THE LIFE OF A NAVVY: A STUDY OF THE RELATIONSHIP BETWEEN ETHNICITY AND STATUS WITHIN RAILWAY WORK CAMPS ON THE KETTLE VALLEY LINE, 1910 TO 1914

by

Carson Toews

B.A., The University of British Columbia, 2019

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE COLLEGE OF GRADUATE STUDIES

(Interdisciplinary Studies)

THE UNIVERSITY OF BRITISH COLUMBIA

(Okanagan)

November 2019

The following individuals certify that they have read, and recommend to the College of Graduate Studies for acceptance, a thesis/dissertation entitled:

The Life of a Navvy: A Study of the Relationship Between Ethnicity and Status Within Railway Work Camps on the Kettle Valley Line, 1910 to 1914

submitted by Carson Toews in partial fulfillment of the requirements of

the degree of Master of Arts .

Christine Schreyer

Supervisor

Robin Dods

Supervisory Committee Member

Victoria Castillo

Supervisory Committee Member

Nancy Holmes

University Examiner

Abstract

The majority of historical and archaeological studies of western Canadian railways have focused on nineteenth century Chinese immigrant workers. Alternatively, I examine the ethnicity and status of early twentieth century European immigrant railway workers in British Columbia by studying the men who constructed the Myra Canyon section of the Kettle Valley Railway (KVR) from 1910 to 1914. The primary function of the KVR was to supply a trade link for mining operations in the Interior region of BC. An important local historical landmark, the 12 km long Myra Canyon section of the KVR is located within the Myra-Bellevue Provincial Park and is comprised of two rock tunnels and 18 wooden trestles through the rugged terrain south-east of the City of Kelowna. In January 2003, the Myra Canyon trestles were given a National Historic Sites and Monuments Board designation. Later that same year, a wildfire destroyed 12 of the 18 trestles in Myra Canyon and revealed the historic campsites of the construction crews that built the railway.

I conducted a study, mapping and recording Huissi's Camp, one of the KVR construction camps in the Myra Canyon subdivision named after the contractor of that particular section. This thesis was written through the lens of historical archaeology, thereby creating a discourse between the material remains at the site, the past and present literature of the KVR, and any relevant archival data found in the Penticton Museum and Archives.

My research questions included: Who were the navvies that built the Myra Canyon section of the KVR? What did they do? What was life like for them? What were the relationships between the navvies and their bosses? Was class and status an important part of being a navvy, and what class structures were in place on the KVR? Was there segregation based on class or

status going on at Huissi's Camp or elsewhere on the KVR? And, can an historical archaeology project within a work camp in the Myra Canyon answer these questions?

Results of this study demonstrate that the navvies led extremely difficult lives and ended up being largely forgotten. The lives of these men merits discussion, because without them the marvelous structures within Myra Canyon would never have been completed.

Lay Summary

This historic archaeology project explores the work camps used by the laborers who built the Myra Canyon section of the Kettle Valley Railway (KVR) in British Columbia from 1910 to 1914. The majority of current literature on the subject of BC railway laborers focuses on Chinese immigrants. Through my research, I will contribute to the underdeveloped body of historical literature on European immigrant railway workers not only in BC, but also Canada at large. The purpose of this research project is to gain a better understanding of the lives and lifeways of the early twentieth century railway workers of the Kettle Valley line known as the navvies.

Table of Contents

List of Tables

List of Figures

Acknowledgements

I would like to take the opportunity to thank the many different people who helped me to make this thesis possible. Without the various contributions from these individuals, I would never have completed this project. I would also like to make special mention of the land itself. The area in and around the Myra Canyon was important both to me as a researcher, and to the men I was researching, and it should be acknowledged here.

I would like to thank the late Dr. Richard Garvin, my original supervisor, who first gave me the inspiration and the opportunity to begin an archaeological study in the Myra Canyon. He donated countless hours of his time as well as his energy to my cause, and I am ever grateful. I would like to say an immense thank you to my final supervisor, Dr. Christine Schreyer, who picked me up and helped me across the finish line. Her contributions to my thesis were immeasurable and I am so very grateful for her kind support and gentle nudges in the right direction. Dr. Diana French acted as my supervisor before her retirement and supported me by answering all of my fledgling graduate student questions and allowed me to borrow so many of her literary resources in order to write a more comprehensive paper. Dr. Robin Dods and Dr. Victoria Castillo assisted me remotely, but nonetheless had a huge impact on my research. Their suggestions and feedback were crucial to my research. I would also like to thank Dr. Maurice Williams for his help with my writing style and structure. I learned a great deal from him, and I am a better writer because of his aid. Thank you to the staff of the Myra Canyon Trestle Restoration Society, without whom I would not have had such unfettered access to the site. I would like to show my appreciation to the Penticton Museum and Archives for their assistance during my research. Thank you also to SSHRC, the College of Graduate Studies and the

University of British Columbia at large for their financial contributions to my project, without which I would not have been able to finish this project.

Finally, but most definitely not least I would like to thank my incredibly understanding wife, Jackie. I can truly say that this thesis would not have been possible without her, both because of her assistance in the field and at home in the office.

Chapter 1: Introduction

The Kettle Valley Railway, located in southern British Columbia, is a marvel of engineering and construction, and is one of the great accomplishments in early Canadian transportation history. Little is known, however, about the lives of the men who built it. The majority of Canadian railway histories have focused on the Asian labourers who helped to build the larger railways like the Canadian Pacific (Chan 1986; Wegars 1993). This focus is evidenced in government sponsored historic themed videos such as the Canadian Heritage Minute and the many National Film Board productions on railways in Canada (Historica Canada 2019; National Film Board 2019).[1] Many Canadians will remember the short television clip with the infamous quote that "there is one dead Chinese man for every mile of the track" (Historica Canada 2019).[2] Although these histories are an essential part of Canadian identity, they leave a void in the Canadian railway history knowledge base. Dozens of different railways have existed across the nation, employing thousands of men who were not of Asian descent. The lives of these men[3] are not very well known, but are nonetheless significant, as they make up a large portion of the settler demographic in early twentieth century Canada.

By learning about the lives of the early railway workers, we can gain a better perspective of both Canadian settler identities, and the history of those twentieth century settler communities. Historical archaeology is one method through which we can explore Canadian cultural heritage.

---

[1] For more information on the Canadian Heritage Minutes and other Canadian National Film Board historical videos, please refer to the following links: https://www.historicacanada.ca/heritageminutes, https://www.nfb.ca/subjects/transportation/railways/, https://www.nfb.ca/film/train_406/, https://www.nfb.ca/film/railroaders/ (Historica Canada 2019; National Film Board 2019).

[2] For a link to the Canadian Heritage Minute video referred to here, see: https://www.historicacanada.ca/content/heritage-minutes/nitro (Historica Canada 2019).

3 I say 'men' here because the KVR did not employ female workers during its construction (Williams 2008). Due to this fact, I will often refer to the railway labourers as men.

Historic archaeological projects can help to construct a more comprehensive understanding of individuals who are habitually overlooked throughout history, such as the impoverished, the disenfranchised, and those who do not identify with the dominant group (Deetz 1996; Little 2016). A sub-discipline of the broader field of archaeology, historical archaeology is the study of human-occupied sites in more recent history, as opposed to those sites in the ancient past that existed prior to historic or written accounts. The research looks at these sites through the lenses of anthropological and historical investigation to more thoroughly examine the specific areas in question. The wide-ranging investigative nature of historical archaeology makes it an excellent tool in the study of sites like the early Canadian railway work camps, where both a rich written and material culture history of the railways and many interesting associated archaeological sites exist. Using an historic archaeological analysis of one of the Kettle Valley Railway work camps, I pull together the history of the railway line and the archaeology of the work camp to illustrate how the railway labourers lived in the early 1900s.

The Kettle Valley Railway (KVR) in southern British Columbia stands out as a unique early Canadian railway with regards to its construction. The KVR was built between 1901 and 1914, primarily to service the southern interior region of British Columbia that was rich in valuable ores like silver and copper. As the ore was located in treacherous terrain, the designers and builders of this new railway had to negotiate steep summits, wicked bends, and massive rock formations. The Myra Canyon section of the KVR, located just southeast of the city of Kelowna, was particularly hazardous and the final product was, and still is, a feat of engineering due to the massive wooden trestles and rock-hewn tunnels that were required (see Figure 1). The KVR was made all-the-more distinctive through the make-up of its workers. The men who toiled on the

KVR were almost exclusively European and no Asian labourers were employed for the construction of this particular railway.

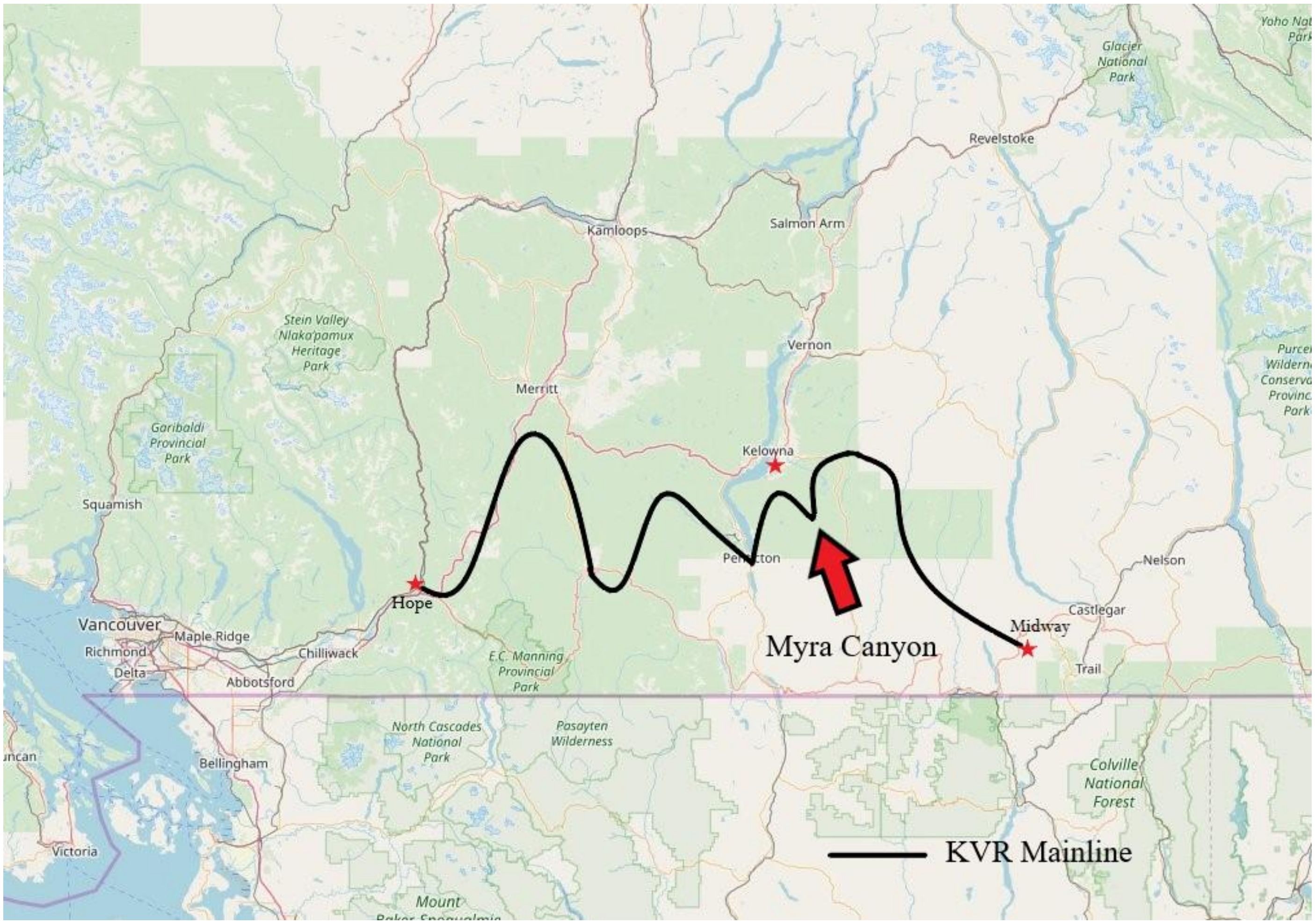


Figure 1. Map of the Kettle Valley Railway. Located in southern British Columbia. Map created by author, © 2019 OpenStreetMap contributors, map used under Open Database License and CC BY-SA.

My research suggests that the navvies[4] of the KVR were unseen, unknown workers. They were people with had little to no official agency, that laboured under horrendous working conditions for very little money. My intention is to shed light on these underprivileged immigrant workers who were all too common in early Canada. To do this, I examine and discuss why the managers and engineers of the KVR decided to build across the Myra Canyon, despite the difficulties. In addition, I describe the relationships between the managers and engineers of the KVR and their lower-class labourers. Furthermore, I investigate why Asian labourers were not employed, and why Europeans instead worked on the KVR. From this I came to address the complex social and cultural structure of Canada at the time.

Specifically, this thesis examines the work camps used by the laborers who built the Myra Canyon section of the Kettle Valley Railway, southeast of Kelowna, B.C. These work camps were constructed along the railway line, where the labourers could sleep, eat and rest between their shifts. I investigated three of the work camps that were erected within Myra Canyon, to explore through camp structure and material culture the class, status, and ethnic structures of the men who occupied the camps. These three camps are Chew's Camp #11, Morissey's Camp #2 and Huissi's Camp, each named after the contractor of that particular section of the rail line. George Chew oversaw several different work camps along the KVR, as did E. A. Morrissey, which is why their work camps are numbered. There is very little known about the contractor Huissi, however, and there is just one work camp named after him. During the summers of 2007 and 2008, students at the University of British Columbia, Okanagan, under the direction of Drs. Richard Garvin and Maurice Williams, excavated both Chew's Camp #11

[4] The term "navvy" was a slang name for a railway worker or technician, which initially stemmed from the word "navigator", which in turn was a named given to the men who worked on Britain's navigation canals in the 1700s (Williams 2008: 68-69).

and Morrissey's Camp #2 (University of British Columbia, Okanagan 2009). The excavations were the focus of an archaeological and historical field school, and students were granted class credit as part of the project (University of British Columbia Okanagan 2009). While I did not personally take my field training there, it was through Dr. Garvin's training and supervisory support that my work here is possible. It was during this time that Garvin and Williams located signs of another work camp, which turned out to be Huissi's Camp. It was at Huissi's Camp where I completed the fieldwork for my thesis.

1.1.1 Class, Status, Ethnicity and the Archaeological Record

In this thesis, class, status and ethnicity became important concepts as I examined the lives of the KVR labourers. Class, status and ethnicity were very significant concepts to early Canadians of the nineteenth and twentieth centuries, due to the cultural climate of the young nation (Brown and Cook 1991). This is because during the early 1900s in Canada, much like in the United States, those three concepts were inextricably linked (Paynter 1999). One's ethnicity placed them, whether they liked it or not, into a particular class, which in turn indicated their status as a Canadian. A white, English-speaking, British-born immigrant would almost always be perceived as higher class and status than an Asian, African or even eastern European immigrant who may or may not speak English. Should a non-white immigrant display an aptitude for assimilating themselves into this early Canadian culture by learning English and behaving as a 'white' person, that immigrant stood a good chance of raising their perceived class and status, but life for them was far from easy (Bradwin 1972). Those three concepts, class, status and ethnicity, were intricately woven through the fabric of Canadian colonial life.

In addition to the prejudice and racist sentiments already in place in early Canada, the years during which the Myra Canyon section of the KVR was being constructed, roughly 1912 to 1914, were fraught with anxiety and fear. Europe was embroiled in pre-war hostilities, and ethnic divisions were growing and expanding across the globe. Many of the European immigrants that found work on the KVR hailed from nations that were beginning to align themselves against Britain, Russia and the West. Many German, Austrian and Hungarian immigrants, among others, would soon be interned in concentration camps across Canada during war time.[5] On the KVR, immigrants from these countries were feared, resented and placed within a lower societal class for the actions of their home nations. They were treated differently from those migrant workers that hailed from Britain or other allied nations and found it very difficult to increase their social standing. As Beaulieu mentions, "Even before WWI, the climate toward Austro-Hungarians,[6] especially from the Canadian social elites, was cold as they voiced strong concern regarding whether these destitute immigrants could ever emulate their strong British character" (Beaulieu 2015, 105). This is the cultural and political climate within which the KVR was being constructed.

Through my research, I identify and discuss the class, status and ethnicities of the KVR navvies, with the help of the material remains at Huissi's Camp. These three core concepts of class, status and ethnicity, however, can be difficult to ascertain in the archaeological record. Archaeological research with regards to class had long been focused on the study of wealth and high-status individuals (Funari et al. 1999; Little 2007; Orser 2004). It was not until works by

[5] It should be noted that Austria-Hungary at this point in history was a huge empire that included more than just ethnic Austrians and Hungarians. Many people of Polish, Slavic and Ukrainian descent resided here, and the Slavs in particular were often thought of as less "white" than the others.
[6] It is likely that Slavs were the ethnic group being referenced here.

researchers like Wurst, Beaudry and Mrozowski, McGuire and Walker, and Orser relatively recently that the trend changed and began to focus on the disenfranchised, the impoverished and the lower class (Beaudry 1988; Larkin & McGuire 2009; Mrozowski 2006; Orser 2004; Scott 1994; Wurst 1999). Mary Beaudry and Stephen Mrozowski both examined the lives of workers in Lowell, MA, Beaudry at a boarding house and Mrozowski at a textile mill. Larkin and McGuire, on the other hand, conducted their historical archaeology research in the coalfields of Colorado, while Elizabeth Scott studied the lives of miners in the mining towns of the western United States during the nineteenth century. Orser conducted his work in Ireland, on rural farms from the 1800s. It is with the aid of these researchers that my thesis can demonstrate the subtle relationships between men of different classes on the KVR.

Interestingly, I can illustrate the uniqueness of Huissi's Camp as it relates to the broader topic of working-class archaeology around the turn of the twentieth century. While Mrozowski describes a lack of a rigid social structure in the Lowell, Massachusetts site where he conducted his research, I demonstrate that a rigid social hierarchy was indeed in place at Huissi's Camp with the assistance of the relevant historical literature. Mrozowski's excavation in Massachusetts was not a railway camp, but it was similar in many ways, including the presence of a bunkhouse and the recruitment of immigrant workers. However, I needed more than just the archaeological record to do demonstrate my findings. Importantly, it is much more effective to combine the material remains of an archaeological site with data gleaned from the historical and archival record, and that is the direction I chose to take in this thesis. I examined archival materials relevant to railway construction in the early twentieth century, significantly the journals of Chief Engineer Andrew McCulloch. These archival resources helped to describe what life was like as a railway worker during this time period, and as such they are extremely useful. I also examined the historical texts related to early Canadian railways in general and the Kettle Valley Railway more specifically. This historical archaeological approach unearthed some interesting data, and in turn, some intriguing interpretations of those data, as will be described later, in Chapter 5.

1.1.2 Previous KVR Excavations

This thesis contributes to a growing understanding of archaeological materials within the Myra Canyon of the KVR. In particular, the late Dr. Richard Garvin conducted earlier work in this area and his research is the focus of comparative documentation with regards to Huissi's camp (Garvin 2014). Garvin, as part of two separate archaeological field schools with the University of British Columbia Okanagan, surveyed and mapped two work camps, Chew's Camp #11 and Morrissey's Camp #2, both of which were part of the KVR line and are located quite close by to Huissi's Camp (Garvin 2014). The surveying and mapping data extracted from these two sites, along with the artifacts observed there are of great interest and were integrated into this study. For example, one of the most significant concepts that emerged through Garvin's research is that of class or status-based segregation within the work camps (Garvin 2014). At Chew's Camp #11, a structure was discovered across a stream and up on a bluff, well away from the rest of the camp buildings (Garvin 2014). Within and around this structure were several artifacts that suggest the inhabitants were of a higher status than the rest of the camp labourers (Garvin 2014). Items such as European porcelain dishes, objects which would have been unavailable to lower-class workers, were identified in the remains of the structure and provide evidence for this theory (Garvin 2014). Through my research, I discovered that it is unlikely that similar patterns of segregation were in place at Huissi's Camp. The material record provided no evidence for higher class individuals living in structures that were located physically apart from the rest of the primary Huissi's camp structures.

1.1.3 Historical Archaeology and Huissi's Camp

The site known as Huissi's Camp has had several different occupations since the early 1900s. The first occupation of the site that we know of, thanks to the material record, was by the KVR labourers from 1910 to 1914, but the site was also used in the 1960s, during the renovation of several of the wooden trestles, which received steel upgrades (Garvin 2014). According to Garvin, the site was also home to squatters at different points in time after the 1960s, perhaps as recently as the early 2000s (2014). For these reasons, archaeological context is quite difficult to ascertain when locating and retrieving artifacts from the site and a historical archaeological perspective is necessary. The Society of Historical Archaeology (SHA) notes "Historical archaeology is the study of the material remains of past societies that also left behind some other form of historical evidence" (Society for Historical Archaeology 2018). Accordingly, in the case of the KVR, the additional historical evidence left behind were the letters of correspondence between the engineers and the managers of the line. Additionally, the early photographs of the KVR are evidence that supplements the material remains and the letters of correspondence. Historical archaeology provides an efficient, flexible, and multi-faceted framework for my research. In particular, I used methods of analysis from historical archaeology to uncover the relationships between and among the European railway workers and their bosses.

To achieve this goal, my research needed to meet the following objectives:

1) To provide a background narrative of both the history of the Kettle Valley Railway, and the history of the archaeological projects undertaken within its boundaries;
2) To learn and describe the ethnic and class makeup of the KVR workers through the efficient and efficacious synthesis of all relevant archival and archaeological data;

3) To utilize adequate methods and methodologies throughout the course of the thesis, and, finally;
4) To interpret all of the resulting data accordingly.

In this thesis I also describe what life was like for the men who worked on the Kettle Valley Railway, specifically for the men who laboured in the rugged Myra Canyon. I studied historical texts and photographs related to the site and the railway in general as a method of learning about those men, but I also examined the material remains from Huissi's Camp and compared those items to the ones found in Chew's Camp #11 and Morrissey's Camp #2. Between the three work camps, there were enough data for me to answer some of the questions surrounding the day-to-day life of the railway workers. Furthermore, I conducted research in the Penticton archives, the home of the majority of the historical data from the Kettle Valley Railway, to uncover any additional information regarding Huissi's Camp, and the Myra Canyon section of the railway. In the following pages, I attempt to present a full, rich picture of the lives of the KVR navvies.

Subsequent to the introduction, the organization of the thesis is as follows.

- Chapter two provides the background of related literary research, histories, and other studies related to the KVR, and is followed by a theoretical outline.
- Chapter three is a discussion of the background to Huissi's Camp. This chapter features maps of the site, as well as photographs.
- Chapter four discusses the methodology employed during the course of the thesis, including archaeological methods, field methods, mapping procedures, and laboratory methods.

- Chapter five includes the interpretation of the resultant artifactual data, through the lens of historical archaeology. A critical evaluation of the class, status, and ethnicity of the KVR workers is essential in this chapter.
- Chapter six provides the discussion regarding the archival research that I conducted at the Penticton archives. This includes examples of written correspondence between the assistant engineers and Andrew McCulloch. In
- Chapter seven, I conclude with my findings about the navvies, and discuss the outcomes of my research, including the limitations and possible future research directions.

Chapter 2: Historical Background of the KVR

2.1 The Origins of the KVR

To better understand what was happening in the work camps in the early 1900s during the construction of the KVR, it is important to discuss how and why the KVR came to be. By the 1880s, many valuable ores had been discovered in British Columbia and each year Canadian mining companies were constructing new mines (Sanford 2003). These new mines unearthed large quantities of coal, copper and silver, which required the mining companies to build smelters across the province to process all the ore (Sanford 2003). As a result, the business of mining and smelting boomed in the province. For instance, in the Boundary and Kettle River regions, prospectors found large quantities of silver ore in 1887, and there were rich deposits of copper as well. A railway line into the region was becoming a necessity (Sanford 2003).

Tracy Holland, an entrepreneur from Ontario, was the man who began one such railway, and after he promoted his concept for a rail line called the Kettle River Valley Railway (KRVR) to the Canadian government in Ottawa in 1901, the government supported his plan to begin construction on the KRVR. Holland, however, delayed the building of his KRVR for an entire year, earning his young railway the unfortunate moniker, the “Hot Air Line” (Sanford 2003, 5-8, 15-16, 75-76). Holland’s delay gave his competitor James Jerome (J.J.) Hill, president of the American-owned Great Northern Railway, the opportunity to begin building his Vancouver, Victoria and Eastern Railway (VV&E) line into the region, which meant that the KRVR had some stiff competition. Holland left the KRVR in 1902 due to the high stress of the job and the competition with Hill, and that same year the KRVR became known as the Kettle Valley Lines (KVL) (Sanford 2003).

The province of B.C. still needed a railway link from the Kootenays and Boundary regions to the coast in order to aid in the extraction of resources. In 1908, James J. Warren, who had financially backed Holland's KRVR project, brought an idea to take over the faltering KVL to the president of the CPR, Thomas Shaughnessy.[7] With new plans in motion to get the track built, the KVL was poised to generate a great deal of revenue in the mining regions of British Columbia. Primarily, these revenues came through the extraction and shipping of copper and silver ore (Sanford 2002; Sanford 2003).

2.2 Competition

Warren realized that the only way to keep J.J. Hill and his American interests out of the area was to complete the track as quickly as possible. In 1910, Shaughnessy approached the heads of the CPR in order to secure funding for the completion of the KVL. With reluctant support from the CPR officials, the KVL became the Kettle Valley Railway (KVR), with Warren and Shaughnessy working together at its helm. The plan was to extend the line from Midway to Hope, thereby allowing the precious ores from the B.C. interior to make their way to the coast more efficiently. The KVR, now with financial backing from the CPR, was fighting to keep this vital railway link firmly in Canadian hands, while Hill and his VV&E sought to take the resources of B.C. south of the border. In order to reach his goal, Warren began construction on the railway from three different points: Midway in the east, Penticton in the centre, and Merritt to the west. In this way, the railway would come together much quicker than if it had been built from one direction only. Hill, meanwhile, had been steadily building his VV&E eastwards out of

[7] Warren had joined the KRVR initially as an investor, but soon realized the railway was in trouble. Because he had a vested interest in seeing the line succeed, Warren proposed to Shaughnessy a deal that would see the KRVR, which was by then known as the Kettle Valley Railway (KVR), brought into a merger with the more powerful CPR in order to get the track finished. The KVR became a subsidiary line of the CPR in 1908 (Sanford 2002)

the city of Abbotsford and in a westerly route out of Princeton (Sanford 2002; Williams 2008). Warren decided that the KVL should also be routed through Princeton, and this was quite obviously met with great resistance by J.J. Hill. Hence, there was a race between the VV&E and the KVL to see who could complete their Kootenay-to-coast line first (Sanford 2002; Williams 2008).

In the end, the Coquihalla Pass was literally and figuratively the pinnacle of the competition between Warren and Hill. By 1910, both the Canadian and American companies had invested so much money into their British Columbia railways that hopes of ever getting back into the black were extremely slim. However, both Warren and Hill fought on stubbornly, each determined not to concede to the other. In the end it was politics that won the railway war for Warren and the KVR. In 1912, the Board of Railway Commissioners stepped in and attempted to settle the dispute by advising that the two railway companies work together on a route. Warren and Hill begrudgingly accepted these terms, but the compromise would not matter in the end. That same year, B.C. Premier Richard McBride was re-elected, and part of his campaign included promises that he would support the KVR in building its railway line through the Coquihalla Pass, while providing no such assistance to the faltering Vancouver, Victoria and Eastern. McBride's victory clearly shows that British Columbians wanted this railway to remain a Canadian enterprise. Hill was forced to concede to Warren, and the construction of the KVR could continue. The KVR was very much a product of the competition with the American company. This meant that its construction was consistently being moved hurriedly along. This rushed nature would undoubtedly have had an effect on the men labouring in the work camps, as there would have been constant pressure to get the work done on time or even ahead of schedule (Hill 1989; Sanford 2002).

2.3.1 Railway Construction

The construction of railways in the late nineteenth and early twentieth centuries followed a logical progression: surveying, clearing, grading and then track-laying using rudimentary, but ingenious tools and machinery. The KVR surveying crews began their work first. The surveying crews were made up of small teams of four to six men, who lived in temporary tent-like housing in the wilderness near to where the railway line would eventually pass through. These groups of men worked long hours using compasses, levels, sextants and similar early surveying equipment to scout out the best and most efficient routes that the railway could take. Their suggestions were taken into consideration by the lead engineers, men like Andrew McCulloch,[8] who would then choose the final route and begin the next stage of construction (Sanford 2002; Williams 2008).

2.3.2 Chief Engineer Andrew McCulloch

Many possible routes for the track between Midway and Hope existed, but through extensive planning and research, Chief Engineer Andrew McCulloch selected the final location. McCulloch was an Ontario native of Scottish descent who had worked on various railway lines for the better part of twenty years. The president of the CPR, Thomas Shaughnessy, approached McCulloch to take up the position of Chief Engineer on the KVR and requested that McCulloch keep the grade to one percent, excepting the few areas where a steeper climb was unavoidable.[9] These steeper sections were allowed to be a 2.2 percent grade. The reason for these low percentages was quite simple; locomotives, with their metal wheels on metal rails, had poor

[8] Andrew McCulloch was a Scottish-Canadian railway engineer born in Ontario in 1864. Prior to being appointed Chief Engineer of the KVR, McCulloch had worked for the Great Northern railway and the CPR over a span of more than twenty years (Williams 2008).
[9] During railway construction in the early 1900s, the track was limited to a certain slope, in percent, where 0 degrees is flat, and 90 degrees is straight up. This is known as the grade. The maximum grade of a specific railway route was based on determinants like the steepness of the terrain and the weight of the trains (Williams 1924).

traction, and a steeper grade would cause slippage and loss of power. In addition, a steep gradient puts a great deal of stress upon the locomotive's engine, which can cause overheating or engine failure. Therefore, McCulloch had to build a winding stretch of rail through Myra Canyon, then known as Canyon Creek, which necessitated the construction of several huge trestles and tunnels. However, even with these additional structures, the route would be completed quicker and cheaper than if the route had bypassed the canyon entirely. This decision would ultimately have the greatest impact on the navvies, the ones who would be labouring in the canyon (Williams 1924; Sanford 2002; Williams 2008).

2.3.3 The Grade

The terrain surrounding the KVR was rugged and keeping the gradient of the track to less than three percent was a daunting task, because it meant that large areas of rocky terrain had to be blasted, cleared and levelled in order to provide a smooth, even surface to build the track upon. McCulloch, like other railway engineers in the early 1900s, had to follow the contemporary guidelines surrounding track gradient. As Clement C. Williams explains:

> All grades on a railroad cause a definite amount of resistance, the amount depending upon the steepness of the gradient… All grades are, therefore, objectionable to a certain extent, but the attendant objections arise from two very distinct sources, and gradients are classed accordingly. One class of grades, in addition to causing the losses common to all gradients because they offer a certain resistance and therefore cause added work to be done, limits the weight of train that can be hauled over any given division on which it occurs, while the other class incur loss by increasing operating expense directly through augmented wear and tear on equipment, cost of fuel, etc. The first class consists of those grades that are called ruling gradients. Ruling grade or gradient may be defined as the grade which, by its length or steepness, limits the weight of train that can be hauled by one locomotive over the division on which it occurs. The second class of grades, or those less than the ruling grade, are termed rise and fall. The expense of the second class of grades, rise and fall, depends upon the cost of pulling trains over these grades, while the expense caused by the ruling grade includes the cost of pulling the train up the grade and in addition the cost of operating light trains over the level or nearly level stretches of line occurring between the limiting grades. (Williams 1924, 219)

Thus, Williams explains the operational facts that the construction of a railway involves inclines and declines, whose slope are determined by several variables. These variables in turn determine the maximum allowed grade for a particular section of railway. With all of the variables included, the KVR was limited to a maximum grade of 2.2 percent, as noted above. It was difficult for the engineers to plan a route along the lake and river routes in southern British Columbia with a maximum of 2.2 percent, due to the vertical harshness of the topography. The engineers frequently had to build portions of the KVR track at the maximum allowed grade in order for the railway to traverse the many hills and valleys located in that region. This in turn meant that these sections of railway were a significant challenge for the train conductors and operators to navigate. A fully loaded steam locomotive did not climb steep hills very easily, nor would it have been easy to stop during its descent (Williams 1924; Turner 1995).

2.4.1 The Clearing Crews

The second team after the surveying crew was the clearing crew. They levelled the land around the track and produced an unobstructed right-of-way for the line. With a large, cleared space to work in, the heaviest of the manual labour began. This entailed the blasting and clearing of rock and the levelling of the terrain. The land was very seldom flat in the country that the KVR passed through, and raw manpower was the only method of levelling the rocky slopes. Over ten thousand men eventually worked on the KVR, and much of the work they did was by hand, with a pick or a shovel. If the line proceeded through an extremely rocky section, this rock was also used in the railway construction. For example, it was common for Italian stonemasons[10]

[10] During the early 1900s, Italians were well known for their craftsmanship with rock, particularly mortarless rock work. Because of this, the KVR hired and used Italian labourers to construct rock retaining walls and abutments, but

to use the rock that was removed from the cut in order to construct the rock ovens near the work camps, or the retaining walls for the track. Stone ovens were necessary for the work camps of the KVR due to the quantity of food required by the navvies and the difficulties encountered in trying to ship food from Kelowna up to the camp sites. It was far easier, more efficient, and less expensive to build rock ovens along the railway line in which the men could bake homemade bread, an economical and basic staple (Sanford 2002; Williams 2008). Where the rock was particularly stubborn, different means were used to remove it; crews needed to use explosives liberally throughout the length of the KVR (Williams 2008; Mills 1900; Williams 1924; Sanford 2002; Harvey 1998).

2.4.2 The Navvies and Explosives

While explosives were used for leveling terrain, they were not as useful for the boring of tunnels because of their unpredictability and imprecision. Instead, crews used explosives like black powder or nitroglycerine to remove large amounts of surface rock from the cut, and then proceeded to tunnel the rest of the way through the obstruction with pickaxes or steam-powered drills. Black powder was not as powerful as the newer explosive, dynamite, but while the nitroglycerine in the dynamite would freeze at sub-zero temperatures, the black powder would not. This meant that when the nitroglycerine froze, workers, unwilling to take the time to thaw it properly, frequently resorted to faster, more dangerous methods. Heating the dynamite in a skillet was not unusual. Premature blasts were common, and several deaths resulted from improper handling of explosives. To remove the rock from the cut, the workers bored small holes into the rock face, and then placed explosives in the holes. By 1913, chemists had developed a

---

also stone ovens that were used for baking. During the construction of the KVR, loose rock was always readily available for these Italian stonemasons to work with (Sanford 2002; Williams 2008).

new, more concentrated form of nitroglycerine that allowed for greater efficiency in blasting. In some areas of the KVR, it was not until this new improved formula was available that the removal of the incredibly dense rock began. After they finished blasting, crews started removing rubble. Rock of adequate size was saved for abutments and retaining walls, while the soil was used for the embankments (Hill 1989; Sanford 2003; Turner 1995; Turner 1987; Sanford 2002).

The rock in the area through which the KVR passed was quite hard, and complaints on the part of the workers were abounded. Nonetheless, the work progressed. Near Naramata, in particular, the density of the rock slowed crews to the point that the contractors had to bring in a steam-powered drill to aid the workers. This increased rock density would influence all aspects of the manual labour that the navvies endured (Sanford 2003; Williams 2008; Turner 1987).

2.5 The KVR Trestles

McCulloch's KVR traversed some rugged landscape that required the construction of many wooden trestles, which were, and still are, an engineering marvel. On the Kettle Valley Railway there was a distinct need for the construction of various wooden bridges to span the various chasms, gorges, creeks and rivers that defined this challenging terrain. Andrew McCulloch knew that a great deal of work was required to negotiate these features. The construction of a bridge was a very much different undertaking than the rest of the rail line. Instead of using the track-laying machine and proceeding steadily from point A to point B, more ingenious methods were necessary. Building trestles was not overly difficult from a design or mechanical sense, but it involved a great deal of labour and could be quite dangerous for the workers.

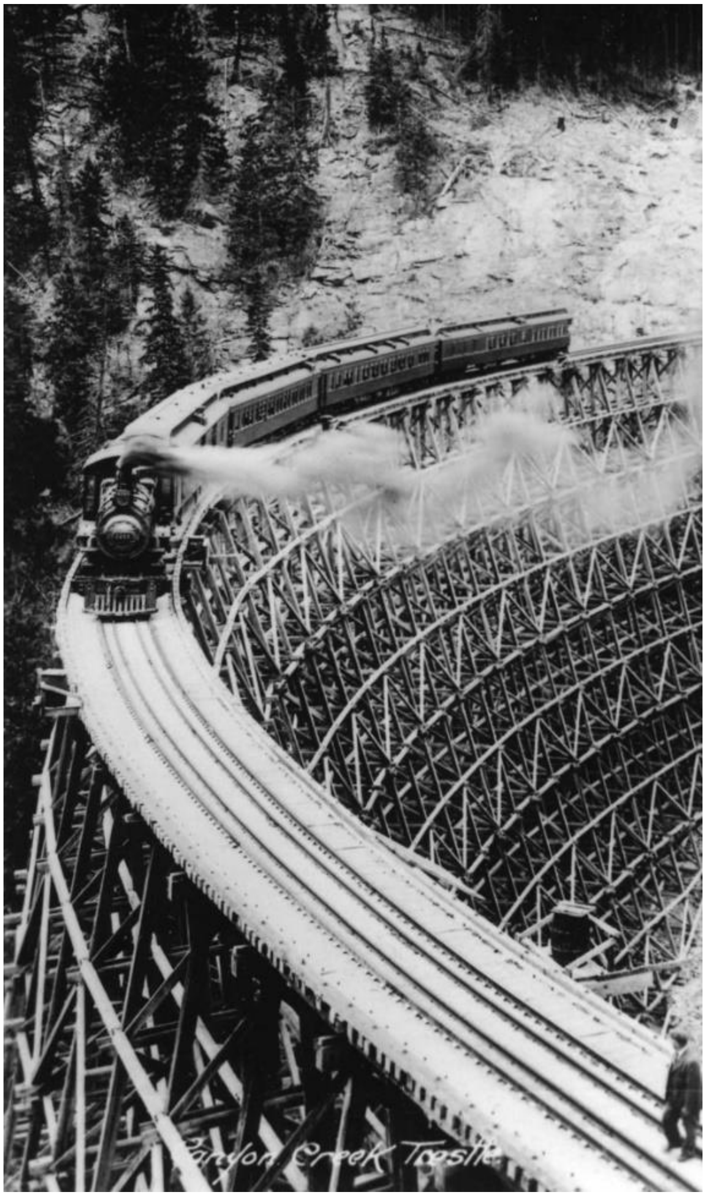


Figure 2. Photograph of Trestle #6 over Pooley (Canyon) Creek on the Kettle Valley Railway in Myra Canyon. In the public domain. Penticton Museum and Archives 2017.

Wooden trestles demanded constant maintenance, but they were the least expensive type of bridge to construct. Wood was locally available, making it very practical to use. Additionally, it is one of the easier construction materials to work with and repair. See Figure 2 for an example of a wooden trestle from the original KVR line. Railway companies like the KVR were often on a tight budget, and trestles were much faster to build than other options, such as filled bridges. A filled bridge was built by simply filling in the gap with earth and rock. In the Myra Canyon of the KVR, filled bridges were not viable options because the spans were far too great (Smuin 2003).

The Myra Canyon section of the Kettle Valley Railway is an excellent example of railway bridgework in the early part of the twentieth century. Between the Myra and Ruth stations, nineteen wooden trestles were originally constructed – one of which was filled in 1929, and one was bypassed in 1946. The total length of these trestles stretched to well over 5,000 feet and contained staggering amounts of lumber.[11] The roughness of the terrain meant that the easiest way to build these trestles was to lay track up to the edge of the gap, and then haul supplies up to that point by train (Smuin 2003; Diaries of the KVR 2001).

The building of a trestle was quite a smooth operation. The foundations of most of the trestles were built and put in place by carpenter crews ahead of the construction crews beginning their work. Thus, the crews could begin immediately, saving valuable time. The difficulty of access to the sites of the Myra Canyon trestles meant that heavy milling equipment was not an option for McCulloch. Instead he brought in pre-fabricated timbers, an industry standard by this time, by train up to the end of the track and had the navvies put them in place with a steam powered crane. These pieces of timber had to be accurately cut to McCulloch's specifications and pre-drilled for installation. McCulloch was a perfectionist and would not allow shims[12] on

11 Because the historical records for the KVR were all recorded in imperial units of measurement, I will be describing the measurements of the trestles and track in imperial units as well. When it comes to the description of my research at the site, including the measuring of any recovered artifacts, I used metric units of measurement and they will be described as such here.

12 A shim is a small, thin piece of wood used to fill in gaps and spaces between the large timbers on the railway line, or other structure. Shims were often used to level out two sections of timber of different heights.

these trestles; therefore, the lengths had to be very precisely measured (Diaries of the KVR 2001; Williams 2008).

Building by hand a wooden trestle two-hundred feet in the air was dangerous work. To construct a trestle, a boom operator controlled a small crane on the top of the track. He would swing the timbers out and down to the people working underneath him. Below, the workers climbed the trestle and received the timbers from the boom. Holding the beams in place, they bolted them together by hand, working this way all along the length of the trestle until they reached the opposite side of the gap. Eventually, on October 2, 1914, the Myra Canyon section of the Kettle Valley Railway was completed (Williams 2008). This feat of Canadian railway engineering was finally ready for regular service in this construction section, but there was more work to be done on the rest of the KVR (Williams 2008). The line west of Penticton was not yet completed, and neither was the Coquihalla section to Hope (Williams 2008). However, even without a true celebration, McCulloch and the navvies could be proud of the completed Myra Canyon section (Diaries of the KVR 2001; Williams 2008).

2.6.1 Historical Background of the KVR Labourers

Railway work was an extremely common source of employment during the late 1800s and early 1900s, so much so that many different idioms and slang terms still used today originated from within its subculture. One slang term that was commonly used during the construction of the KVR, but which has since been abandoned, is “navvy”. As mentioned in Footnote 4, a railway labourer would often be referred to as a navvy, which initially stemmed from the word “navigator”, which in turn was a name given to the men who worked on Britain’s navigation canals in the 1700s (Williams 2008: 68-69). Thus, railway work was seen as a continuation of a grand English tradition, and the men who toiled for cents on the Kettle Valley line were the keepers of that legacy.

The navvies of the KVR earned an average wage for 1910, around $2.75 per day, which was comparable to other unskilled work at local canneries or sawmills. The men also received lodging and food, but the main thing that drew them to work on the railways was the availability of employment. Cannery and sawmill jobs were fine if you could find them, but the sheer number of men required to build the railway meant recruitment was always happening. The contractors of the KVR were constantly looking for labourers because turnover for navvies was high. Working men, however, were difficult to find. In 1910, when construction began, Canada was experiencing a period of general prosperity. Due to these circumstances, labour was in great demand and short supply all across the country. As Brown and Cook note in their work about the history of Canada, both skilled and unskilled workers were scarce, in part due to restrictions on immigrant workers that were put in place by the Canadian government (1991). Brown and Cook go on to mention that The Canadian Immigration Act of 1906, in particular, was a source of grief for railway employers because The Act targeted migrant workers from Asia, and even labelled them the "yellow peril", noting that these "undesirables" were coming into Canada with greater and greater frequency (1991, 68). One of the more pertinent quotes from Brown and Cook's work comes from Robert Borden, leader of the opposition in Canada at the time. Borden said, "We must not allow our shores to be overrun by Asiatics, and become dominated by an alien race" (1991, 68). This was a common sentiment in Canada, especially in British Columbia during the early 1900s. Therefore, unlike the CPR before it, the KVR was unable to find its workers in China or Japan. It should be noted that the Immigration Act of 1906 did not outright ban any specific ethnic groups from entering Canada, it simply gave the government the power to deny entry to anyone they wished. The political sentiments at the time were such that Asian labourers were extremely undesirable (Williams 2008; Hill 1989; Sanford 2002; Sanford 2003).

2.6.2 Ethnicities

The KVR workers were of various nationalities, but the majority of these men were central European immigrants. While many of the other early Canadian railways brought in large numbers of labourers from all over the world, by the time the KVR was undergoing construction in the early twentieth century, immigration from certain countries, like Ireland and China had begun to wane. Canadian workers had proven to be inadequate for railway work; the railway companies felt that Canadian workers asked for too much in terms of wages, room and board, and possessed a low work ethic. Therefore, the KVR needed to consider other sources for its labour. British men were also deemed unfit for railway work in Canada due to the harsh conditions and comparatively low rates of pay. CPR President Thomas Shaughnessy aptly expressed the changing views of railway workers in Canada when he said, "It would be a huge mistake to send out any more of these men from Wales, Scotland or England… who come here expecting to get high wages, a feather bed and a bath tub" (Avery 1979: 26). Additionally, as noted, the Canadian government imposed regulations against Asian immigrants. This meant that the KVR could not look to China for labour. Thus, the KVR recruited its twentieth-century workers from Central and Eastern Europe, including Scandinavia, and Russia. The majority of the Central and Eastern European men were Slavic, Swedish, German and Austrian, but, as noted earlier, trained Italian stoneworkers were also hired to construct the rock ovens, and mortarless rock retaining walls of the KVR (Sanford 2002). The men who arrived from these countries were seen as strong, hardy and perfectly fit for work on the Canadian railways, and later, for farming, settling and populating the land. Although the European, Scandinavian and Russian navvies were selected for their ability to work hard, this did not mean they were well respected on the line. The available historical documentation on the subject actually exposes some wide divisions among the workers based on nationality and linguistic facilities. According to Edmund Bradwin, a writer who lived and worked on the early Canadian railways, there were very specific rules for race and nationality in the railway work camps; there were "white" men and there were "foreigners" (1928).[13] To be considered "white", a person had to have light-coloured skin, but they also had to speak English (Bradwin 1928). With these prerequisites in mind, the vast majority of Central and Eastern European immigrant workers were considered "foreigners" (Bradwin 1928). In fact, it was really only English-speaking Canadian, American and British men that were considered "white" (Bradwin 1928). Sometimes those immigrants of Scandinavian or German descent could also be considered white, but this was subject to their work ethic (Bradwin 1928). Italians were often considered foreign, particularly dark-skinned southern Italians (Luconi 2003; Saucier 2018; New York Times 2018). According to Bradwin, those who displayed physical or mental prowess or ability with respect to railway work could also earn "recognition", which generally meant inclusion (1928, 86-87, 92). Any navvy who was designated as foreign could expect to be assigned to more menial, physically demanding and dangerous work, and, according to Bradwin, usually to their own separate bunkhouse (1928). Not only did the ethnicity of the navvies change to be more frequently Central and Eastern European on the KVR, but the working conditions on the line were equally in flux (Bradwin 1928; Sanford 2002; Williams 2008).

[13] It is prudent, when talking about concepts like race and ethnicity, to define the terms prior to discussion. For the purpose of this thesis, race will be used to describe the biological distinction of social identity, whereas ethnicity will be used to describe the social and cultural distinction of social identity. It is generally accepted today that race is a classification constructed by society, but in Canada in the early 1900s, race was seen as a genetic determinant that categorized people into rigid groups. It is through this lens that we will examine the navies of the KVR (Johnson 2010).

2.7.1 Finding Work

Labour conditions for the KVR navvies were both beneficial and deceptive. On the KVR, most of the immigrant workers who were brought over from Europe signed on with employment agencies, which was not unusual. The labourer was put into a position with a specific railway, which was an easy task because there was a perpetual shortage of labourers in western Canada in 1910. All the navvy had to do was arrive at the jobsite. The immigrant's travel expenses were paid for by the agency, and the worker repaid those expenses over time through paycheck deductions. Through this system, the navvies were put into debt, which sometimes proved difficult to escape. This system was not unlike the indenture systems present in Canada during the 17th and 18th centuries. For the immigrants, not being able to speak English was a hindrance, and many were taken advantage of. Worksite responsibilities were sometimes changed unbeknownst to the worker, who was forced to continue to fulfil his contractual obligation to the foreman. For example, an immigrant worker may have signed a contract stating he would be performing track-laying duties, but when he arrived at camp, he found out that he would be digging a rock tunnel instead. Once these workers signed a contract, they were locked in for the duration of that contract. The labourers were essentially paying to work, and the managers treated them as poorly as they pleased. Work for the European immigrants was easy to find, but the process of finding work was dubious because, as noted above, both contractors and employment agencies were often corrupt (Williams 2008).

2.7.2 Unionization

When a contingent of the Industrial Workers of the World (IWW)[14] triggered a strike on the Canadian Northern railway in 1913, the KVR navvies followed suit. The men wanted an increase to their rate of pay, from $2.75 to $3.00 per day, better food, and improved living quarters. The strike persisted for more than a week before ending, with protestors gaining nothing. Daily wages stayed at $2.75, and life in the work camps remained the same. It is possible that the reason the strike was so unsuccessful on the KVR is due to the nature of the terrain. The IWW would have had a difficult time sending very many of their followers into areas like the Myra Canyon. Furthermore, there would have often been a language barrier with the navvies in the Myra Canyon, which would have been difficult for the Wobblies to overcome (Williams 2008).

2.8 Public Perception

The behaviour of the KVR navvies was quite subdued when compared to the conduct of the railway workers of the earlier Canadian lines. On the KVR, rampant drunkenness was not an issue as it had been elsewhere in Canada. This was due in large part to the many patrolling policemen the province hired to keep the peace. The officers were frequently in search of liquor merchants who preyed upon the railway workers. The work camps of the early Canadian railways tended to be like the wild west as portrayed in Hollywood, with lawlessness and violence running rampant (Sanford 2003). Thanks in large part to the constabulary presence, the KVR navvies were far less violent and abusive than other railway workers in early Canada had

[14] The IWW, or Wobblies as they were known, were a labour movement that originated in the United States, and quickly found traction among the railway workers across the U.S. and Canada. Their agenda included spreading information about unionization through the work camps and thereby attempting to incite strikes and walkouts (Sanford 2002).

been, although some transgressions still occurred. For instance, in 1914, two Russian men got into a fight at one of George Chew's camps and one of the men stabbed the other in the leg with a knife (Williams 2008). The two men were brought before the provincial Police Court in Kelowna and the dispute was settled with the attacker paying a fine, as well as the doctor's bill of the victim. As noted, incidents like this were infrequent on the KVR when compared to the other, earlier railways in Canada. This fact and police intervention with court-based resolutions helped considerably to assuage the feelings of anxiety the citizens of Kelowna and Penticton had towards the KVR navvies (Sanford 2003; Williams 2008).

The local residents seemed to have mixed opinions of the KVR navvies. Although the workers had a reputation for being ill-behaved, the citizens knew that the railway and the men that worked on it were necessary. Furthermore, the European immigrant workers were known amongst Kelowna citizens to be honest, honourable men. Some of the navvies' habits still irritated the locals, however. For instance, the hunting routines of the navvies annoyed Kelowna residents. The navvies were allegedly overhunting the region and frightening the rest of the game away. The province increased the number of game wardens in the area as a result. In truth, there was plenty of game for everyone near the KVR line. Tensions arose not because of overhunting, but due to the perception of railway workers at the time. The 'white' Canadian locals looked down on the foreign navvies because of their ethnicities, their nationalities and their class. The living conditions of the average navvy did not help matters (Sanford 2002; Williams 2008).

2.9 Living Conditions

Life for the KVR navvies in the railway construction camps was undesirable to say the least. The camps were very necessary during the building of the KVR; they gave the workers a place to sleep, eat and prepare for their work when they were not working on the grade.[15] The work camps of the surveying and clearing gangs, the men who were first on the scene, consisted of large, temporary tents that were made of a wooden frame covered in canvas, and a floor space also made of wood. This temporary worker housing was abysmal in quality, but the permanent structures were no better. The permanent housing structures that were later erected for the navvies were hastily constructed, and therefore often leaked, and the amount of men forced to live inside them was such that they quickly became filthy and smelled horribly. Picture a large group of unwashed men, sometimes up to 100 at a time, working hard labour all day and then heading back to camp at the end of the day, into a poorly ventilated bunkhouse that housed all of them. They have been exposed to the elements and are often soaking wet with either sweat or precipitation, and they proceed to hang their clothes to dry in the rafters. It is easy to see why these bunkhouses smelled and were usually infested with rodents, ticks, lice and nits. With regards to Huissi's Camp specifically, it is likely that fewer men than average for a KVR work camp were being housed at the site. There was one structure in the camp that was large enough to be the bunkhouse; this structure is 7.6 meters long by 5.5 meters wide, or 41.8 square meters, which would have been quite a bit smaller than the average bunkhouse at the time, capable of housing 10 to 20 men. Most contemporary bunkhouses were usually roughly 140 square meters in size and housed, on average, 60 men at a time (Williams 2008).

There was also usually a cookhouse at camp, with everything the cook might need to feed the navvies. There would be a stove, tables and food preparation surfaces, and storage for the foodstuffs. Due to a lack of refrigeration, the camp cooks needed to ensure any produce and fresh

[15] The term "on the grade" is slang for any time a railway labourer was working along the railway line. Particularly if that labourer was engaged in clearing the land or levelling the terrain.

meats were consumed quickly with as few leftovers as possible. Bread was a crucial part of the navvy diet, and as such, rock ovens were often constructed near the work camps within which the cooks made baked goods for their crews. Even today, hikers can find these rock ovens along the KVR, many of them still intact after over a century (Williams 2008).

Although the accommodations at camp were atrocious, they were fairly average living conditions for a railway work camp. The overall organization and creation of the camps had not changed much since the early days of Canadian railway construction, but the KVR campsites had a strong police presence that was a slight improvement for the navvies. These provincial officers ensured that the liquor merchants steered clear, and that hostilities between the navvies stayed at a minimum (Williams 2008).

2.10.1 Historical Background of Railway Maintenance on the KVR

On July 31, 1916, the main line of the Kettle Valley Railway (KVR) was officially completed. The terrain surrounding the railway was quite demanding at any time of year, but in winter, the landscape became even more challenging. KVR maintenance crews faced huge snowfalls on steep sections of track, and avalanches were an ever-present danger. Many of the navvies who worked on the actual construction of the KVR moved on to maintenance related jobs on the KVR line, like clearing snow in the winter, so even after the construction was finished their lives were being impacted by the railway. The crews struggled continuously to keep the trains running through the winter. Nowhere on the line was this struggle more apparent, however, than in the Coquihalla Pass (Hill 1989).

The Cascade mountain range was the primary obstacle that the builders of the KVR encountered. The Cascades extend over 400 kilometers from north to south and span the border of British Columbia and Washington in the United States. The highest peaks of these mountains reach altitudes of more than 3,000 meters, and weather patterns can be quite severe, especially during the winter. The route that the engineers of the KVR chose to cross these mountains was the Coquihalla Pass, the summit of which sits at 1,244 meters in elevation, which is just shy of the height of Rogers Pass on the CPR. At this height, precipitation during the winter becomes excessive (Turner 1995; Turner 1987; Turner 1981; Riegger 1981; Sanford 2002).

The annual amount of snow that historically fell in the Coquihalla Pass was legendary, rivaling, and at times, exceeding that of Kicking Horse Pass and Rogers Pass on the CPR. Twelve to fifteen meters of snow was an annual average for the region, placing huge strain upon the resources and manpower of the KVR. Repairing the annual cycle of damage to the track was a continuous battle. It was extremely rare for an entire winter to pass without a closure, and some winters were worse than others. For instance, the winter of 1915 to 1916 saw more than 20 meters of snow fall on the Coquihalla. Then, during the winter of 1917-1918, the Coquihalla section was snowed-in from mid-December to the end of May. In 1921, the route was closed from January to May. In fact, during the first seven years of its operation, the KVR line was closed for five of those winter seasons.

The KVR battled to keep the snow off of the tracks, but it became clear to KVR officials that additional measures needed to be taken to alleviate some of the burden. After the completion of the KVR line, snow sheds were built in the areas especially prone to avalanches. These snow sheds were basically a large timber-framed cover for the railway track that allowed snow, specifically snow coming down the mountain from an avalanche, to pass over the railway without damaging it – like a lean-to shelter. From 1915 to 1920, fifteen of these shelters were constructed along the Coquihalla Pass in order to reduce the overall damage to the track. Some of these sheds were over 400 meters in length. As the first line of defence, the snow sheds provided the KVR with some protection against the ravages of winter, but they were far from perfect. Slides were difficult to predict and could wipe out the track quite easily. Furthermore, the snow sheds were not invulnerable, and were sometimes destroyed by winter storms, avalanches and rock slides. The best efforts of the KVR could not stop the weather, and accidents continued to occur after the construction of the snow shelters (Turner 1995).

2.10.2 Workplace Accidents

The Kettle Valley Railway was renowned for its exemplary safety record, but even so, accidents in the winter months still occurred and because many of the navvies still worked on the line after construction was finished, their lives were affected by these events. When passenger trains were heading down the line, KVR crews ensured that every precaution was taken to prevent any mishaps. The track was patrolled on foot before the trains went through, ensuring that there were no slides to contend with. If required, a separate plow train would go on ahead of the passenger train to clear the track of snow. Crews of the KVR freight trains, on the other hand, were on their own. In the winter, the heavy snowfalls meant that the Coquihalla became quite treacherous, but the winter crews maintained their reputation for safety (Turner 1995; Turner 1987).

From 1885 to 1931, the majority of accidents on the KVR occurred between spring and fall, with only a few notable exceptions. However, the winter accidents on the KVR did not often result in fatalities. Several incidents occurred where the locomotive ran into a slide on the track, or a snow storm forced crews to abandon their train, but deaths were rare on the KVR. Conductor F. Perley McPherson, for example, worked on the KVR line for forty years without suffering a single serious mishap. During its first year in operation, the KVR in the Coquihalla Pass experienced one serious incident. On November 1, 1916, a slide came down on the track, crushing a plow train and killing its driver.[16] Then, on December 13, 1917, another slide smashed into the rear end of a plow train, pushing the caboose 200 meters down into the valley below. One crewman perished as a result (Sanford 2002; Turner 1981).

It is clear that the crews of the KVR endured some very trying times and worked under grueling conditions. The KVR navvies are a true testament to the determination of early Canadians to explore and settle the new land they called home. Life for the navvies was difficult, and they were often mistreated – by their employment companies, their contractors, their coworkers and even the local residents. Now that I have completed this brief history of the KVR, I move on to discover how the navvies left their mark in the material record of the Myra Canyon section of the Kettle Valley Railway.

---

[16] A plow train was a specially designed locomotive that had a wedge or shovel-shaped front, which gave it the ability to plow snow out of its way as it travelled down the track.

Chapter 3: Methods

I will separate the discussion about the various methods undertaken within this thesis into three sections. Part one will focus on the methods employed in the field. This includes the clearing and mapping of the site, as well as sampling techniques. Second, I outline the archival and documentary methods such as the collection of literature, the interpretation of that literature, and comparisons made between artifacts found in the field and the literature located in the archives. Third, I describe the laboratory methods I utilized, such as cataloguing techniques, quantification and measurement of artifacts, and data analysis.

3.1.1 Field Methods

In July and August of 2015, I completed the fieldwork research for my thesis. For the majority of the project, I completed the work by myself, but for portions of the clearing of the site and the recording of artifacts, I had a small crew of people to assist me. The location of Huissi's Camp within the Myra Canyon allowed me to utilize the hiking and biking trails to access the site. I was able to drive a vehicle into the park and across the first three trestles from the Ruth Station side of the canyon and park the vehicle on the side of the main trail. From there I unloaded the gear that I needed and carried it the rest of the way to the site. From where I parked the vehicle, Huissi's Camp was about a twenty-minute hike up a small path located just off of the main trail. Because of the relative ease of access to Huissi's Camp, I did not need to set up a camp or stay in a hotel during the course of my field research. The entirety of my fieldwork took eight weeks time.

The first step I undertook in the field at Huissi's Camp was the physical clearing of the deadfall and brush within and around the site in July of 2015. A great deal of fallen, dead timber was strewn across the entire area where the 2003 wildfire came through, and all of the deadfall that was found within the boundaries of the Huissi's Camp structures needed to be removed. In addition to these large fallen trees, the site was overgrown with small grasses and shrubs that also required removal. During this part of my research, I had the assistance of Maury Williams and Jackie Toews for some of the clearing work.

I cut the large pieces of deadfall into smaller, more manageable pieces and stacked them in an area outside of the actual camp site, away from any structures. I used a chainsaw to buck up the logs, and a hand saw was used in areas where space did not allow for the use of the chainsaw. I cut and removed the small shrubs and grasses with a set of large pruning shears and a small hand saw and stacked the remains in the same space as the large logs.

Once the clearing of the site was complete, I next set out to determine the boundaries of the site and locate any structures within it, as described in Chapter 4. Using a historic photograph of the site that was taken prior to the completion of the nearby Trestle #4, I was able to locate the original structures on the ground. This historic photograph can be seen below as Figure 3, and Huissi's Camp is shown outlined in red. I completed a pedestrian survey on foot, and was able to recognize fourteen structures in all, based on the visible walls that remained. In addition to these structures, a refuse area became apparent downslope of the structures, on the opposite side of the tote road.[17] This midden[18] was apparent through the large collection of assorted artifacts that were found there. The horizontal extent of this refuse area was determined based upon the range of visible surface artifacts, according to Fladmark's archaeological field procedures (Fladmark 1978). This border extended as far in each direction as these surface artifacts were visible. A

[17] The term tote road is a railway colloquialism for a small dirt path by which supplies and workers could enter and leave the site. It was usually wide enough to allow the passage of a single horse and cart.
[18] The term midden describes a refuse heap or collection of discarded items.

combination of the boundary of the refuse area and the boundary of the camp structures were used to create an approximate outline of the extent of the site, which was the focus of my research.[19]

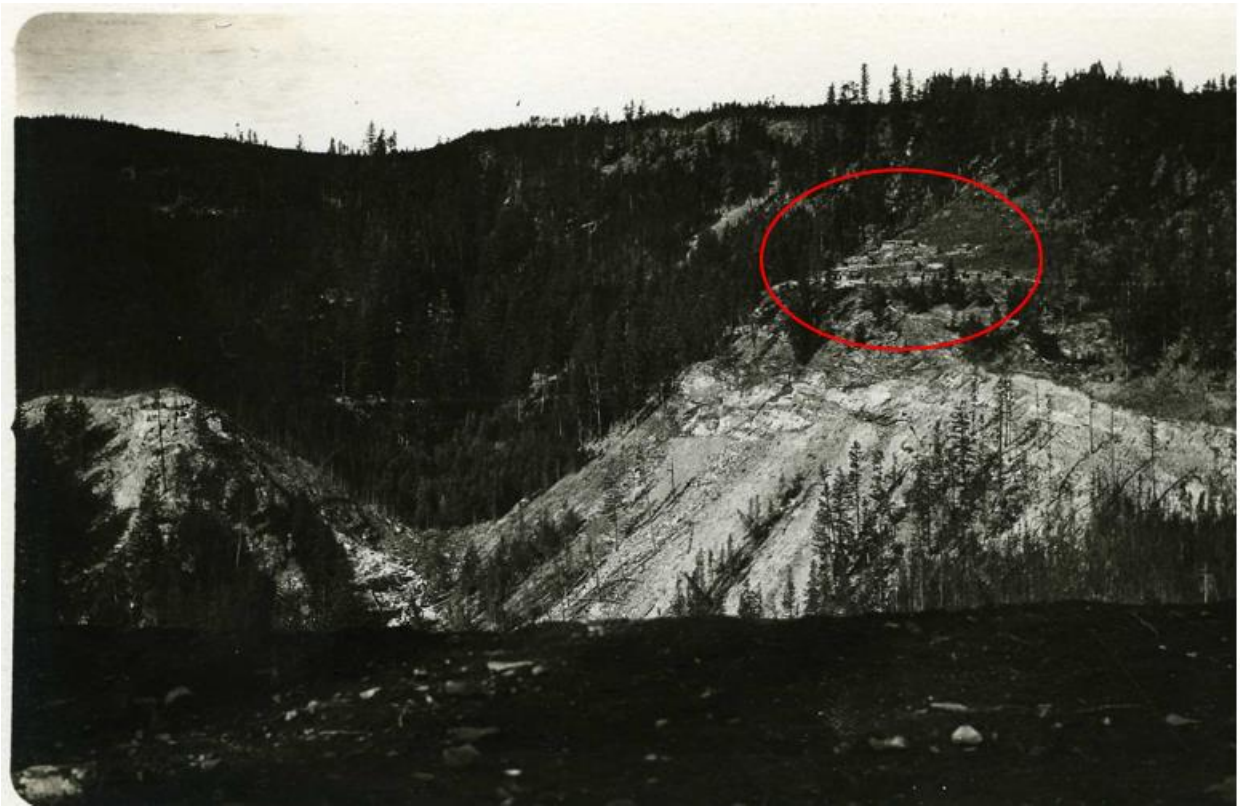


Figure 3. Photograph of Huissi's Camp from across the Myra Canyon. Circa 1912-1913. In the public domain. Modified from Penticton Museum and Archives 2017.[20]

[19] It is worth noting that I chose the boundaries of the site. Being that I didn't excavate the camp fully, I cannot know the full extent of the site boundaries. These boundaries are approximations.

[20] There is not a lot of information available for this photograph. The nearby trestle, #4, was completed in 1914. By looking at the amount of clearing and preparation in the area around the trestle, the photograph was likely taken some time in 1912 or 1913.

3.1.2 Mapping

I completed the physical mapping of Huissi's Camp with a Garmin eTrex handheld GPS unit, set to record data in UTM units (Eastings and Northings) as opposed to degrees of latitude and longitude. I used UTM coordinates for the mapping data because the Surfer computer map creation software requires UTM coordinates in order to create the topographic maps. Therefore, I took the rest of the measurements at the site, including those used for graphs and tables, in UTM to avoid confusion. Holding the GPS approximately one metre from the ground, as per the specifications of the eTrex unit, I took coordinates at the boundary of the site at two metre increments. For each datum point, the GPS provided a measurement of easting, northing and elevation in meters. Using this technique, I established the boundary of the site. Once I plotted the outer extent of the site, I mapped the tote road leading through Huissi's Camp in the same fashion, also at two metre increments. With the tote road mapped, my next step was to record the location of the structures within the camp. To provide adequate coordinate data for the structures of the camp, I took measurements with the GPS at the four corners and the centre of each structure. I located the centre of the structures by measuring the distance between the two sets of opposing corners and marking them with string, and then locating the intersection of these two lengths of string. I noted these five readings for each of the fourteen structures. I also calculated the average size of the structures in the site by adding the area of all of them, and then dividing that total by the total number of structures in the camp. The structures of the camp appeared to be divided into three main levels of elevation, which I labelled as "tiers", as described in Chapter 4. The lowest tier, which is located directly adjacent to the main tote road, I labelled tier one. Tier one includes the majority of the structures at the site, eight in all. Tier two incudes just two structures, as does tier three. One structure exists in between tier one and tier two, so I described this as residing in tier one-point-five. Likewise, in between tier two and three is another structure, which I described as residing in tier two-point-five. As was the case with the coordinates for the camp boundary, I recorded eastings, northings and meters of elevation (Fladmark 1978). For this portion of my fieldwork, I was able to enlist the help of Amanda Zotto, Jackie Toews and Ricki-Lynn Achilles at various stages of the mapping process.

3.1.3 Sampling

With the coordinates of all significant locations at Huissi's Camp recorded, I employed an archaeological sampling strategy in order to allow for the recovery of artifacts. While choosing a sampling design, I kept the following concept in mind:

> [The selection of a sampling design] must be done in relation to the size and environmental characteristics of the survey area; funding, logistics and personnel, and specific research goals. Sampling must occur whenever it is impossible or impractical to cover the total survey area. Thus, if the area is too large or rugged to allow examination of 100% of the ground surface with available time or funding, or if it is felt that it is not necessary to cover the entire area to achieve the research goals, then one must select a sampling method to determine which parts of the survey area will be examined and which will not. (Fladmark 1978, 3)[21]

Due to the limited personnel available for this project, only myself, coupled with the difficult terrain, I was only able to take archaeological samples from within specific structures. Additionally, the artifacts I recovered from the site were all collected from the surface of the site – I did not undertake any sub-surface excavations. The structures chosen for surface collection were selected based on a stratified judgemental sampling technique, which is a non-probabilistic strategy (Fladmark 1978, Hester et al, 2009). This meant that the structures were selected for

[21] Knut Fladmark's field methods from 1978, although dated, were chosen as a resource in this section of my thesis because the non-probabilistic sampling strategy that I chose to use was more commonly employed during archaeological research projects prior to the 1980s. Fladmark's techniques were contemporary to that time period, and therefore are useful as a reference for the strategies I used.

gridding and sampling based on previous knowledge of the area, along with personal judgement. As described by Knut Fladmark, "Judgmental sampling selects units of study on the basis of the researcher's opinion of the relative 'productivity' of different areas… Such units may be of varied size or shape depending on the characteristics of the survey area, prior archaeological knowledge, and the research goals…" (Fladmark 1978, 3). It also meant that, as a non-probabilistic sampling strategy, my method of artifact collection was useful for providing quantitative estimates but would not be as accurate or comprehensive as another technique may have been. As Shafer notes, "Non-probabilistic surveys, or reconnaissance projects, can provide useful information on the conditions of the archaeological sites in a region and an indication of the culture history in a short time and at low cost" (Hester et al, 2009, 26). In short, non-probabilistic surveys are a good place to start for a research project, particularly a Master's project; they can provide a foundation upon which a richer probabilistic sampling strategy can be employed at a later date (Hester et al, 2009).

In addition to the non-probabilistic, judgmental aspect of the sampling strategy, the design I chose was stratified. This meant that I divided the site into "sub-areas or strata on the basis of environmental or prior archaeological information, each of which is independently randomly sampled" (Fladmark 1978, 4). The sub-areas in Huissi's Camp are simply the tiers of elevation; the tiers already adequately divided the site into smaller sections. The prerequisites for sampling were fairly straightforward. First, if a structure was located spatially separate from the rest of the camp, it was designated for investigation. This is because of the possibility that it was the residence of a higher-class individual at the camp (Garvin 2014). As aforementioned, it has been theorized that those men of higher class resided in separate areas of the railway work camps from their working-class counterparts because the men of higher status were thought to deserve better accommodations (Garvin 2014). Secondly, if there were large amounts of surface artifacts visible within the structure, it required further exploration. This is because this project was limited to surface artifact collection, and a high number of visible artifacts allowed for more samples of the site as a whole (Fladmark 1978; Hester et al, 2009).

I set up the grid as follows. First, I created a north-to-south base-line using the handheld GPS unit. Once a base-line was established, I set stakes along the line at two metre intervals. Working off of this base-line, I set other stakes, both to the east and west, in two metre increments to create a grid. I tied twine around each stake, producing two-metre by two-metre squares. I labelled each corner with its own UTM coordinates, and took measurements in centimeters north, south, east or west of the closest corner stakes using a measuring tape (Fladmark 1978; Hester et al, 2009; Renfrew and Bahn, 1991).

3.1.4 Recording Artifacts

I recorded the artifacts that were located outside of the gridded zones in a different way. For instance, I took UTM provenience of each item found in the refuse area downslope of the main site. This was in part due to the extremely rough and unstable terrain, which would have made the creation of a grid quite hazardous, but also due to the limitations in the overall scope of the project. I used the handheld GPS unit to take the provenience of all out-of-grid artifacts, with the easting, northing and elevation in meters noted for each item (Fladmark 1978). During this stage of my fieldwork, I had the assistance of Amanda Zotto and Ricki-Lynn Achilles.

When I chose an artifact for recovery within a grid, I used a measuring tape to document its location away from the nearest stake. I recorded this measurement in centimeters away from the stake in both axis directions and used the handheld GPS to note the elevation of the artifact. I then took a photograph of the artifact's position within the grid. Once documented, I copied the coordinates onto a paper bag and deposited the item in the bag.

When I chose an artifact for collection outside of any grid, I took provenience of the artifact's location and recorded it using the handheld GPS. I noted the item's easting, northing and elevation in meters and copied the data onto a paper bag along with a brief note of where the artifact was found. For example, the item may have been found out of grid, downslope of tier two (Fladmark 1978; Hester et al, 2009). I took a photograph of the artifact as it lay *in situ*, and then collected the item and placed it in the paper bag (Fladmark 1978, Hester et al, 2009). I stored all artifact bags in a large, lidded plastic bin for safekeeping, until I was able to remove the bin from the camp and take it to the archaeology laboratory on the UBC Okanagan campus.

Under the circumstances and for the reasons discussed already, the methods used are appropriate for this particular thesis, however, the limitations of this project still require stating. Firstly, the use of a handheld GPS unit resulted in less accurate data than if a theodolite or total station had been used. This project was limited with regards to available resources, which included limitations on available equipment; the total station that was loaned to me malfunctioned and was irreparable. Second, the judgmental sampling technique I employed may not have yielded data as random as probabilistic sampling could generate. Probabilistic sampling selects units within a site either completely randomly, or fully and systematically. In this way, probabilistic sampling "forces coverage of areas which might not normally be investigated by a judgemental sample" (Fladmark 1978, 4). Furthermore, because probabilistic sampling is less biased than judgemental sampling, it allows for the "prediction and extrapolation of the total site population and characteristics of site locationing for the entire survey area" (Fladmark 1978, 4). However, given the limitations of available personnel and the difficulty of the terrain surrounding Huissi's Camp, the judgemental sampling technique I used is still a valid and applicable sampling strategy, and provided me with a sufficient amount of relevant data (Fladmark 1978; Hester et al, 2009).

3.2 Archival and Documentary Methods

An integral aspect of this thesis is the study of archival resources related to Huissi's Camp, Canadian railway workers, and the KVR in general. For this reason, it was crucial that I familiarized myself with the Penticton Archives, which is the facility that houses the largest holdings related to this topic. While visiting these archives, I had to follow proper archival methods and techniques, which will be outlined here.

The first step to garnering accurate data from the archives in Penticton was to learn what items and documents were available that would be useful to my research. This simple step saved me a great deal of time and resources and avoided fruitless searching. I created an itinerary by itemizing and recording my preliminary findings, including the probable location of the item or document in question. Establishing contact with the staff at the archives ahead of time also ensured that specific items that I required access to were available to me upon my arrival. These stages of planning were all influenced by my research questions and what I hoped to find by visiting the archives (Gaillet 2010).

One of the primary reasons I visited the Penticton archives was to locate any historic photographs of Huissi's Camp or the surrounding areas. The historic photograph of Huissi's Camp (Figure 3) proved to be extremely helpful for the mapping of the overall camp as well as the identification of the specific structures within it, and I hoped that I might be able to locate more photographs like it. Another reason for visiting the archives was to locate any correspondence related to the contractor, Huissi, or his men. Very little is known about the contractor himself or the labourers he hired, therefore any information regarding him is invaluable. Finally, the archives also house a large collection of newspapers, which I hoped might contain information about Huissi or the other KVR contractors. It was crucial to analyze any news article related to the construction of the Myra Canyon section of the KVR. Unfortunately, the staff at the Penticton archives were unable to find any newspaper clippings or photographs specifically related to Huissi or his railway camp, but they were able to locate a great deal of written correspondence between the bosses of the KVR during its construction. These letters were the weekly status updates provided to the head of the KVR, J.J. Warren, by his various sub-contractors and engineers. They detailed, in part, numbers of available labourers for a particular section of track, the monetary costs of supplies, or various equipment surpluses or deficits along the line. I visited the Penticton archives on several different occasions. Significant time was dedicated to photographing each piece of written correspondence that was relevant to the Myra Canyon section of the KVR. Then, in order to supplement these letters with some actual site photographs, I spoke with my then supervisor, Rick Garvin, who was able to provide me with several historic pictures that were associated with the construction of the KVR that he had located years earlier.

3.3.1 Laboratory Methods

I took all of the artifacts that I recovered from Huissi's Camp back to the archaeology laboratory at the UBC Okanagan campus. Once stored there, the artifacts required cataloguing. I reopened each bag of artifacts and temporarily sorted them by type, one bag at a time, and catalogued each individual artifact or artifact fragment in the following way. First, I gave the artifact or artifact fragment an item number, then labelled it by site, which was Huissi's Camp, and also by unit. The complete catalogue of artifacts is available in the Appendices section of this thesis. The catalogue I used for this thesis was adapted from one I was given during my field work for my undergraduate degree. I completed this field work course through the University of Calgary under Dr. Dale Walde, and I will define the different artifact classes used in this catalogue here. These classes are based on the function of an artifact. Household was a category used to describe artifacts that would be commonly used in one's home. These would include items like glass medicine containers, liquor bottles, tin cans that would have contained foodstuffs and kitchenware. The hardware category described items like nails or construction implements, these were often things you might commonly use to build something, but not including the tools used. There was a separate tools category that was used to identify the actual construction utensils like hammers and saws. The arms category included artifacts related to weapons, like bullet casings. The personal category was reserved for one's personal valuables, like watches or clothing. I included a post-occupational category for the artifacts located at Huissi's Camp that were left behind after the initial occupation at the site. This category included things like nylon rope that could not have been used by the navvies. The architectural category defined items that were used for architectural purposes, like window glass or chimney bricks. Lastly, unidentifiable was a fairly self-explanatory category used to classify artifacts that could not be identified.

If found within a grid, I noted the provenience data of the particular grid in eastings, northings and meters of elevation. If the artifact was found outside of any grid, such as in the refuse area, I made note of this as well. I then recorded the provenience data of the item in the catalogue in eastings, northings, and meters of elevation, along with the source of elevation. In the case of Huissi's Camp, all items I recovered came from surface collection. I then classified the artifact or fragment by material, such as metal or wood. If the artifact had been exposed to fire, I recorded the stage of burning, and then noted the final form of the artifact. Lastly, I weighed the artifact, in grams, and then briefly described it. Inside the laboratory, the artifacts were kept in their plastic bags, and then inside the brown paper bags, which were inside the large plastic container described above in section 3.1.4. Only during examination were the artifacts removed from their bags, and they were placed back into the bags when the examination was complete (Banning 2002; Fladmark 1978).

3.3.2 Catalogue Creation

With the catalogue completed, I could now create the various typologies for the thesis, see appendices for more detail. For this process, I used examples from Diana French's paper, *Ideology, Politics and Power: The Socio-Historical Implications of the Archaeology of the D'Arcy Island Leper Colony, 1891-1924* as a template (French 1995). First, I created a typology for all glass fragments recovered from Huissi's Camp. I broke the artifacts into categories based on function, which would simplify the comparative studies between Myra Canyon work camps that were necessary for this study. This was followed by shape, and finally, by colour. I gave each glass fragment a designation like "La2". Capital letter, followed by lower-case letter, then number. This particular designation meant that the glass shard was from a liquor container that was round in shape and colourless, or clear. In this example, "L" stands for liquor container, "a" stands for round in shape, and "2" stands for colourless or clear. Following the glass typology, I created a similar metal artifact typology. Metal artifacts required more distinction than the glass fragments, as there was a much wider variety of items found. I sorted the metal artifacts by general function, followed by more specific function, then shape or style, and finally by size. In this way, I could typify a metal item as "Hd2ii", which would mean that it was a piece of hardware or a tool; more specifically a piece of cookware (a skillet or pan), that was large in size (greater than 25 centimeters in diameter) (French, 1995: 183-193).

3.3.3 Photographs

Once I catalogued and typified the artifacts, I photographed each item using a Canon Rebel digital SLR camera. I placed the artifacts on a black cloth background and shone a low-angle light on them with a white cardboard backing placed against the opposite side. The light brought out the detail of each artifact while minimizing glare, shadows, and reflections. I placed the camera above each artifact at a fixed height using a metal frame, so each photograph could be taken from the exact same height, making it easier to gauge the scale of the artifacts. I took all of the photographs in RAW format, which allows for the digital file of each picture to be edited more freely in the future (Castle Museum Archaeology, 2019).

After all of the photographs had been taken, I began post-processing the pictures. I edited all of the photograph using the Adobe Photoshop CC 2018 computer software. First, I precisely cut the artifacts out of each photograph and placed them on a fresh, completely black background. This ensures the removal of all shadows, dust and debris from around the artifact. I then colour-balanced the artifacts based on their individual need: level of detail, colour ratios and size of the artifact. Once I had edited each artifact photo, I inserted a fresh 10 cm scale into each photograph, and it was ready for use in the thesis (Castle Museum Archaeology, 2018).

3.3.4 Map Creation

With the artifacts from Huissi’s Camp catalogued and quantified, my next task to be completed in the laboratory was the creation of various maps of the site. For this thesis, I used the computer program Surfer 8 for the creation of all maps, including topographical maps and contour maps. I inputted the UTM coordinates into the program based on what type of map I required. For the topographical maps, I entered *all* datum points into Surfer, including artifacts, structures, site boundaries and tote road coordinates. For more specific maps like the tote road maps, I used only the coordinates that I took from along the path. In this case, I overlaid the tote road coordinates on top of the contour map to give more context and definition to the line of the path.

Surfer 8 takes the UTM coordinates and plots them onto a graph, based on the eastings, northings and elevation of each datum point. When enough datum points are gathered for a specific map, the program creates an image. Settings are chosen in order to define how the user would like the data to be displayed. The map can be as simple as datum points represented as dots on a page, or as complex as a three-dimensional wireframe rendering of the changes in elevation over the entire site. The maps created with this program are of excellent quality, but are also very easy to manage, which makes them ideal for this thesis.

3.4 Summary

The field sampling method I employed at Huissi's Camp allowed me to collect a large number of artifacts despite having few personnel available during the course of my fieldwork. This in turn granted me a cross-section of what material remains were left at the site as a whole. The GPS coordinate mapping system, along with the Surfer 8 computer software allowed for the creation of several valuable topographical maps of Huissi's Camp and provided insight into the location and orientation of the structures at the site, which will then be used as part of the discussion of the lives of the navvies at the KVR work camps. The archival methods used during the course of my research yielded some interesting and insightful correspondence, although photographs and newspaper clippings were in short supply. The data produced by my artifact catalogue contributed to a much better understanding of what artifacts remained at the site, and what this meant. These different methods can be summarized into three primary research categories: artifact data, archival data and mapping data. A combination of these three data sets allows for an analysis and investigation of the lives of the navvies of the KVR in the early 1900s.

Chapter 4: Natural Environment and Site Background

4.1 Climate

Huissi's Camp is located in the Myra Canyon near Kelowna in the Okanagan Valley of British Columbia. The region is nestled between the Columbia and Cascade mountain ranges, and as such is located in a rain shadow (Canadian Encyclopedia, 2006). This effect creates a hot, dry climate in the valley permeated by large periods of sunshine. While not a true desert, the Okanagan Valley does display many climatic aspects of an arid region and is normally referred to as "desert-like" (Canadian Encyclopedia, 2006). The area around Huissi's Camp receives roughly 2,000 hours of sunlight per year, and only about 250 to 400 millimeters of rain (Canadian Encyclopedia, 2006). While this type of climate is usually conducive to preserving archaeological artifacts, the dry weather often results in forest fires which have the opposite effect. Temperatures in the summer can reach the high 30s Celsius with a relative humidity of less than 10 percent, while the winter can be as cold as the -30s Celsius with an average of approximately 90 centimeters of annual snowfall.

4.2 Geology

The Okanagan Valley was last geologically active roughly 50 million years ago, when massive basaltic lava flows created much of the rocky topography we see today (Cannings, 2009; Mathews, 1987). Scientists, even today, debate exactly how the geography of the valley was formed, but it is likely that it was a combination of a complex set of conditions that created the environment we see today (Cannings, 2009; Mathews, 1987). However, basalt is the most pervasive feature, in some areas forming massive columns and sheer rock walls. For example, Layer Cake Mountain near Kelowna is a prime and obvious example of this type of formation.

This rocky, mountainous geology of the Okanagan Valley is punctuated by deposits of glacial till; alluvial fans of silt and sand left behind by the retreating glaciers during the Pleistocene (Canadian Encyclopedia, 2006). This till is extremely fertile, and in certain parts of the valley, perfect for agriculture.

In the area directly around Huissi's Camp, heavily eroded rock is the primary feature. The camp was built into the dirt and rock on a fairly steep hillside, and over time the mountain has sought to reclaim the site. The trees around the site have not yet grown to a size that can protect the camp from the erosive effects of the weather, and thus the site is quite exposed to the elements. Huissi's Camp is therefore heavily eroded, and footholds while walking through the site can be quite slippery due to the loose soil.

4.3 Flora and Fauna at Huissi's Camp

The dominant tree species in the area directly surrounding Huissi's Camp are Ponderosa Pine (*Pinus ponderosa*) and Interior Douglas Fir (*Pseudotsuga menziesii*) (Parish et al., 1996: 47). In other areas of Myra Canyon there are also Trembling Aspen (*Populus tremuloides*) as well as Mountain Larch (*Larix occidentalis*) (Parish et al., 1996: 29, 32). All of the trees in and around Huissi's Camp are quite young in age – they were approximately 11 years old during my research in 2014, due to the 2003 wildfire that removed all of the old growth and forest floor duff. Most of the Ponderosa Pine were between 1.8 and 3 meters in height in 2014, signifying the beginning of first stage post-fire regrowth.

Identified shrub species, in order of prevalence, include: Scrub Birch (*Betula glandulosa*), Kinnikinnick (*Arctostaphylos uva-ursi*), and Prickly Rose (*Rosa acicularis*) (Parish et al., 1996: 64, 78, 85). Poison Ivy (*Rhus radicans*) was also found in the area around Huissi's

Camp, as was Red Raspberry (*Rubus idaeus*) and Thimbleberry (*Rubus parviflorus*) (Parish et al., 1996: 61, 62, 70).[22] The dominant species of ground cover at the site are Blue-bunch Wheatgrass (*Agropyron spicatum*), Idaho Fescue (*Festuca idahoensis*), Bull Thistle (*Cirsium vulgare*), Pasture Sage (*Artemisia frigida*), Common Red Paintbrush (*Castilleja miniata*), Great Mullein (*Verbascum thapsus*), Fireweed (*Epilobium angustifolium*) and Common Groundsel (*Senecio vulgaris*) (Parish et al., 1996: 129, 135, 143, 168, 176, 241, 313, 331).

Faunal species that inhabit the area include, in alphabetical order: American Badger (*Taxidea taxus*), American Black Bear (*Ursus americanus*), American Crow (*Corvus brachyrhynchos),* Bald Eagle (*Haliaeetus leucocephalus*), Bighorn Sheep (*Ovis canadensis*), Black-billed Magpie (*Pica hudsonia*), Black-capped Chickadee (*Poecile atricapillus*), Bobcat (*Lynx rufus*), California Quail (*Callipepla californica*), Cottontail Rabbit (*Lepus sylvaticus*), Coyote (*Canis latrans*), Douglas Squirrel (*Tamiasciurus douglasii*), Elk (*Cervus canadensis*), Fisher (*Pekania pennant*), Flammulated Owl (*Psiloscops flammeolus*), Grizzly Bear (*Ursus arctos*), Lewis' Woodpecker (*Melanerpes lewis*), Mountain Goat (*Oreamnos americanus*), Mule Deer (*Odocoileus hemionus*), North American Beaver (*Castor canadensis*), North American Cougar (*Puma concolor*), North American Porcupine (*Erethizon dorsatum*), Northern Flicker (*Colaptes auratus*), Prickly Sculpin (*Cottus asper*), Rainbow Trout (*Oncorhynchus mykiss*), Red-tailed Hawk (*Buteo jamaicensis*), Spotted Bat (*Euderma maculatum*), Striped Skunk (*Mephitis mephitis*), Townsend's Mole (*Scapanus townsendii*), Western Moose (*Alces alces*), Western Screech Owl (*Megascops kennicottii*), White-tailed Deer (*Odocoileus virginianus*) White-throated Swift (*Aeronautes saxatalis*), and Yellow-bellied marmot (*Marmota flaviventris*)

[22] Several of these plants are indicative of soil disturbance and are frequently used as indicators for archaeology site locations.

(Cannings, 2009: 81, 107, 117, 181, 183, 213, 223, 235, 265, 267, 285; Encyclopaedia Britannica, 2019).

4.4 Site Background

Huissi's Camp is located in the middle section of the Myra Canyon subdivision of the KVR, roughly three kilometers southeast of Ruth Station, see Figure 4. The site is comprised of fourteen distinct structure foundations spread across some very steep terrain in the hills above the main line, see Figure 5. The structures at Huissi's Camp were constructed in 1913 and are located approximately eighteen meters upslope (to the south) of what is now known as Trestle #4 in Myra Canyon (Buck 1913). Due to the slope, the camp is separated into three tiers, each at its own elevation, which in total span roughly nine meters in elevation, see Figure 6. However, there is one structure that was not built in line with any of these three tiers. In my analysis, therefore, an extra tier was necessary between Tier 1 and Tier 2, making four altogether. For the purposes of this thesis, the four tiers were labelled: Tier 1, Tier 1.5, Tier 2, and Tier 3, moving from the lowest to the highest elevation respectively.

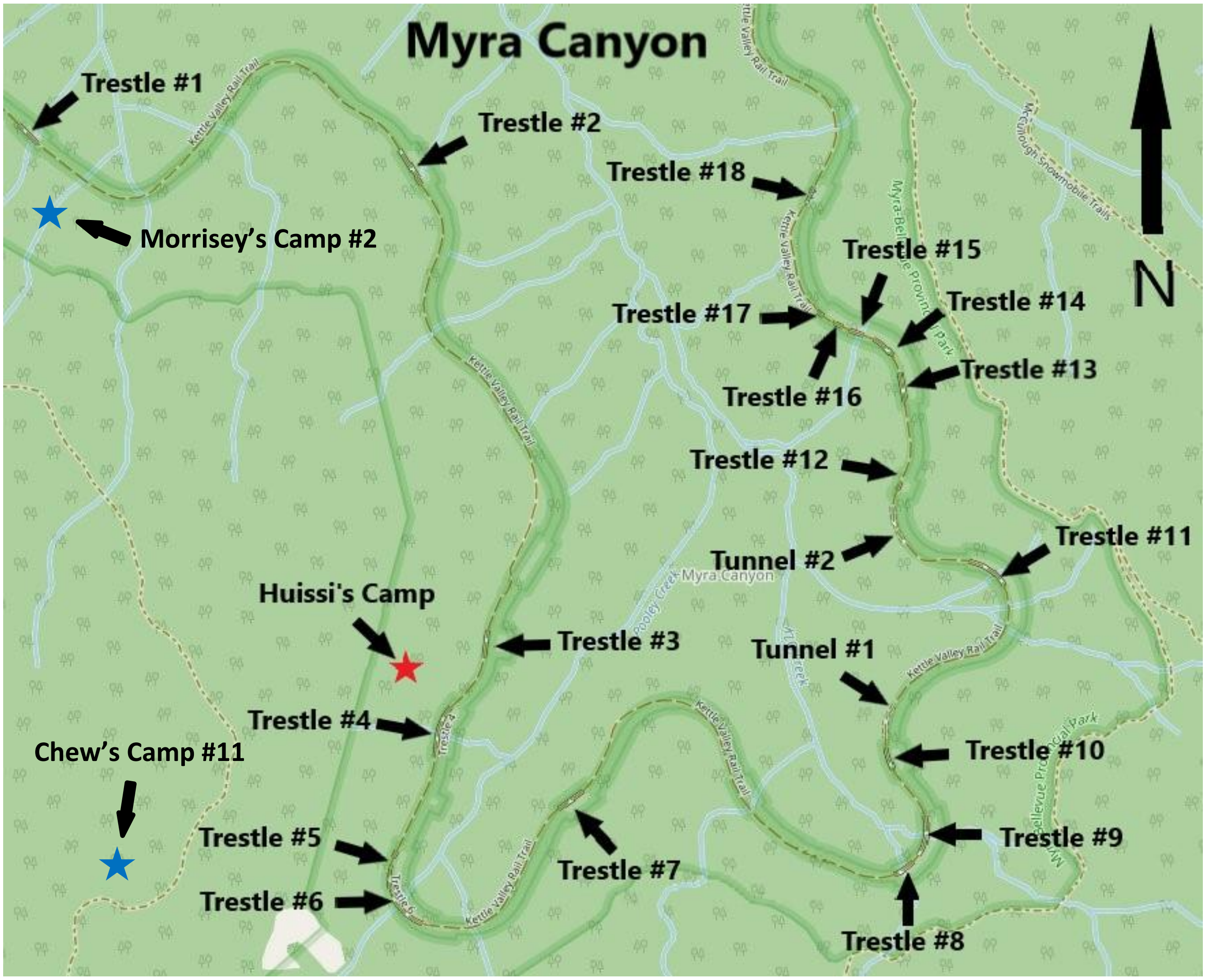


Figure 4. Map of the Myra Canyon section of the KVR. With the different trestles and tunnels labelled, as well as the location of Huissi's Camp. Map created by author, 2019.

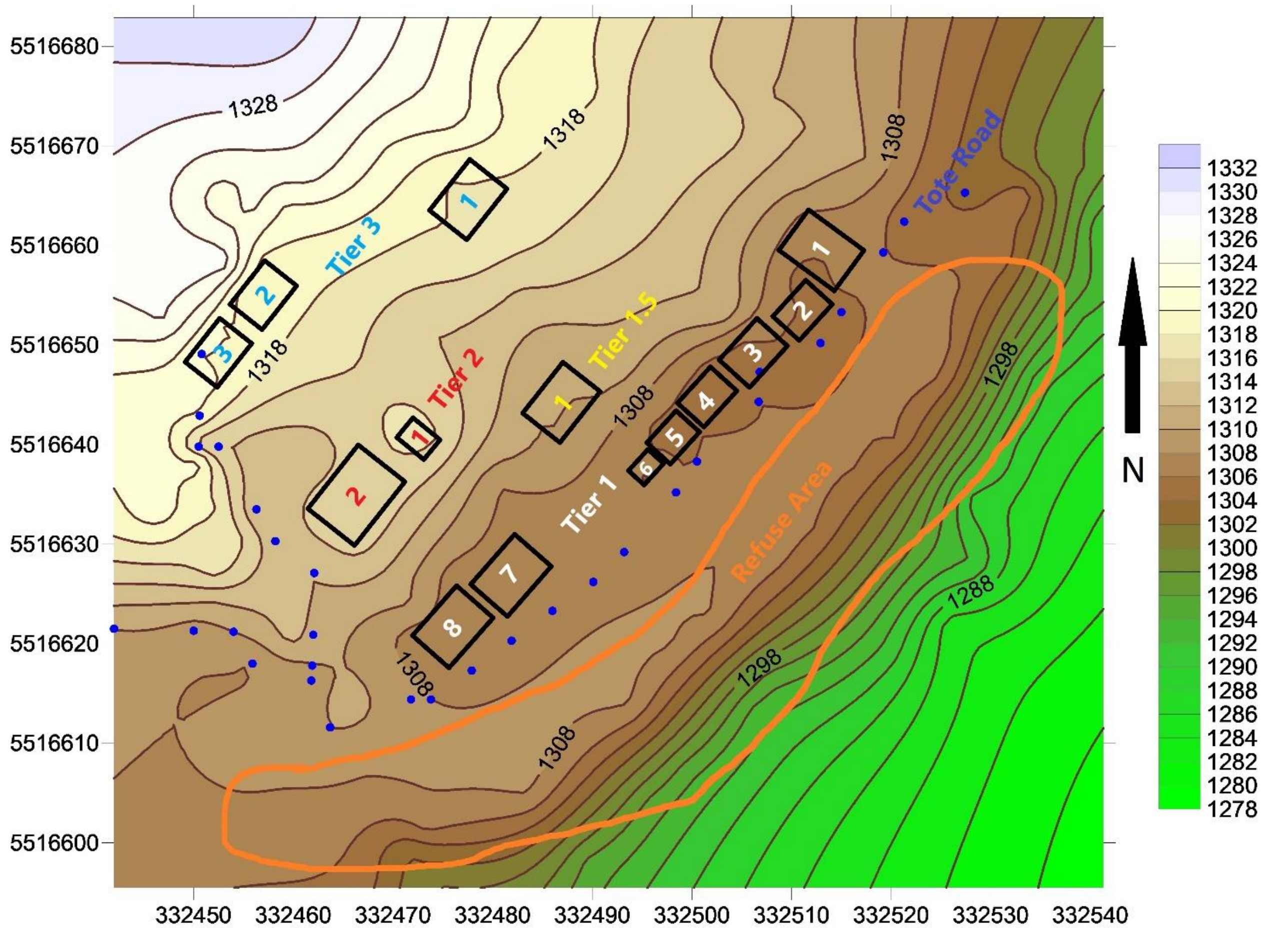


Figure 5. Topographic map of Huissi's Camp. Tote road, structures and refuse area labelled. Map created by author, 2019.

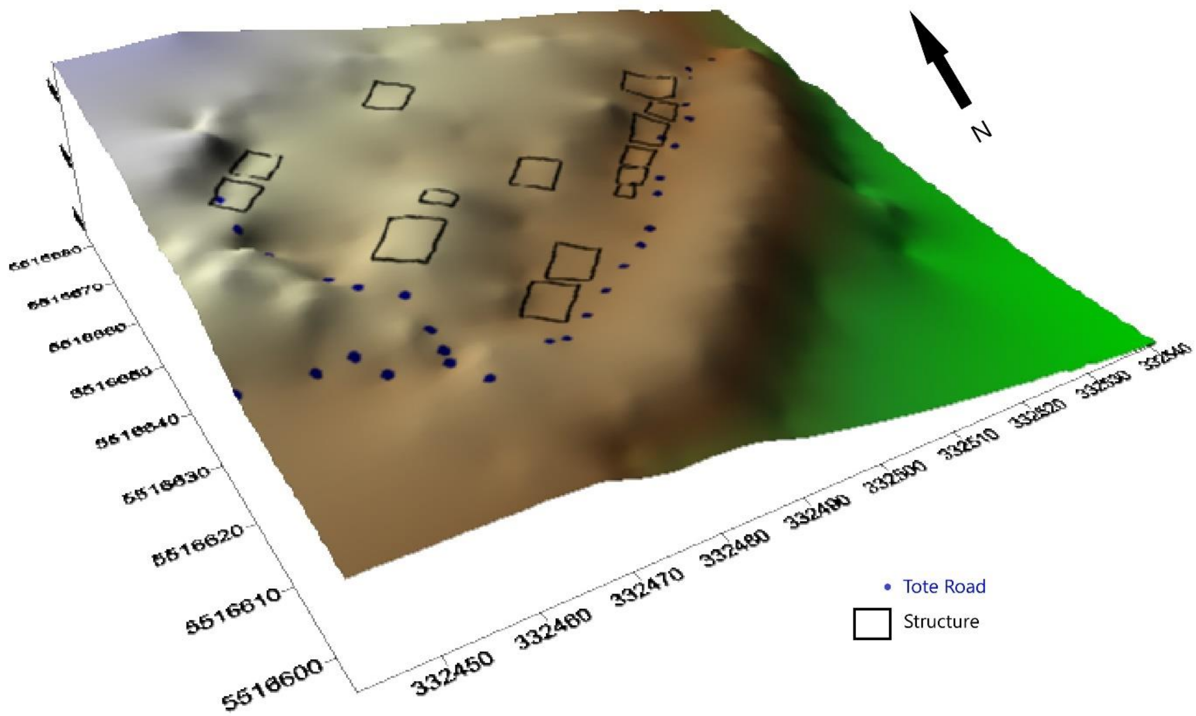


Figure 6. Wireframe map of Huissi's Camp. Tote road and structures labelled. Map created by author, 2018

Figure 7. Tier 1 at Huissi's Camp. Author's photograph, 2015

The different levels of elevation within the camp appear to be natural formations, and it is likely that camp workers took advantage of this in choosing this site. It is much easier and faster to build a work camp on already level ground, rather than having to move large quantities of earth. The natural tiers are not perfectly symmetrical, however, and it was necessary for the navvies to dig cut-banks into the sides of the hills to accommodate the foundations of many of the structures. I encountered the cut-banks during my pedestrian survey of the site. They are highly visible and easily observed. See Figure 7 for a photograph of Tier 1, the cut-banks can be clearly seen on the right-hand side. To allow access to Huissi's Camp, the construction workers of the KVR constructed a tote road that ran along the hillside upslope of the main line.

Figure 8. Tote road at Huissi's Camp. Looking down from the upper tiers of the site. Author's photograph, 2015

This tote road is the only way in and out of the camp and has twice served as a by-pass route for tourists while Trestle #4 was under renovation. See Figure 8 for a picture of what the tote road looked like during my research at Huissi's Camp in 2015. Trestle #4 can be seen in the background of Figure 8. Once in the 1960s when the trestles were being augmented with steel components, and once in the early 2000s in the wake of the wildfire. The tote road hooks up with the main KVR line further to the north, just past Trestle #3, and if one were to follow the tote road out of Huissi's Camp to the south, it would loop around the mountainside upslope of Trestle #4 and connect with the main KVR line on the southern side of that trestle. No detailed maps have been made of this tote road, but it can be seen as the blue dotted line in Figures 5 and 6.

Figure 9. Structure 4 of Tier 1 at Huissi's Camp. Author's photograph, 2015

None of the buildings at the site are standing today, all that remain are the slightly raised, rectangular berms that indicate the presence of a foundation. See Figure 9 for an example of what the raised berms look like. The rectangular shape in Figure 9 is actually the remains of

Structure 4 of Tier 1 of Huissi's Camp. It is entirely possible that there remains a charcoal outline of each of the structures beneath the surface of the ground, but due to the limitations of this particular study, no subsurface survey was completed. For the purpose of this thesis, these foundations will be called structures. The original buildings were lost to a combination of decomposition over time and the action of forest fires. According to Richard Garvin, one building was still standing prior to the 2003 wildfire,[23] but it was lost during that fire and no original timber used at the site remains today. I did not find any charcoal from the timbers of the original structures at the site. There was, however, plenty of charcoal from the more recent wildfire in 2003 (Garvin 2014). Additionally, there is a great deal of ground disturbance across the whole site indirectly caused by the wildfire. The fire destroyed the majority of the large standing timber in and around the camp, and those dead trees are now falling, or have already fallen to the ground. See Figure 10 on the right-hand side of the photograph for an idea of what the deadfall located at Huissi's Camp looked like during my research.

[23] In 2003, a devastating wildfire broke out in the hills near Kelowna, BC. The fire spread, consuming everything in its path in the areas south and east of Kelowna proper, including homes, and also several of the trestles in the Myra Canyon.

Figure 10. Tier 1 of Huissi's Camp, looking back towards the main entrance of the camp. Author's photograph, 2015

This deadfall heaves the earth around the roots of the trees, causing "tree throws" to appear. Furthermore, the lack of timber and brush after the fire led to an increase in soil erosion.

4.5 Disturbance Processes at Huissi's Camp

Huissi's Camp has been subject to various disturbance processes since it was last used in the early 1900s. This includes re-occupation during the 1960s, when the nearby trestles were under renovation, and during the wildfire season of 2003, when firefighters were in the area battling the blaze. Additionally, the site was part of a bypass route for the main trail while the trestles were being rebuilt by the Myra Canyon Trestle Restoration Society, or MCTRS, following the wildfire of 2003 and many tourists passed through the area.

Not only did human interaction have an impact on Huissi's Camp and the artifacts associated with it, but it is likely that the local flora and fauna had an effect on the context of the artifacts as well. By this, I mean the disturbance processes that occur through the action of floralturbation, faunalturbation and cryoturbation. All three of these processes can have a significant impact on the context of an archaeological site. Floralturbation is the term for the alteration and movement of artifacts and soil stratification through plant growth and root action. Faunalturbation pertains to the same movement processes, but due to animal burrowing. Finally, cryoturbation is the term for the actions of frost-heave, and the freezing and thawing of the site (Schiffer 2007). During my research at Huissi's Camp, these processes did not come into play as much as they would have if I had performed a sub-surface survey of the site. However, they are worth mentioning as they could still have caused movement among the surface artifacts that were left behind following each occupation of the camp.

4.6 Tiers of Elevation and Structures

Tier 1 at Huissi's Camp contains most of the structures found within the site. Out of fourteen structures, eight are located within this first tier. These eight rectangular structures were constructed roughly side-by-side along the south side of the tote road, as shown in Figure 5 and Figure 6. They are labelled Structures #1 to #8 from northeast to southwest. The buildings are bunched tightly together, with less than a metre of space between them. Additionally, the buildings are not aligned in a straight line, but instead jog slightly to the north or to the south, according to the most level stretches of ground.

Structure #1 is of average size for the site.[24] It is oriented lengthwise from northwest to southeast, which is an oddity because most structures at the camp are oriented from northeast to southwest. By examining the artifacts located and recovered from in and around this structure, it is possible that this was a workshop. This is because the majority of artifacts found within the nearby area were hardware, broken tool pieces and large metal containers. This structure may have been used for hardware and tool maintenance, farriering, or other various metalworking and woodworking.

Structures #2, #4 and #5 are all 4.9 meters by 4.3 meters, and Structure #3 is 5.5 meters by 4.3 meters. Structures #7 and #8 have a length of 6.1 meters and a width of 4.6 meters. All of these structures are fairly average in size for Huissi's Camp. Furthermore, through my examination of structures #2, #3, #4, #5, #7 and #8, there were no significant artifacts recovered that could help to determine what the structures were used for. Therefore, it is difficult to say with any certainty what the function of these structures was. However, it is my opinion, judging by the artifacts recovered from other areas of Huissi's Camp, along with the knowledge of what the navvies would have required to do their work on a daily basis, that one of the structures was likely built for use by a farrier[25] and one was likely a workshop.

Structure #6 is noticeably smaller in length and width from the rest of Tier 1's structures, at 4.6 meters by 3 meters. Although this structure was smaller in size, it was not located apart from the others at the site. Furthermore, no significant artifacts were found nearby this structure that would signify that it was used as housing of any kind. In fact, very few artifacts of any kind

[24] The average size of the structures at Huissi's Camp was calculated by taking the total approximate square foot area of each structure, adding these totals together, and dividing by the number of structures at the site.
[25] A farrier is an occupation that involves taking care of the hooves of horses. This includes shoeing the horses, but also some basic veterinary care and blacksmithing.

were found within this structure, so it is difficult to ascertain its original purpose, however, based on its size, it is likely that this was simply a storage shed. There are not many things a building this small could have been used for. The two uses that immediately come to mind are an outhouse or a storage shed, but the site of the structure as it sits today has no dug-out area or pit of any kind, which was a requirement for latrines in the early 1900s. Therefore, it is logical to suppose that this was a storage shed.

Access to Tier 1.5 is given in between Structure #6 and #7, by way of a footpath, that runs straight uphill to Structure #9 at Tier 1.5. Structure #9 rests on a small knoll, and is of average size at Huissi's Camp, with a length of 6.1 meters and a width of 4.6 meters.[26] The structure is oriented typically for the site, lengthwise from east to west. Structure #9 is the closest structure to where the large midden of artifacts now lies, including the old camp stove. This indicates that it is possible that Structure #9 was the cookhouse for the camp, however, other artifacts found within the structure or nearby suggest otherwise. Two ink bottles were located just downslope of Structure #9, which suggests that the structure may have been the housing for the local engineer or contractor, someone who knew how to read and write. Additionally, a metal grommet, of the type found in old tarpaulins or canvas coverings was found within the structure. This suggests that the structure was not permanent, but rather was built with a more temporary canvas cover. This in turn indicates that Structure #9 was not a cookhouse, because the camp stove would not have had its exhaust vent routed through a flammable tarpaulin. It is possible, however, that the metal grommet that was found at this location was the result of one of Huissi's

[26] The measurements listed for the structures in Huissi's Camp are all rounded up or down to the closest unit of distance in meters. The structures were difficult to measure precisely because the remains of the foundations were very rough in shape and the outlines of the walls varied substantially in thickness. Therefore, these measurements are approximations.

Camp's later occupations, including the squatters in the late 1990s. Therefore, without further analysis of this structure, including a sub-surface excavation, it is impossible to tell what Structure #9 was used for during the construction of the Myra Canyon. The most likely uses are a cookhouse or contractor's or engineer's quarters.

Continuing to the end of the row of buildings in Tier 1, just past Structure #8, is another small path that leads upslope towards Tiers 2 and 3. Tier 2 runs perpendicularly west out from the access path and contains only two structures. The structures located here have been labelled #10 and #11, from west to east respectively, with Structure #11 being the largest building found within Huissi's Camp at 7.6 meters long by 5.5 meters wide. Due to its large size, it is most likely that Structure #11 was the bunkhouse where the navvies slept. Structure #11 is oriented lengthwise from east to west, like the majority of structures at the site, while Structure #10 is oriented lengthwise from north to south. Structure #10 is also slightly smaller than the average at Huissi's Camp, at 4.6 meters by 3 meters. The two buildings here sit neatly side-by-side 3 meters apart. There were many large empty cans located in and around the foundation of Structure #10. These cans were primarily black powder containers, while others were unidentifiable. The conclusion I came to was that this was a storage building for explosives.

Continuing upslope along the small path past Tier 2 leads to the uppermost level, known as Tier 3. This tier contains three structures in total, #12, #13 and #14, from west to east respectively. Structures #13 and #14 each are the same in size, which is the typical 6.1 meters by 4.6 meters. Structure #12, however, is located apart from the other two buildings, down a slope to the southwest about 6.1 meters, connected by a small path. While this structure is spatially segregated from the rest of the structures at Huissi's Camp, I believe that the distance is not great enough to indicate that this was the contractor's or engineer's housing. Furthermore, no artifactual evidence was found within or around this structure to suggest this. Structure #12 is slightly larger than average for Huissi's Camp, with a length of 6.4 meters and a width of 4.9 meters.

Directly across the main tote road from the buildings of Tier 1 is a heavily sloped area where many artifacts were recovered. In fact, close to forty percent of all artifacts found at the site came from this location, which I dubbed the Refuse Area. This stretch of land runs roughly 60 meters from east to west alongside the tote road, and about 20 meters downslope towards the main line. I refer to this region of the camp as the Refuse Area based upon the visible artifactual evidence at the site.[27] This area is located on some of the steepest terrain at Huissi's Camp, dropping approximately 12 meters in elevation over its span.

After discussing the geography of Huissi's Camp, we can now move on to examine the artifacts that were seen at, or recovered from, Huissi's Camp during the course of my research project.

[27] The term Refuse Area refers to material refuse, not human waste. No soil analysis was performed at Huissi's Camp during the course of my research project.

Chapter 5: Material Culture Discussion and Interpretation

Not much is known about Huissi himself. The name is likely of Swedish or Finnish origin, but other than that no historical or archival data could be found that relates to who he was.[28] However, the men who worked for him, or were at his work camp, come to us through careful, although tentative, consideration of the data provided by the surface collection of artifacts and mapping of the site. From this some patterns begin to emerge that help to shed some light on the lives of the navvies who worked there. My tentative approach was the result of the issues discussed in Chapter 3 on the difficulty in ascertaining the original context of the artifacts.

In addition to the unreliable context and extent of the site, resource and personnel limitations during my fieldwork at Huissi's Camp meant that a full excavation of the site was impossible. Instead, a site survey, including mapping of the camp using handheld GPS, as well as surface collection of visible artifacts was completed. Despite the limitations of my research project, I gathered enough data through the addition of archival resources (discussed in Chapter 6) and comparative studies to build a cogent discussion of life for the navvies at Huissi's Camp.

5.1.1 General Site Overview

In order to demonstrate and explain the patterns that emerged when I examined the distribution of artifacts at Huissi's Camp, it is important to discuss the site systematically by tier. The first pattern I noticed is that there were far more surface artifacts in the lower tiers than in the upper tiers, see Table 1. The first explanation could be that the lower tiers of the camp housed more storage and work-related buildings, while the upper tiers were designated living

[28] The name Huissi was mentioned to me through personally communications with Rick Garvin and Maurice Williams. I was never informed where they found the name, or any other information about this man. His background at this time remains very much a mystery.

quarters or cookhouses. If this was the case, I would expect to see more hardware related items left behind in the lower tiers and, nearer to the structures in the upper tiers, more personal items and cooking related items. During the artifact recovery phase of my research, more hardware artifacts were indeed recovered from the lower tiers, however, there were no more personal items recovered from the upper tiers than any other area at the site. In fact, very few personal items at all were found at Huissi's Camp, which leads me to believe that the workers found their personal effects too vital to leave behind. Other reasons for this pattern could be that the items were moved further downslope over time during subsequent occupations of the site, or that more artifacts may have been found in the uppermost tiers had a sub-surface excavation taken place there. Gravity may have also played a part in the dispersal of artifacts from higher elevations down to lower elevations. Additionally, personal items are usually small in size and if dropped, they can be quickly integrated into the matrix and thus move to the subsurface, where I would not have been able to find them. It is also worth mentioning that any unique or valuable personal items left at Huissi's Camp could have picked up by anyone hiking through the area in the last 100 years. Site destruction by what have been termed 'potters' (site thieves) can shift the range of artifacts retrieved during controlled, systematic investigations. As I touched upon in Chapter 4, the time and resources I had available to me during my research of the site did not allow me to collect artifacts from every structure at the camp. Instead, I chose structures based on a stratified judgemental sampling technique. Thus, some structures are not included in the following tables.

In Tier 1, I chose to take samples from Structures 1, 2 and 6. In Tier 1.5, I chose to sample the only structure in that tier, Structure 9. In Tier 2, I sampled from both Structure 10 and Structure 11. Finally, in Tier 3, I sampled Structures 12 and 14. Outside of the tiers, I took samples from the area in between Tiers 1 and 1.5, and I also sampled the Refuse Area downslope of the main work camp. In all of these cases, I chose the areas for sampling based on what I could see. For instance, Structure 1 in Tier 1 had a large amount of visible surface artifacts present within it, therefore, I chose to sample from that structure.

Table 1. Provenience of Artifacts at Huissi's Camp.

Provenience		Number of Artifacts
Tier 1		
	Structure 1	143
	Structure 2	2
	Structure 6	8
	Total	153
Tier 1.5		
	Structure 9	9
	Total	9
Tier 2		
	Structure 10	3
	Structure 11	19
	Total	22
Tier 3		
	Structure 12	4
	Structure 14	8
	Total	12
Between Tiers 1 and 1.5		73
Refuse Area		148
	Total	417

5.1.2 Tier 1

As discussed in Chapter 3, Tier 1 is the lowest level of the site closest to the tote road that leads from the railway line up into the hills above. While examining the artifacts recovered from the structures in Tier 1, I found substantially more hardware artifacts in Tier 1 than in any other location, including the Refuse Area, see Table 2. While this tends to support the theory that Tier 1 was primarily used for storage, work spaces and industry, there are a few more points to consider. For instance, during the recovery of artifacts at Huissi's Camp, I only collected nails[29] from the first structure in Tier 1 due to research limitations. Since I categorized nails as hardware, and because they are by far the most common hardware item at the site, this undoubtedly skews the results, therefore I have removed nails from the hardware category for this particular section. See Table 3 for a look at the amount of hardware artifacts recovered from the site with nails removed.

[29] All nails retrieved from Huissi's Camp were machine cut, however the nails were saved and transported to the Penticton Museum and Archives for storage and could be subjected to a deeper analysis as more resources become available.

Table 2. Hardware Artifacts Recovered at Huissi's Camp with Nails Included.

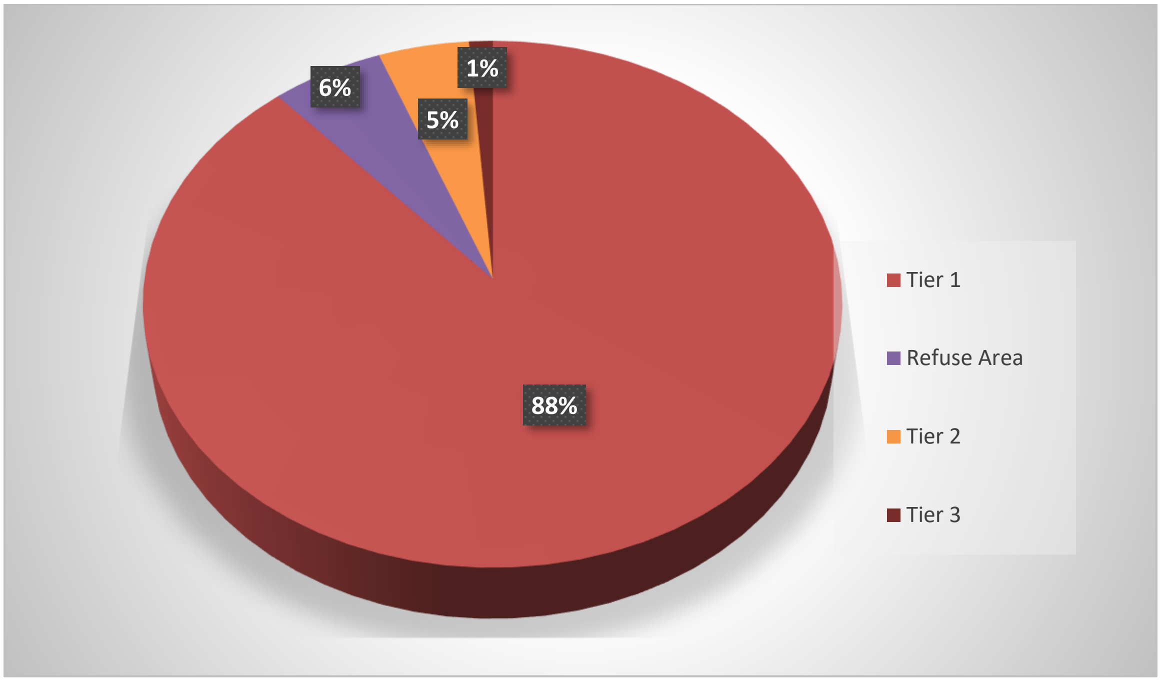
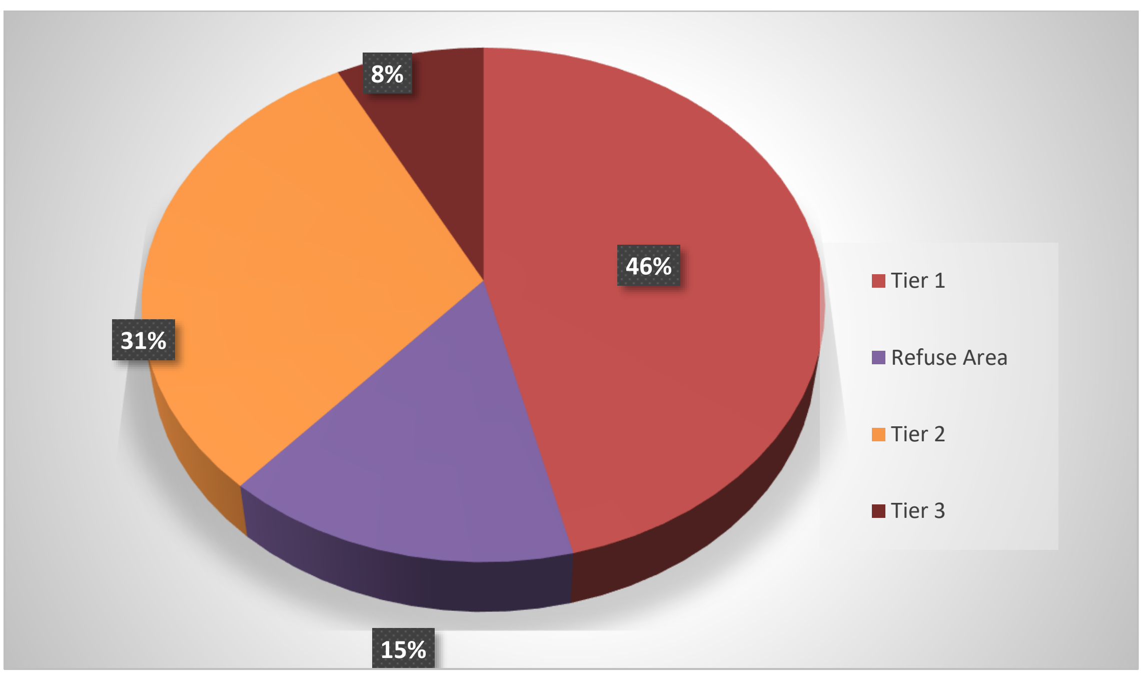


Table 3. Hardware Artifacts Recovered at Huissi's Camp with Nails Removed.



Another interesting pattern to emerge from the examination of Tier 1 is that out of the entire site, only one furniture artifact was recovered, and it was found in this Tier. It was a cast iron metal table or chair leg, measuring twenty-one centimeters in length. It is shown in Figure 11. The leg was not ornate in any way and the only detail on it was a small, raised star shape and a small, raised diamond shape on the outside part of the leg, near the middle. The star and diamond shapes aside, the design of the leg appears to be basic and utilitarian. If the metal leg was originally part of a piece of furniture like a desk, dresser or cabinet, its presence in Tier 1 is an anomaly. Nonetheless, this would mean that, aside from a large amount of hardware and tools, there was indication of furniture in Tier 1. In that case, there may have been some lodging structures located in Tier 1 in addition to the tool sheds, workshops and storage buildings. However, it is possible that the metal leg was originally part of a work bench or craftsman's table. Lastly, it is possible that the metal leg was moved to Tier 1 by passersby after the original occupation of the site and is not in primary context.

Figure 11. Metal Furniture Leg Found in Tier 1. Twenty-one centimeters in length. Author’s photograph, October 2017.

1. The lack of furniture artifacts could have several different interpretations. This could support the idea that when the site was abandoned, all of the crucial items were taken out to be reused elsewhere. Furniture such as beds and seating were extremely important in the railway work camps and would have been transported from site to site as needed. This is due to the fact that any large items initially had to be hauled into the camp via horse and cart, which was time consuming, expensive and difficult. Once those large items arrived, they would have been coveted within the work camps and not simply left behind to rot (Williams 2008).

2. The lack of furniture at Huissi's Camp could also be evidence of post-occupational looting. If any furniture was left behind at the camp by the navvies, it could have had some value to future visitors to the site, which may have led to the removal of those items.
3. Lastly, a lack of furniture at the site could simply be due to the effects of the 2003 wildfire. Furniture at the time would likely have been made mostly of wood and would have been completely destroyed by the fire. The main problem with this theory is that more metal furniture pieces like the table leg from Figure 11 would have been left behind in that case. It should be noted that the table leg from Figure 11 may not have been a table leg at all. It is entirely possible that this artifact was part of an old bathtub or was the leg of an old stove.

5.1.3 Tier 1.5

Just above Tier 1 is Structure #9, located in what is known as Tier 1.5. This is the next area of the site that requires a closer examination, and the next interesting piece of information comes from there. Most of the artifact data seem to suggest that Structure #9 was a cookhouse. This is chiefly supported by the presence of a cook stove in the area directly downslope of Structure #9, along with a midden of various other metal objects including cans, tins, handles, and metal and enamel bowls, which can be seen in Figure 12.

Figure 12. Midden of Metal Artifacts. Includes an old stove located in between Tier 1 and Tier 1.5 [30] Author's photograph, July 2014.

Through my initial conversations with Richard Garvin regarding the site, I know that these items were moved here purposefully by Garvin and Maurice Williams in 2008. However, the stove itself is quite large and cumbersome, and it is unlikely that it was moved very far (Garvin 2014). The reason the stove and the other artifacts were moved is because the tote road to Huissi's Camp was used as a primary bypass route to the main rail line during the reconstruction of the trestles following the 2003 wildfire. Due to the heavy amount of foot traffic

[30] The placement of the trowel in the foreground provides an optical illusion of the actual size of the receding items. Thus, the stove is actually slightly larger than it appears in the photograph.

through the site, Garvin decided to move some of the artifacts to an area in between Tier 1 and Tier 1.5 in the hopes that they would not be damaged by passersby traffic.[31]

Among the metal artifacts recovered from Tier 1.5 of Huissi's Camp were various pieces of cutlery, including knives, forks and spoons. All of these tableware items had a floral design on the handle (see Figures 13 and 14), that matched those recovered from both Chew's Camp #11 and Morrissey's Camp #2, suggesting that all three of these work camps were supplied by the same seller. Although I was unable to determine who the exact seller was, it is likely they were located in the Kelowna area and brought in many items for the railway work camps. None of the distribution catalogues of the time including Eaton's, Simpson's and Goodwin's had anything with a floral pattern on the handle like those found at Huissi's Camp (Library and Archives Canada 2010). It is possible that the work camps even shared goods between them. The cutlery supplied to the work camps, like Huissi's, were standard and basic, built to serve their purpose, which speaks to the class of the navvies. The simplest, most rudimentary supplies are most often given to those people who occupy a lower class. Had these men been professionals or contractors, the quality of the artifacts, even the broken ones, found left behind at Huissi's Camp would have been much higher. For instance, as will be discussed in the final chapter of this thesis, there were fragments of Austrian porcelain found within one of the structures at Chew's Camp #11, in a structure that is believed to have housed a contractor or assistant engineer of the KVR. Higher class individuals were given higher quality supplies, and the navvies at Huissi's Camp were simply not of a higher class.[32]

---

[31] When I last visited Huissi's Camp, this midden of large metal artifacts was still located in between tiers 1 and 1.5. However, it is possible that these item were moved or even removed from the site since then.

[32] Unfortunately, no first-hand records or invoices of railway camp supplies were available during my research. When I make note of higher quality supplies, this was learned from second hand sources with no specifics provided.

Figure 13. Metal Knife with Floral Design on Handle. Recovered from Huissi's Camp. Author's photograph, October 2017.

Figure 14. Metal Knife with Floral Design on Handle #2. Recovered from Morrissey's Camp #2. Photograph taken by Richard Garvin, 2008, reproduced with permission, 2014.[33]

The concept that Structure #9 was a cookhouse is further supported by the fact that no hardware artifacts at all were recovered from Tier 1.5. There were no tools, no spikes or nails,

[33] This photograph was taken by Richard Garvin in 2008, and I was unable to take a new photograph of this artifact. While this photograph is not of the greatest quality, it is possible to see that the floral design on the handle is the same as that of the knife in Figure 13. The cutlery found at Huissi's Camp is clearly the very same as the cutlery recovered from Chew's Camp #11 and Morrissey's Camp #2.

nothing to suggest that this structure was used for storage or crafting. Furthermore, some of the glass fragments found in the area surrounding Tier 1.5 are identified as pieces of a bottle of Eno's Fruit Salts, a common antacid treatment of the late 1800s and early 1900s.[34] Fruit salts would likely have been housed within the cookhouse for use with or after meals – see Figure 15. Although it is possible that it may have been stored in the contractor's house for his own personal use instead of within a cookhouse.

Figure 15. Eno's Fruit Salt bottle recovered from Morrissey's Camp #2. Richard Garvin, reproduced with permission, 2014.

[34] Eno's Fruit Salt was a common antacid medicine available during the early 1900s. It was created by James Crossley Eno, an English medicine manufacturer (Oxford Dictionary of National Biography 2019).

Indeed, some of the artifact data suggest that Structure #9 served a different purpose than a cookhouse, perhaps as housing for the lead contractor or an assistant engineer. Two ink bottles were found downslope of Structure #9 (see Figures 16 and 17), roughly one meter from the foundation of the building.

Figure 16. Small, Square Shaped Ink Bottle. Recovered from Huissi's Camp Tier #1.5. Author's photograph, October 2017.

Figure 17. Small, Round Shaped Ink Bottle. Recovered from Huissi's Camp Tier #1.5, labelled "Underwood's Inks" on the side. Author's photograph, October 2017.

The fact that these ink bottles were found near Structure #9 of Tier 1.5 could mean that the structure was used by someone of importance within the site, someone who was required to write letters or other documents.[35] The ink bottles could also have been repurposed in some way, possibly for food storage, although this scenario is unlikely. It is more probable that these ink bottles were not found in their original context, especially because they were found directly adjacent to one another, on the very top layer of soil. They had not sunk into the ground at all, which is very unlikely over a span of one hundred years. In summation, the purpose of Structure

[35] This will be discussed further in Chapter 6.

#9 in Tier 1.5 is unknown, and the artefactual evidence suggests two different scenarios, but the most likely interpretation is that this structure was a cookhouse, because of the close proximity of the camp stove as well as the presence of antacid bottle fragments.

5.1.4 Tiers 2 and 3

Above Tier 1.5 are the next two tiers of elevation at the site, Tiers 2 and 3. I decided to discuss these two tiers together because very few items were found in Tiers 2 and 3, see Table 1. The artifacts that were recovered turned out to be unidentifiable metal pieces, and an assortment of hardware and household items. However, even a lack of artifacts can provide information. The absence of visible artifacts in structures of the upper tiers of the camp could be evidence of site abandonment; the workers may have taken everything they could with them when they left the site. Furthermore, I was never able to excavate below ground and therefore there may yet be remains at the site that I did not access. This evidence, in turn, could help to reveal what the four structures in Tiers 2 and 3 were used for. As the most commonly left-behind items at Huissi's Camp were glass bottle fragments, tin cans, and large metal containers, and these items were not found in the same quantities in Tiers 2 and 3 as they were found in Tier 1, then this could mean that Tiers 2 and 3 served a different purpose than Tier 1. Continuing on that thread, a lack of artifacts could indicate that the items that once resided in Tiers 2 and 3 were of sufficient value to warrant their removal during the abandonment of the site. The items with the highest reuse value tend to be furniture and tools. Furthermore, because Structure #11 is the largest structure at Huissi's Camp, it stands to reason that it was not used as a workshop or storage facility. It is far more likely that Structure #11 was a bunkhouse, used for sheltering as many workers as possible. As observed in other railway work camps, the largest structure at the site was usually the bunkhouse (Garvin 2014; Williams 2008). This last thought lends support to the theory that Tier

1 was used more for storage and work-shops, while Tiers 2 and higher were used for housing and other functions. If Structure #11 was a bunkhouse, it is possible that the other buildings in Tiers 2 and 3 were also used for housing. Of course, it is also entirely possible that a lack of artifacts in Tiers 2 and 3 were simply a by-product of the subsequent occupations of the site, as mentioned earlier. Any artifacts that may have been left there by the navvies could have been moved or removed by human action over time.

5.1.5 Refuse Area

Downslope of Tier 1, on the opposite side of the tote road, is what is known as the Refuse Area. One noticeable consistency in the data that comes out of the Refuse Area is that out of all the artifacts found there, the vast majority (91%) are household items, things like glass fragments, metal containers and tableware, see Tables 4 and 5. In fact, out of all the household items recovered from the Refuse Area, 84% of them were glass bottle fragments (see Table 5), and out of all items recovered from the Refuse Area altogether, 78% of them were glass bottle fragments (see Table 6). The large quantity of glass fragments lends support to the concept that the site was abandoned and makes sense with regards to the KVR work camps in general. At the end of the construction project, it is likely that any items of importance would be transported out of the site to be reused. Things like furnishings, intact tools or personal items would be taken out of the site before the camp was abandoned, while items like old bottles, broken tools and the structures themselves would be left behind (Garvin 2014; Williams 2008). The price to haul items from site to site in the early 1900s was one penny per pound of freight, which made the shipments quite expensive (Williams 2008). Furthermore, it stands to reason that throughout the various occupations of the camp, those items that were abandoned would become strewn about by the occupants, and many of those items would eventually make their way downslope and into the Refuse Area.

Table 4. Artifacts Recovered from the Refuse Area. Sorted by artifact class.

Artifact Class	Number of Artifacts	Percentage of Artifacts
Architectural	0	0
Arms	1	0.7
Hardware	3	2
Household	134	90.5
Personal	1	0.7
Post-occupational	0	0
Scrap	0	0
Tool	2	1.4
Unidentifiable	7	4.7
Total	148	100

Table 5. Household Good Artifacts Sorted by Category.

Huissi's Camp: Household Goods by Category

Category	Number of Artifacts
Containers	
Bottle Fragments	255
Tin Cans	11
Bottle Cap	1
Furnishings	1
Tableware	10
Kitchenware	2
Total	280

5.2.1 Significance of Glass Artifacts

Having now discussed the patterns of the artifacts recovered from the different tiers and areas of the site, I will touch on each of the most prevalent artifact types found at Huissi's Camp in general. The first most frequently recovered artifacts at the site were glass fragments. Types of glass recovered from Huissi's Camp included liquor bottles, medicine bottles, ink bottles, window pane glass and what is likely fragments of a glass vase or large bottle. Of these varied glass items, glass liquor bottle fragments were by far the most frequently found at the site. Only 2 ink bottles were recovered, and just a handful of medicine bottle and vase fragments were found, as seen in Table 7 and Figure 22. The vast majority of these glass fragments were recovered from the refuse area, as seen in Table 6, and additionally, of those fragments the vast majority were liquor bottle fragments as seen in Table 7.

As mentioned above, glass bottles would be the most likely item to be thrown out of the camp and into the Refuse Area. Glass containers were heavy and fragile, which made them difficult and expensive to transport, and used liquor bottles would have been left behind. Subsequently, the glass bottles would have been dispersed and destroyed over the years resulting in the distribution currently seen at Huissi's Camp. It is worth noting that, out of all of the artifacts at Huissi's Camp that would have been visible to tourists and passersby over the last 100 years, glass bottles have the highest likelihood of being thrown around and broken for amusement. Furthermore, the heat from the wildfire that passed through the area in 2003 would have had a high chance of shattering any glass containers that were left intact up until that point.

Table 6. Artifacts Recovered from Refuse Area Sorted by Type.

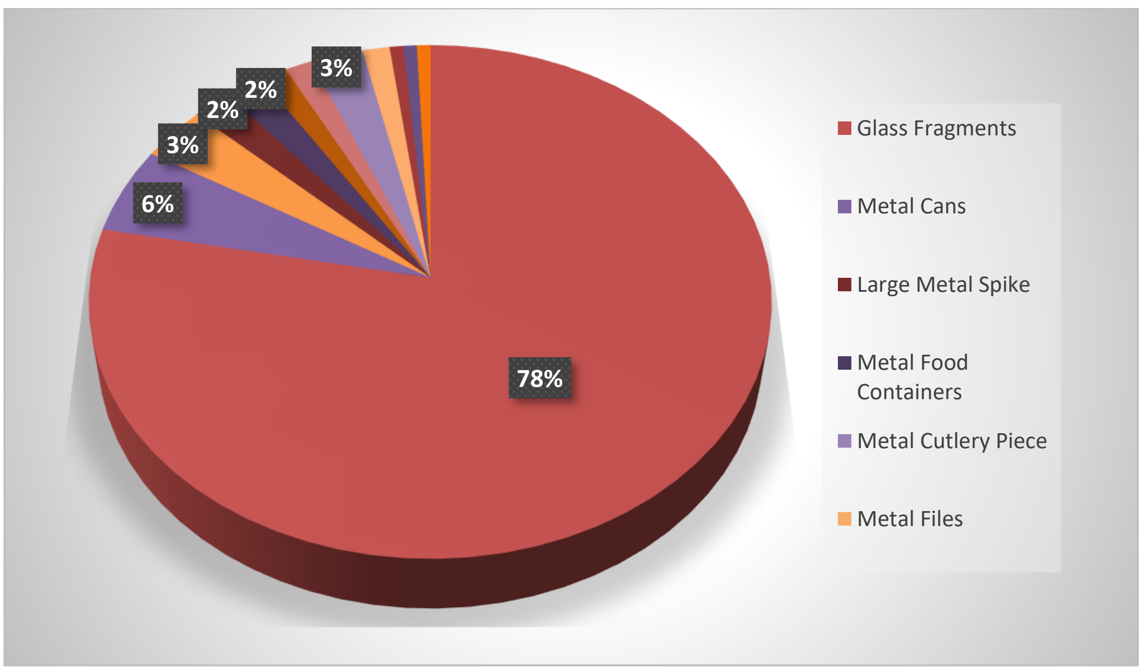


Table 7. Frequencies of Glass Artifact Fragments Sorted by Type.

Huissi's Camp: Frequencies of Glass Artifact Fragments Sorted by Type

Artifact Type	Number	% of Total
Large square, possible food Container, blue-green color	1	0.4
Large round, possible vase, Amethyst solarized color	4	1.5
Small square ink bottle, Amethyst solarized color	1	0.4
Small round ink bottle, Amethyst solarized color	2	0.8
Round, cylindrical liquor bottle, Dark brown color	116	44.4
Round, cylindrical liquor bottle, Dark blue cobalt color	7	2.7
Round, cylindrical wine bottle, Dark green color	2	0.8
Round, cylindrical liquor bottle, colorless	45	17.2
Round, cylindrical liquor bottle, Amethyst solarized color	2	0.8
Round, cylindrical liquor bottle, Light green color	37	14.2
Round, cylindrical liquor bottle, Light blue-green color	15	5.7
Small square, medicine bottle, Amethyst solarized color	13	5
Small square, medicine bottle, colorless	1	0.4
Unidentified glass fragment, dark green color	2	0.8
Unidentified glass fragment, Amethyst solarized color	1	0.4
Unidentified glass fragment, colorless	8	3.1
Unidentified glass fragment, light blue color	1	0.4
Window glass fragment, light green color	3	1.1
Total	261	100

Broken bottle shards were the most numerous artifacts found at the site. This is indicative of several things. First, it speaks to the cultural processes that were going on at the site during its tenure as a work camp. It appears that glass liquor bottles were not very highly valued among the navvies and amounted to little more than trash. Additionally, the majority of bottle fragments were located in the Refuse Area downhill of the actual camp, which helps to demonstrate and validate the patterns of refuse disposal inherent at the site. Secondly, the high volume of bottle fragments, specifically those that are identifiable as liquor bottles, is evidence that alcohol was being consumed in substantial quantities at this particular camp, see Figures 18-21.[36] This consumption of alcohol, specifically with regards to the large quantities, in turn suggests that the navvies that occupied Huissi's Camp were working class individuals, and not professionals or engineers. This is because during this time period, railway workers were well known for drinking alcohol, oftentimes to excess. The professionals who worked for the KVR, on the other hand, were held to a higher standard by their managers and they would not have been as likely to participate in this type of heavy drinking. It is worth noting that due to the difficult lifestyle of working on the railway, alcohol in many ways would have been used as a form of medicine. The brutal working lives that these men endured would have been slightly improved through the consumption of liquor, despite the fact that it was frowned upon. This speaks to the fact that so many liquor bottles were found at the site. While the navvies oftentimes lacked agency, their consumption of alcohol could be interpreted as a form of subversive agency. They were fighting against their oppression by breaking the rules and drinking liquor at the work camps.

36 Some of the bottles and bottle fragments were easily identified as liquor containers. For instance, Figure 18 shows the remains of a wine bottle with the maker's mark still visible. Other bottles were identified as liquor containers by examining their color and design, along with any visible stamps on the fragments, see Figures 19-21.

Figure 18. Two Dark Green Glass Bottle Fragments. Recovered from Huissi's Camp Refuse Area, embossed with Makers Mark on the shoulder. Mark reads "Fratelli Branca Milano", which identifies it as a bitters liqueur bottle from Milan, Italy in the late 1800s to early 1900s. Huissi's Camp was originally occupied between 1912 and 1914 for reference (Fernet-Branca 2019; Kleinman 2013). Author's photograph, October 2017.

Figure 19. Dark Brown Bottle Fragment. Part of the bottle's base, recovered from Huissi's Camp Refuse Area, stamped with Makers Mark. Mark reads "A B Co, 103", which identifies it as a beer bottle manufactured by the American Bottle Company out of Streator, Illinois between 1906 and 1916 (Glass Bottle Marks 2019; Lockhart et al 2000). Author's photograph, October 2017.

Figure 20. Light Green Glass Bottle Fragment. Part of the bottle's base, recovered from Huissi's Camp Refuse Area, stamped with Makers Mark. Mark reads "W F & S, 21, MIL", which identifies it as a beer bottle manufactured by William Franzen and Son, a brewing and bottling company from Milwaukee, Wisconsin between 1896 and 1929 (Sussex-Lisbon Area Historical Society 2019). Author's photograph, October 2017.

Figure 21. Light Blue Glass Bottle Fragment. Part of the bottle's base, recovered from Huissi's Camp Refuse Area, stamped with Makers Mark. Mark reads "AB" which identifies it as a beer bottle manufactured by the Adolphus Busch Glass Manufacturing Company, and/or the American Bottle Company, between 1886 and 1929 (Glass Bottle Marks 2019).[37] Author's photograph, October 2017.

[37] If the bottle was manufactured prior to September 1905, it would have been made by the Adolphus Busch Glass Manufacturing Company. However, after September 1905, the company was incorporated into the American Bottle Company.

Figure 22. Solarized Amethyst Coloured Glass Bottle Fragments. Two pieces making up the majority of a medicine bottle. Recovered from Huissi’s Camp Refuse Area. Author’s photograph, October 2017.

Huissi’s Camp was originally supposed to be a “dry” camp, where liquor was banned, and prohibition was strictly enforced (Garvin 2014; Williams 2008). However, the work camps were full of men who were often isolated and unsupervised, and alcohol would often find its way in. It is clear that the material evidence supports this idea completely. Lastly, the high volume of glass fragments recovered from the camp could simply be a by-product of the surface collection of artifacts. Glass fragments tend to catch the eye of passersby, and are therefore easier to collect, which could have led to a higher number of glass artifacts recovered at the site.

5.2.2 Significance of Metal Artifacts

The next most commonly found artifacts at Huissi's Camp were metal containers like tin cans. Second to broken glass bottle fragments, tin cans were the most numerous items found at the site. The majority of these cans were small food-related cans, as seen in Figure 23, which probably held canned vegetables or soups. In some other, larger archaeological sites like Fort Selkirk, the men who lived there were able to subsidize their diets with home-grown vegetables and herbs planted in garden plots nearby or within the site (Castillo 2012). Unfortunately for the men who worked on the KVR, the managers and contractors did not provide any such gardening areas for their workers. Instead, the navvies relied heavily on the canned goods that were shipped into the work camps by horse and cart along the tote roads, which is why such a large quantity of empty metal containers littered the site during my research (Williams 2008). Furthermore, when moving from work camp to work camp, garden plots obviously lacked portability, while cans were relatively easily transported. Some of the cans found at Huissi's Camp were much larger, however, and were used for storing black powder, which was used as an explosive in the time period before dynamite was readily available. An example of these black powder canisters can be seen in Figure 24.

Figure 23. Small, Cylindrical Tin Can. Very rusted, recovered from Huissi's Camp Refuse Area. This particular can was known as a "hole-in-cap can", because it had a small pin-sized hole in the center called a matchstick filler, or vent hole, which was sealed with lead. Author's photograph, October 2017.

Figure 24. Large, Cylindrical Tin Can. Broken and rusted, left in situ at Huissi's Camp Tier #1. Labelled "Canada Explosives Limited, Black Blasting Powder", which identifies it as having come from the Canada Explosives Limited gunpowder and blasting powder plant in Windsor, Ontario between 1911 and 1922 (Farfan 2019). Author's photograph, July 2014.

Aside from metal containers, there was another metal artifact that I found in several instances at Huissi's Camp during my research. Those items were metal hinges, likely from the doors to the various structures at the camp, as seen in Figure 25. These hinges were all of roughly the same size, approximately 35 centimeters from tip to tip when unfolded. They appear to be of a very basic design, although they seem to be quite sturdy. Probably these were the most readily available hinge in the supply stores of the Okanagan at the time and were widely used in the work camps for doors and gates.

Figure 25. Large, Metal Door Hinge. Very rusted, found in Structure #1 of Tier 1 at Huissi's Camp. Author's photograph, October 2017.

5.3 Valuable and Unique Artifacts at Huissi's Camp

There is an overall lack of valuable artifacts at Huissi's Camp. Plenty of broken glass fragments and tin cans exist within the site, but items like personal effects and furniture are almost completely absent. As previously discussed, this could be due to the movement or removal of artifacts from the site during its more recent occupations, or the artifacts may have been burned in the wildfire in 2003. On the other hand, if the fire burned any furniture at Huissi's Camp, it would have still left some metal pieces behind. Larger quantities of things like metal table legs or gussets would surely have been uncovered, but they were not.[38] Only one piece of

[38] A gusset is a flat metal plate or bracket that can be used to hold two pieces of material together, or to strengthen a joint or seam.

furnishing, a single table leg, was found throughout the entire site. As mentioned above, a more likely theory is that the KVR contractors and their subordinates took any items of value with them during the abandonment of the camp (French 1995). As the construction of the Myra Canyon section of the KVR continued, labourers moved from work camp to work camp along the line as needed (Garvin 2014). Any furniture or crucial household items would have been transported along with the navvies, hence the lack of these types of items left behind at Huissi's Camp. This demonstrates that the removal of artifacts from the site was a very selective process. If the item was unimportant, or as mentioned above, heavy and fragile, it would have been left behind.

One of the more interesting metal artifacts recovered from Huissi's Camp was a small, metal container with a hinged lid, approximately five centimeters in width, as seen in Figure 26. This container appears to be a pill box of some kind, used to store personal medicine. Another possibility is that it was used to contain tobacco or snuff. If it was used as a pillbox, this indicates that its owner was a higher-class individual, able to afford personal medication. However, the fact that it was found in the Refuse Area means it was not likely in its original context when it was recovered. Therefore, I am unable to link this artifact to a particular structure or tier within the site.

Figure 26. Small Metal Container with Hinged Lid. Very rusted, found in Refuse Area at Huissi's Camp. Author's photograph, October 2017.

Another curious metal artifact found at Huissi's Camp was the item seen in Figure 27. At this time, it is unknown what this artifact was used for, which makes it quite interesting. It was recovered from the Refuse Area, so its original context is quite probably lost, but its uniqueness is worth noting. It is possible that it was used as a brace or cover for some machine or railway part, or possibly a door or drawer handle or piece of hardware. It may have even simply been a piece of decoration.[39]

[39] I would like to thank Gisli Balzer, Brent Riley, Victoria Castillo, Stephan Biedermann, Joel LeBaron, Rebecca Jansen and Barbara Hogan for their help in identifying these artifacts.

Figure 27. Large, Semi-circular Metal Artifact of Unknown Purpose. Very rusted. Found in Refuse Area at Huissi's Camp. Author's photograph, October 2017.

With the discussion and interpretation of the artifacts from Huissi's Camp completed, we can now move on to discuss the data I collected in the Penticton Archives. The data consists of over a year's worth of weekly reports written by the assistant engineers of the KVR, documenting the goings-on along the line in the early 1900s. This data will further illuminate the camp life of an average navvy during the construction of the KVR.

Chapter 6: Archival Discussion and Interpretation

6.1 The Men of the Myra Canyon

This section of my thesis will include historic photographs found in the Penticton Archives during the course of my research. These pictures and their labels will help to illustrate the ethnic makeup of the navvies that worked on the KVR.

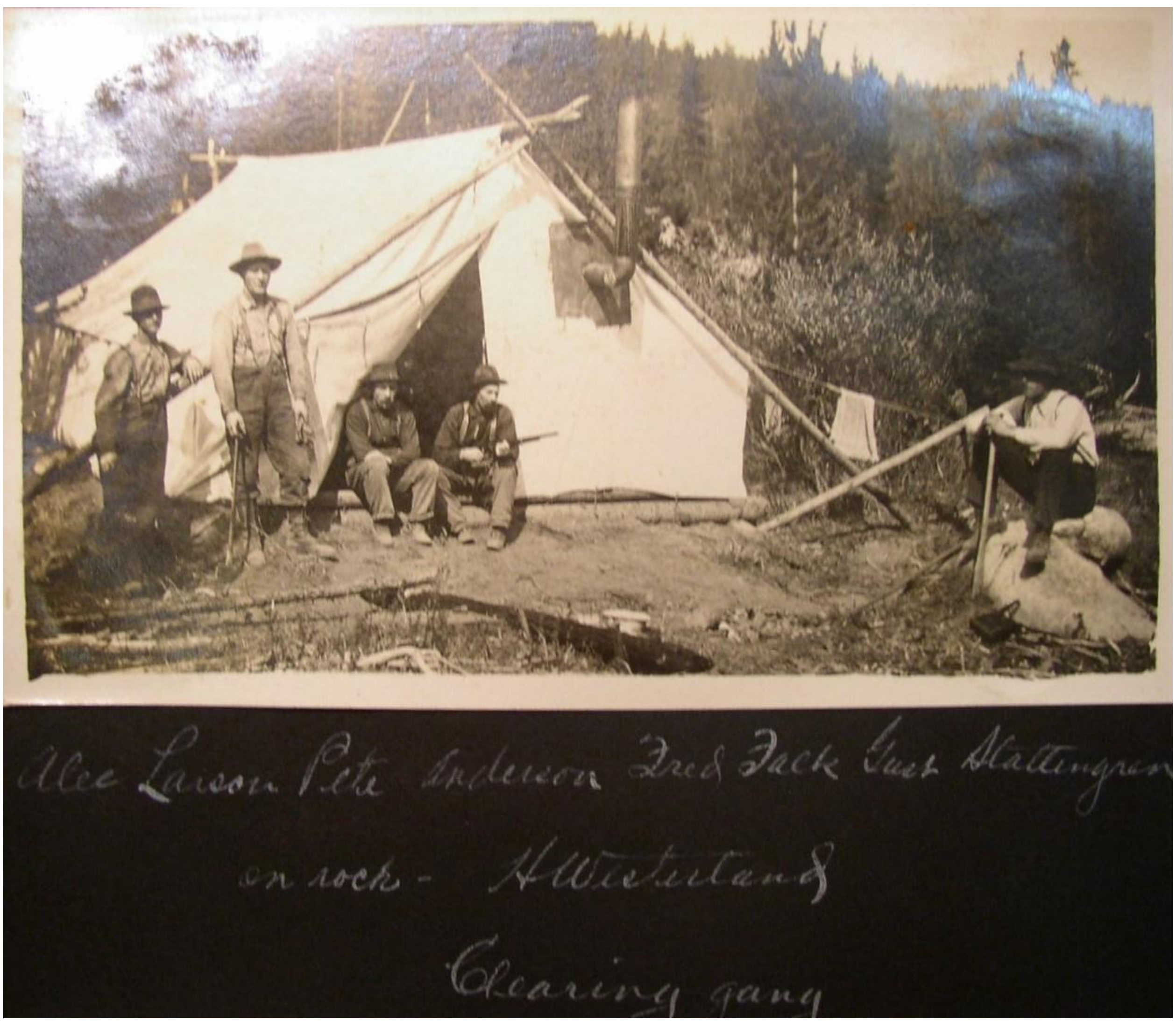


Figure 28. Historic Photograph of a "Clearing Gang". From the construction period of the KVR. Text reads, "Alec Larson, Pete Anderson, Fred Falk, Gust Stattingren on rock - H. Westerland". These men were likely Swedish immigrants hired by the KVR to work on the grade. In the public domain. Penticton Museum and Archives 2017.

Figure 29. Historic Photograph of a Survey Crew. From the construction period of the KVR. In the public domain. Penticton Museum and Archives 2017.

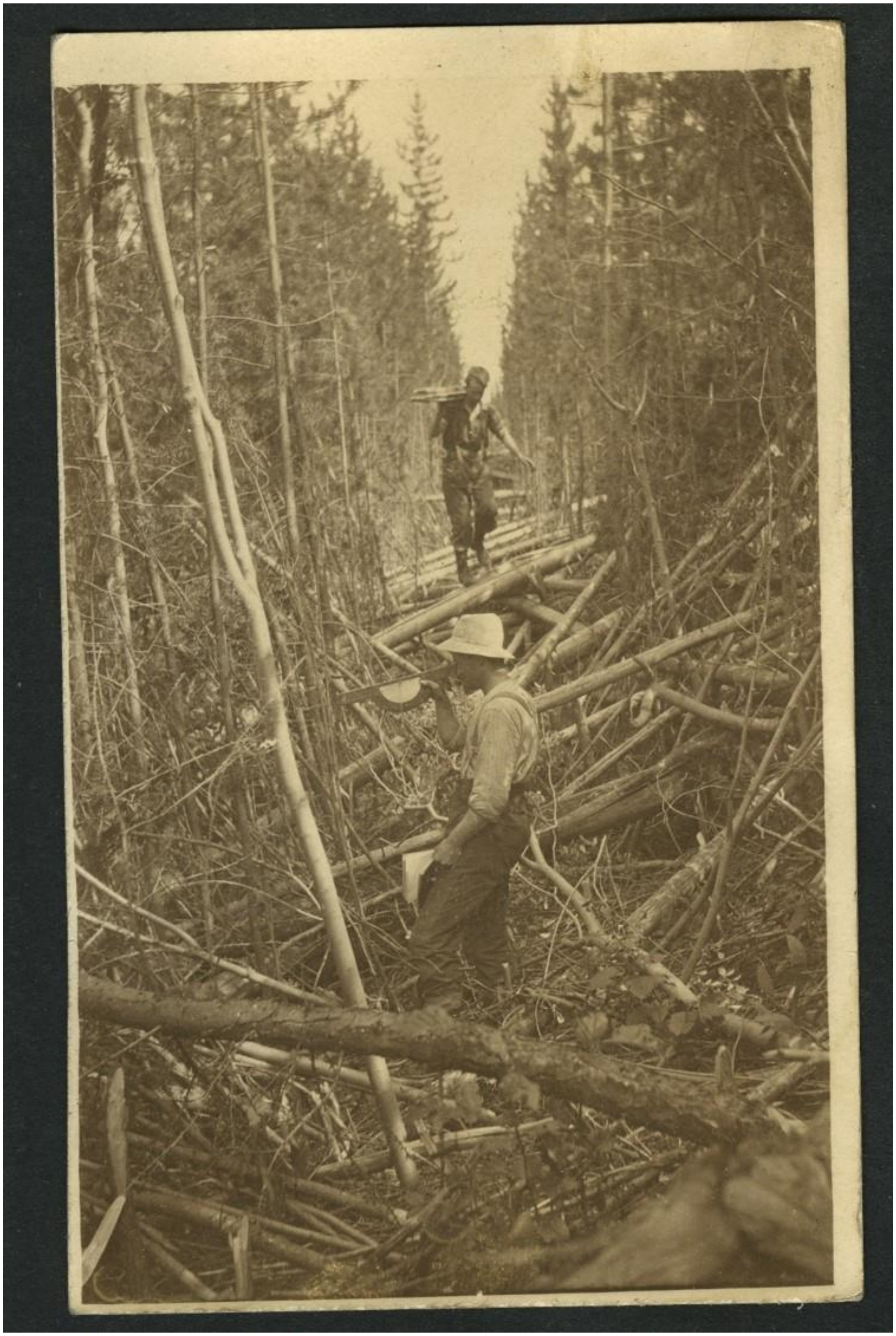


Figure 30. Historic Photograph of a Survey and Clearing Crew. From the construction period of the KVR. In the public domain. Penticton Museum and Archives 2017.

Figure 31. Historic Photograph of a Survey Crew #2. From the construction period of the KVR. In the public domain. Penticton Museum and Archives 2017.

+++++++

Figure 32. Historic Photograph of a Construction Crew of the KVR. In the public domain. Penticton Museum and Archives 2017.[40]

[40] Note the man on the far left of this photograph with the notepad. He appears to be dressed in finer clothing than the other men and he obviously knows how to read and write. It is possible that this man is one of the professionals of the KVR, possibly an assistant engineer. Men like him would have been the reason why the two glass ink bottles were found at Huissi's Camp.

Figure 33. Historic Photograph of one of the Surveyors of the KVR. In the public domain. Penticton Museum and Archives 2017.

++

Figure 34. Historic Photograph of a Construction Crew of the KVR #2. In the public domain. Penticton Museum and Archives 2017.

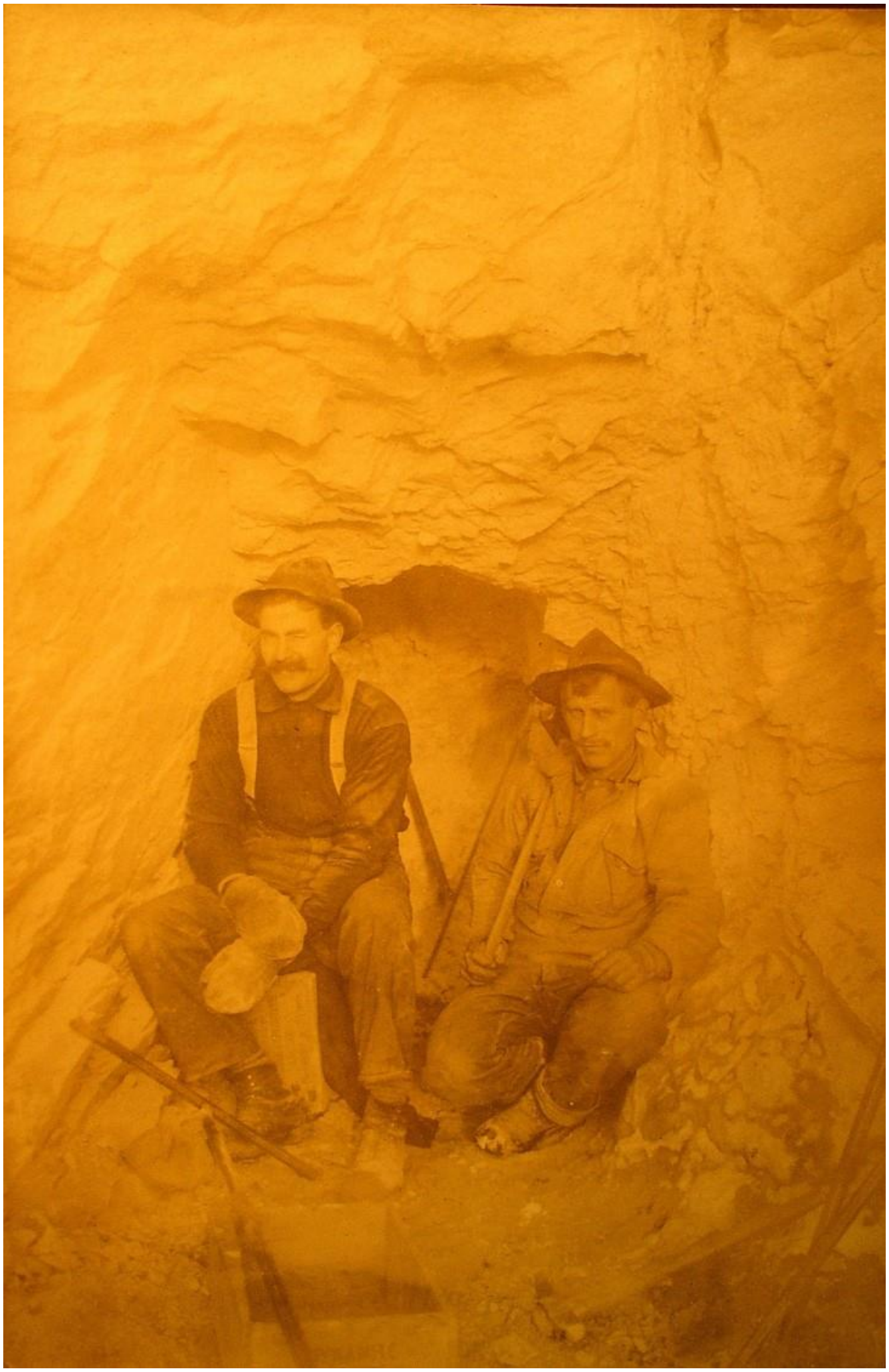


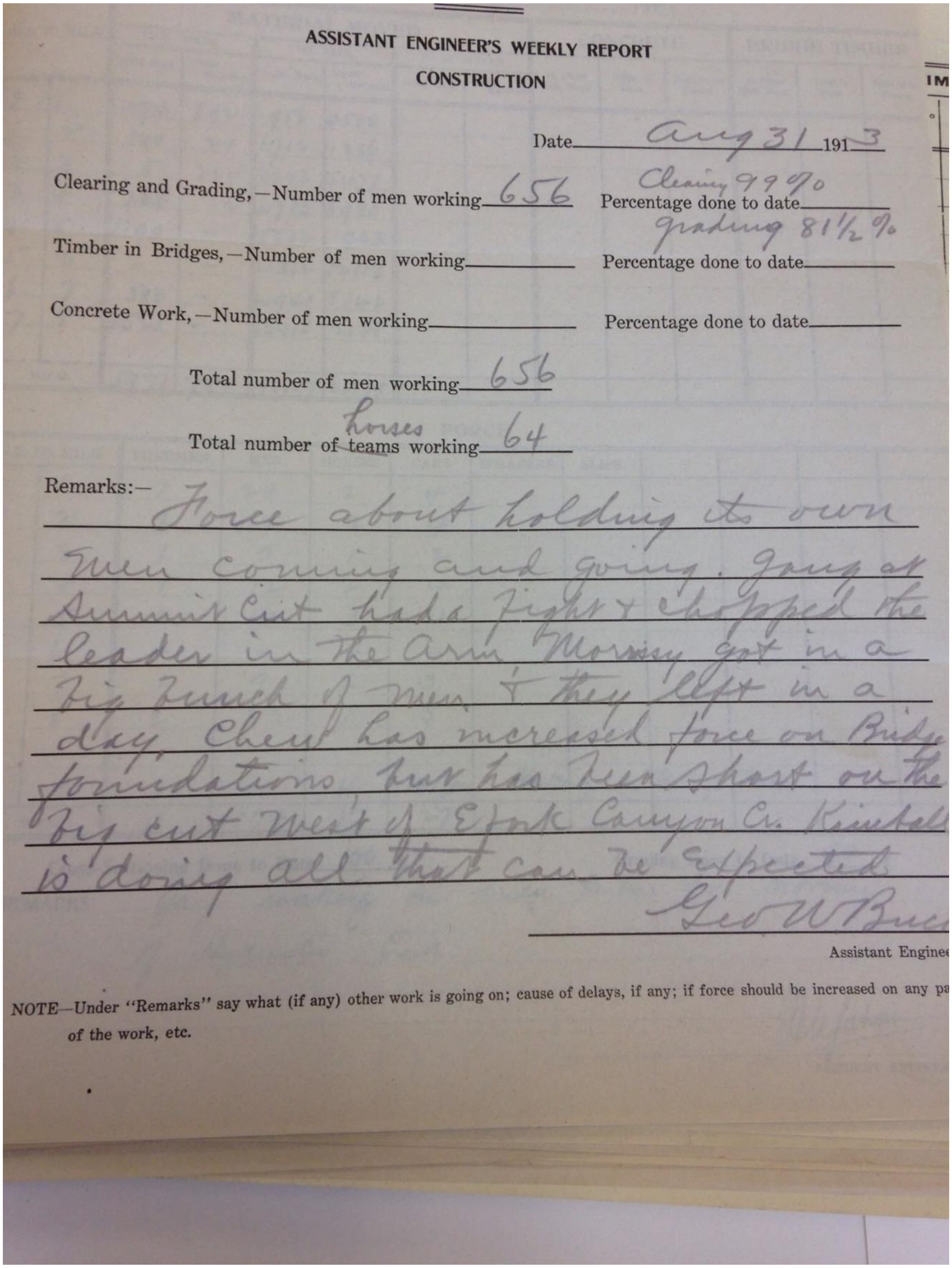
Figure 35. Historic Photograph of one of the Tunnel Drilling Crews of the KVR. In the public domain. Penticton Museum and Archives 2017.

As the photographs clearly demonstrate, there was not much racial diversity among the navvies of the KVR, but there was quite a bit of ethnic diversity. These pictures substantiate the information I gathered in the archives and the literary sources I examined. These men were clearly all white males and, when provided, their names were of European origin.

After illustrating through photographic evidence what the workers looked like, it is important that we discuss how these men were treated once they arrived in Canada and began work on the railway.

6.2 Maltreatment of the Navvies

Both the historical documentation and the archival data support the idea that the men who worked to build the Myra Canyon section of the line were not treated very well. First, as discussed in Chapter 2, the buildings and utilities that they had to live with were, by today's standards, deplorable. Additionally, the labour companies that hired men in eastern Europe and then sent them overseas to Canada often misled and mistreated the unwitting immigrants (Williams 2008). The idea that the navvies were mistreated by their employers and employment agencies is further supported by the available archival information. The first thing that I noticed by reading Buck's reports was that work for the navvies of the KVR was not easy. In their correspondence with the owners and head contractors of the KVR, the assistant engineers, like George Buck and others, describe the navvies merely as statistics. The men were often simply known as "the force" and this force could increase or decrease, according to the engineers, with regards to the amount of men working (Buck June 7, 1913; Buck June 14, 1913). This terminology was even used on the fillable weekly report forms that assistant engineer Buck submitted each week, see Figures 36 through 38. It is interesting to note that if, and when, men abandoned their work and left, specific mention of this is made in the correspondence including how many men left and how this might impact the progress of the line; the engineers were obviously quite concerned with deserters (Buck July 21, 1913). For example, in Figure 36 below, it reads "Morrissey got in a bunch of men and they left in a day…" (Buck Aug. 31, 1913). However, as described below, when a man died, little care is taken with regards to recording the details of the accident or providing further information. The engineers referred to their workers in statistics because there was such a high turnover of men all along the line. Seeing hundreds of men come and go every week probably meant that men in positions of authority, like Buck, did not get attached to any of the navvies. Only the most basic care was given to the navvies, enough to keep them working and to keep the railway construction schedule on time. Buck and his colleagues discuss the men simply in numbers, and where those numbers were needed along the line (Buck 1913; Buck 1914). Never once was the condition of the workers a factor in their communications. In one weekly report, shown in Figure 36, George Buck mentions in passing that the "…gang at Summit Creek had a fight and chopped the leader in the arm..." but neglects to mention how badly the leader was hurt, or what happened afterwards (Buck August 31, 1913). After reading through the rest of the weekly reports, I found no other mention of this incident.


ASSISTANT ENGINEER'S WEEKLY REPORT

CONSTRUCTION

Date Aug 31 1913

Clearing and Grading,—Number of men working 656 Percentage done to date Clearing 99% grading 81½%

Timber in Bridges,—Number of men working ______ Percentage done to date ______

Concrete Work,—Number of men working ______ Percentage done to date ______

Total number of men working 656

Total number of ~~teams~~ horses working 64

Remarks:— Force about holding its own Men coming and going. Gang at Summit Cut had a fight & chopped the leader in the arm Morrisy got in a big bunch of men & they left in a day. Chew has increased force on Bridge foundations but has been short on the big cut West of E fork Canyon Cr. Kimball is doing all that can be expected

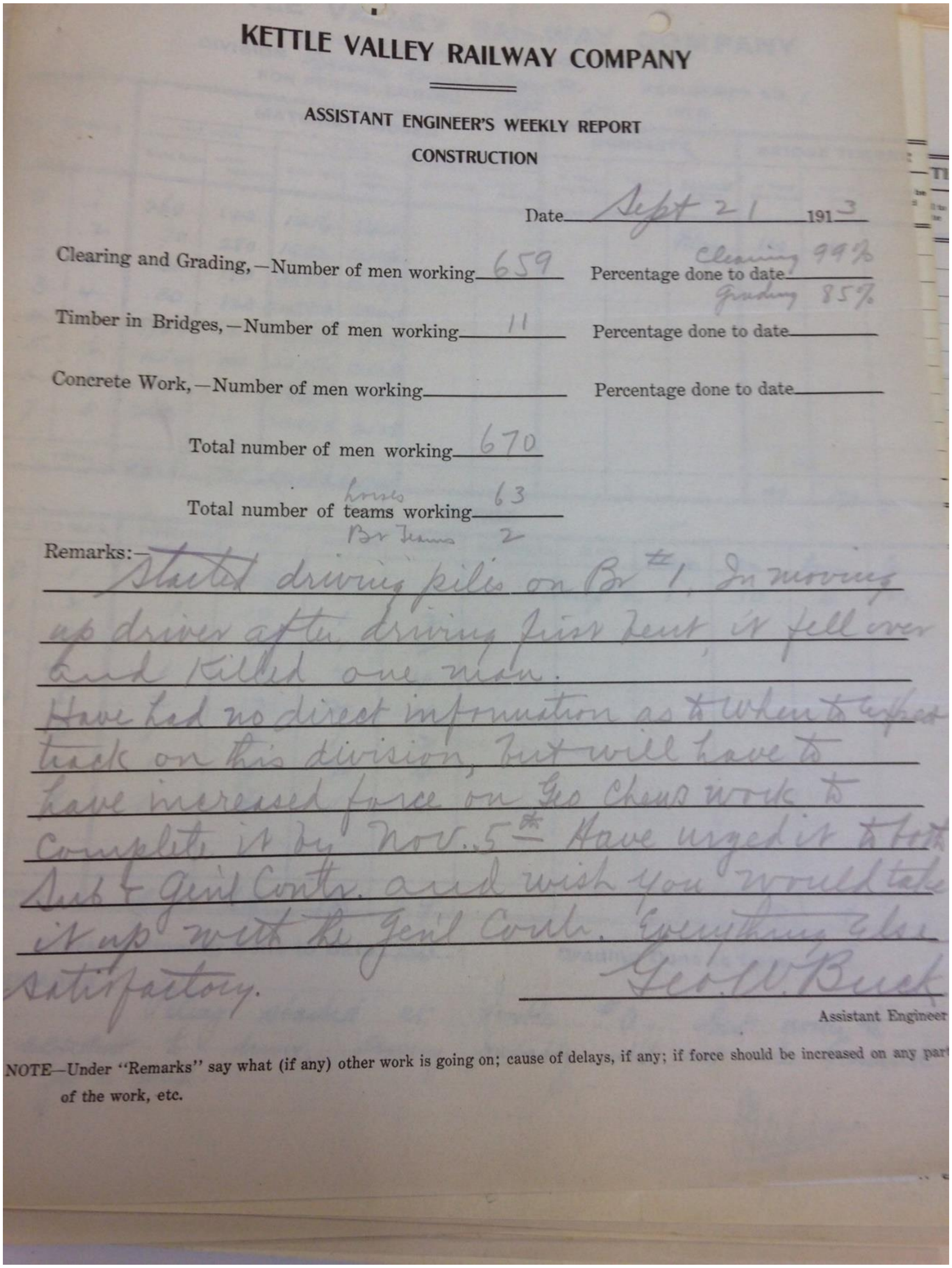
Geo W Buck

Assistant Engineer

NOTE—Under "Remarks" say what (if any) other work is going on; cause of delays, if any; if force should be increased on any part of the work, etc.

Figure 36. Assistant Engineer's Weekly Report, August 31, 1913. From Geo W. Buck to Andrew McCulloch. Reproduced with permission from Penticton Museum and Archives. Author's photograph, July 2014.

Sometimes a navvy would die due to various circumstances, but little sympathy or sorrow was included in the letters. This can clearly be seen in Figure 37. In this case, the report reads, “Started driving piles on Br #1. In moving up driver after driving first bent, it fell over and killed one man. Have had no direct information as to when to expect track on this division but will have to have increased force on Geo Chew’s work to complete it by Nov. 5th” (Buck September 21, 1913).



KETTLE VALLEY RAILWAY COMPANY

ASSISTANT ENGINEER'S WEEKLY REPORT

CONSTRUCTION

Date Sept 21 1913

Clearing and Grading,—Number of men working 659 Percentage done to date Clearing 99% Grading 85%

Timber in Bridges,—Number of men working 11 Percentage done to date

Concrete Work,—Number of men working Percentage done to date

Total number of men working 670

Total number of teams working horses 63 Br Teams 2

Remarks:—Started driving piles on Br #1. In moving up driver after driving first bent, it fell over and killed one man.
Have had no direct information as to when to expect track on this division, but will have to have increased force on Geo Chews work to complete it by Nov. 5th Have urged it to both Sub & Gen'l Contr. and wish you would take it up with the Gen'l Contr. Everything else satisfactory.

Geo W. Buck
Assistant Engineer

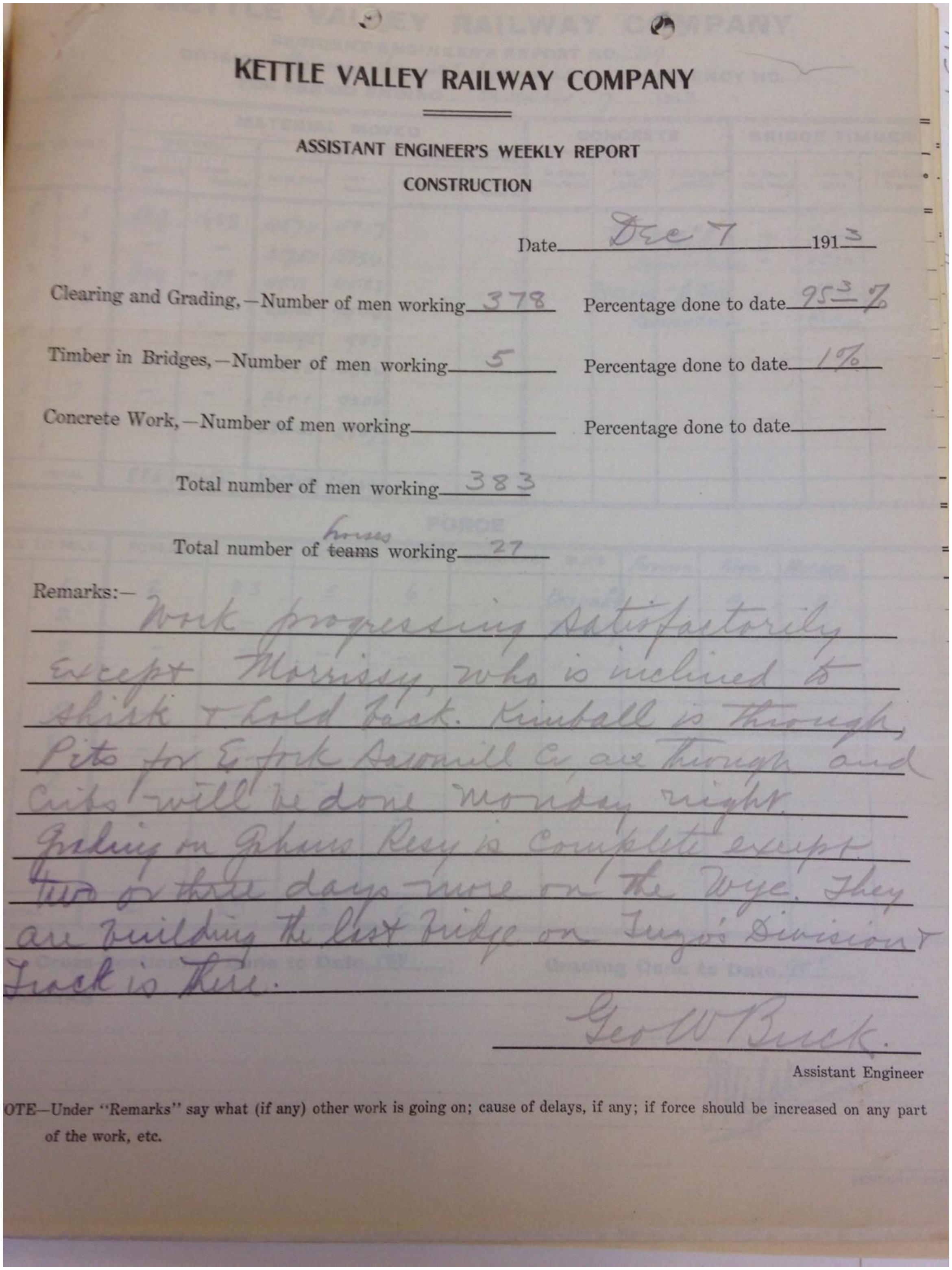
NOTE—Under "Remarks" say what (if any) other work is going on; cause of delays, if any; if force should be increased on any part of the work, etc.

Figure 37. Assistant Engineer's Weekly Report, September 21, 1913. From Geo W. Buck to Andrew McCulloch. Reproduced with permission from Penticton Museum and Archives. Author's photograph, July 2014.

As you can see, the engineers simply mention that a worker died or had been injured, and that he would have to be replaced. The main point was that work would be behind schedule because of an accident – it was often viewed as an inconvenience, not a tragedy (Buck Sept. 21, 1913; Buck Mar. 21, 1914). To the engineers the navvies were replaceable. As soon as they were hired, they were just another faceless number to add to the work force. They were moved around from site to site as needed, and only when they failed to show up for work did anyone pay them any mind. It is also interesting that, on the weekly reports filled out by George Buck, he crosses out "teams" in favor of "horses" when listing what forces were currently working on the line (Buck 1913; Buck 1914). This suggests that both men and horses were considered as statistics, with men just slightly more important. The engineers and contractors treated the navvies with such indifference because the navvies occupied a different social class - labourer rather than management.

6.3 Class and Status on the KVR

Class differentiation was a very real thing in the early 1900s, as it is today, and it appears in the archival data, in the material remains of Huissi's Camp, and in the historical documents related to the KVR. With regards to the archival data, class differentiation is never directly discussed in the correspondence between the assistant engineers and the head contractors, but the documents imply as much. The assistant engineers describe the navvies as unreliable and expendable, and the same went for the sub-contractors – it was not just the navvies that were treated with contempt (Buck July 21, 1913; Buck Mar. 21, 1914). One primary example comes up in Figure 37, the weekly report from assistant engineer George Buck to Andrew McCulloch (Buck Dec. 7, 1913). In it, George Buck mentions that one of the contractors, Morrissey, "is inclined to shirk and hold back" (Buck Dec. 7, 1913).



KETTLE VALLEY RAILWAY COMPANY

ASSISTANT ENGINEER'S WEEKLY REPORT

CONSTRUCTION

Date Dec 7 1913

Clearing and Grading,—Number of men working 378 Percentage done to date 95¾ %

Timber in Bridges,—Number of men working 5 Percentage done to date 1%

Concrete Work,—Number of men working Percentage done to date

Total number of men working 383

Total number of ~~teams~~ horses working 27

Remarks:— Work progressing satisfactorily except Morrissey, who is inclined to shirk & hold back. Kimball is through, Pits for E. Fork Sawmill Co. are through and Cribs will be done Monday night. Grading on Gohams Resy is complete except two or three days more on the Wye. They are building the last bridge on Tuzo's Division & track is there.

Geo W Buck.

Assistant Engineer

NOTE—Under "Remarks" say what (if any) other work is going on; cause of delays, if any; if force should be increased on any part of the work, etc.

Figure 38. Assistant Engineer's Weekly Report, December 7, 1913. From Geo W. Buck to Andrew McCulloch. Reproduced with permission from Penticton Museum and Archives. Author's photograph, July 2014.

In a different report, Buck mentions that Morrissey refused to finish some of his work due to the weather (Buck Mar. 7, 1914). In subsequent reports, Buck notes that the other contractors are forced to pick up the slack due to Morrissey being behind on his work (Buck Apr. 14, 1914; Buck Apr. 21, 1914; Buck May 14, 1914). Clearly the assistant engineers were concerned only with getting the railway done on time and on budget. There is no mention of camp conditions, or the condition of the workers whatsoever, and whenever there was an injury it was merely noted that more men would be required to complete the work.

Unfortunately, the weekly reports make no direct mention of Huissi or Huissi's Camp. This is likely because Huissi was a sub-contractor for a small section of the railway and was not very well known himself. If one of the more well-known contractors, like Chew or Morrissey sub-contracted any of their work to Huissi, the letters would probably not mention Huissi but instead refer to Chew or Morrissey's work. This is because, ultimately, the head contractor was still responsible for the larger sections of track, even if they outsourced their work to others at times. This is unfortunate because we still know very little about who Huissi was, or what specific part of the KVR he and his crew built. Due to the location of Huissi's Camp, it is likely that he was working on or around Trestle #4, which is the nearest trestle to his camp.

As for the material remains uncovered at Huissi's Camp, class distinction is displayed more through a lack of artifactual evidence, as mentioned in Chapter 5. The fact that there was very little significant and identifiable material culture left behind at the site is indicative of both the low status and relative poverty of the navvies as well as the extremely harsh lives that they led. The work for the navvies was difficult, but it was made even more difficult because they were treated with indifference by their employers and managers. This marginalization of the navvies is evidenced in the archival record and leads me to conclude that life on the KVR was not an enjoyable experience. It was, however, necessary for those immigrants that came from Europe to Canada in the 1800s and 1900s to find work and a place to settle down, and the KVR provided them with a job.

6.4 The KVR Fonds

Through my research at the Penticton Archives, I was able to locate some very interesting archival material that I will be referencing to and discussing below. With the help of the archive staff, Dennis Ooman and Chandra Wong, as well as their numerous volunteers, I found and studied several pieces of correspondence between the assistant engineer, George Buck, and the Chief Engineer, Andrew McCulloch. These letters of correspondence come in the form of Weekly Reports that Buck would fill out and send to McCulloch each week, documenting things like the number of labourers currently working on certain sections of the KVR line. The reports also discuss workplace confrontations, undesirable weather and any delays in construction. More specifically, there were a total of 53 weekly reports, from June 7, 1913 to June 30, 1914 in the KVR fonds that pertained to the Myra Canyon section of the railway. Fifty-two of these reports were penned by George Buck, an assistant engineer on the KVR, who oversaw the various contractors and sub-contractors in the Myra Canyon and beyond. Buck would write up a new report each week and then send it off to the Chief Engineer, Andrew McCulloch, who would usually be somewhere on the line, or in the KVR headquarters in Penticton. One of the weekly reports was written by G.G. McCartney, another of the KVR's assistant engineers, who was likely filling in for George Buck for the week of June 30, 1913. It was crucial to my thesis for me to examine these documents because they gave me some valuable insights into the relationships and interactions between the navvies and their bosses.

Chapter 7: Conclusion

7.1 Early Canadian Immigration

Canada in the late 1800s and early 1900s was a very different nation than it is today and immigration was a very important topic then, as it is now, but in an entirely unique way. At the time the KVR was being constructed, Canada as an independent nation was in its infancy, having only confederated in 1867 (Barman 2007). British Columbia would become an official province of Canada even later, in 1871 (Barman 2007). European settlement was so new on the west coast of Canada that when Canadians at that time spoke of the significance of immigration, it was because immigrants were necessary to the settlement and development of the province, and also the nation at large. Immigrant settlers were the lifeblood of the growing nation, but public sentiment in the young province of BC was mixed when it came to the birthplaces of those immigrants.

British Columbia was initially heavily influenced and populated by immigrants from Great Britain, and the mindset was that British Columbians should try to keep the province British. Without delving too far into the history of BC, it is safe to say that the province during the time the KVR was being constructed was very Eurocentric. Migrants from anywhere besides Europe were persecuted and scorned, but the prejudice went even further. There were divisions even amongst the European immigrants. Basically, if you were an English speaking, white skinned European you were accepted, but the darker your skin, and the less English you spoke, the more you were disliked and considered foreign. It is worth noting that there is a lack of documentation of any indigenous involvement in the construction of the KVR.[41]

This is the climate that new immigrants, like the navvies of the KVR, entered when they moved across the world to find work and start a new life in early Canada. Life was not easy to begin with, but it was made that much more difficult when you were considered a foreigner. Foreigners occupied a lower class and held a lower status than their "white" counterparts (Bradwin 1972). The local employment agencies took advantage of them, and the bosses of the railway segregated them and treated them merely as statistics.

However, the navvies migrated to BC despite these hardships. Mostly because, for the majority of them, life was still even more difficult back in Europe. Canada was a new frontier full of possibilities for these young men, and they were eager to take their chances here.

7.2.1 Site Comparisons

Through my initial investigations into Huissi's Camp, Chew's Camp #11 and Morrissey's Camp #2, I discovered that Rick Garvin noted during his examination of Chew's Camp #11 that one of the structures of that work camp was located physically separate from the other buildings at the camp. See Figure 39 for a layout of Chew's Camp #11.

[41] I believe that this absence of mention merits research of its own, but this topic would be outside the scope of my thesis.

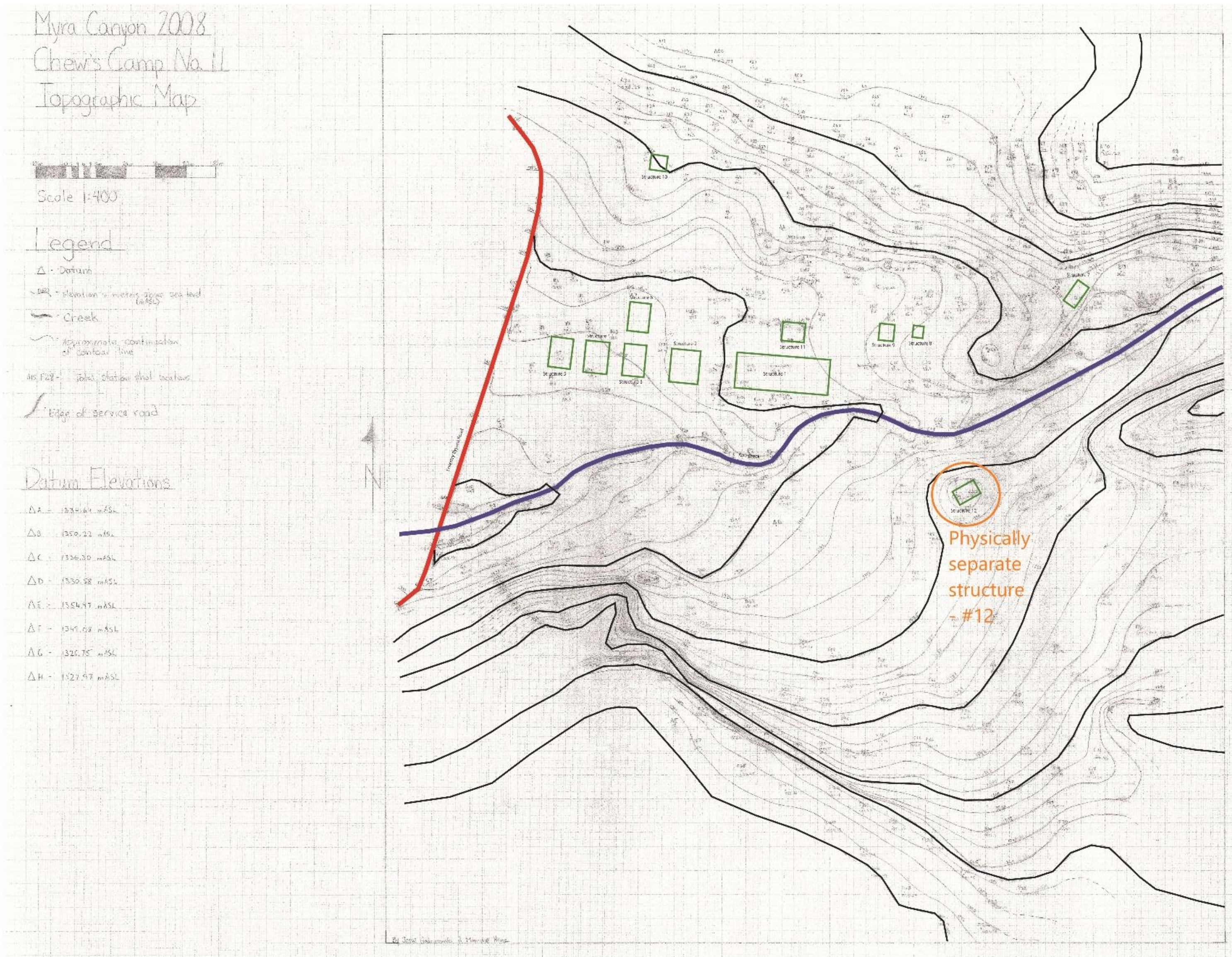


Figure 39. Topographic Map of Chew’s Camp #11. With forestry service road and structures labelled. Property of the University of British Columbia Okanagan, reproduced with permission, 2019. Circle and text added by author.

Garvin believed that that separate structure was constructed as a form of housing for the manager, assistant engineer, or contractor of that camp, based on its physical separation combined with a brief site survey that he had done of the area. His idea was that the boss of

Chew's Camp #11, being of a higher class and status than the navvies there, would have wanted to be separated from them. During his exploration, Garvin located several pieces of porcelain, some of which was identifiable based on a maker's mark on the bottom. This porcelain was identified as fine Austrian china, made in the late 1800s or early 1900s which supports the theory that the structure was used by a manager or boss of some kind.

It is because of this theory based on specific porcelain at Chew's Camp #11 that I began wondering if similar patterns of separation could be found at Huissi's Camp. First, I needed to find a structure that was located apart from the others at the camp. At Huissi's Camp, there are two such structures, Structure #9 in Tier 1.5, and Structure #12 in Tier 3. After surveying and mapping these two structures, I was hopeful that I would be able to recover artifacts within one of them which might point to the fact that it was used as housing for the manager of the camp. However, as discussed in Chapter 5, the artifacts found in both Structure #9 and Structure #12 did not signify that a higher status individual might have been residing there. Therefore, while it should be noted that the artifacts found in Huissi's Camp, Chew's Camp #11 and Morrissey's Camp #2 suggest that all three camps were using the same items and tools, only Chew's Camp #11 had a physically separate structure that may have been used to house the manager of that work camp. The fact that Huissi was a sub-contractor of the KVR makes perfect sense in this scenario because Huissi's Camp lacked physical evidence of a separate, higher-class structure. Huissi was a sub-contractor and not a head contractor or engineer, therefore his social status would be low enough to not warrant his own distinct living quarters. He would most likely reside with the rest of the navvies.

7.2.2 Artifactual Comparisons

When looking at the artifacts found at Huissi's Camp in comparison with the other two work camps that Garvin and his students studied in 2007 and 2008, some interesting similarities are revealed. The first is that the cutlery found at Huissi's Camp exactly matches the cutlery found at both Chew's Camp #11 and Morrissey's Camp #2. In addition to cutlery, the nails, metal containers and glass shards found at Huissi's Camp also match those found at the other two work camps. The nails and the metal containers recovered from Chew's Camp #11 and Morrissey's Camp #2 fall into the same size categories as those recovered from Huissi's Camp, and they are also a visual match. With regards to glass, it is more difficult to make comparisons because the glass artifacts found at Huissi's Camp were almost never intact but were often in small pieces. At Chew's Camp #11 and Morrissey's Camp #2, the glass artifacts were frequently found whole and intact. However, based on the glass fragments from Huissi's Camp that were identifiable, their original form was the same as many of those found at the other two work camps. This includes, but is not limited to, Eno's Fruit Salts bottles, medicine bottles, and various liquor bottles.

What this means for a comparative examination of the artifacts found at the three different work camps is that the data suggests that all three camps were being supplied or obtaining their supplies from the same place. Whether the supplier of the camps was a store in Kelowna or not is unclear at this time, but wherever the artifacts originally came from, there seems to have been a standard set of items that was given out to the workers on the KVR. This fact in turn means that each work camp was being treated equally with regards to the items they were given to complete their work. Continuing on this thread, this means that, in the eyes of the managers of the KVR, the navvies all occupied the same class and status when it came to the availability of goods. Life for the navvies was indeed difficult, but those men who worked at Huissi's Camp were not treated differently than those who worked at Chew's Camp #11 or Morrissey's Camp #2, and this includes sub-contractors like Huissi himself.

7.3 Research Questions Answered

At the outset of my thesis project at Huissi's Camp, I had a number of research questions that I hoped to have answered over the course of my studies: Who were the navvies that built the Myra Canyon section of the KVR? What did they do? What was life like for them? What were the relationships between the navvies and their bosses? Was class and status an important part of being a navvy, and what class structures were in place on the KVR? Was there segregation based on class or status going on at Huissi's Camp or elsewhere on the KVR? And, can an historical archaeology project within a work camp in the Myra Canyon answer these questions? During the course of my research at Huissi's Camp, I learned a great deal about the navvies and was able to answer the majority of these questions.

The navvies of the Myra Canyon section of the KVR were a unique group of railway workers. Not just because they completed one of the most daunting pieces of railway work ever undertaken in Canada, but because of their cultural makeup. Unlike the labourers who helped to build the CPR, the navvies of the KVR were not of Asian descent, but instead were primarily comprised of Central and Eastern European immigrants, with other European ethnicities also present.

Day to day life at the work camps consisted of heavy manual labour, including the clearing and removal of plant growth, the digging, drilling, blasting and removal of rock and soil, and the lifting, placing and constructing of the actual railway line. The work was very challenging and strenuous, due to the fact that the vast majority of it was completed by hand, without the use of power tools.

Outside of their daily labour, life for the navvies was discouraging. If they were unfortunate enough to have been hired through an employment agency, they were often taken advantage of. If they were considered foreign, they were given more difficult tasks. Their bosses moved them around from place to place like pawns in a chess match, never really caring how they were doing or how they were being treated. Wages were fair, but the navvies were not becoming rich. The managers paid them enough to lure a steady stream of migrants out of Europe to Canada to work, and eventually, become citizens.

The relationships between the navvies and their bosses were difficult to ascertain because there was very little interaction between the two. However, it is clear that to the managers of the KVR, the navvies were a conglomerate work force that grew and shrunk, that could be sent to wherever it was needed. The men were statistics, and they were treated like it.

Class and status, while not discussed openly in any of the KVR correspondence, was an ever-present concept for the navvies. The central and eastern European navvies occupied a unique class I have dubbed the "Foreign Working Class". They occupied a low status and class, akin to a working class in today's world, but with the added influence of the racism and prejudices of the late 1800s and early 1900s mixed in. These Working-Class Foreigners were still considered part of British Columbian society, but they were viewed as a lower class than the average "white" settler.

With regards to segregation of the navvies based on their lower status, there was evidence of this being in place in Chew's Camp #11 in Myra Canyon. As noted above, one of the structures in the camp was located across a creek and up on top of a small hill, away from the workers' lodgings. Within this structure, there was some material evidence found that provided support to the theory that it was the housing of a manager, contractor or engineer – someone of higher status than the navvies living in the other structures at the camp. However, no such structures were found at Huissi's Camp, or Morrisey's Camp #2, so it is not known whether similar methods of segregation were happening there.

I undertook an historical archaeological approach to my research at Huissi's Camp because I felt that it gave me the most well-rounded and applicable sets of data that I could use to answer my research questions. By combining the material culture found at Huissi's Camp with the available historical literature on the subject, and also bringing in the archival records written by the assistant engineer of the Myra Canyon section of the KVR, I was able to fully explore the lives of the navvies who worked at Huissi's Camp.

7.4 Limitations of the Study

There were several limiting factors during the course of my research at Huissi's Camp that influenced how I conducted my studies. Firstly, I was only able to take surface samples of artifacts from within certain specific structures. This was due to the limited personnel available for this project, coupled with the difficult terrain in some areas of the camp, like the Refuse Area. The lack of personnel meant that I was unable to take samples from every structure at the camp. Instead, I employed a stratified judgemental sampling technique, which means that I used my personal judgment as to which structures I would sample based on my observations of the camp. Once I chose structures, I constructed an archaeological geophysics grid over the structure and took samples from within that grid. The grid allowed me to provide accurate provenience data of each item taken out of the site.

Secondly, in some areas of the site, I was limited to what I could sample because it was far too hazardous and unstable to allow for the construction of an archaeological grid, such was the case in the Refuse Area. Instead of creating a grid, I recorded the location of the artifacts in a different way. I took UTM provenience of each item found by using a handheld GPS unit, noting the easting, northing and elevation in meters for each item.

Additionally, I used the handheld GPS unit for my study because I was also limited with regards to available resources, which included limitations on available equipment. The total station that I originally planned on using for recording the provenience of artifacts malfunctioned and turned out to be damaged beyond repair. The GPS unit provided me with the data that I needed, but that data could have been more accurate if I had been able to use the total station as originally planned.

Dr. Garvin's untimely death meant that there were no published records of the excavations at Chew's and Morrissey's camps to draw on. Much of the information I gathered about those two sites comes from my personal communication with Dr. Garvin prior to his passing. This is another limitation that made it difficult to accurately describe the conditions at Chew's Camp #11 and Morrissey's Camp #2.

The information in the archives was also limited in its scope. For instance, I could find no mention of Huissi in any of the documentation and his name remains only as part of an anecdote. We do not know anything else about him other than the fact that he was a sub-contractor for the

Myra Canyon section of the KVR that was working out of a camp that was geographically close to Trestle #4.

Lastly, with regards to the historical literature I gathered for this thesis, the resource limitations of this study meant that I was unable to conduct personal interviews with the surviving family members of the navvies. These interviews could have been an informative addition to my research and may have been able to shed more light on the contractors and their relationships to the workers.

While these conditions were not ideal, I was still able to collect enough data to complete my research. This was aided by the historical archaeology approach that I chose to employ for my thesis project, which meant that I was able to pull in other pieces of information from both the historical literary record and the archival record. This approach allowed me to overcome the limitations of my study and produce a viable, valid thesis.

7.5 Future of the Site and Additional Research

There is a great deal of research still waiting to be done at Huissi's Camp and the Myra Canyon section of the KVR in general. The limitations of the scope and breadth of my study mean that there are still many surface artifacts waiting to be retrieved from the site. The sampling technique I chose left many surface artifacts within several structures at the camp, which could inform future researchers about any number of things.

Furthermore, subsurface excavations would certainly yield some interesting data. As mentioned in my thesis, I was unable to conduct a large-scale excavation of Huissi's Camp, which means that any artifacts that were buried in the soil at the site remain there now. Any future studies of the camp would likely unearth large quantities of artifacts to be studied and catalogued. Additionally, if a subsurface excavation was performed at Huissi's Camp, the structures at the site would be more fully exposed, and perhaps more information about their material makeup could be provided.

A more precise and detailed map could be produced using the information garnered from a theodolite or total station unit, rather than the GPS produced maps that I have created. These future maps could be further enhanced by the complete clearing and subsurface excavation of the camp. The removal of all debris would allow for even more accurate provenience and in turn more accurate maps of Huissi's Camp and the surrounding area.

With regards to the Mya Canyon in general, there are other work camps that have not yet been explored at all, according the Richard Garvin (Garvin 2014). George Chew, the namesake of Chew's Camp #11 in the canyon, had several other camps built along the line, including within the Myra Canyon. The same can be said for Morrissey. If these other camps were located, cleared, mapped and excavated, a huge amount of data could be gathered, influencing countless other research projects in the area.

All of this future research would have an impact on Kelowna's history by adding to and furthering what we already known about the KVR railway workers. Many of those navvies settled in the Kelowna area and had families, some of whom still live in the area today. It is possible that some of those descendants do not even know that their families worked on the KVR. Having a more detailed history to look upon allows the public to avoid past mistakes and learn from them, or to discover who they are and who their family was.

7.6 Final Thoughts

In April of 2017, it was announced that both Huissi's Camp and Morrissey's Camp #2 in the Myra Canyon would be opening to the public (Kelowna Daily Courier 2017). Signage was added along the trails leading to these camps, as well as within the camps themselves, allowing hikers to explore and learn about the work camps of the navvies. This is all made possible by the Myra Canyon Trestle Restoration Society and its members, who have worked to make the trails to the camps passable. Being able to visit these sites will allow the public to see for themselves exactly where the KVR navvies lived during the railway's construction in the early 1900s.

This public acknowledgement of life on the KVR is exactly what I set out to accomplish when I began this thesis project. I wanted to learn what life was like for the railway workers of early Canada, and to disseminate what I have learned to others. Huissi's Camp offered me a unique way of experiencing just that, and by approaching this project from an historical archaeological perspective, I feel that I created a more rich and comprehensive narrative than I would have been able to produce using an alternative approach.

Bibliography

Allen, Cecil J. *Modern Railways: Their Engineering, Equipment and Operation.* Westport: Greenwood Press, 1973.

Around the Horn: The KV Line, 1890 – 1989, DVD, MCTV9, Merritt Cablevision, 1989.

Avery, Donald, *"Dangerous Foreigners": European Immigrant Workers and Labour Radicalism in Canada, 1896-1931*. Toronto: McClelland & Stewart, 1979.

Banning, E.B., *Archaeological Survey*. Springer Science & Business Media, 2002.

Barman, Jean. *The West beyond the West: A History of British Columbia*. 3rd edition. Toronto: University of Toronto Press, 2007.

Beaudry, M. C. 1988. The Archeology of Work and Home Life in Lowell, Massachusetts: An Interdisciplinary Study of the Boott Cotton Mills Corporation. *The Journal of the Society for Industrial Archeology*, *14*(2), 1–22.

Beaulieu, S., (2015). *Remembering the Forgotten Archaeology at the Morrissey WWI Internment Camp*. Vancouver: SFU Publications.

Berton, Pierre. *The Great Railway Illustrated*. Toronto: McClelland and Stewart Limited, 1972.

______. *The National Dream: The Great Railway, 1871-1881*. Toronto: McClelland and Stewart Limited, 1971.

Bone, Peter Turner *When the Steel Went Through: Reminisces of a Railway Pioneer*. Toronto: Macmillan of Canada, 1947.

Bradwin, Edmund *The Bunkhouse Man: A Study of Work and Pay in the Camps of Canada, 1903-1914*. Toronto: University of Toronto Press, 1972.

Breen, David H. "The CPR and Western Petroleum, 1904-1924," in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Brown, C.B. and Cook, R., *Canada 1896-1921: A Nation Transformed*. Toronto: McClelland & Stewart Inc., 1991.

Burrows, Roger G. *Railway Mileposts: British Columbia, Volume I: The CPR Mainline Route from the Rockies to the Pacific Including the Okanagan Routes and CN's Canyon Route*. Vancouver: Railway Milepost Books, 1981.

Canadian Encyclopedia. 2019. "Okanagan Valley." Canadian Encyclopedia website, Accessed [April 4, 2019]. https://www.thecanadianencyclopedia.ca/en/article/okanagan-valley.

Cannings, Richard. *Roadside Nature Tours through the Okanagan; A Guide to British Columbia's Wine Country*. Vancouver, BC: Greystone Books, 2009.

Cannings, Richard, Harry Nehls, Mike Denny and Dave Trochlell. 2009. *Birds of Interior BC and the Rockies*. Surrey, BC: Heritage House Publishing.

Castillo, Victoria. (2012). Fort Selkirk: Early Contact Period Interaction Between the North Tutchone and the Hudson's Bay Company in Yukon. Archaeology Programme, 1–257.

Castle Museum Archaeology. 2019. "Photographing Artifacts." Archaeological Website. Accessed [March 10, 2019]. https://hsscarchaeology.wordpress.com/2015/06/09/photographing-artifacts/.

Chan, Anthony B. 1982. Chinese Bachelor Workers in Nineteenth-Century Canada. *Ethnic and Racial Studies* 5(4): 513-534.

Chan, Sucheng. *From China to Canada: A History of the Chinese Communities in Canada*. By Harry Con, Ronald J. Con, Graham Johnson, Edgar Wickberg, and William E. Willmott. Edited by Edgar Wickberg. Toronto: McClelland and Stewart, Ltd., 1982.

Cruise, David and Griffiths, Alison. *Lords of the Line: The Men who built the CPR*. Markham, ON: Penguin Books, 1988.

Deetz, James F. (1972) "Archaeology as a Social Science," in *Contemporary Archaeology: A Guide to Theory and Contributions*. Mark P. Leone, ed. Carbondale: Southern Illinois University Press.

Deetz, James F. "*In Small Things Forgotten: An Archaeology of Early American Life*," New York: Anchor Books, 1996.

Dempsey, Hugh A., Ed. *The CPR West: The Iron Road and the Making of a Nation*. Vancouver: Douglas and McIntyre, 1984.

Dempsey, Hugh A. "The Fearsome Fire Wagons," in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

den Otter, A.A. "Bondage of Steam: The CPR and Western Canadian Coal," in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Diaries of the KVR, the Story of Myra Canyon: Inspired by the Original Diaries of Andrew McCulloch, DVD, TechYou Digital Media, 2011.

Digital Kingston. 2019. “Presents from the Past; Store Catalogues.” Kingston Frontenac Public Library website. Accessed [September 30, 2019]. https://www.digitalkingston.ca/presents-from-the-past/store-catalogues.

Doeksen, Gerry. *Kettle Valley Railway*. 2nd ed. Montrose, 1995.

Eagle, John A. “Shaughnessy and Prairie Development, 1889-1914,” in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Eagle, John A. *The Canadian Pacific Railway and the Development of Western Canada, 1896-1914.* Montreal: McGill-Queen’s University Press, 1989.

Encyclopedia Britannica. 2019. “Encyclopedia Britannica.” Reference website. Accessed [March 10, 2019]. https://www.britannica.com/.

Farfan, Matthew. 2019. “The Black Powder Industry of Windsor.” Reference website. Accessed [March 10, 2019]. http://townshipsheritage.com/article/black-powder-industry-windsor.

Fernet-Branca. 2019. “An Amaro That Will Make History.” Spirits website. Accessed [March 10, 2019]. https://www.fernetbranca.com/en/fernet-branca-world/an-amaro-that-will-make-history.

Fladmark, Knut R. 1978. *A Guide to Basic Archaeological Field Procedures*. Vancouver: Department of Archaeology, Simon Fraser University.

Foran, Max “The CPR and the Urban West, 1881-1930,” in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

French, D. E. 1995. *Ideology, Politics and Power: The Socio-historical Implications of the Archaeology of the D’Arcy Island Leper Colony, 1891-1924*, Vancouver: SFU Publications.

Funari, Pedro Paulo A., Martin Hall, and S. Jones, *Historical Archaeology: Back From the Edge*. Vol. 31; 31. New York; London: Routledge, 1999.

Gaillet, Lynee Lewis, “Archival Survival: Navigating Historical Research,” in *Working in the Archives: Practical Research Methods for Rhetoric and Composition*. Carbondale: Southern Illinois University Press, 2010.

Garvin, Richard, Excavations at Morrisey’s Camp #2 and Chew’s Camp #11. Personal Communication, Kelowna, B.C., November 22, 2014.

Glass Bottle Marks. 2019. “AB (Connected) Mark on Antique Glass Beer Bottles.” Historical Website. Accessed [March 10, 2019]. https://www.glassbottlemarks.com/ab-mark-on-beer-bottles/.

Glass Bottle Marks. 2019. "R & CO mark: Reed & Company, Massillon, Ohio." Historical Website. Accessed [March 10, 2019]. https://www.glassbottlemarks.com/r-co-mark-reed-company-massillon-ohio/.

Gold Trails & Ghost Towns, *Series #2: The Kettle Valley Railroad*, DVD, CHBC (Television Station: Kelowna, B.C.), 1996.

Grant, H. Roger *The Railroad: The Life Story of a Technology*. Westport: Greenwood Press, 2005.

Harvey, R.G. *Carving the Western Path: By River, Rail, and Road through B.C.'s Southern Mountains*. Surrey: Heritage House Publishing Company Ltd., 1998.

Hart, E.J. "See This World before the Next," in *The CPR West: The Iron Road and the Making of a Nation,* Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Hester, Thomas R., Harry J. Shafer and Kenneth L. Feder. *Field Methods in Archaeology*. New York: Left Coast Press, Inc., 2009.

Hill, Beth. *Exploring the Kettle Valley Railway: By Car, Foot, Skis, Horseback or Mountain Bike.* Winlaw: Polestar Press Ltd., 1989.

Historica Canada. 2019. "Heritage Minutes." Canadian History website. Accessed [March 10, 2019]. https://www.historicacanada.ca/heritageminutes.

Innis, Harold A. *A History of the Canadian Pacific Railway.* London: P.S. King & Son, Ltd., 1923.

Jameson, Sheilagh S. "Partners and Opponents: The CPR and the Ranching Industry of the West," in *The CPR West: The Iron Road and the Making of a Nation,* Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Johnson, Matthew. 2010. *Archaeological Theory; An Introduction*. Chichester, UK: Wiley-Blackwell.

Jones, David C. "It's All Lies They Tell You: Immigrants, Hosts and the CPR," in *The CPR West: The Iron Road and the Making of a Nation,* Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Kelowna Daily Courier. 2017. "Cyclists, Walkers Using KVR Trail Can Now Access Work Camp Ruins." Media website. Accessed [March 10, 2019]. http://www.kelownadailycourier.ca/life/article_ace1e00e-18ef-11e7-b925-cb6c38dcada5.html.

Kleinman, Geoff. 2013. "The Fuss About Fernet-Branca." Spirits Website. Accessed [March 10, 2019]. https://www.drinkspirits.com/liqueur/fernet-branca/.

KnowBC. 2019. "Kettle Valley Railway." Heritage website. Accessed [March 10, 2019]. http://knowbc.com/limited/Books/Encyclopedia-of-BC/K/Kettle-Valley-Railway.

Langford, Dan and Sandra *Cycling the Kettle Valley Railway*. 3rd edition. Calgary: Rocky Mountain Books, 2002.

Larkin, K & McGuire, Randall H., *The Archaeology of Class War: The Colorado Coalfield Strike of 1913-1914*, Boulder, CO, University Press of Colorado, 2009.

Laut, Agnes C. *Am I My Brother's Keeper: A Study of British Columbia's Labor & Oriental Problems.* Vancouver: Subway Books Ltd., 2003.

Lavallee, Omer *Canadian Pacific Steam Locomotives.* Toronto: Railfare Enterprises Ltd., 1985.

Leier, Mark *Where the Fraser River Flows: The Industrial Workers of the World in British Columbia.* Vancouver: New Star Books, 1990.

Library and Archives Canada. 2010. "Before e-Commerce; A History of Canadian Mail Order Catalogues." Government of Canada website. Accessed [September 30, 2019]. https://www.collectionscanada.gc.ca/cmc/009002-101.02-e.php.

Little, Barbara J., *Historical Archaeology: Why the Past Matters*, Walnut Creek, Left Coast Press Inc., 2016.

Lockart, Bill, Pete Schulz, Bill Lindsey, Carol Serr, David Whitten. 2000. "The Dating Game: The American Bottle Co.: A Study in Contrasts and Contradictions." *Bottles and Extras* January-February 2007: 47–58.

Luconi, Stefano. 2003. "Forging an Ethnic Identity: The Case of Italian Americans." *Revue Française d'études Américaines* 2(96): 89–101.

Matheson, George *The Vaders' Caboose: Stories of a Railroad Family, the Vaders, who worked on the Greatest Ball-Buster of them all… the Kettle Valley Railway of British Columbia.* Lumby: Kettle Valley Publishers, 1994.

Mathews, W.M. 1987. Neogene Geology of the Okanagan Highland, British Columbia. *Canadian Journal of Earth Sciences*, 725–732.

Marsh, John S. "The Spiral and Connaught Tunnels," in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

McCulloch, Andrew and Buck, George, Weekly Reports, Penticton Museum and Archives Fonds, 2017.

McDougall, John Lorne *Canadian Pacific: A Brief History.* Montreal: McGill University Press, 1968.

McKee, Bill and Klassen, Georgeen. *Trail of Iron: The CPR and the Birth of the West, 1880-1930.* Vancouver: Douglas & McIntyre Ltd., 1983.

Mills, William Hemingway. *Longman's Civil Engineering Series: Railway Construction.* London: Longman's, Green and Co., 1900.

Mrozowski, Stephen A., *The Archaeology of Class in Urban America*, Cambridge: Cambridge University Press, 2006.

Myra Canyon Explorer: Trestles, Bridges and Tunnels of the Kettle Valley Ry., In and Near Myra Canyon, DVD, LPD Publishing, 2003.

Myra Canyon Trestle Restoration Society. 2019. "Myra Canyon." Canadian Heritage website, Accessed [March 10, 2019]. https://www.myratrestles.com/.

National Film Board. 2019. "Transportation." Canadian Film website. Accessed [March 10, 2019]. https://www.nfb.ca/subjects/transportation/railways/.

New York Times. 2019. "How Italians Became 'White'" Media Website. Accessed [November 3, 2019]. https://www.nytimes.com/interactive/2019/10/12/opinion/columbus-day-italian-american-racism.html.

Northwest Profiles: Steaming History (Steam Trains). DVD. KSPS-TV, 2011.

Parish, Roberta, Ray Coupe and Dennis Lloyd, eds. 1996. *Plants of Southern Interior British Columbia and the Inland Northwest*. Vancouver, BC: Lone Pine Publishing.

Paynter, R. 1999. Epilogue: Class Analysis and Historical Archaeology. *Historical Archaeology, 33(1)*(1), 184–195.

Orser, Charles E. *Historical Archaeology*. Upper Saddle River: Pearson Education, Inc., 2004.

Oxford Dictionary of National Biography. 2019. "Eno, James Crossley (1827/8–1915), Manufacturer of Patent Medicine." Reference website. Accessed [March 10, 2019]. http://oxfordindex.oup.com/view/10.1093/ref:odnb/38995.

Regehr, T.D. "Letters from the End of Track," in *The CPR West: The Iron Road and the Making of a Nation,* Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Renfrew, C., and P. Bahn. *Archaeology: Theories, Methods, and Practice.* Thames & Hudson, New York, 1991.

Riegger, Hal. *The Kettle Valley and its Railways: A Pictorial History of Rail Development in Southern British Columbia and the Building of the Kettle Valley Railway*. Vancouver: Evergreen Press, 1981.

Roy, Patricia E. "A Choice between Evils: The Chinese and the Construction of the Canadian Pacific Railway in British Columbia," in *The CPR West: The Iron Road and the Making of a Nation*, Ed. Hugh A. Dempsey. Vancouver: Douglas & McIntyre, 1984.

Sanford, Barrie. *McCulloch's Wonder: The Story of the Kettle Valley Railway*. Vancouver: Whitecap Books Ltd., 2002.

______. *Steel Rails and Iron Men: A Pictorial History of the Kettle Valley Railway*. Vancouver: Whitecap Books Ltd., 2003.

Saucier, H. Denise LoPresto. 2018. "From Dago to White: The Story of Sicilian Ethnic Evolution in New Orleans Amidst the Yellow Fever Epidemic of 1905." Master's Theses. 344.

Scott, Elizabeth M., *Those of Little Note: Gender, Race, and Class in Historical Archaeology*, Tucson: The University of Arizona Press, 1994.

Schiffer, Michael B., *Advances in Archaeological Method and Theory*, Volume 1. Tucson: AZ, 1978.

Smuin, Joe. *Kettle Valley Railway Mileboards*. Winnipeg: North Kildonan Publications, 2003.

Society for Historical Archaeology. 2018. "What Is Historical Archaeology?" Anthropological Website. Accessed [March 10, 2019]. https://sha.org/about-us/what-is-historical-archaeology/.

Stevens, G.R. *Canadian National Railways: Volume 2, Towards the Inevitable, 1896-1922*. Toronto: Clarke, Irwin & Company Ltd., 1962.

Sussex-Lisbon Area Historical Society, Inc. 2019. "The Wisconsin Glass Industry." Historical website. Accessed [March 10, 2019]. http://www.slahs.org/antiqibles/glass_bottles.htm.

Thompson, Norman and Edgar, J.H. *Canadian Railway Development from the Earliest Times*. Toronto: The Macmillan Company of Canada Ltd., 1933.

Toews, Carson, Maps Created by author, 2018.

Turner, Robert D. *Railroaders: Recollections from the Steam Era in British Columbia*. Victoria: Sound and Moving Image Division, Provincial Archives, 1981.

______. *Steam on the Kettle Valley: A Railway Heritage Remembered*. Victoria: Sono Nis Press, 1995.

______. *West of the Great Divide: An Illustrated History of the Canadian Pacific Railway in British Columbia, 1880-1986*. Victoria: Sono Nis Press, 1987.

University of British Columbia Okanagan. 2018. "Trestle Restoration Society funds UBC Okanagan Myra Canyon research." University Website. Accessed [March 10, 2019]. https://news.ok.ubc.ca/2006/05/03/trestle-restoration-society-funds-ubc-okanagan-myra-canyon-research/.

University of British Columbia Okanagan. 2009. "UBC Okanagan summer field school returns to Myra Canyon." University Website. Accessed [March 10, 2019]. https://news.ok.ubc.ca/2009/04/17/ubc-okanagan-summer-field-school-returns-to-myra-canyon/.

Wegars, Priscilla. "Hidden Heritage: Historical Archaeology of the Overseas Chinese." New York: Routledge, 1993.

Wegars, Priscilla. 1991. Who's Been Workin' on the Railroad?: An Examination of the Construction, Distribution, and Ethnic Origins of Domed Rock Ovens on Railroad-Related Sites. *Historical Archaeology* 25(1): 37-65.

Williams, Clement C. *The Design of Railway Location: A Study of the Physical and Economic Conditions that Control the Location of Railways in Order that their Operation may be at Maximum Safety and Efficiency.* New York: John Wiley & Sons, Inc., 1924.

Williams, Maurice. *Myra's Men: Building the Kettle Valley Railway, Myra Canyon to Penticton.* Kelowna: Myra Canyon Trestle Restoration Society, 2008.

Wilson, Keith. *Railways in Canada: The Iron Link*. Toronto: Grolier Limited, 1982.

Wu, Ching-Ch'ao. 1928. Chinese Immigration in the Pacific Area. *Chinese Social & Political Science Review* 12: 543-632.

Wurst, L. 1999. Internalizing Class Archaeology. *Historical Archaeology*, *33*(1), 7–21.

Appendix 1: Huissi's Camp Artifact Catalogue

Structure	Item No.	Unit East.	Unit North.	Level	Artifact East.(m)	Artifact North.(m)	Artifact Elev.(m)	Class	Category	Type	Weight (g)
N/A	000001	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	1
N/A	000002	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	1
N/A	000003	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	1
N/A	000004	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	1
N/A	000005	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	1
N/A	000006	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	5
N/A	000006	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	5
N/A	000007	NA	NA	Btwn 1 & 1.5	332490.000	5516638.000	1310.000	Household	Containers	Glass Shard	8
N/A	000008	NA	NA	Btwn 1 & 1.5	332490.000	5516638.000	1310.000	Household	Containers	Glass Shard	14
N/A	000009	NA	NA	Btwn 1 & 1.5	332490.000	5516638.000	1310.000	Household	Containers	Glass Shard	20
N/A	000009	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	119
N/A	000009	NA	NA	Btwn 1 & 1.5	332492.000	5516640.000	1306.000	Household	Containers	Glass Shard	133
N/A	000009	NA	NA	Btwn 1 & 1.5	332487.000	5516636.000	1310.000	Household	Containers	Glass Shard	297
N/A	000009	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total

N/A	000009	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000009	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000009	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000010	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332485.000	5516632.000	1307.000	Household	Containers	Glass Shard	49 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total

N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332489.000	5516631.000	1306.000	Household	Containers	Glass Shard	549 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000011	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000012	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000012	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000012	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000012	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000012	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000013	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000013	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total

N/A	000014	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000014	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000014	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000015	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000015	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000015	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000015	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000015	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000015	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000016	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Household	Containers	Glass Shard	550 Total
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516640.000	1308.000	Household	Containers	Small Glass Container	33
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516640.000	1308.000	Household	Containers	Small Glass Container	63
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516640.000	1308.000	Household	Containers	Small Glass Container	108
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Post-occup.	Post-occup.	Bone Shard	1
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	5
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	10
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	11
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	11

N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	11
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	11
N/A	000017	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	11
N/A	000018	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	11
N/A	000019	NA	NA	Btwn 1 & 1.5	332495.000	5516641.000	1308.000	Unidentifiable	Unidentifiable	Metal Piece	18
N/A	000020	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Arms	Ammunition	Metal Bullet Casing	11
N/A	000020	NA	NA	Refuse Area	332495.000	5516619.000	1297.000	Hardware	Construction	Metal Spike	184
N/A	000020	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Hardware	Construction	Metal Spike	199
N/A	000020	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Hardware	Construction	Metal Spike	214
N/A	000021	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	4
N/A	000021	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	8
N/A	000022	NA	NA	Refuse Area	332494.000	5516606.000	1294.000	Household	Containers	Glass Shard	8
N/A	000022	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Household	Containers	Glass Shard	8
N/A	000022	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	9
N/A	000022	NA	NA	Refuse Area	332487.000	5516609.000	1299.000	Household	Containers	Glass Shard	10
N/A	000023	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Household	Containers	Glass Shard	11
N/A	000024	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Household	Containers	Glass Shard	11
N/A	000025	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Household	Containers	Glass Shard	14

N/A	000025	NA	NA	Refuse Area	332487.000	5516609.000	1299.000	Household	Containers	Glass Shard	19
N/A	000026	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	21
N/A	000027	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	23
N/A	000027	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Household	Containers	Glass Shard	23
N/A	000027	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	28
N/A	000028	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Household	Containers	Glass Shard	30
N/A	000028	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	32
N/A	000028	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	33
N/A	000029	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	40
N/A	000030	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	41
N/A	000030	NA	NA	Refuse Area	332494.000	5516606.000	1294.000	Household	Containers	Glass Shard	49
N/A	000030	NA	NA	Refuse Area	332526.000	5516647.000	1304.000	Household	Containers	Glass Shard	50
N/A	000031	NA	NA	Refuse Area	332494.000	5516606.000	1294.000	Household	Containers	Glass Shard	54
N/A	000032	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	64
N/A	000032	NA	NA	Refuse Area	332526.000	5516647.000	1304.000	Household	Containers	Glass Shard	69
N/A	000032	NA	NA	Refuse Area	332464.000	5516617.000	1308.000	Household	Containers	Glass Shard	111
N/A	000033	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	101 Total
N/A	000034	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	101 Total

N/A	000035	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	101 Total
N/A	000035	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	101 Total
N/A	000035	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Glass Shard	101 Total
N/A	000035	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	102 Total
N/A	000035	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	102 Total
N/A	000035	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	102 Total
N/A	000035	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	102 Total
N/A	000035	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	102 Total
N/A	000036	NA	NA	Refuse Area	332526.000	5516647.000	1304.000	Household	Containers	Glass Shard	171 Total
N/A	000036	NA	NA	Refuse Area	332526.000	5516647.000	1304.000	Household	Containers	Glass Shard	171 Total
N/A	000036	NA	NA	Refuse Area	332526.000	5516647.000	1304.000	Household	Containers	Glass Shard	171 Total
N/A	000036	NA	NA	Refuse Area	332526.000	5516647.000	1304.000	Household	Containers	Glass Shard	171 Total
N/A	000036	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000036	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000036	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000036	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000036	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000036	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total

N/A	000037	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000038	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000039	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000040	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000041	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000042	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000043	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000044	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000045	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Containers	Glass Shard	173 Total
N/A	000045	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	184 Total
N/A	000045	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	184 Total
N/A	000045	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	184 Total
N/A	000045	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	184 Total
N/A	000046	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	262 Total
N/A	000046	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	262 Total
N/A	000046	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	262 Total
N/A	000046	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	262 Total
N/A	000046	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	262 Total

N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000046	NA	NA	Refuse Area	332460.000	5516622.000	1308.000	Household	Containers	Glass Shard	266 Total
N/A	000047	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000048	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000048	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000049	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000050	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000051	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000052	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000053	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total

N/A	000054	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Glass Shard	319 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Containers	Glass Shard	347 Total
N/A	000055	NA	NA	Refuse Area	332532.000	5516652.000	1300.000	Household	Containers	Glass Shard	48 Total
N/A	000056	NA	NA	Refuse Area	332532.000	5516652.000	1300.000	Household	Containers	Glass Shard	48 Total
N/A	000057	NA	NA	Refuse Area	332532.000	5516652.000	1300.000	Household	Containers	Glass Shard	48 Total
N/A	000057	NA	NA	Refuse Area	332532.000	5516652.000	1300.000	Household	Containers	Glass Shard	48 Total
N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total
N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total
N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total
N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total

N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total
N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total
N/A	000057	NA	NA	Refuse Area	332523.000	5516642.000	1298.000	Household	Containers	Glass Shard	581 Total
N/A	000057	NA	NA	Refuse Area	332486.000	5516602.000	1298.000	Household	Containers	Glass Shard	95 Total
N/A	000057	NA	NA	Refuse Area	332486.000	5516602.000	1298.000	Household	Containers	Glass Shard	95 Total
N/A	000058	NA	NA	Refuse Area	332486.000	5516602.000	1298.000	Household	Containers	Glass Shard	95 Total
N/A	000058	NA	NA	Refuse Area	332486.000	5516602.000	1298.000	Household	Containers	Glass Shard	95 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Containers	Glass Shard	98 Total
N/A	000058	NA	NA	Refuse Area	332490.000	5516611.000	1304.000	Household	Containers	Glass Shard	40
N/A	000059	NA	NA	Refuse Area	332490.000	5516611.000	1304.000	Household	Containers	Glass Shard	46
N/A	000059	NA	NA	Refuse Area	332494.000	5516604.000	1298.000	Household	Containers	Metal Can	259
N/A	000060	NA	NA	Refuse Area	332461.000	5516642.000	1302.000	Household	Containers	Metal Can	6

N/A	000061	NA	NA	Refuse Area	332461.000	5516642.000	1302.000	Household	Containers	Metal Can	40
N/A	000062	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Metal Can	49
N/A	000062	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Metal Can	59
N/A	000062	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Metal Can	74
N/A	000062	NA	NA	Refuse Area	332507.000	5516629.000	1293.000	Household	Containers	Metal Can	11
N/A	000062	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Metal Can	26
N/A	000063	NA	NA	Refuse Area	332473.000	5516600.000	1301.000	Household	Containers	Metal Container	40
N/A	000063	NA	NA	Refuse Area	332509.000	5516622.000	1294.000	Household	Containers	Small Metal Container	10
N/A	000063	NA	NA	Refuse Area	332494.000	5516604.000	1298.000	Household	Containers	Small Metal Container	12
N/A	000063	NA	NA	Refuse Area	332518.700	5516643.900	1297.000	Household	Kitchenware	Metal Skillet	NA
N/A	000063	NA	NA	Refuse Area	332518.500	5516642.500	1295.000	Household	Kitchenware	Metal Skillet	NA
N/A	000063	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Tableware	Metal Knife	25
N/A	000063	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Tableware	Metal Knife	36
N/A	000064	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Tableware	Metal Piece	42
N/A	000065	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Household	Tableware	Metal Cup	63
N/A	000066	NA	NA	Refuse Area	332527.000	5516642.000	1305.000	Household	Tableware	Metal Cup	73
N/A	000066	NA	NA	Refuse Area	332461.000	5516619.000	1309.000	Household	Tableware	Metal Piece	13
N/A	000067	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Personal	Clothing	Metal Rivet	1

N/A	000068	NA	NA	Refuse Area	332486.000	5516602.000	1298.000	Tool	Metalworking	Metal File	26
N/A	000068	NA	NA	Refuse Area	332486.000	5516602.000	1298.000	Tool	Metalworking	Metal File	312
N/A	000069	NA	NA	Refuse Area	332462.000	5516624.000	1309.000	Unidentifiable	Unidentifiable	Large Metal Piece	399
N/A	000069	NA	NA	Refuse Area	332494.000	5516606.000	1294.000	Unidentifiable	Unidentifiable	Metal Piece	34
N/A	000070	NA	NA	Refuse Area	332507.000	5516633.000	1297.000	Unidentifiable	Unidentifiable	Metal Piece	113
N/A	000071	NA	NA	Refuse Area	332518.700	5516643.900	1297.000	Unidentifiable	Unidentifiable	Metal Piece	339 Total
N/A	000072	NA	NA	Refuse Area	332518.700	5516643.900	1297.000	Unidentifiable	Unidentifiable	Metal Piece	339 Total
N/A	000072	NA	NA	Refuse Area	332517.700	5516613.000	1297.000	Unidentifiable	Unidentifiable	Metal Piece	NA
N/A	000072	NA	NA	Refuse Area	332518.700	5516643.900	1297.000	Unidentifiable	Unidentifiable	Wood Piece	339 Total
1	000073	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Arms	Ammunition	Bullet Casing	1
1	000074	-52E	-34N	Tier 1	85cm W	71cm N		Arms	Ammunition	Bullet Casing	1
1	000074	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Arms	Ammunition	Bullet Casing	2
1	000074	NW	NW	Tier 1	NA	NA	Surface	Arms	Ammunition	Bullet Casing	3
1	000074	-52E	-34N	Tier 1	38cm W	67cm N		Hardware	Building	Metal Hinge	435
1	000074	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000074	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000074	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000075	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000076	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000077	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000078	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000079	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000079	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3

1	000080	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000081	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000082	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000082	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	3
1	000083	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000084	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000085	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000086	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	3
1	000087	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000088	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000089	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4

1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	4
1	000090	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	9
1	000090	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	9
1	000090	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	9
1	000090	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	9
1	000090	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	9
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	9
1	000090	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	9
1	000090	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	14
1	000090	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	14
1	000090	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	14
1	000090	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	14
1	000090	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	14
1	000091	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	14

1	000092	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Hardware	Construction	Metal Nail	14
1	000093	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000094	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000095	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000096	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000097	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000098	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000099	-50 to -52E	-34 to -32N	Tier 1	SW	SW	Surface	Hardware	Construction	Metal Nail	14
1	000100	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000100	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000100	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000100	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000101	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000101	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000101	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000101	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000101	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000102	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15

1	000102	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000102	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Nail	15
1	000102	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	26
1	000102	SE	SE	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Nail	26
1	000102	NW	NW	Tier 1	NA	NA	Surface	Hardware	Construction	Metal Spike	49
1	000102	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Wire	2
1	000103	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Wire	2
1	000103	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Hardware	Construction	Metal Wire	2
1	000103	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Household	Containers	Glass Shard	7
1	000103	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Household	Containers	Glass Shard	9
2	000104	-50 to -52	-40 to -42	Tier 1	9cm E	16cm N		Household	Containers	Glass Shard	11
1	000104	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000105	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000105	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000106	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000106	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000107	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000108	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000109	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total

1	000110	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000110	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000110	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000111	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000112	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000113	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000113	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000113	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000113	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000114	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000114	-52E	-32N	Tier 1	21cm W	26cm N		Household	Containers	Glass Shard	430 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total

1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000114	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000115	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000116	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
1	000117	-52E	-34N	Tier 1	68cm W	62cm N		Household	Containers	Glass Shard	640 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total

6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
6	000118	NA	NA	Tier 1	332494.000	5516639.000	1305.000	Household	Containers	Glass Shard	619 Total
1	000118	NW	NW	Tier 1	NA	NA	Surface	Household	Containers	Metal Bottle Cap	1
1	000118	SE	SE	Tier 1	NA	NA	Surface	Household	Containers	Metal Pail	65
2	000118	-50 to -52E	-40 to -42N	Tier 1	76cm E	35cm S		Household	Furnishings	Metal Piece	440
1	000118	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Household	Tableware	Metal Knife	20
1	000118	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Household	Tableware	Metal Knife	28
1	000119	-52E	-32N	Tier 1	41cm W	19cm N		Household	Tableware	Metal Cup	79
1	000120	NW	NW	Tier 1	NA	NA	Surface	Household	Tableware	Metal Piece	6
1	000120	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Personal	Clothing	Metal Button	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Personal	Clothing	Metal Button	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Personal	Clothing	Metal Button Piece	1
1	000121	NW	NW	Tier 1	NA	NA	Surface	Personal	Clothing	Metal piece	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Personal	Clothing	Metal Rivet	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Personal	Clothing	Metal Rivet	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Personal	Clothing	Metal Rivet	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Personal	Clothing	Metal Rivet	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Personal	Containers	Metal Bottle Cap	3
1	000121	SE	SE	Tier 1	NA	NA	Surface	Personal	Miscellaneous	Metal Clothspin	1

1	000121	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Post-occup.	Post-occup.	Bone Shard	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Post-occup.	Post-occup.	Bone Shard	1
1	000121	-50 to -52E	-34 to -32N	Tier 1	NE	NE	Surface	Tool	Metalworking	Metal File	12
1	000122	-52E	-32N	Tier 1	14cm W	41cm S		Tool	Metalworking	Metal File	57
1	000122	NW	NW	Tier 1	NA	NA	Surface	Unidentifiable	Unidentifiable	Metal Piece	5
1	000122	-50 to -52E	-34 to -32N	Tier 1	SE	SE	Surface	Unidentifiable	Unidentifiable	Metal Piece	13
1	000122	SE	SE	Tier 1	NA	NA	Surface	Unidentifiable	Unidentifiable	Metal Piece	29
9	000122	-32E	-36N	Tier 1.5	34cm E	0cm N		Household	Containers	Glass Shard	6
9	000123	-32E	-36N	Tier 1.5	34cm E	0cm N		Household	Containers	Glass Shard	153 Total
9	000123	-32E	-36N	Tier 1.5	34cm E	0cm N		Household	Containers	Glass Shard	153 Total
9	000123	-32E	-36N	Tier 1.5	34cm E	0cm N		Household	Containers	Glass Shard	153 Total
9	000123	-48E	-42N	Tier 1.5	60cm E	7cm N		Household	Containers	Glass Shard	71 Total
9	000123	-48E	-42N	Tier 1.5	60cm E	7cm N		Household	Containers	Glass Shard	71 Total
9	000123	-48E	-42N	Tier 1.5	60cm E	7cm N		Household	Containers	Glass Shard	71 Total
9	000123	-48E	-42N	Tier 1.5	60cm E	7cm N		Household	Containers	Glass Shard	71 Total
9	000123	-30E	-34N	Tier 1.5	61cm W	71cm S		Post-occup.	Post-occup.	Metal Grommet	4
11	000123	-6E	-48N	Tier 2	10cm W	10cm S		Hardware	Building	Large Metal Piece	235
11	000123	-8E	-50N	Tier 2	92cm W	13cm N		Hardware	Building	Metal Hinge	224
11	000124	-8E	-46N	Tier 2	0cm E	17cm N		Hardware	Building	Metal Hinge	360
11	000124	-4E	-48N	Tier 2	61cm E	23cm N		Hardware	Building	Metal Hinge	429
11	000124	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	12

11	000125	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000126	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000126	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000127	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000128	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000129	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000129	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000130	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000131	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000132	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000132	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000132	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
11	000132	-6E	-48N	Tier 2	10cm E	8cm N		Household	Containers	Glass Shard	253 Total
10	000132	-8E	-34N	Tier 2	95cm W	71cm N		Unidentifiable	Unidentifiable	Metal Piece	9
10	000132	-8E	-34N	Tier 2	95cm W	71cm N		Unidentifiable	Unidentifiable	Metal Piece	10
10	000132	-8E	-34N	Tier 2	95cm W	71cm N		Unidentifiable	Unidentifiable	Metal Piece	10
11	000133	-6E	-48N	Tier 2	88cm E	82cm N		Unidentifiable	Unidentifiable	Metal Piece	19
12	000133	-20E	-22N	Tier 3	8 cm W	29cm N	1316.000	Architectural	Window	Glass Shard	43
12	000134	-20E	-22N	Tier 3	8 cm W	29cm N	1316.000	Architectural	Window	Glass Shard	43
12	000134	-20E	-22N	Tier 3	8 cm W	29cm N	1316.000	Architectural	Window	Glass Shard	43
12	000134	-18E	-18N	Tier 3	26cm E	66cm S		Hardware	Building	Large Metal Cap	226

14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total
14	000134	NA	NA	Tier 3	332453.000	5516646.000	1316.000	Household	Containers	Glass Shard	312 Total