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PROTECTING THE FIRE: A COMMUNITY-FOCUSED APPROACH TO REDUCE
VULNERABILITY AND RISK TO INDUSTRIAL HERITAGE IN A HISTORIC CLAY DISTRICT

By

Talva Jacobson

A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

In Industrial Heritage & Archaeology

MICHIGAN TECHNOLOGICAL UNIVERSITY

2022

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This dissertation has been approved in partial fulfillment of the requirements for the Degree of
DOCTOR OF PHILOSOPHY in Industrial Heritage and Archaeology.

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To my son, Ethan.

May you walk fearlessly through the door opened.

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Acknowledgements

A PhD focused on a disaster recovery takes a team. I could never have been able to complete the recovery, research, and expectations around a project of this scope without the support of many individuals. First, I would like to thank Ethan. You were my trusted sidekick who did your best to follow me around to the various locations I was required to travel during the duration of this process. I know it was not easy, but we did it. I would like to thank Barry Finkelman, the former Executive Director of the Medicine Hat Clay Industries National Historic District, for trusting me to come and help assist in the recovery. Barry's commitment to the Historic Clay District has been never ending, even in his retirement. Barry took time to work with me right to the end. As always, "thank you, Barry". I would also like to acknowledge Medalta's newest Executive Director, Mike Onieu. I see a passion in you for the heritage situated in the District. You are a strong leader and those who came before are lucky to have your vision moving forward. Your awareness honors the efforts that have been invested in the past.

I would like to thank the commitment of Lorne Simpson, Fraser Shaw, Shawn Thibault, Alan Zyla, Al Dillman, Mike Lake, Duayne Robinson, Phillip Root, and James Reid. The flood recovery was a massive undertaking, and I could not have asked for a better team of professionals around me. I have learned so much from all of you and I have gained some valuable experience. I consider myself very fortunate to have these skills moving forward. Any one of these professionals were always available for direction during various points in the recovery process. Mike Lake thanks again for all your positivity, it always made the early morning tasks (e.g., at 1 a.m. to prep the kiln exhibit for disinfecting) or weeks at the end of a conveyor in chilly weather conditions, easier. You always popped in to make sure we were all going to make it. The coffee was always a nice touch too.

I would like to thank Jack Forbes, Jim Marshall, and Malcolm Sissons for the encouragement and lessons you all taught me about the heritage and the brick industry. I must send a huge thank you to Nicole MacIntosh, Cynthia Temoin, Nancy Robinson, Robert Colley, and Tony Lammers. I could not have finished the project without each of you. You are stellar people, and you were always willing to get dirty to get the job done. Robert Colley, thank you so much for taking so many photographs of the historical resources during the many phases of recovery, especially during the documentation and rebuilding phases. I could always count on you to record what was happening and to see things from a different and refreshing angle. You rounded out the archaeology team. A thank you to Natasha Dilke, for assisting in the recording of the kiln and the analysis of the faunal remains found during sherd screening. Thanks to the many volunteers who took time out of their busy schedules to contribute a day-here and a day-there during the recovery, those days added up to many hours of service. It was the process that reinforced to me the meaning of community effort.

I would like to acknowledge the staff of Medalta Potteries during the recovery: Laurie Switzer, Quentin Randall, Darcey Howells, and Cody Weiss for helping our team move through the process. I graciously acknowledge Charity Schweitzer, Emergency Planning extraordinaire, who supported me in the field during the recovery and took interest in heritage at-risk. Thank you for your willingness to talk about emergency response. Your expertise has been greatly appreciated. I would like to thank the Friends of Medalta Society for their willingness to provide documents regarding the District's development.

It must be recognized that the recovery program required me to leave my PhD studies for a period of three years. I would like to thank my Co-advisor Dr. Timothy Scarlett for being an advocate for me while I was away from Michigan Technological University. You took the bullets,

so I could help the community, for what was essentially an unknown amount of time. Thank you. I also need to thank Dr. Melissa Baird. You rolled onto the scene at the right moment and helped me get to the end of the process with a mix of tenacity, spirit, and compassion. Thanks, it has been a pleasure. You have been a great Co-advisor. Thank you to my committee Dr. Greg Waite and Dr. Mark Rhodes. I have enjoyed working with you both and appreciate your encouragement throughout this process.

I would like to thank my friends Angela Brule, Andrea Roen, Tanya Peckmann, Megan Berry, Heather Macleod-Leslie, Susan McKinnon, Jeanie Gartly, and Steve Kruger for your friendship and during the research phase, editing, and preparing for my defense. Your encouragement and advice kept me moving forward with laughter. It has not been an easy process, but one I would never trade. Thank you to the home team: Thelea, Svea and Greta. I appreciate all your support while travelling to and from Michigan and Medicine Hat. I would like to acknowledge Calvin Dick. I love you, Dad. To all of those who I may have missed, I thank you for your assistance, advice, care, or support during the development of the research and dissertation.

Abstract

The Medicine Hat Clay Industries National Historic Site preserves an industrial landscape on the southern prairies of western Canada. The district contains 150 acres of industrial heritage, including a brick plant, two intact pottery factories, the remnants of two other clay products plants, a raw material manufacturer, and a rail spur line interconnecting these industries. In June 2013, the province of Alberta experienced a devastating flood resulting in damages exceeding 5 billion dollars. In Medicine Hat, floodwaters inundated over 39,000 sq. ft. of historic resources, altering the cultural landscape, and damaging most of the archaeological sites. This flood was one in a long history of disasters contributing significantly to the changes seen in this heritage district over time. To date, in-place emergency protocols and preservation policies impede heritage protection; these policies are notably incongruous, despite a robust historic designation.

This dissertation examines how to prioritize heritage against flooding and demonstrate how heritage designations guarantee neither protection nor priority of response. I will explain how heritage “values” underpin the protection and the development of preparedness strategies for at-risk industrial heritage resources through the establishment of a heritage vulnerability community profile. Heritage districts are vulnerable to disasters because of complicated ownership frameworks, multijurisdictionality, inventory, interpretation of risk, and who is involved in protecting heritage before, during, and after an event. Heritage values inform and frame the resources considered the critical heritage infrastructure; they also create barriers to the development of effective disaster planning. Drawing on qualitative and historical methods, archival tools and document analysis, this dissertation illustrates how heritage valuation, assigned to tangible heritage, directs preservation, programming, and influences a community’s ability to develop disaster planning.

Archaeologists are critical assets within disaster planning, conservation, and have vested interest in protecting heritage value. By understanding how values contribute to the development and reuse of industrial heritage districts we can identify the challenges associated with protecting tangible heritage against unforeseen events. This dissertation contributes unique insights into how heritage valuation may interfere with disaster planning and response development. By incorporating archaeological methods alongside conservation planning, we can assign priority and strengthen disaster protocol. Industrial heritage districts contain vast inventories of resources that may exist at various levels of disrepair. Assigning priority allows a community to decide how to protect and recover essential heritage first.

1 Introduction

“They had this crazy idea, that this site could become a cultural site of importance and the story was bigger than just Medicine Hat - and it was.”

-Barry Finkelman, former Executive Director of the Medicine Hat Clay Industries National Historic Site (Fandrich 2019).

Within the Southeast corner of Alberta’s prairie landscape, the Medicine Hat Clay Industries National Historic Site sits at the confluence of the winding banks of the South Saskatchewan River, Seven Person’s Creek, and Ross Creek in the city of Medicine Hat. Located along the Canadian Pacific Railway mainline this historic district is located on “Treaty 7 and neighbor to Treaty 4 territory, the traditional and ancestral territory of the Siksika (Blackfoot), Kainai (Blood), Piikani (Peigan), Stoney Nakoda, and Tsuut’ina (Sarcee), as well as the Cree, Sioux, the Saulteaux bands of the Ojibwa peoples” (Medicine Hat College 2021). This territory is also home to the Metis Nation of Alberta within Region III within the historical Northwest Metis Homeland (Ibid). The district is surrounded by a distinct landscape outlined by the rugged coulee cliffs that define this region of Alberta. The heritage that remains symbolizes Alberta’s role in the clay products industry for much of the 20th century had secured 75% of the entire Canadian clay market. If it was ceramic, it was very likely it was produced in Medicine Hat. Today, the Historic Clay District protects a vast inventory of artifacts and structures related to various clay products industries and contain some of Alberta’s earliest technologies. The heritage remains signifies the momentum felt across these landscapes during the late 19th to early 20th century as the prairies were swiftly transforming into viable settler communities. It was the significance of these industries and technologies led to the site’s formal recognition today by the Historic Sites and Monuments Board of Canada as a cultural landscape of national significance in 199. The Medicine Hat Clay Industries National Historic Site preserves a series of historic clay factories, gas wells, and a workers’ residential area which formed in clusters along a railway spur line in Medicine Hat’s industrial area. It grew in response to the location of

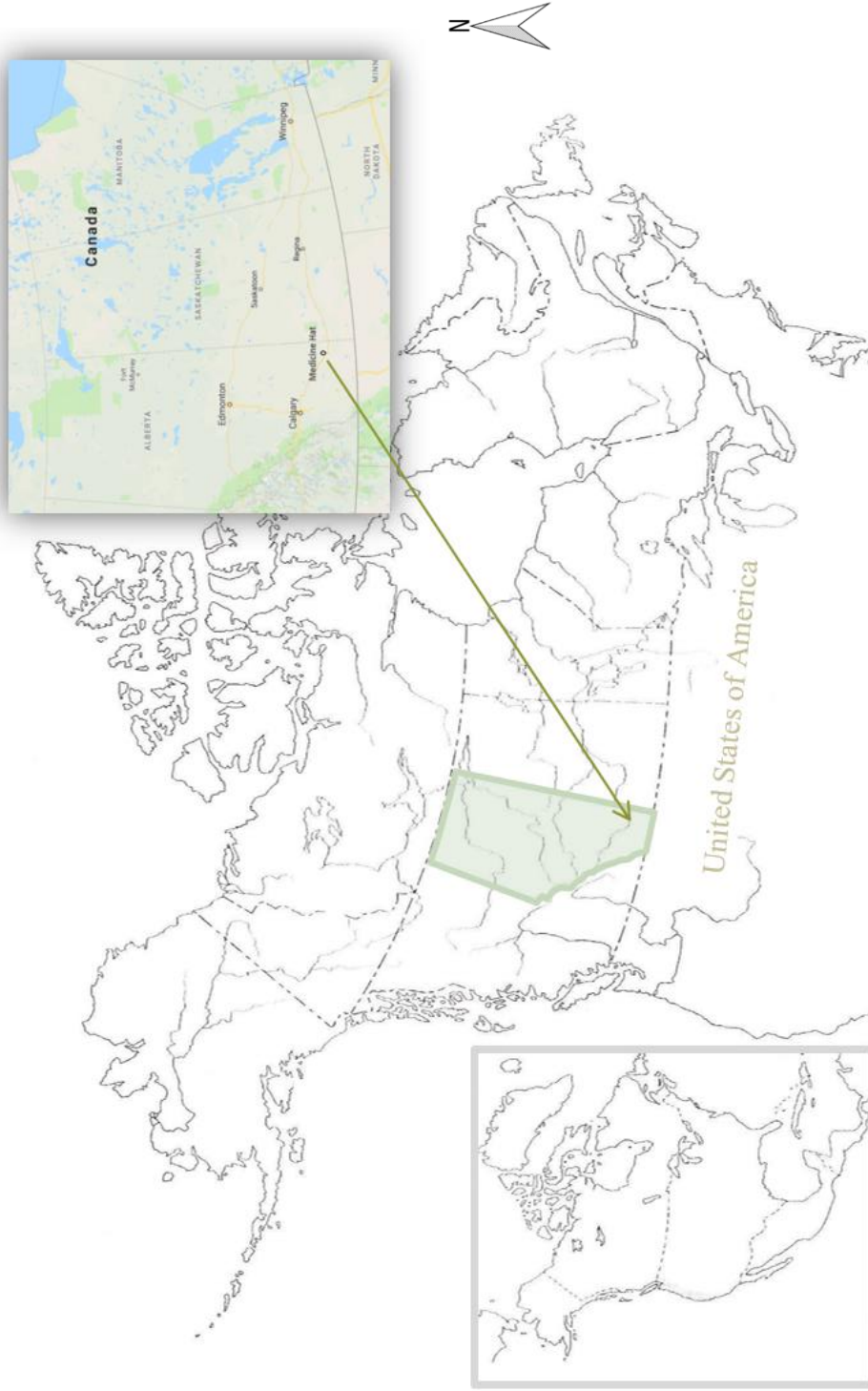


Figure 1-1. Location of Medicine Hat, Alberta, Canada (Jacobson 2018) (Image source: Google Maps 2019) (See Appendix 4 for full attribution and copyright licensing information).

suitable clay, availability of natural gas, and access to a nationwide transportation route (Antonelli and Forbes 1978; Wright 2006). At its height, Medicine Hat's clay products industries provided Canadians with bricks, sewer pipes, crocks, tableware, and electrical conductors facilitated the growth and expansion of the Canadian West.

Only one commercial industry continues to operate there today. The rest remain protected as designated and undesignated industrial heritage, which has been used to create a multi-dimensional visitor experience where people are welcomed to learn about Medicine Hat's ceramic history. Today, the site protects and presents a substantial inventory of industrial heritage, archaeological remains, mechanical installations, manufacturing supplies, thousands of artifacts, and a railway spur line. Together, the industrial heritage and its landscape comprises an important story related to the technological and historical growth of the Canadian West, a story of local communities, marketing, the nature of work, household staples, and those who used or made the ceramic products. All these stories connect the history to the heritage, defines the site's significance and its overall heritage value. The integrity of the remains is critical to historical legacy. The chronology of the industries hinges on the technology developed inside each factory in response to social trends. The subsequent disuse of these technologies created a vulnerability for the very resources preserves this history as they lost relevance to the operating industry; but their *reuse* creates sustainability and reignites their relevance. Preserved, this heritage is strengthened through its cohesion, offering a complete picture of the evolution industry undergoes, and underpins its heritage value.

1.1 The 2013 Flood, Alberta, Canada

On June 19th, 2013, the province of Alberta, Canada, experienced unusually heavy rainfall flooded landscapes all along the Bow, Elbow, Highwood, Little Bow, Red Deer, Sheep, and the South Saskatchewan Rivers and their tributaries (Marvin, Unfreed, and Lakevold 2016). Several First Nation communities (e.g., Blood #48 and Siksika Nation) and the communities of Canmore,

Calgary, Lethbridge, High River, Sundre, Banff, Black Diamond, Cochrane, Red Deer, Turner Valley, and Medicine Hat were inundated by floodwaters (Alberta 2013a,b). A total of 32 local states of emergency were called, 28 operation centers were engaged, and tens of thousands of people had to evacuate their homes (Alberta 2013a,b; Ogrodnik 2013). A total of five lives were lost, and hundreds of homes, commercial buildings, roads, and infrastructure were destroyed. Floodwaters swiftly traveled through the province of Alberta, altering much of the landscape as waters scoured and eroded the banks, changing many of southern Alberta's river systems (Marvin, Unfreed, and Lakevold 2016; Porter and Frampton 2017). Hundreds of designated heritage sites, historic homes, museums, well-established historic districts, and archaeological sites were impacted. These places experienced a loss of heritage resources, and previously recorded archaeological sites near these rivers were eroded and scoured (Marvin, Unfreed, and Lakevold 2016). Estimated damages exceeded 5 billion dollars, and in 2013, it was predicted it would take communities up to 10 years to recover (CBC News 2013; Ogrodnik 2013).

The flood in Medicine Hat's Historical Clay District was devastating. Floodwaters inundated much of the industrial heritage, resulting in a combined total of over 39,000 square feet of heritage contaminated by biological, chemical, and environmental agents suspended in the water. Floodwaters scoured historic mortar and completely submerged subterranean spaces. The water weakened sensitive archaeological exhibits and contributed to their structural collapse. Once-stable structures were eroded, leading to an increase in moisture levels followed by the crystallization of soluble salts within archaeological exhibits. Clean-up crews identified the contamination of thousands of objects, machines, brick masonry, and master plaster molds. Not only were the archaeological and architectural remains affected, but archival records were also damaged. It took five years and dozens of workers to recover the most severely impacted heritage located in the Historic Clay District.



Figure 1-2. The Medalta Potteries site after flooding peaked in June 2013. (Image credit: Barry Finkelman 2013) (See Appendix 4 for full attribution and copyright licensing information).

On a practical level, the initial recovery was a success. All historical and archaeological resources fell within the scope of the recovery plan were stabilized and secured. Historic structures, such as the circular kiln foundations, brick cross-walls, and exposed archaeological features of these structures were decontaminated and dehumidified. All previously undocumented heritage of the buildings was recorded using archaeological methods, and impacted heritage resources were stabilized, repaired, and rebuilt when necessary. Interior exhibits were cleaned of silt, debris, and some of the site's undocumented collections or spaces were documented, cataloged, or recorded into digital databases (Jacobson 2016; McKinnon 2019). However, despite all the successes, four obstacles remain. First, the clay industries were built on a floodplain. The subterranean landscape has changed underneath many buildings and exhibits, causing cracks in the buildings as the ground responds to seasonal changes post-flood. One factory has been emptied of offices since the flood due to step cracking creating a risk of complete failure should snow accumulate or another flood event occur (McKinnon 2019;

Gartly 2020). Second, many structures above and around recovered historic kiln structures and archaeological exhibits are still undergoing rehabilitation requiring much needed maintenance, leaving interior locations containing archaeological exhibits susceptible to continued moisture infiltration and dampness, perpetuating spalling, and the erosion of mortar further weakening brick masonry (Jacobson 2017[2019]). Third, preliminary flood grants focused on flood-affected remains, forcing agendas away from the community-centred programming originally designed to generate operating capital. This loss of operating capital hindered ongoing conservation efforts to stabilize heritage that was already suffering due to disuse and the passage of time. Finally, there continues to be a lack of broad-based administrative support to further develop preventative strategies or a preparedness plan for at-risk heritage, another effect of the loss of operating capital. While the loss of staff is difficult, the lack of a preparedness plan is a major vulnerability for the site.

The 2013 flood was only the most recent disaster event. The region has a long history of disasters and have contributed significantly to the changes seen within the Historic Clay District. These disasters repeatedly impact heritage remains, but also affect how the community relates to and values this heritage. The values connected to heritage are complicated - and attempts to ameliorate flood damages were influenced by how the disaster cleanup was approached. When asked to assess and mitigate flood-damaged remains between 2013 and 2016, I assumed it would be a technical, action-driven, process-based project. But recovery approaches focused on documentation, monitoring, decontamination, or stabilizing the material remains could not adequately address the damages without impacting overall operations and creating additional challenges for staff. The process of recovery in Medicine Hat revealed the unique challenges connected to managing heritage recovery projects in multi-use historic districts. Many of the challenges relate to the knowledge needed to conserve sites and how recovery teams perceive risk. Risk, as defined here, means the possibility of a disastrous event occurring because of a hazard and the magnitude of loss when an environmental event

occurs. A disaster occurs when an environmental hazard intersects a community causing a “serious disruption of the functioning of a community or society at any scale. . .” outside the range that a community can cope. Vulnerabilities cause disasters and is determined by the “conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts” (Cutter 2018).

This dissertation will show the single most important lesson learned through the flood recovery at the Medicine Hat Clay Industries National Historic Site was how heritage value was interpreted by those engaged with or managing heritage before, during, and after the event and how their interpretation impacts the risks to the site. As I argue here, how heritage is valued influences its use, protection, and the type of support it receives. It also influences how it fits into local agendas and emergency protocols. Challenges confronting recovery and protection of heritage are further complicated by industrially altered environments, previous condition, age, size of inventory, and ascribed heritage value. Without a doubt, recovery procedures are intense, often requiring extensive time because of the sensitivity of the heritage, with recovery and iterative processes taking a toll on the administration, staff and volunteers at a site. Thus, it is essential those in charge of heritage have the tools and understanding to approach disaster-risk management procedures within the range of pertinent funding opportunities, as well as within the capacity of the staff who are tasked with making decisions regarding heritage priority. This research asks: knowing a site is susceptible to repeated flood events and recovery processes which are costly in both time and capital, what impedes the development of preparedness strategies to protect heritage?

1.2 The Current Work / Dissertation

This dissertation draws on lessons learned directly during the recovery of the industrial heritage impacted by Alberta's disastrous flood in June 2013 in the Historic Clay District (EaOp-48). Part of the work reflects upon my experiences as a first responder and heritage

practitioner. In this study I have positioned myself from the perspective of recovery, as a First Responder, an archaeologist, and a researcher. I am working at the center of this and take this perspective so that I can understand what communities may be struggling with and try to find ways to **support them**. The purpose of this study broadly is to better understand the experience of assessing the vulnerability of heritage, generally, through the lens of risk management to become better informed about the tools and processes available to a community who are designing plans for their safety, business operations, and for heritage as it exists within the culture of the community. I expand this story to include the history of the site and its management as the context of the heritage located on the landscape. I do this to show how the history connected to the heritage and how it is valued may contribute to or conflict with the development of preventative interventions or preparedness strategies for standing tangible heritage.

This dissertation serves both as a case study and model to demonstrate the process of identifying the priority heritage from within a landscape to minimize the effects from a future flood hazard. I am generally interested in trying to understand the challenges in the process of assessing vulnerability when risk is focused on heritage. It presents the history and the responses to the 2013 flood disasters to contextualize how the Historic Clay District was affected and how the site has changed as a result. It offers insights and approaches pertaining to the challenges of response and recovery. Finally, I offer a vulnerability assessment framework that can be used to guide a process of identifying essential heritage, locating where it is, and how to categorize heritage most at-risk with an intention to isolate the heritage that may require additional preventative interventions and preparedness strategies in ways that it supports the community values assigned to the use of the heritage. This study offers the baseline data required to support the inclusion of heritage during the development of an emergency plan found within the first phase of the disaster management cycle identified in risk management discourse. These data are useful during the prevention stage and can support

ongoing conservation efforts and community-based disaster planning using tools regularly used in archaeology. This framework begins by asking: What types of heritage requires support? Is it moveable or immovable? And, what values are connected to the heritage, how is it used, and can these be incorporated into a conceptualization tool that can support the development of emergency planning during a pre-hazard stage?

The research through which this framework has developed integrates the practical philosophy of emergency management, archaeological methods, and a heritage preservation approach to identify the steps necessary to ascertain priority heritage. The body of work is divided into seven chapters beyond this introduction. Chapter II presents a review of Southeastern Alberta's physiography. In Chapter III, I present a brief cultural history of Medicine Hat with the intent to inform and frame the District's industrial heritage and describe how it became integrated into a historic district. Chapter IV examines the literature pertaining to risk and values-centered conservation as it relates to industrial heritage that supports designation and defines authenticity. Consequently, it also identifies the vulnerabilities within a historical district in landscapes that can be impacted by disasters on a variety of levels.

Chapter V presents my research design and methodology, including the goals of this research. This section describes the datatypes used to understand heritage values, guided by insights identified during field studies and site reconnaissance, offers a rationale for what constitutes heritage value and community values, and how these can be used to identify the critical heritage infrastructure found within an extensive historic district through a methodological outline containing the steps taken to isolate various values.

Chapter VI presents the research results, where I reveal the values as I identified them through coding a series of documents related to the designation and use of the national historic site. These values situate the heritage, identify what heritage is at risk, and illustrate the heritage that is vulnerable within various ranges of flood risk. I briefly provide how heritage was impacted by flooding to provide context and a rationale for the course of my research.

Chapter VII explores the vulnerability of the heritage located in the Medicine Hat Clay Industries National Historic Site. Following this, I offer insight based on my research and experiences with the recovery and offer an example of an emergency planning tool recognized as an essential component in emergency planning to foster and improve the challenges facing the community who are engaged in a process of developing preventative interventions or preparedness strategies to minimize further damage or loss should another flood event occur. Finally, I end with a brief discussion of next steps in Chapter VIII, framed through the challenges facing communities as they contend with assessing the vulnerability of heritage with an emphasis on building capacity.

The main theoretical discourse that underpins this research is found in values-centered theory as it is used to inform values-based conservation planning and how it frames the current use of this site-specific inventory of heritage. This theoretical position guides the methodology and supports the vulnerability assessment process identified in the first stage of the disaster management cycle. The results have been applied to a community-focused publicly available flood inundation model offered by the Government of Alberta. The values identified through previously developed planning initiatives has been used to reidentify the value of the heritage used by those who have been engaged in a process of preservation of the heritage in the district, which is still ongoing.

This dissertation, as a contribution, seeks to fill a gap in disaster management planning. While emergency management studies and disaster planning emphasize how to develop critical plans to protect a whole community's essential services, business acuity, and human lives, it is also essential to prioritize the heritage connected to the place's designation and associated community values. As I argue throughout this dissertation, the extensive use of heritage is complex and has been incorporated into the site's economic development plan and seen as a substantial capital investment through decades of community initiative and effort. The protection of cultural heritage has become an urgent public issue. By reframing the values

connected to urban heritage sites or historic districts, I argue that we can better identify the heritage considered essential within a historic district, when we apply a multi-dimensional approach, identify how complex management structures or the interpretation of heritage's values may hinder or enhance preparedness planning.

My approach incorporates the practical knowledge found in the discourse of Emergency Management and tools used to categorize and inventory artifacts or heritage. I aim to offer an approach that can be used by communities, who may include volunteers or staff with little background in conservation but are tasked with identifying their "critical heritage infrastructure". By integrating the principles found within the conservation-preservation process the approach I offer becomes accessible to these workers. Once a community can understand and identify the heritage assets that hold a District's value, its membership can be leveraged for additional support, they can form risk committees, distinguish the need for conservation of certain heritage resources from others and engage in the process of assessing and directing community-wide emergency planning. When people know what heritage is most important and why, they can apply processes used to determine project priority to these heritage resources, such as cost-benefit analysis. As a case study, how this industrial heritage has been integrated into Medicine Hat's community profile creates both an opportunity and additional vulnerabilities. If communities are left to their own devices to develop disaster plans specific to heritage, then, as heritage professionals, we need to start making sense of what tools and methods can be used to identify priority heritage from the useful, often scattered, resources available across varied disciplines. Identifying critical heritage infrastructure from a Historic District that spans 150 acres requires a systematic and deductive approach that is reflective of sophisticated scholarship. Communities have been asked to protect their heritage, at times on their own. As it stands, the processes offered are disconnected and scattered.

This dissertation demonstrates that the values used to preserve industrial heritage are complex, indicative of who is considering the heritage, and what lens is being used to assess

risks to it. Differences in assessing risk underpins how heritage is used to promote, support, educate and interpret a community's culture, history, or livability. As I show, disaster planning is multidimensional and especially complex for heritage found in a multi-use historic district where heritage is valued and understood differently by different communities of people. Drawing on the Medicine Hat case study, I show how to use the values assigned to a historic district and categorize them to assign ranges of risk. Because values change or evolve through time, they can be used to understand what hinders a community's inability to prioritize essential at-risk heritage and determine what heritage requires the most protection. This research acknowledges the expenditure of time, capital, and resources that has been made by the Friends of Medalta Society in the Medicine Hat Historic Clay Industries National Historic Site. The aim of the Friends of Medalta Society is to support the local community in the identification of the heritage that secures the site's designation, alongside the values appreciated by the community. This research will feel familiar to anyone who must assess risk from the fields of conservation, archaeology, and emergency management. It is intended for use by the community of Medalta in the Historic Clay District in their process of making the best of the worst decisions regarding the heritage most at-risk within the Historic Clay District, so that they may be better prepared for the next flood, because it will happen again.

2 “Land Fit only for Gophers”¹: a View of the Canadian Prairies

Alberta's identity from its earliest beginnings has been influenced by its landscape. In the case of the development of the clay products industry, the environmental conditions surrounding Medicine Hat were fundamental to its historical development and economic growth. The success of the clay products industry grew from the relationship between people and their natural environment, the resources it provided, and the topography clays are found within. Although clay is a relatively simple material, it is deceptively complex, requiring craftspeople to harness the power of fire to create a product of value. The sheer number of clay products manufactured in Medicine Hat could only have been achieved because of the resources found in southeastern Alberta. Natural gas may have ignited Medicine Hat's local spirit, but it is clay that has become the city's symbol of hard work. Being a potter is not easy, and if the preservation of the clay factories that once defined them is any indicator, the story of clay celebrates the region's entrepreneurial vision. Historically, the physiographic characteristics of this geographic region may have driven settlement and established distribution routes, but it has also been a primary agent of change. The very environment that contributed to the success of the industrialization of the clay products industry in Medicine Hat has contributed to its demise.

This chapter will present the environmental setting of Medicine Hat and Southeastern Alberta. It will describe the physical environment, climate, precipitation, soils, and river system to contextualize how these features contributed to the development of Medicine Hat's famous clay industries. From its earliest development, the Historic Clay District's prominence in Canadian industry outlines its transformation from a major producer of ceramic products to its current role in heritage tourism as a model of urban renewal. The physical environment directly influences where industries develop, if they thrive, grow, and what types of resources

¹ Based on Ed Gould 1981.

can be used to develop local economies. The environment has played a significant role in the changes that the Historic Clay District has experienced through time. It is seen in the types of factories that developed, the businesses or homes built, and the size of the community that formed within a landscape. The environmental setting is an essential component of any archaeological research project and is particularly important when trying to understand the risks that natural hazards can have on heritage, what heritage is vulnerable, how it has been impacted, and what remains or has been lost.

2.1 Physical Environment

The environmental setting of Medicine Hat can be described as both an aeolian and fluvial environment found within the short grass region of the Southern Alberta Plains. Medicine Hat is located in Cypress County and has an actual area of 112 kilometres² (Statistics Canada 2022 Census) (Figure 2-1). The city is found in townships 12 and 13 and occupies range 5 and range 6, west of the 4th meridian (Wyatt and Newton 1926).

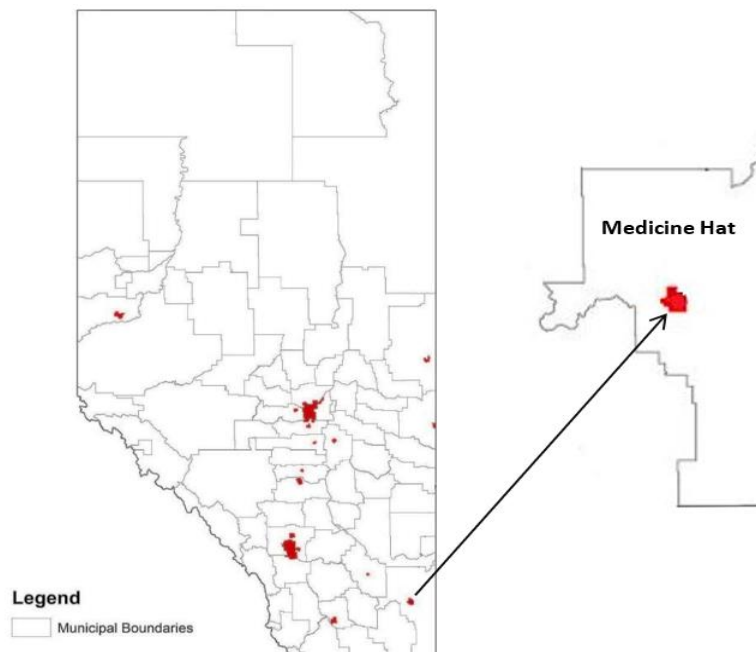


Figure 2-1: Map showing Municipal Boundaries of Alberta (Altalis 2022).

Cypress County is found within the southern Alberta and lies 701m above sea level. It is situated in the western portion of an area known as the Palliser Triangle and defined by a semiarid climate. The land's surface is flat to undulating or gently rolling, with a general elevation ranging between 2,400 and 2,800 feet (Wyatt and Newton 1926). This type of prairie landscape is littered with glacial deposits from the last glacial retreat approximately 10,000 years ago (Lac and Colan 2004; Wickham 2007). Cypress County and Medicine Hat are drained by the South Saskatchewan River and its tributaries. The landscape slopes toward the South Saskatchewan River along a large clay flat that extends east and west (Wyatt and Newton 1926). This region experiences long cold winters and short warm summers with little precipitation. The features that distinguish this area are the grass-covered, treeless landscapes, which exhibit many small depressions, and coulee landforms that outline flood plains or drainage zones (Beaty 1975:119).

Most of the coulees found in Southern Alberta are generally dry valleys and only exhibit moisture when surficial runoff enters valley floors, after heavy rains, or when winters snowpacks melt (Wormington and Griffin 1965:5). Most of the year, these landforms tend to be dry around the city of Medicine Hat, and when rain occurs, it exsiccates quickly because of the extreme variations in heat that defines this region's summertime temperatures (Ibid). Southern Alberta's coulee landforms are classified as gentle and "short, often straight, narrow, [with] comparatively steep ravines that form as a result of natural erosional processes caused by water, glacial activities, and wind erosion" (Beaty 1975). See Figure 2.2 below to view the coulees as they exist within Southern Alberta.

Wormington and Griffin (1965) explain that there are three main drainage systems found in Alberta. They are the Milk River located in Southern Alberta, a tributary of the Missouri; the Saskatchewan River, which has both a north and south branch; and the Mackenzie that flows to the Arctic Ocean through two tributaries, the Peace and the Athabasca (Wormington and Griffin 1965:5). The city of Medicine Hat sits within the Belly River Formation of the Western

Canadian Sedimentary Basin, and buildings, industries, and residential homes have been built along both sides of the South Saskatchewan River. The South Saskatchewan is a confluence of the Oldman and Bow Rivers (See Figure 2-2). The Oldman and Bow are fed by headwaters originating in the Rocky Mountains and drain from the eastern slopes (Ibid). This process contributes to the seasonal rise of the South Saskatchewan River as snowpacks melt and drains off the mountains (Jacobson 2013; Newton 2017; Wickham 2007). The South Saskatchewan River has a series of drainage creeks and tributaries that flow into or from it. Because of the region's climate, many only carry water during certain seasons of the year. They are the Mackay, McAlpine, Ross, Gross Ventre, Bullshead, and the Seven Persons. Seven Persons Creek and Ross Creek flow through the Historic Clay District into the South Saskatchewan River within the boundaries of the city of Medicine Hat. Lakes and sloughs are a feature of Alberta but are few in lands around Medicine Hat. The surveyed lands around Medicine Hat include the southern end of Lake Newell, which is connected to the CPR as an irrigation reservoir but does not contribute to the city.



Figure 2-2: South Saskatchewan River near Medicine Hat, Cypress County, Alberta, Canada. Image source: <http://www.stockaerialphotos.com/> (See Appendix 4 for full attribution and copyright licensing information).

Throughout history, the South Saskatchewan River has been heavily relied upon by surrounding communities from Alberta and Saskatchewan (Figure 2-2). It is a significant tributary to the Saskatchewan River, and it eventually discharges into the Hudson's Bay (Newton 2017). The South Saskatchewan River flows for 865 mi (1,392 km) through the dry plains of both Alberta and Saskatchewan and has a mean flow of 280 cubic meters per second (m³/s) (Newton 2017; World Wildlife Fund 2020). Its flow varies throughout the year and is controlled by 13 hydropower dams and exhibits hundreds of reservoirs constructed along its length (World Wildlife Fund 2020). It has a natural watershed of 146,100 square kilometers and supports most of Canada's irrigated agricultural lands, cottonwood forests, and is heavily exploited (World Wildlife Fund 2020). The extreme heat experienced in this area of Alberta leave the region susceptible to droughts in the river basin, leaving the South Saskatchewan River one of Canada's most threatened rivers in terms of flow (Ibid).

It is the nature of the meandering river system that cause flooding within these landscapes (Waters 1996). The bends and curves in these rivers' complicate floodplain use, particularly because of their shape and flow. Medicine Hat borders an extensive floodplain that contains some extreme bends and always water will take the path of least resistance and when additional water enters the system by heavy rain, or flow increases, causing water to scour the sides of river along bends and curves. As these bends erode, water will eventually reduce the bank enough that it will directly flow overland.

2.2 Climate, Precipitation, and Geography

Alberta's climate, precipitation, and geography are varied. This region is commonly referred to as the *Canadian Prairies* and is influenced by a steppe climate that exhibits a range of extreme seasonal temperatures (Davison 2001; Marchildon 2016). Classified a semiarid desert environment, it experiences short hot summers, long cold winters, and exhibits cyclical bouts of severe chilling cold, with freezing points below -20°C, or multi-year droughts with

heat over +25°C (Davison 2001; Marchildon 2016). Annual precipitation levels, between seasonal snowfall and rainfall, range between 13.0 inches (250mm) to 17.5 inches (445mm) of moisture per year, and a water deficit is a reoccurring attribute of this ecozone (Davison 2001). The warmest month is July, with temperatures varying between mean summertime temperatures of 19.8 degrees Celsius (67.6 degrees Fahrenheit). January is typically the coldest month, with an average of -11 degrees Celsius (10.8 degrees Fahrenheit) during the winter season (Wickham 2007). Medicine Hat experiences short frost-free growing seasons and receives 2,500 hours of sunshine a year (Clark 2014b; Climenhaga 2021; Jacobson 2013; Wickham 2007). The city and its surrounding areas are vulnerable to severe local summer and winter storms, including thunderstorms, lightning, and extreme wind events that are powerful enough to cause trees to fall. Winter snowstorms, blizzards, wind chill, freezing rain, and freezing temperatures (-48°C) are a feature of this region, and hail and extreme wind events such as tornadoes. High winds are a consistent environmental hazard in Medicine Hat and often occur with heavy rain. It is not uncommon for wind speeds to average between 60 and 90 km/hr.

The mixed climate of this region has a history of attracting and supporting a diverse range of wildlife, such as bison, antelope, elk, bear, wolves, deer, mountain goats, sheep, mice, and voles (Wormington and Griffin 1965). Historically, there were large herds of bison within the landscape, which were essential to the lives of indigenous communities before lands were settled. Through historical agricultural practices and the development of Industrial activity, many species are considered on the edge of extinction in this ecozone today (Lac and Colan 2004). The coulee landforms and the river valleys that define this environment supported various berry bushes, small game, birds, and fish (Wormington and Griffin 1965). Considered a four-season landscape, it was the primary territory of the Blackfoot people but also supported the Cree and Assiniboine. The region's flora and fauna, its resources, and the animals it attracted were traditionally used and relied upon to sustain their communities and families.

The landscape was suited to procuring bison by using the depressions and coulees as buffalo pounds or jumps (Wormington and Griffin 1965; Forbes 2006). The semi-nomadic people exhibited an extended clan network with vast communities sharing a common language, moved to follow bison herds, and migrated out of necessity (Waldman 1985). Prior to settlement and the development of the cash crop system, these communities managed this dryer landscape by protecting the beaver because of its role in creating wetlands (Daschuk 2009:17). They managed this by restricting the hunting of beaver, which decreased long-term drought (Daschuk 2009). There has been an anticipation that this climate will change

2.3 Soils and Clay

Medicine Hat is located within the South Saskatchewan River valley and is surrounded by a series of gently sloped coulees. The soil types are distinct to southeastern Alberta and are classified in the “chernozemic order, more specifically, brown chernozemic soils that range between very fine-grained sandstone and green shale that exhibit horizons of coal, minor bentonite, and concretionary Cretaceous dinosaur beds” (Lou, Zheng and Qi 2017).

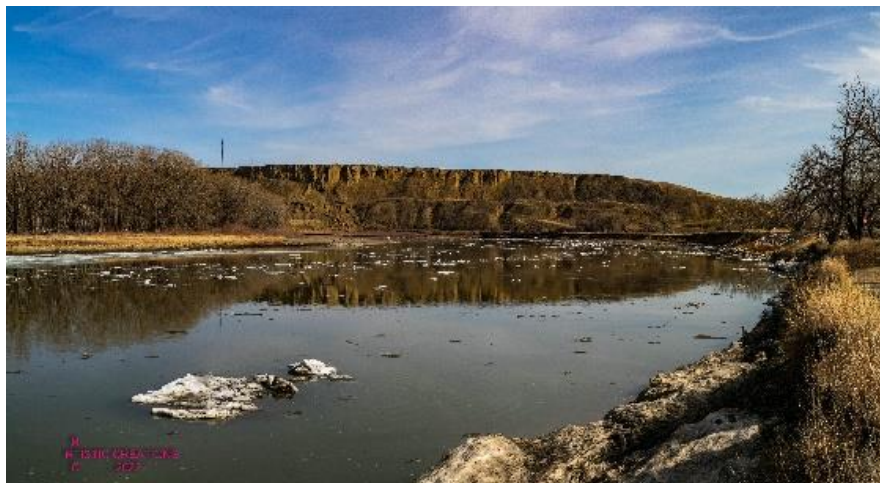


Figure 2-3: Coulee view along the South Saskatchewan River, Medicine Hat (Image credit Colley 2022) (See Appendix 4 for full attribution and copyright licensing information).

Known as the “Whitemud Formation,” is classified as a siltstone containing kaolin powder (Lou, Zheng and Qi. 2017:1158). Lou, Zheng and Qi’s (2017:1158) study describe its sediments as, “distinctive. . .cretaceous sediments. . .composed of prehistoric marine sediments and fossilized remains.” Formally classified as the “Upper Cretaceous Series Whitemud-Battle Formation” is present in Alberta and most regions of Saskatchewan (Lou, Zheng and Qi. 2017). The Battle Formation has been described as “dark grey shale” and is found directly beneath the Whitemud Formation (Lou, Zheng and Qi. 2017:1158). The hill slopes and coulee landform sediments exhibit horizons of clay, silt, and sand. These landforms are classified as erosional and are shaped by the streams, rivers, and creeks meandering as tributaries to the South Saskatchewan River. Floodplains are located below the coulee cliffs, within catchment areas, and their soils are fertile and highly sought-after areas for both settlement and cattle ranching. The soils found along the flattened surfaces of the coulees are used for cash crops and require extensive irrigation to maintain strong yields (Jacobson 2013; Jones, Wilson, and White 1988; Wickham 2007).

There are a series of clay escarpments located throughout this landscape and exhibit the various types of clays distinctive of this region, layered one above the other, in the stratigraphic sequence throughout Cypress County. These layers measure between 2 and 3 feet thick, and range in color from white to dark brown (often, considered as soapstone or slate). The primary difference between these clays is one type can be dug easily by hand, while the other can only be used once it has been released from the strata using explosives (Wyatt and Newton 1926). Not all of the clays found within the Whitemud Formation in this region is viable for use within industrial ceramics and because they demonstrate different properties when dried or fired (Scafe 1991). The primary industrial clay found in this region of Alberta is classified as ‘low kaolinitic clay’ and exhibits lower concentrations of alumina making it particularly suited to the production of low-value structural clay products, such as standard

brick. The erosional nature of this landscape through the layering of clay has come to symbolize the rebranding of this region in Alberta as the “badlands”.

There is a long history of human occupation in Alberta and modifications through industry has changed its natural environment significantly since settlement. Currently, 21 million hectares of Alberta’s land is used for agriculture, primarily cattle ranching and crop production, while the rest has been developed into communities, harvested for fossil fuels, and altered to support industry (Alberta Agriculture and Forestry 2019:1). It is this history which forms the basis for the development of the clay industries that have emerged in and around the city of Medicine Hat.

2.4 Flora and Fauna

There are five ecoregions located in the Canadian prairies, they are: Aspen Parkland (Northern Alberta), Moist Mixed Grassland (Central Alberta), Mixed Grassland (Southeastern Alberta), the Cypress Upland (South Alberta), and the Fescue Grassland (Western Alberta portion of the prairies). Medicine Hat is found within the Mixed Grassland ecozone. The landscapes found in this ecoregion are the most diverse and dominated by various grasses and are the primary ground cover. Grasses produce seeds and reproduce through a root system through underground runners, called rhizomes. They are associated with loamy soils and their fibrous root systems hold soil in place and prevent the erosion of fertile soils.

Grasses have been and continue to be a primary food source for the animals and communities who live within this region of Alberta. Several species of trees and shrubs are found in this landscape and are commonly found within groves, bluffs, and sandy soils (Lac and Colan 2004). Commonly found shrubs in this region are the sage, pasture sage, and winterfat. Pasture sage is the most common shrub found in this ecoregion (Lac and Colan 2004). In wetter depressions within or around rivers or streams, various fruit-bearing shrubs can be found. A few trees and bushes are found in this ecozone but are typically found within river valleys or along

the tributaries. The Cottonwood is the only native species found in Medicine Hat's environment. There is one isolated forest found 75 kilometers southeast of Medicine Hat, on a flat-topped highland near the Cypress Hills, containing aspen and conifers (Wormington and Griffin 1965:5).

Conventional development practices have altered much of the natural landscape surrounding Medicine Hat and contributed significantly to the depletion of the region's fertile topsoil and the loss of native vegetation through levelling and infilling sites. These factors become important as it pertains to development causing a significant shift in the region's ecosystem with changes producing increased erosion, a loss of plane, and viable habitat for various wildlife, including the beaver. Southern Alberta lost much of its historical grasslands because of development in the 1800s when lands were altered to agricultural cropland. This practice has fragmented this region's natural habitat into small concentrations of conserved areas. Modifications to the environment have decreased the area's ability to self-regulate moisture and drought. Given the extreme climate and water scarcity that define the Canadian Prairies, these modifications have made this landscape vulnerable to longer droughts that will increase in frequency and duration (World Wildlife Fund 2020).

2.5 Summary

The situation of the city of Medicine Hat in Southeastern Alberta in this environment is a key feature to bear in mind for the content of this document and its use. Cypress County is distinguishable by its grass-covered barren coulee landforms and meandering river systems. The coulees characteristic of the landforms surrounding the South Saskatchewan River exhibit various refractory clays useful in the clay products industry (Figure 2-5). The local climate of Medicine Hat is a semiarid desert environment that experiences short, hot summers and long cold winters. Considered a four-season landscape, the average annual precipitation levels range between 13.0 inches (250mm) to 17.5 inches (445mm) of moisture per year. Grasses are

the primary vegetation in this region. The South Saskatchewan River runs through the city's center and has played a significant role in developing the industry, agriculture, and settlement patterns seen in Southeastern Alberta. Alan F.J. Artibise (1992:517) wrote about the development of the prairies noting that “the success of one prairie city relative to another was not determined by a convenient location or the impersonal forces of urbanization.” Artibise explains that it was people who formed prairie cities as they “interacted with the environment” (1992:517). It was their “hopes, beliefs, energy, community spirit, initiative and adaptability [that] influenced the rate of growth, degree of prosperity, and physical form of cities (Artibise 1992:517). Although the success of thriving in this type of landscape was challenged by its physiology, it influenced how communities were shaped and how they grew. Alberta’s traditional use patterns through agriculture and extracting resources has placed a strain on this landscape (World Wildlife Fund 2022). As we enter climate change, this type of landscape will experience a higher frequency of droughts, flooding, and storms (Diaz, Hurlbert, and Warren 2016).

3 From Gas City Industry to National Historic District

It takes a special kind of imagination to look at the crumbling walls and dust filled factory floors of an abandoned industrial site and not only see something profound but see something worth saving. To imagine a landmark, a hub for artists, a place for community [and] students.

None of these things seemed obvious a few decades ago when the remnants of Medicine Hat Alberta's once booming clay industry had largely been relegated to history. Of course, everyone loves a happy ending, but people of a certain age will tell you that this could have just as easily been a story of a grand vision that was never realized.

As the last of Medicine Hat's clay industry gradually became victim to rising costs, imports, and even a few natural disasters, what remained were artifacts, a handful of abandoned factories, and a few people who could see the potential in what had been left behind.

-Luke Fandrich 2019.

(See Appendix 4 for full attribution and copyright licensing information).

During Alberta's early Eurocolonial settlement, in 1871, there were no urban centers (Artibise 1992). There were only a handful of Hudson's Bay Trading Posts and Northwest Mounted Police Posts. The goods that made their way into the prairies were manufactured in Central or Eastern Canada (Klassen 1999). Medicine Hat owes much of its success to the development of the transcontinental rail line built by the Canadian Pacific Railway (CPR) (Friesen 1993). As it moved across the nation, it was the major driver that developed Canada's "new investment frontier" (Friesen 1993:163). CPR reached Medicine Hat In 1883, which at this time was only a small tent city with the Northeast Mounted Police (NWMP) Barrack overlooking the South Saskatchewan River. It had a telegraph, an express office, and an active stagecoach connected daily to the CPR (Henderson's North West Gazetteer and Directory 1884).

It was the arrival of CPR that triggered the discovery of natural gas as crewmen were drilling for water to power their steam engines while they were prospecting the region for resources necessary to form a townsite. A series of shallow natural gas pools were accidentally discovered (City of Medicine Hat 2013). The region's history is tightly woven to this discovery because there was so much natural gas "wherever the railway crews tried to dig, they would unintentionally find another" (City of Medicine Hat 2013). Despite the abundance of these

shallow pockets, natural gas did not become an economic driver until much later (Simpson, Roberts, and Wappell 1993[1995]). The area's primary industry was agriculture, specifically market-oriented dryland farming and ranching through the establishment of the lease system (Klassen 1999:46). Alberta's economy relied heavily on commercial agriculture, between 1870 to 1905, and areas throughout the province evolved into centers defined by regional specialization (Klassen 1999:47). "Southwestern and eastern Alberta became known for cattle. . . central and north-central Alberta for mixed farming and around the Lethbridge area for sugar beets" (Ibid).

It was only after the discovery of a reserve of natural gas, measuring 150 square miles, at a depth of 1,000 and 2,000 feet below the city, did Medicine Hat become known as the *Gas City*. The first commercial gas well was established in 1890 but was not the cornerstone of the economy until 15 years later (Hayward 2001:7). In 1901, Medicine Hat had a population of 1500 people (Klassen 1999:47). By June 1904, natural gas had become harnessed as an incentive to encourage the migration of people and entice industry to relocate to Medicine Hat (Hayward 2001:8). After a surge in industrial development began in 1905, Medicine Hat began to grow exponentially. The famous Rudyard Kipling during a visit in 1907 was mesmerized with Medicine Hat, remarking "this part of the country seems to have all hell for a basement, and the only trap door appears to be Medicine Hat" (Brennan 2019). In 1909, Medicine Hat had 5,750 people and in 1910 the "Encyclopedia Britannica claimed. . . Medicine Hat had 'wells with unlimited quantities. . .'" (Simpson, Roberts, and Wappell 1993[1995]:8).

In 1911, Medicine Hat was leading "Canada in the total percentage of building permits issued" and by 1912 the city had doubled to 11,086 residents (Industrial Bureau of the Board of Trade 1912). During this time, the successful prairie city was measured through material success and,

"after 1900 the demand for western land was so brisk, and the CPR and various land companies so zealous in attracting settlers to the region, that it is hard to believe that the homestead policy was in any sense necessary as a means of settling the West" (Norrie 1985:240).

“To boosters, the challenge presented by the undeveloped prairies was to build. . . a prosperous, populous, and dynamic region as quickly as possible” (Artibise 1992:411). CPR may have drove expansion, but natural gas drove this incentive because it provided three essential services required by industry - “heat, light, and power - and at a fraction of the cost of coal” (Hayward 2001). As word spread of tax incentives, free land, and water to anyone willing to relocate their industries to Medicine Hat, by 1913 the city contained 40 industries and factories that were either entirely operational, under construction, or in contract to develop within the city (Industrial Bureau of the Board of Trade 1913a; Hayward 2001; Jacobson 2013) (Appendix 1). The abundant and cheap supply of natural gas, free land, and water within the vicinity of a well-established CPR mainline made Medicine Hat an attractive location for many Canadian and American Investors. Because deals were sweetened by the promise of tax incentives, industry moved into the city providing much of western Canada goods, much-needed labor, capital, and subsequent population that could support a series of secondary businesses (Antonelli and Forbes 1978:11).

Civic boosters called Medicine Hat the “California of Canada” (Industrial Bureau of the Board of Trade 1913a:5). Newspapers reported that Medicine Hat’s gas reserves was the “extravagances that make gas users in other cities hold up their hands in horror” (Hayward 2001:8). Gas was critical to the survival of the city and its development (Hayward 2001). There is a story that has become local folklore that refers to how much gas there was and told through the lanterns that once lined the streets throughout the city. They would be left to burn twenty-four hours a day because it was less expensive to leave them flickering than to send out lamplighters to snuff and relight them daily (Ibid). Industrial development peaked between 1910 and 1914, resulting in the development of flour mills, steel rolling mills, woolen mills, greenhouses, foundries, machine companies, breweries, glass, and ceramic manufacturers who produced brick and pottery. A complete list of factories is found in

Appendix 1. These factors alongside the city's locational advantage along the Canadian Pacific Railway's mainline persuaded people to immigrate, settle, and begin producing clay products. Whether American or Canadian, brick was Medicine Hat's industry of choice and through the next century was the primary producer of brick in Canada. It was clay and cheap gas that contributed to the growth in Medicine Hat and transformed it from a small prairie farming community to a significant industrial clay manufacturing hub that produced everything from brick and sewer pipes to crocks, bottles, and electrical conductors (Artibise 1992). If it could be made from clay, it was.

Between 1885 and 1989, the city of Medicine Hat and the nearby town of Redcliff contained over a dozen different potteries and brick industries. Because of how cheap gas was, kilns were fed a steady supply of fuel reliably 24-hours a day for pennies on the dollar allowing factories to produce a variety of goods "at practically no cost" (Industrial Bureau of the Board of Trade 1913b). An article printed by the Medicine Hat News, dated May 2, 1907 reported that "[w]ith the clay, fuel, and power, why should Medicine Hat not make the pressed brick, common brick, sewer pipe, tile and cement for the whole west!" (Antonelli and Forbes 1978). Gas fueled the kilns that fired bricks and sewer pipes to develop infrastructure within new communities and provided the containers needed in the kitchens of their inhabitants all over the province and Canada.

At its peak, Alberta accounted for over "two-thirds of the pottery produced by domestic clays in the whole of Canada with the province ranking third after Ontario and Québec accounting for 58 to 80% of Canadian pottery production" (Hayward 2001:4). This history made the brick produced in Medicine Hat famous and solidified the City's role in the province's rank within Canada's ceramic industry. It is tied to the integrity of the heritage that remains and symbolizes the significance of the story of the Historic Clay District.

3.1 The Historic Clay District

The purpose of the Historic Clay District is “to reinforce and support the vision of this area of the City as a tourism destination; to encourage the development of the areas as a heritage, arts, and cultural hub; to establish the opportunity for complementary commercial uses that support tourism and local neighbourhood needs; [and] to establish the opportunity for Live Work Residences and other infill residential development.”

Medicine Hat’s Land Use By-Law #4168

The Medicine Hat Clay Industries National Historic Site, locally known and developed into “The Historic Clay District” is found within a 150-acre triangular-shaped area of land within Medicine Hat’s [River] Flats neighborhood. Malcolm Sissons, a local historian, explains that it was “the clay resources, natural gas, proximity to the railway, and a growing demand for clay products that allowed various clay industries to flourish a century ago” (Sissons 2019). Its success was driven by the location of CPR mainline to the south and the clay escarpment to the east. The interest in the preservation of this district’s industrial heritage began in the mid-1970s when the Medalta plant was being threatened with demolition (Wright 2006:6).

Janet Wright, a Parks Canada Architectural Historian and Heritage Advisor, captured the early history of the development of this district in a paper delivered to the International Congress of Industrial Heritage and Urban Transformation titled, *Medicine Hat Clay Industries: Beyond the Historic Site Model*, in 2006. This paper fills a gap in the history of the development of the site by framing the story of the development of the district around the Medalta Potteries site through the heritage, its history, and through the commitment and energy of the community who, “remained strong [as] the project struggled to take shape in the face. . .obstacles” (Wright 2006:1). She contextualized the relevancy of Medalta as a much “remembered” local producer of stoneware crocks, noting that people “identified” with Medalta’s products, specifically through its kitchenware, bowls, crocks, and dinnerware (Wright, 2006:6). She provides historical context to the reasons why the site developed into what it has today by framing the story around a “small but highly effective lobby group” who had the tenacity to formulate a plan for Medalta which focused on restoration to stabilize the heritage to be used as a “living history museum with a full interpretive program. . .[and]. . .a

fully operational historic pottery plant” (Ibid). This group’s early challenges were the costs required to preserve, the limited grants available, and a lack of local support. Wright (2006:7) explains that places like Medalta Potteries may at one time be celebrated as an important source of economic wealth but they were “also associated with low-paying jobs, tough working conditions, and occasional labour unrest” (Ibid). She points out that it was not necessarily “a chapter in. . .history to be celebrated, let alone, a recipient of public funds” (Ibid). This group’s earliest efforts were unsuccessful leaving the historical remains of Medalta Potteries vacant where it was impacted by neglect, flooding, vandalism, and fire until interest was revived again in the mid-1980s (Wright 2006).

Designated as a Provincial Historic Resource in 1996, Wright explains that it took time to get the support to develop Medalta and through the process it ricocheted through a series of unfortunate events, noting that “local politics and rival interests conspired. . . [to derail the]. . .early efforts” of the Medalta project (Wright 2006:6). When plans were first being drafted, Alberta was experiencing an oil boom, but “by the time Medalta’s supporters were able to regroup, the oil boom was over, government spending was cut back, and the opportunity was lost” (Wright 2006:6). The decline in oil revenue impacted grants and government support forcing the government to focus on maintaining the museums and historic sites that were already owned by them (Wright 2006). Leaving many historic sites in the hands of smaller heritage organizations, municipal governments, and “more frequently, by small non-governmental organizations sustained by local volunteers” (Wright 2006:6). She goes on to state that these strategies were enough to sell an idea of “saving fine old houses or important architectural landmarks” but not so easily suited to the “hulking relics of an industrial past.”

The interest in the preservation of Canada’s industrial heritage began to grow by the 1980s. Many industrial conservation-preservation projects fell into the category of “industrial recycling whereby the exterior structures were conserved for commercial, residential or occasionally public purposes” (Wright 2006:7). Wright explains that when industrial heritage is

categorized in this manner, the volume of the buildings was retained. Their spatial organization and relationships were conserved, but it was common that all of the machinery, artifacts, and any evidence to early industrial processes were removed causing the history that told these stories to disappear (Wright 2006). The purpose of this history was to frame the success of Medicine Hat's Historic Clay District as a unique example of preservation through minimal intervention. The community preserving Medalta, placed an intentional emphasis on conserving all of the interpretive heritage *in situ*, in the location where it was used, so that the remains could become the evidence to its history.

Medalta Potteries was the first site to be recognized as a National Historic Site by the federal government and "a group of local supporters was formally incorporated as a not-for-profit society called the Friends of Medalta" (Wright 2006:7). Situating themselves in the National Porcelain Site, they were almost entirely comprised of volunteers (Finkelman 2022). They fundraised, cleaned up the buildings, and even financially supported the site when fundraising efforts did not provide the necessary funds to pay taxes (Howells 2010). They applied for small government grants and matched the funds being acquired with local subsidized labor through local job creation programs (Finkelman 2010; Howells 2010; Wright 2006). All of these efforts allowed the Friends of Medalta to stabilize the remains of the Medalta Pottery site while it was vacant.

It wasn't until the Friends of Medalta received a donation of the Hycroft China site, in 1992, that they could promote it as a substantial destination and an attraction essentially as-is. Because Hycroft only closed in 1989, it contained an inventory of *in situ* artifacts that included out-dated equipment, a rare circular tunnel kiln, and a collection of products that could be sold as a souvenir (Howells 2010). Hycroft China became a driver into the District providing a reason for people to come and visit. At the time of the donation, Medalta Potteries was physically still being cleaned up, repaired sparingly, and working towards full stabilization. It could not safely host visitors on the inside but could be viewed from a safe distance.

The acquisition of the Hycroft China site was the catalyst that would convince the community that Medicine Hat's historic clay products industries could be a viable pursuit. The Hycroft China site was being used as a small pottery works that made replica Medalta ware, used to drive interest, created a walking tour, and an exhibit called "The Great Wall of China" (Finkelman 2010). Additional fundraising was facilitated to acquire the necessary capital to continue to stabilize the Medalta Potteries site into the museum, reception gallery, collection archive, and event hub seen today.

Designated as a significant cultural landscape in 1999, the Medicine Hat Clay Industries National Historic Site has since become an extensive landscape that protects three Provincial Historical Resources: Medalta Potteries, Hycroft China Factory (and associated Alberta Clay Products heritage), and the Medicine Hat Brick and Tile Company Site. There is one surviving kiln associated with Alberta Clay Products, National Porcelain, the commercial remains of the I-XL brick plant, Plainsman Clays, and some residential housing. The city of Medicine Hat has integrated the area into a Historic District to support its industrial heritage within a live-work neighborhood (Friends of Medalta Society 2004). This successful place-making initiative has been categorized "as a tourism destination" (City of Medicine Hat 2014:74). Once home to many of the laborers who went to work within these various factories, the streets in the District were aptly named Industrial Avenue, Clay Avenue, Potter Street, Medalta Avenue, Porcelain Avenue, or Brick Avenue (Sissons 2019). This District is connected by a historic Canadian Pacific Railway spur line that connected these various clay product factories to other unrelated factories along a 1.2-kilometer rail. Two open spaces on either side of the Seven Person's Creek that weave through the District contain various concentrations of buried deposits of brick, product failures, and raw materials indicative of the entire area's historic industrial use. When the Medicine Hat Clay Industries National Historic Site was successfully petitioned, it "was one of three such designations in Canada" (Wright 2006:8).

The City of Medicine Hat is the recognized owner of the Medalta Potteries property. At the same time, the Friends of Medalta Society (the “Society”) is the designated lessee, management, and operator of the Medalta Potteries site. The artifacts, collections, and exhibits are also owned by the Friends of Medalta. The Society is the sole owner and operator of two additional designated sites; Hycroft China Limited (est. 1938) and the Medicine Hat Brick and Tile Company (est. 1912). The latter was established on the remains of a soft-mud brickyard, McCord Brick (est. 1889), and located just south of I-XL's sewer pipe manufacturing plant (est. 1954). One undesignated site, National Porcelain Company Limited (est. 1947), is owned by the Friends of Medalta Society. One commercial site, Plainsman Clays Limited (est. 1976), categorized as a Social Enterprise, is owned and operated through a private numbered company whose shares are 100% owned by the Friends of Medalta Society and is also located within the District (Finkelman 2020). This unique partnership, spearheaded by the former Executive Director and the I-XL Board of Directors, former owners of Plainsman Clays, provided a strategy to ensure a steady source of operating capital for the historic site. The Friends of Medalta Society has stewardship over the remains of Alberta Clay Products Limited site, a 1910 era clay sewer pipe and brick factory that operated eighteen down draft kilns but is owned by Plainsman Clays.

Today the District symbolizes the stories of all the clay industries that “developed in the region, their successes and failures, the workers in the pottery factories who had concerns and opinions about wages and working conditions; [the] factory owners who worried about efficiency, productivity, and the risks and the opportunities of the business of clay” (Hayward, 2001).

Nothing speaks more of the spirit of industry than the hard work, determination, and industriousness of the people who created Medicine Hat's vibrant clay industry throughout the early and mid-20th century. Their perseverance produced a major industrial centre that shaped the history of Canadian industry and the economic and social history of **Alberta** (“Sharing a Vision” *Fire the Spirit of Industry Campaign* 2004). (See Appendix 4 for full attribution and copyright licensing information).

Medicine Hat's historic building stock lay as evidence of the clay products industry as a place that produced the pottery of yesteryear and was used by people throughout Canada and the United States who relied on its consistent availability (Graff 1999; Hayward 2001). Today, the Medicine Hat Clay Industries National Historic Site is supported by the Society and guided through their vision statement: The Friends of Medalta Society is dedicated to developing the Historic Clay District as “A world-class cultural district with a heart of clay” (Friends of Medalta Society 2022). It preserves an extensive collection of machinery, buildings, and artifacts that include everything from bricks to sewer pipes and crockery to dishware (Sissons 2019).

When the Friends of Medalta Society was incorporated, the Society's goal was “to preserve and restore the historic Medalta Potteries as a living/working museum for the benefit of all Canadians and visitors from around the world” (Simpson, Roberts, and Wappell 1993[1995]:5). The process to designation began with the Medalta Potteries site, when a portion of the factory was designated a provincial resource in 1976, “by virtue of its in-situ resources characteristic of the ceramic industry, and its impact on the development of that industry in Canada” (Simpson, Roberts, and Wappell 1993[1995]:7). In June 1988, the Historic Sites and Monuments Board of Canada recommended that the Potteries be considered “as a priority for program action with respect to cost-sharing” and designation was applied to the heritage “in the public interest” (Simpson, Roberts, and Wappell 1993[1995]:7). The City of Medicine hat contributes at an arm's length and supports the coordination for any city involvement on the project. The City is technically the legal owner of the Medalta Potteries site and is fully informed of any progress made at the site. Until 2020, the City of Medicine Hat contributed to the maintenance and insurance costs of the Medalta Potteries site (Onieu 2020). But the primary revenue stream has been through fundraising and donations. It also receives capital resources through grants from the Province of Alberta, who entered as a partner in cost-sharing agreements in partnership with Medalta Potteries because of the number of buildings and structures on the site that have been designated as provincial historic resources. Additional grants have also

3.1.1 The History of the Clay Industries located in the Historic Clay District, Medicine Hat, Alberta.

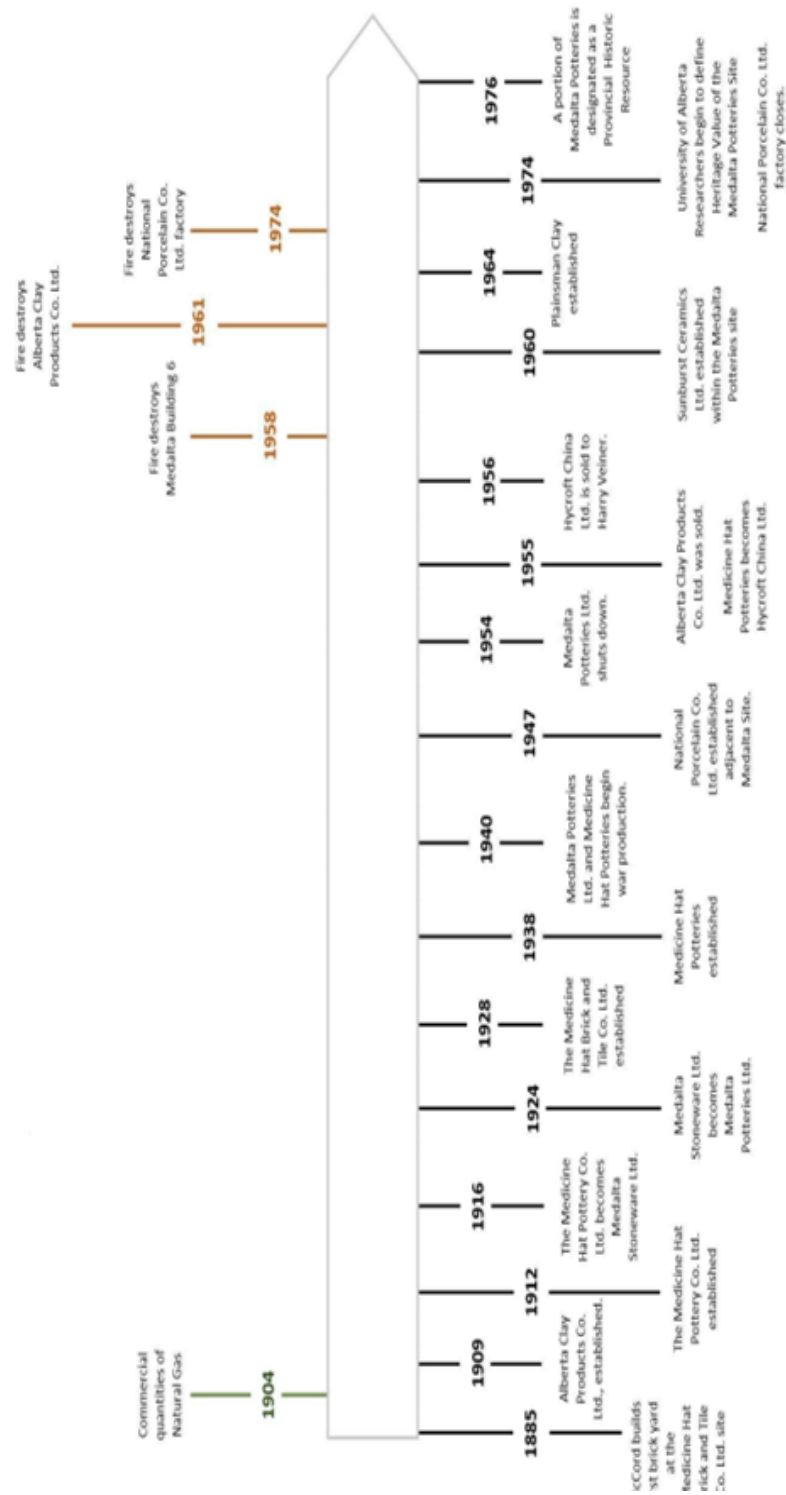


Figure 3-1a: Industrial History of the Clay District. Timeline constructed by Jacobson 2022.

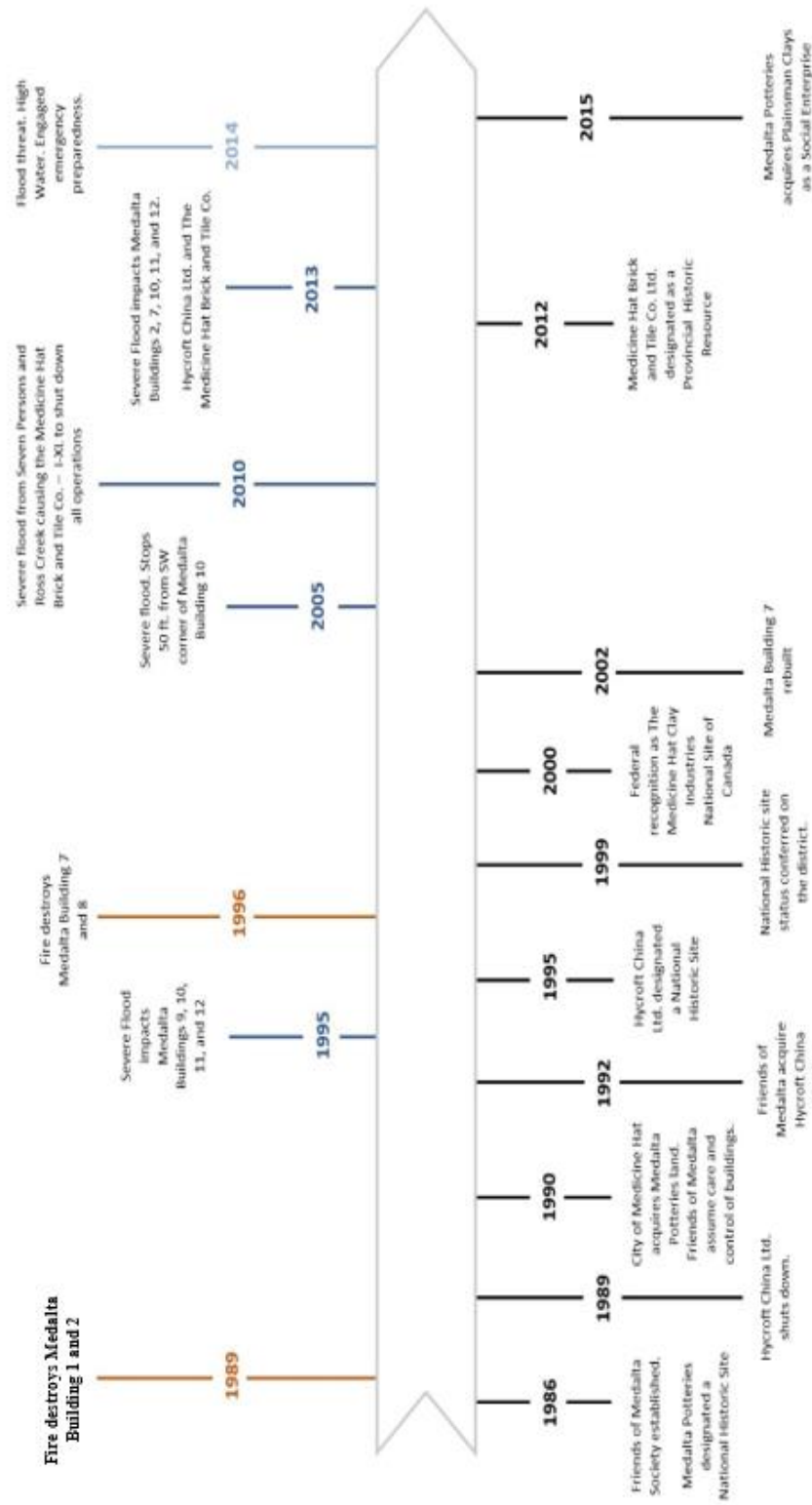


Figure 3-1b: Industrial History of the Clay District. Timeline constructed by Jacobson 2022.

been received from Parks Canada, who are also considered a partner through the District's designation as a national historic site (Simpson, Roberts, and Wappell 1993[1995]). The province has provided technical assistance during the process of preserving the heritage and allocates funding to assist the development of conservation planning under the Alberta Historical Resources Foundation (AHRF) (Simpson, Roberts, and Wappell 1993[1995]).

3.2 Historical Value of the Heritage in the Historic Clay District

The establishment of the Medicine Hat Clay Industries National Historic Site as a designated place is recognized through its "association with the growth and diversification of an industry that played a vital role in the economic and physical development of western Canada" (Parks Canada 2000c). It is seen through the remnants of five significant factories that influenced how the site "evolved" in response to the numerous types of clay products that were produced. Each factory is distinct and were each a significant wealth creator that employed hundreds of people and played a significant role in the establishment of many of the surrounding prairie communities. They are situated on a floodplain that contains both open and undeveloped lands bordered by a clay escarpment along the east of the district and bordered along the south by the Canadian Pacific Railway's (CPR) mainline. The historic remains include the structural remnants of a former brick and tile factory, a porcelain insulator factory, two intact historical pottery factories, and a major brick plant that exhibit a series of upgraded machinery and buildings that were built through time as it shifted through various successive production stages (Heitzmann 2001; Mills 1999). The machines found in the district create a unique inventory that include the Automatische Hochleistungs - Tonformmaschine Union Clay Molding Machine, a Flowerpot Press, extruders, conveyors, and tunnel kilns that remain *in situ*. Together, they inform the district's regional heritage value and the buildings materiality inform the district's character-defining features and provide record and authority to the District's Statement of Significance (SOS) (Forbes 2000:100,102).

To date, the historic value of the collection has been maintained through minimal intervention and from a functional perspective is easily understood by the public as something that is tangible. The presence of all of the factories and the sites features convey the site's historical value which has been specifically defined by the Historic Sites and Monuments Board (2003) through "it's *in-situ* resources characteristic of the ceramics industry, and its impact on the development of that industry in Canada" (Commemorative Integrity Statement 2000c:9). But heritage is not necessarily history. Heritage is a manifestation of history that has come to symbolize an environment, the resources found within, the people who lived amongst it, and the culture of the community that formed around it. Understanding the value of heritage means we must consider the history connected to the material remains, recognizing the site's authenticity as a historically important place linked to the original fabric of these factories as a historic document. To protect it, we must acknowledge the business of heritage designed to preserve the history of an area through various frameworks designed to promote sustainability (e.g., financial, programming, community development) through legal acts and ordinances associated with designation and the philosophy designed to conserve living heritage through development (Hall 2007).



Figure 3-2: A Panoramic View of Medicine Hat's Industrial District (ca. 1913). Catalogue/Image No. 0525.0115. (Image source: Esplanade Arts and Heritage Center) (See Appendix 4 for full attribution and copyright licensing information).

Historical Resources within the Medicine Hat Clay Industries National Historic Site

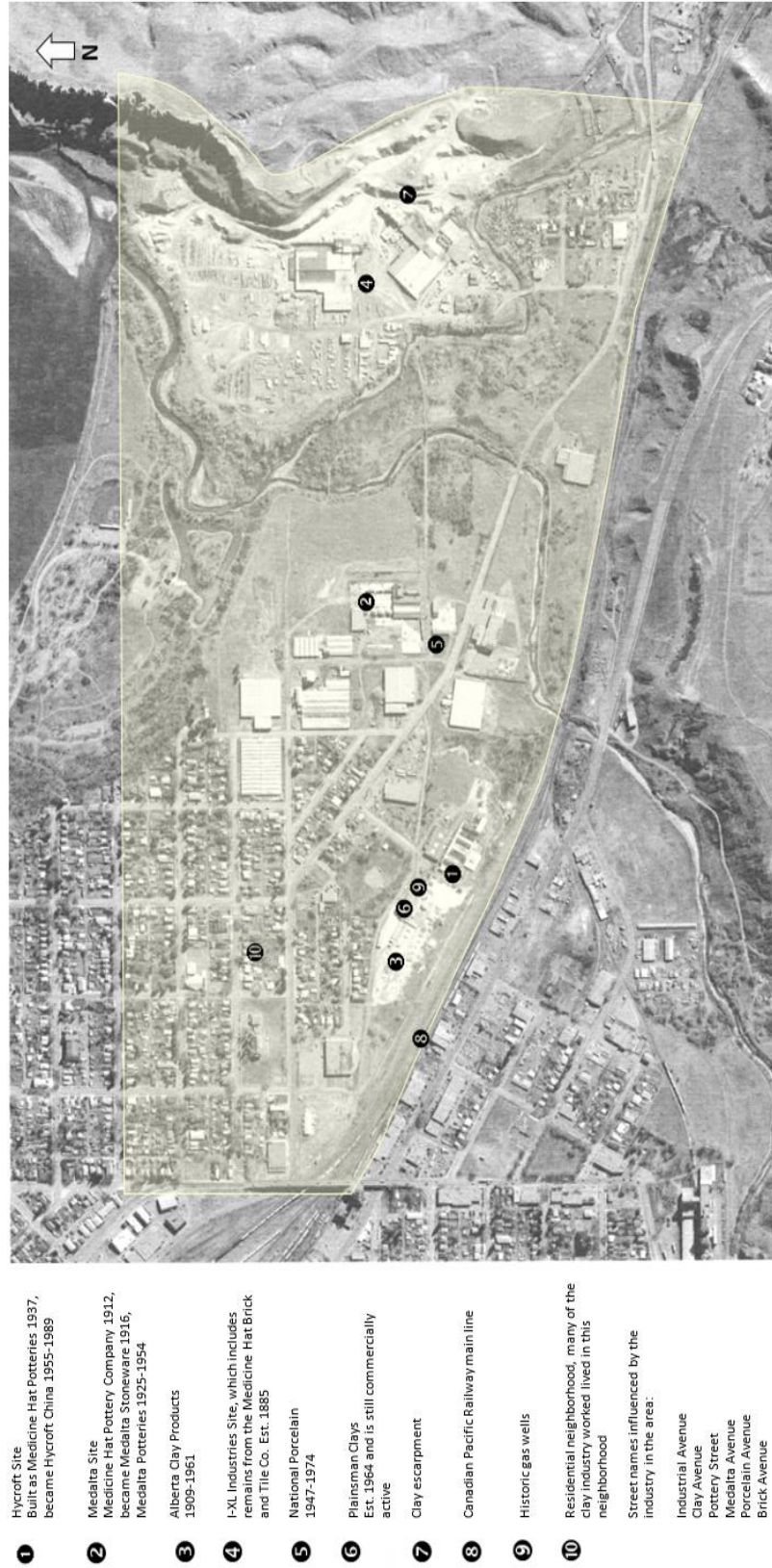


Figure 3-3: Aerial View of the Historical Resources located in Medicine Hat's Historic Clay District. Yellow zone is the approximate boundaries of the district (Image source: *Fire the Spirit Campaign*, Friends of Medalta Society 2005:12) (See Appendix 4 for full attribution and copyright licensing information).

The scale of protection in a historic district is dependant upon the region's landscape, the building's association to resources, a particular type of architecture, how they were used, and the style reflected in the types of heritage found within. The historical and archaeological resources found in the Medicine Hat Clay Industries National Historic Site have been preserved through a shared understanding aimed at safeguarding these features of this industry to ensure their survival. They have been conserved by maintaining and stabilizing the factories existing materials. This collection is regulated under provincial legislation and managed and operated by the Friends of Medalta Society. There are sites without designation being maintained in the collection. For those with designation, like the Medalta Potteries site, regulation means that any changes or additions that may be required will undergo documentation and research before any interventions are incorporated in order to preserve the site's historical texture that informs how it evolved through time and will require Ministerial approval. Although the federal role is commemorative, the province does provide direction, and when necessary, a Municipality can enforce bylaw.

There is currently 354,505 square feet of built heritage found in the Historic Clay District and contains 19.3 acres of land and property that directly interprets the district's built heritage. Between the land and property there are a total of nine archaeological sites and three of them are currently being used as open exhibits. There is an extensive series of industrial artifacts, machinery, structures, and features. The Collection located in the Medalta Potteries site includes fine art, decorative art, photographs, and historic documents. The Museum contains a library with rare ceramic secondary sources with publication dates as early as the 1900s and include product guides, original paper items such as payroll checks, and daily punch cards with the names of some of the former workers on them. There are a series of master plaster molds, an inventory of ethnographically derived interviews taken in the early 2000s from former workers who inform part of the site's industrial history.

3.3 Summary

In an effort to illustrate the scale and rarity of the inventory located in Medicine Hat, we only have to look at the record of how many brick factories were in operation in the early 1900s. Between 1907 and 1912, there were 32 brick factories producing brick in Alberta (Mason 1983:85). “Almost as many more would be promoted but would never get off the ground” (Mason 1983:85). Jack Mason (1983), a social historian and son of a Scottish stonemason/bricklayer chronicled the brick industry in Alberta in the 1980s. Mason explains that brick yards were pushed to produce tens of thousands of first quality, seconds, or clinker bricks, as buildings grew taller, and demand grew (Mason 1983). Brick was used to line main streets, sheath homes, and wrap multiple-storey businesses as urban areas developed in Alberta (Mason 1983:85). Although the clay products industry is a story that stretches well beyond Medicine Hat, there is practically no evidence of the majority of these industries today. What does remain of these factories are seen through the preservation of some historical homes, perhaps on a pantry shelf, within a brick laid sidewalk or buried brick foundation. Because the industry has essentially disappeared in Alberta, the remnants of the industries in Medicine Hat act as transitory touchstones on the contemporary prairie landscape. They are influential in their presence as evidence of the province's earliest systems of exchange, while also signifying the types of resources that were relied upon during the province's period of expansion.

David Harvey (2001:320) expresses that heritage is continually being produced by people and that every community has created meaning from their past. It is this relationship between people and how they express their history that creates the reasons to conserve heritage. They may differ from person to person, community, or group, but the reasons that some industrial heritage is reused, preserved, or repurposed, while others are left to decay, is complicated but centers around the concept of value (Clark 2005, 2010; Harvey 2001). It is reasonable to claim that the demand and enthusiasm for industrial heritage or historic districts within community

redevelopment and revitalization strategies have depended entirely upon professional/public dichotomy and even necessity during their development (Chan 2011; Loures 2008; Othman and Heba 2018; Wright 2006). Although there are few historic brick plants left on the prairies, there is a substantial inventory still standing in the City of Medicine Hat that captures the enthusiasm, activity, and speed of development between the 1880s and 1930s. Harvey explains that “heritage has always been with us. . .[and]. . .we should explore the history of heritage, not starting at an arbitrary date. . .but by producing a context-rich account of heritage as a process or a human condition rather than a single movement or personal project” (2001:320). This collection does just that through its preservation. Its value is not just its materiality, it is how it encapsulates all of the stories of settling the west, good and bad. This industrial district is a place that records the customs, practices, and beliefs of people who played a substantial role in the world we live in today. Its protection has been a process informed by those for a variety of reasons and through the efforts of many their values embody the heritage that remains standing today.

The flood in June 2013 created an opportunity to study the heritage located in Medalta Potteries, the Medicine Hat Brick and Tile Co. site, Hycroft China Ltd./ACP Site, and National Porcelain. Although it was initiated through disaster, it created an opportunity to explore the complexity of preserving living heritage. The heritage that exists upon this landscape will continue to be vulnerable to environmental hazards because it is located on a floodplain. Each interprets a different part of the City’s history, each will require a different intervention, and all overlap grey areas of protection. The community has begun to develop policy regarding documentation and the borrowing of the objects in the Collection (McKinnon 2019), a conservation plan was devised for flood impacted heritage specifically focused on maintaining the heritage day-to-day (Jacobson 2017[2019]), and a full conservation plan developed for Hycroft China aimed at stabilization and repair (Gartly 2020). There is no permanent onsite heritage manager that holds experience in both heritage conservation or industrial archaeology and many of those who have been intimately involved with the site’s development are no

longer there. This is a major vulnerability as institutional knowledge diminishes or disappears. There has been a foundation document written for Medalta, designed to support emergency planning for staff and the Artists in Residence (Jacobson 2018). It does not cover the whole historic district. It has been significantly impacted by the current Covid-19 pandemic and is only now emerging from a place where it functioned at a diminished capacity due to restrictions. It will be maneuvering within the unexpected effects of this multi-year pandemic for some time still.

This historic district is valuable and balances vulnerable tangible and intangible heritage on a complicated landscape. Its preservation has respected the theory of minimal intervention which means that all interventions chosen were designed to retain as much of the original fabric as possible in order to conserve as much of the character defining elements indicative of the buildings or factories historical use. Sir Neil Cossons, OBE (2005:ix) states explicitly that “understanding the complexities of. . .historic industrial environments is crucial if we are to develop a structure for its protection and management.” Cossons notes that industrial landscapes have been a focus of renewal and development and understanding these landscapes' vulnerabilities will better “secure the intrinsic character and quality of a building or structure” (Cossons 2005:x). Cossons warns that “knowledge and understanding are essential. . .but it is only a first step. . .it must lead in turn to carefully crafted design briefs and management frameworks which are flexible enough to allow for both preservation and for managed change” (Cossons 2005:ix). The designation of this collection of factories and their integration into this community has relied on the efforts, creativity, and energy of many local citizens. But the value of this district is greater than the character-defining elements that define its historical value. Its presence and integration are valued economically, socially, aesthetically, scientifically, spiritually and is a member of this modern contemporary community. It was essential to the city’s beginnings and is still relevant today.

4 Literature Review: Discourse, Risk, and Heritage

“I feel badly that we’ve allowed certain resources to disappear because once it’s gone, it’s gone forever. As a community, I’d like to see more emphasis on the preservation of potential historic entities.”

-Rose Stickle, a former Medalta Decorator employed at Medalta Potteries in 1945 (Swihart 2001a).

Climate disasters have become a crucial public issue within the cultural heritage industry. Reports from key agencies describe that the intensity and frequency of hazard events have increased throughout North America. The United Nations Office for Disaster Reduction (UNDRR) reported that the number of disaster-affected people from 2000 to 2019 was 7,348 disasters, with economic losses recorded at 2.97 trillion US dollars. During this time, there were 1.23 million lives claimed and 4.2 billion people affected by these disasters. There were 3,254 significant floods and 2,034 storms recorded (e.g., hydrological, meteorological, or climatological events) (UNDRR 2015). In another example, the “Human Cost of Disasters 2000-2019” records that there have been significant increases in other categories, including drought, wildfires, and extreme temperature events, as well as earthquakes and tsunamis. In Canada, The *Insurance Bureau of Canada* (IBC 2020) reported that the catastrophic losses in 2019 cost 1.3 billion; in 2016, losses totaled 5.2 billion, and in 2013 losses totaled 3.4 billion. Maxx Dilley, Director of the *Climate Programme and Climate Coordinator for the World Meteorological Organization*, stated in 2000 that, “Hazards related to climate change and weather cause the most economic damage worldwide than any other type of natural hazard. . . .[and]. . .when global warming and the possibility of abrupt climatic changes are factored in, there is every reason to proactively integrate disaster reduction in sustainable development” (2000:45). As these data indicate, climate caused events are expected to be more frequent and extreme and, if these trends continue, will impact a broader range of people or settlements (UNISDR 2018). “Cultural heritage, encompassing the archaeological and historical built environment and movable heritage, is at risk from natural disasters” (Taboroff 2000:71).

Risk management and disaster preparedness, then, are essential services to consider, within the parameters of conservation priorities and continued use. If building resilient heritage is a goal, then we need to rethink emergency management, risk, disaster preparedness, recovery processes, monitoring strategies, and provide solutions to assist communities working through the process of preparing heritage for unforeseen events. As heritage professionals, we recognize a need to make changes yet, heritage is often not included in the existing conversations of emergency planning and risk preparedness within municipal planning. Neither is heritage vulnerability discussed when it is tangential to economic or community impacts. In some discourses, well-established themes are developed, such as social organization during an emergency, protecting business continuity, variability of impacts for different socio-economic groups or communities, as well as the necessity of effective communication, (Adler 2006; Alexander 2000; Foster and Giegengack 2006; Geis 2000; Haddow, Bullock, and Coppola 2011; Tierney 2006; Wisner 2004). However, processes are lacking which outline ways to prioritize heritage in historic districts for protection against the loss of heritage value of those large-scale inventories underpinning designation. Specifically, for those with multiple sites of varying age focused on the pre-hazard phase.

How disaster and risk management work towards building the resiliency of cultural heritage has been identified by World Heritage Committees as an important part of conserving our heritage and awareness of this has been steadily growing. Despite a growing awareness, the consequent actions do not provide strategic processes for communities with little experience in planning for protection and management of massive inventories of heritage. Nor does it teach them how to prioritize the *critical heritage* from within what is essential to a district's heritage value (historical and sustainable). There are distinctive features associated with extensive historic collections of heritage, a variation in types of heritage, distance between them, the features of a landscape connecting heritage structures or places to the inventories associated with them. While communities and heritage managers are aware disasters impact cultural heritage and historic districts (e.g., fires, flooding, earthquakes), and these events can

create structural failure to historic building stock, erode exposed archaeological features, or destroy collections of artifacts, case studies detailing strategies to increase resiliency, or create conceptual tools are inadequate.

It is an erroneous assumption that large-scale heritage sites have someone responsible to manage the heritage and often, as a result, disaster planning is left in the hands of whomever is administering staff or caring for the day-to-day operations of a heritage district. Specific steps on how to identify vulnerability as it pertains to cultural heritage in ways that emergency service specialists can understand or the evidential data about the cost associated with the loss of cultural heritage or heritage value is virtually absent (Jokilehto 2000). June Taboroff, a cultural resource specialist who concentrates her research within environmental economics has argued, “Although there is a long tradition of devastating natural disasters that have destroyed irreplaceable cultural resources, awareness of the need to reduce risk is low, and memory is short of costs incurred because of a lack of preparedness” (2000:71).

In the developing world evidence points to a pattern of higher vulnerability to . . . natural disasters, [but there is] a weak record of implementation of protective measures to control or limit damage, exacerbating negative impacts, and lengthy recovery time (Taboroff 2000:71).

While much research and resources have focused on addressing environmental disasters, the impacts of these events on cultural heritage are broadly illustrated within resulting statistics and as it pertains to heritage at local levels have not been adequately considered. This oversight may occur because “there is not always a [proportional] relationship between the size of the physical forces unleashed and the magnitude. . . of human suffering and losses that result” (Alexander 2002:2). This chapter discusses industrial heritage and how it has become woven into large-scale historic sites or districts through community redevelopment and place-making strategies integrating the significance of heritage into various layers of land use or registers designed to support early efforts of preservation through permitted use. In an effort to understand this internal structure, I show how historic industrial sites and heritage districts have become integrated in regional community development plans designed to support

diverse interests, businesses, and tourism. To make this point, I discuss and summarize how sustainability efforts are used to recreate contemporary places with strong connections to the past. I argue that heritage critical infrastructure within the community or regional emergency planning initiatives have not yet been fully considered. This matters. When a community includes a property as a heritage resource and it is celebrated as a successful component of a regional economic management framework, the values used to engage and integrate the heritage as regional development might differ from those necessary to prioritize and prepare it, as a heritage resource, against unforeseen disasters (Fredeim, Harald, and Khalaf 2016).

The purpose of this literature review is to understand the broad historical themes connected to the integration of industrial heritage as product of use as a historic district, what makes it attractive as a topic of preservation, what designation offers for protection and examines the interface between conservation and risk management in order to establish the basic history and theories around the reasons to preserve heritage. This is relevant to understand the challenges communities face as they try to identify what heritage requires additional preventative interventions and what tools can be used to sort the inventory that accompanies large scale districts. It will begin with a brief history and summary about industrial heritage, how they are integrated into community development, and when industrial heritage became framed as a destination. Because this dissertation is focused on an inventory of industrial heritage and has broken down a technical process of assessing vulnerable heritage, it is sometimes difficult to see the relationships between the purpose of conservation, the significance of the industrial museum, what protection designation actually provides and how it all fits together within the current state of emergency management as a discipline.

This literature review has been designed to provide the context to the vulnerability of heritage focused as it is informed by values-based conservation, designation, and how heritage is framed within risk, specifically through a local level required by communities who must navigate within these complex topics during emergency planning. Each topic is relevant within the process of assessing risk to heritage because of the complexities connected to the theory of

conservation, planning, and values but are often written for experienced heritage managers. The complexity of value and minimal intervention can complicate a process of planning for heritage by communities (sometimes referred to as non-professional) who have little skill or an understanding of the philosophy that has established each discipline, yet are the stakeholders most affected by the recovery of heritage and the salvage of heritage impacted (Babić 2015). In this dissertation I use only the term community not non-professional because I feel the latter denigrates the efforts and investment of community members. This discussion will be framed around the concept of heritage values, it will briefly define the value of industrial heritage to understand the heritage in the Historic Clay District, why it is significant as a collection in Canada, and the staff and volunteers of Medalta Potteries as a place that requires protection.

Value informs how heritage has been conserved, used within the business of heritage, and how risk is assessed. They also drive emergency management strategies designed to support a community. This discussion is intended to provide the background needed to determine the vulnerability of heritage value and how it might be at risk when sites are positioned within overlapping frameworks tied to complex ownership structures. Why does this matter? The challenges facing communities trying to balance safety and long-term conservation with the use and management of heritage is vulnerable to natural disasters. When we understand value, we can communicate what is at risk to those outside of heritage. I will end the discussion by identifying risk management as a tool that can be used to frame emergency planning as a departure towards future possibilities. Each topic reviewed here was written for a purpose and it is critical to understand the purpose of conservation and ask what else can we do to help? If we are going to ask people to establish risk reduction strategies for heritage at-risk then we must understand what provokes their inclusion into emergency plans and reveal the gaps in assessing risk, vulnerability, and resiliency. Heritage informs a place, people influence disaster planning, and both are deeply impacted by disasters and recovery.

4.1 Why bother preserving industrial heritage? The foundation of a Canadian place

“Everything that I am comes from the past.”

-Survey participant (Conrad, Ercikan, and Friesen et al. 2013:18)

Industrial heritage has been defined by Parks Canada as any of the remains of industry; its materiality, objects, processes, evolution, uses defined by a place, and the connections created through its influence within a culture (2010). Although most places of heritage are used, the relationship between the utility of industrial heritage has become relevant as many industrial places have been incorporated into community economic plans as unique spaces offering a sense of place because of its inherent character and landscapes. Their transformation through rehabilitation has created ways to revitalize derelict places and encourage sustainability, their value is often only seen through their history rather than the role they play within broader creative economic development. There is, however, a relationship between the inclusion of heritage into a community, as significantly designated heritage, and its protection. All has been designed to establish it as a real and tangible feature within the physical use and development of a place. This is what distinguishes a historic district from a contemporary development or a solitary museum exhibit. It is also what makes industrial heritage vulnerable.

An important entry point into this discussion begins with the origins of the development of industrial heritage as a focal point of conservation and what it means to preserve. The factors and conditions surrounding the integration of industrial heritage within conservation planning began in the mid 1970s as communities throughout North America, Europe, and the British Isles tried to hang on to their aging industrial remains after many became decommissioned as a result of changes in technology, decreased profitability, or shifts in cultural desire. Why does this matter? In most cases, these transitions left many former industrial sites vacant in communities. Some stood as an epitaph to a different time serving no purpose, some were dismantled. Those that were acquired by a community or integrated into a neighborhood are

tied to a complex relationship between people and the tangible remains of industry, not only because of how they were constructed or their materiality, but what they offer outside traditional planning and development offered during this time. Because industry was so embedded into a place during its historical development, they often inform a part of the built environment, the types of neighborhoods that grew around them, and can be seen as a static and endearing feature of a place. Navigating the web of the complex reasons why heritage is preserved and why it is at risk requires a toolkit drawn from a number of specializations.

The preservation of industrial heritage is a community initiative. Their presence has received considerable attention in the philosophies of labor historians, like Karl Marx and Fredrick Engels, who used them to demonstrate the relevancy of working-class lives and could be used to frame stories of capitalism through ideas like economic determinism, capitalist modes of production, and class struggles (Innis 2017b). These perspectives formed part of the foundation of the social history of industry, which was also in the process of legitimizing during the seventies and held a particular interest in local and community studies. Whether they were actively being used or lay vacant, they form part of the stories connected to a community and they play a significant role in their protection. For the public, industry was often understood through the benefits that they provided to the whole of a functioning community, and through time, personal connections formed. The heritage that is preserved or documented are often led by skilled, “enthusiasts, former employees, or descendants of site occupants. . .[and many]. . .have not only sustained but, enhanced. . .scholarship through their dedicated research and field recording” (Casella 2005:8-9). While the relationship between people and industrial heritage is certainly a focus of this research, the heritage is integral to the reasons why people invest in its protection and its use. Whether positive or negative, the remains of industry are often influential in community identity, their preservation supports the development of new cultural facilities, and can signify an important period within a community’s social history outside the blight of divestment. From a definitional perspective, industrial heritage holds a

broad range of community value because of how it has been integrated and redefined as a destination.

Industrial heritage has been used in a variety of ways since the 1980s resulting in some historical industries to become repurposed into industrial museum landscapes, urban loft spaces, community centers, restaurants, and business incubators (Bookspan 2000; Matsuda 2004). While it has been integrated into a variety of uses, the focus of this research is on its integration as a multi-purpose industrial heritage district that contains a substantial inventory of historic remains with portions of the site being used as a living museum. This discussion includes the establishment of the industrial museum in North America. The beginning of the industrial museum can be traced back to an American, Charles Richards, who was the president of the *American Association of Museums*, who recognized their value as places of history through his publication *The Industrial Museum, the place of industry* in 1925. In his early work, Richards (1925) examined the role of industry in the economic, social, and cultural experiences of North Americans. Not only did Richards enthusiastically believe in preserving the history of industry, but he also viewed them as a viable subject as a museum, both as an attraction, but also a destination and considered the protection of industrial history as a relevant and necessary pursuit (Cutliff and Lubar 2000; Skramstad 2000). He viewed industrial history as a facet of cultural identity. Their preservation into museums was considered a benefit that offered a place for people to, “visit to understand where we as a nation. . .[came] from, get some perspective on the transitions that we [were] undergoing as individuals, [and] communities, and. . . .consider the future of work, technology, and society” (Cutliff and Lubar 2000:12).

Industrial heritage considered a destination was a pivotal moment in the protection of North America’s industrial history. During the nineties, the re-branding of industrial properties into heritage sites of interest as engaging destinations became important to communities entering into the post-industrial era (Roth 2000). When industry actively exists as a commercial entity, there is an awareness of its presence. Its influence is far reaching throughout a

community, its identity and economy, but their internal structures and places are inaccessible to many. Driven by a sense of social purpose, industrial heritage was different from traditional museum models and as attitudes of the general public waned toward traditional museums, people looked for alternative historical experiences, “for recapturing the past, particularly at the local level” (Leary and Sholes 2000:52). There was, “an obvious dissatisfaction with the potential of most museums to facilitate a sense of place” (Leary and Scholes 2000:52). Its recognition as worthy of preservation meant deindustrialization became a matter of public interest.

In an effort to understand the reasons industrial buildings and landscapes, once shaped by capitalist potential, are repurposed into mixed-use community spaces as attractions, we must also recognize how their presence contributes to a cultural identity (Messer, Shriver, and Adams 2015). A sense of place can be described as the relationship that is formed between people and a place and how it is, “expressed in different dimensions of human life: emotions, biographies, imagination, stories, and personal experiences” (Russ 2017:69). Through the record that conserved industrial heritage sites create, we can see the variety of reasons why they have been regarded as special, not only through their temporal sequence, but how they provide people interested in industrial remains a glimpse into an often-foreign world “when such institutions are no longer questioned; when they are increasingly distant, no longer accepted as the basis for economic, social and cultural life” (Cutliff and Lubar 2000:13). Their preservation informs both the present as well as the past. While there is a place for a narrative pertaining to the history of industrial heritage, how it exhibits a community’s collective history becomes interesting to those who live in a post-industrial world, and it is this history that defines the evolution of industrial heritage into places people visit (Cutliff and Lubar 2000:11).

Expressing community character through the incorporation of industrial heritage into sustainable development began by the 1980s and these early initiatives have played a significant role in the amount of industrial heritage found today (Nocca 2017). Although David Harvey and Doreen Massey have drawn on Marxist beliefs to understand the presence of

heritage as, “material consequence of particular political and ideological arrangements under global capitalist. . .[their presence speaks more to the relationships people have with the materiality of heritage and]. . . .resonates with the notion that different people may ascribe different meanings to the same place” (Russ 2017:70).

In Alberta there is a current inventory of eighty-four industrial sites on the provincial register (Alberta Register of Historic Places *n.d.*). What they offer through their preservation is found in the stories framed through multiple viewpoints. There are stories tied to the workers, those who managed or drove operations and much of what exists today frames complex stories of capitalism and shifts in the use of technology. The challenge for industrial districts with substantial interpretive programs and *in situ* heritage is “to identify and exploit the places and stories where the accurate and compelling intersect most powerfully” (Goldstein 2000:134). Repurposing industrial heritage falls under the theory of sustainable development, which is considered a continuous process, whereby sustainable planning principles focuses on the importance of place as it is found, considers why heritage is special to individuals or groups, and incorporates this knowledge into community planning initiatives (Kaltenborn and Bjerke 2002).

Planning and development are a cultural process and the integration of industrial heritage into urban development through restoration or adaptive re-use have been framed as an economic benefit. The most characteristic features of industrial heritage are not only found in its aesthetics, but it is also linked to its contribution to a community’s social significance, its involvement in the growth of a community, or role in a region. Whatever the reason communities choose to protect, its preservation reflects a shift to values-based conservation in planning and development. Although the conservation of the built environment, sites, or industrial landscapes are often preserved through a process of rehabilitation, restoration, and integrated into a recreational use, the fabric of industry interprets behaviours and reflects the activities at the site through its historical intent. Labor historians, such as Daniel Drache (1984), H.C. Pentland (1981), and David Bercuson (1981) might provide the historical relevance

behind the preservation of industrial heritage, the fundamental message linked to their presence –in the case of industrial heritage and the decision to participate in the complexity of rehabilitation– the relationship that has formed between heritage, the people captivated by it, and stories they evoke. In Goldstein’s view, scholarly discourse has been useful in their preservation but, “is not the ultimate end. . .[but rather]. . .the primary point of departure to ensure that the final product is not only accurate, but also substantive and resonant” (2000:134).

Although many may not hold an inventory of *in situ* heritage, their integration and preservation can be seen as an innovative shift in Canadian land use planning towards sustainability. Their preservation creates a sense of place, while speaking to shifts in urbanization and the adoption of specific technology (Klassen 1999). The details that define the historical significance in preserved industrial heritage is found in the details pertaining to the presence of industry, its role in the development of mass-produced commodities (Mason 2002), the deskilling of tradespeople (Bright 1994), and how products fostered the growth of Canadian consumerism (Hayward 2001). Preserving industrial heritage might be driven through a grassroots effort. What becomes of it as a sustainable development requiring the buy-in from multiple stakeholders. To understand the inventory and place of industrial heritage, we must look to local social histories to provide context to these remains, but how the heritage is preserved can be seen as an academic challenge that weaves the value of industry from its history. The heritage provides the relevancy behind the reasons why industrial heritage is seen as a solution to a particular problem in land use. The process of preserving industrial heritage as a community development activity, must be viewed as a collaborative approach, consisting of both a development of a plan and a defined strategic process (Hodge 1998:188). The character that industrial heritage provides is the “nitty-gritty” details of industry (Shaw 2013, 2019). Its presence demonstrates the interrelationship between society and technology, distribution, and has been presented in ways that people can see themselves in the

complexities of these relationships (Bercuson 1981; Innis 2017a,b; Lowenthal 1985; Pentland 1981). Preserving them is not a small achievement.

In 1997, there were approximately 120 designated heritage districts in Canada (Fulton 2006). In Canada, a heritage Districts are most often designated as a heritage site or place. In 2018, there were 996 National Historic Sites in Canada (Parks Canada 2018). 172 of them are administered by Parks Canada. The remaining sites are locally supported by individuals, groups, agencies, and governments (Parks Canada 2018). Of these chosen, industrial remains are considered an asset and hold special meaning. Whether through their materiality, the stories they tell, or the struggles they emphasize, what social history tells us, it's the places they take us. Gerald Hodge explains that when a district or neighborhood is developed that it is completed through strategic planning comprised of two phases. It is through this process that heritage can become interlaced within a complex ownership framework. Hodge (1998:188) explains the development of a district in Canada is a two-step process:

“the first process is identified as a normative process that a community undertakes to determine its needs, objectives, acceptable courses of action, and whom to involve in the deliberations regarding its plan. The next process is technical primarily outlined by a professional planner that engages in the study of a community and designs a plan.”

Both processes are based on, “a long-developed theoretical view of what constitutes a good planning process for a community which is concerned with the physical assets (buildings and streets), open spaces, and a community of individual people which include groups and social institutions” (Hodge 1998:188). The community is the foundation of a community-planning process, the details connected to the buildings are defined by its inherent permanence, history, and the physicality of a place. Industrial heritage as a historically significant place is linked to its own integrity. The foundation of a Canadian historic district is formed through a combination of who is the community and what are the physical assets of a space that constitutes the character and image of place. How a site functions is dependent on both facets of planning and how it might be woven into an economic or business development plan. As a district it must provide more than static history, but rather become part of the interpretation

of a community that exists within its boundaries or is informed by its presence. “Culture Heritage Conservation is the act of protecting the authentic values and cultural rights of a segment of humanity, buying time to modify itself and its cultural perspectives and assets, progressively and incrementally” (Loh 2010:71). Historical significance in this sense includes a chronological narrative. It also holds a larger story that includes a multiplicity of voices and narratives that overlap, complement, and at times, conflict with each other.

Industrial heritage sites celebrate working class lives. As a historical industrial landscape not only does it capture the manufacturing process but is also defined by its varied inventory of *in situ* heritage: buildings and structures, machines, and archaeological remains. As a district, the *Canadian Register of Historic Places* (CRHP) defines it as:

“a place comprising a group of buildings, structures, landscapes and/or archaeological sites and their spatial relationships where built forms are often the major defining features and where the collective identity has heritage value for a community, province, territory or the nation” (Parks Canada 2010:50).

Industrial heritage as a subject is preserved because of the features of value, its authenticity is secured through the presence of heritage, and can be situated in urban and rural environments or found relatively alone on vast and isolating landscapes. Wherever it is situated, it is as varied as the environments it is found in, and where it is found, contributes to its heritage value.

Industrial heritage is most defined by its place. As an urban space, it must be recognized as a “socially constructed place. . .both inherited and created by those who live there. . .reflect[ing] a bond between people and places” (Russ 2017:69). A “sense of place is the lens through which people experience and make meaning of their experiences in and with a place” (Adams 2013:47). Heritage is often seen as a non-renewable resource and integrated throughout North America and Europe as a feature or subject of sustainable development projects, urban renewal initiatives, and environmental reclamation projects (Loh 2010). Their rebranding can result in some highly successful enterprises and used “to create a sustainable and equitable life environment for its present and future generations” (Loh 2010:71). Industrial

heritage as a topic, is far broader than what has been presented in this section. Its origins have been briefly discussed to provide context to the development of an industrial district.

Industrial heritage are products of the Industrial Revolution. This movement radically changed the globe and left behind an inventory of historical evidence equal to its range of influence. The factors that popularized the re-branding of industrial properties are the focus in this research and how they have been repurposed into a destination connected to community development. The heritage value of a district is found in local, regional, or national stories. These stories are sold through its materiality and integrity. The aesthetic and social values that industrial heritage convey is cultural and, in their redevelopment, as contemporary places, is connected to industry as history. What they become are unique repositories of history and have been called places with un-remembered pasts (Cameron and Gatewood 2000). I would have to disagree. Why communities commit to preserving industrial heritage is a personal journey regardless of the presentation of the outcome.

4.2 “The Lure of the Local”²

“Theaters of memory” resurrects and “unite the strands of manufacturing and life” in ways that contribute to establishing identity.

-Raphael Samuel (1994) in Leary and Sholes (2000:50,61).

Heritage has been seen as an opportunity to be used, “as an instrument to create understanding and to manage cultural change proactively” within community development (Loh 2010). Heritage, by today’s standards, is a very broad term that can be applied to anything or anyplace that holds value. In this dissertation, it is tangible heritage that is of interest as it secures the intangible heritage associated with its presence within a district. Regardless of how heritage is interpreted, where it is found, industrial heritage sites are places that, “contain the

² Based on Lippard 1997

physical elements of industry that were constructed, organized, and used for industrial activities” (Parks Canada 2010:111).

Before industrial heritage can be considered for designation as a Municipal Historic Resource in Alberta, the government has identified that it must first hold eligibility as a type, whether it is historical, archaeological, or paleontological. It must possess historical significance and have an adequate level of material integrity (Municipal Heritage Partnership Program 2010d:15). It is then evaluated on its local or provincial significance. Once it has been preliminarily assessed as containing the above features, it must then demonstrate at least one of the five following significance criteria outlined by the Municipal Heritage Partnership Program, these criteria have been defined as, “a) a theme, activity, cultural practice, or event, b) an institution or person, c) a design, style, or method of construction, d) inform a municipality’s history, prehistory, or natural history, or how they hold e) prominence or exceptional visual, a sentimental or symbolic value that transcends its primary function” (ibid). Like any good strategy, the process of deducting eligibility requires an evaluation of the industrial heritage to a series of values identified through research that speak to a site’s evolution, the role it played in a community, how it may be tied into broader regional stories, and then its integrity is evaluated and then related to how it conveys a site’s authenticity. Heritage, on one level, is made up of both the cultural traditions and the artifacts that we inherit. Dennis Hardy (1988) has pointed out, heritage is also a “value-loaded concept, embracing (and often obscuring) differences of interpretation that are dependent on key variables” (1988:333). Values can be identified through the design of the heritage, its architectural style, or the physical attributes specific to its materiality, spatial organization, regional location, and how it might relate to the natural environment (Municipal Heritage Partnership Program 2010d:15). Hardy (1988) notes that it is how it is interpreted in a particular context that creates its distinct qualities and become the factors that inform significance.

Heritage value is typically evaluated by a local specialist or academic, but it commonly emanates a strong artifactual value and is considered a living historical document. Communities, groups, or individuals can create their own case for heritage designation but once designation has been approved, there is an agreement that conservation principles will be applied to the heritage and all matters pertaining to its preservation will require some sort of written approval if treatments range outside standard upkeep, whether municipally or provincially, and maintained within the standards created through designation. Once a historic property becomes a designated heritage site, historic property owners must consider how to apply interventions and agree not to “destroy, disturb, alter, restore, repair, or remove any feature” that may hold heritage value without prior approval (Parks Canada 2010). Parks Canada considers this a holistic approach to the preservation of heritage and was adopted in 1994 and have been outlined under a series of Standards and Guidelines designed around a theory of minimal intervention (Parks Canada 2010). The objective of these standards is to preserve heritage value and all treatments or interventions must respect the character-defining elements that have been identified in designation documents. Any additions, alterations, must not only be reflective of a sites heritage value but “must work match the forms, materials, and detailing of sound versions of the same elements” (Parks Canada 2010:23). These Standards can be found in Appendix 2. After designation, Municipalities are encouraged to register their heritage on the Alberta Register of Historic Places where it will be recorded and a Statement of Significance will formalize its recognition which is publicly shared detailing the heritage, its character-defining elements, and pertinent history (HeRMIS n.d.). In Alberta, after heritage has been designated, protection is offered through the creation of a special bylaw. It has been noted in in the documents outlining the process of designation that, after 60 days, the bylaw can be registered against the title, but holds no regulatory role other than statutory municipal requirements pertaining to development planning and building permits (Municipal Heritage Partnership Program 2010d:8-11).

In general, the Government of Alberta's Municipal Historic Partnership Program (2022) have outlined the purpose of designating heritage as having three main functions, they have been summarized below:

- Provides a historical property legal protection through the establishment of a bylaw. Any actions taken leading to damaged, diminished, or destroyed heritage is considered unlawful and action could be taken.
- Establishes formal recognition of significance of a historic place as an important local place, whether for its tangible distinctiveness or through its association with an important facet of provincial history.
- Opens a property to streams of funding by providing an opportunity to link the historical property to financial and other incentives using the heritage management approach with an emphasis on collaborative protection initiatives.

How it is protected locally, provincially, and federally is governed through various mechanisms, they are described and summarized below.

4.2.1 Canada's Federal Governmental Responsibilities to Designated Heritage under Threat in Alberta

The responsibility to designated heritage at the Federal governmental level is limited to identifying sites of national historic significance as evaluated by the Historic Sites and Monuments Board of Canada. The Federal government has little role in directing or coordinating heritage organizations in Canada. Parks Canada (a federal government organization) maintains the Canadian Register of Historic Places, a comprehensive online listing of places of national, provincial, and local heritage value. Federal designation is commemorative only and does not provide statutory protection. Any support or advocacy required by a heritage organization in Canada is facilitated by the National Trust (NTC), and provincial heritage organizations. These organizations can be governmental or not-for-profit. The Federal role is to ensure that Canada's National Heritage is preserved and perpetuates a strong sense of identity. It also encourages the public to support the country's historical sites, while bringing sites to the attention of provincial and municipal authorities who have the legal

power to preserve sites like Medalta Potteries Ltd., Hycroft China Co. Ltd., and the Medicine Hat Brick and Tile Co.

Overseeing heritage sites for Canada, currently, falls under the jurisdiction of the ministry of Environment and Climate Change. Although the minister is technically and directly responsible for designated heritage, it is primarily through commemoration with heritage sites managed by their respective provinces and municipalities. Through federal, provincial, and territorial collaboration the *Standards and Guidelines for the Conservation of Historic Places in Canada* have been devised to provide an overall guideline for preserving and conserving all heritage sites in the country. These have been included in this document in Appendix 2. Governments develop incentive programs to promote heritage conservation and vary across the country. In Alberta, heritage initiatives are financially assisted by the Government of Alberta's Heritage Preservation Partnership program under our current ministry, Alberta Culture, Multiculturalism and Status of Women. There are Federal cost-sharing grants available for National Historic Sites through Parks Canada's National Cost-Sharing Program for Heritage Places.

4.2.2 Provincial Government's Responsibilities to Designated Heritage under Threat in Alberta

Historic resource management is a provincial rather than federal jurisdiction. The actual administration of heritage preservation is carried out through various provincial acts and laws. They have been designed to protect historic and cultural sites for the enjoyment of future generations by limiting how historic sites may be improved. The implementation of heritage policy is placed on each province, territory, and municipality. Each province is responsible to create its legislation and programs aimed at protecting and managing (conserving) historic resources within its jurisdiction. In Alberta, the *Historical Resources Act* empowers provincial and municipal governments to designate historic resources of provincial and local significance respectively where such protection is deemed a matter of public interest. Provincial designations are registered on the Certificates of Land Title. Designation formally recognizes

historic places' heritage value, and it protects their integrity by requiring that changes are approved by the designating authority(ies) and is provincially recognized as a public resource (Province of Alberta 2021). From this point on, how it is preserved and what methods are taken to conserve elements of the heritage become actions in the public's interest and will require approval by a provincial heritage advisor on behalf of the Minister who is responsible for heritage (Province of Alberta 2021).

Heritage value at Medalta, Hycroft, and the Medicine Hat Brick and Tile Co. is currently regulated solely by Historic Resources Management Branch of Alberta Culture, Multiculturalism and Status of Women. Programs, such the Alberta Historical Resources Foundation (AHRF) offers financial assistance in the form of grants to assist in conservation efforts of historic places and other heritage programs province wide. Such conservation initiatives for designated provincial sites must receive ministerial approval.

4.2.3 Municipal and Heritage Societies Responsibilities to Designated Heritage under Threat in Alberta

Under the *Historic Resources Act*, any property owner may apply for designation that has Provincial significance and is in the public's interest. The process identifies as a community-based values-centered process that aims to enable a community "to achieve heritage conservation goals within the limits of available financial resources, time and energy" (Municipal Heritage Partnership Program 2010a:7). A successful application resulting in designation will achieve "at least some" of the following criteria: achievability, flexibility, responsiveness, accountability, and usability. It will require a blueprint for a heritage program identified as a "Heritage Management Plan" (Municipal Heritage Partnership Program 2010a:8). The plan will hold a vision statement, a description of a site's historical context, and will outline goals, priorities, and objectives of a heritage project. Designation is seen as a tool that Municipalities can use to conserve a community's significant places and any alterations will need Municipal approval (Municipal Heritage Partnership Program 2010). Municipal designations are registered on the Certificates of Land Title.

Whether designated as a provincial or municipal resource any action to alter any part of any structure will require written approval (Municipal Heritage Partnership Program 2010e:14). If industrial heritage is found on a landscape and it has been designated, it will require approval from a heritage advisor on behalf of the Minister, or a permit from the provincial archaeologist on behalf of the Crown. These approvals will reflect what type of activities will be taking place on the site. Any industrial heritage situated in a historic district will require approval to make any alterations, this includes capping sensitive features, and if interventions are required, they will be required to reflect methods that balance minimal interventions or remedies using *in kind* materials (Parks Canada 2010).

Why industrial heritage is preserved is a community matter. Whether the conservation and rebranding of industrial heritage is tied to goals of enhancing a community's economic stability, a development strategy devised to create a sense of place, a way to stimulate growth through a neighbourhood that may be struggling with a decline, or enhance quality-of-life, the heritage and its use will require a clear and specific understanding of what makes it valuable. The preservation of Canadian heritage is guided by the theory of values-based conservation directed by minimal interventions. [English Heritage](#) (2008:27) define values within the historic environment as the factors that,

“people want to enjoy and sustain for the benefit of present and future generations, at every level from the ‘familiar and cherished local scene’ to the nationally or internationally significant place.”

Anyone can be a stakeholder of heritage, in fact it has been advocated as important aspect of heritage management and conservation, whether it is recognized at a local or global level (Kalman 2014; Little 2007; Moshenska 2017; Smith and Waterton 2012). Values underpin the conservation of heritage in Canada and contribute to the authenticity of its inventory. They have also been foundational to the county's spirit of place, whether heritage is found in a historical district or seen in a solitary place. Values inform the presence and conservation of heritage within communities, its public use, protection, and planning. When heritage is

present, history is never lost, its presence implies some type of cohesive social network. It is values that make heritage conservation and use worthwhile and drive people to protect.

This section has been offered to frame a process and reasons behind designation, define heritage value, and acknowledge the long-held belief in minimal interventions to frame the complexity associated with protecting heritage against disasters. Designated heritage is conserved within a series of standards and guidelines, require approvals to make any changes to the heritage or a landscape, and with all of this investment by a community and professionals, it has yet acknowledged as an asset worthy of inclusion into community-wide emergency management plans. Is public heritage not a public community asset? The evolution of heritage as an industry, the process of refining the practice of heritage preservation, and how it has been integrated, as far as I can tell, has become critical to the wealth of a community as much as it has become to the well-being of people's quality of life. The following philosophy informs conservation planning in Alberta and frames heritage as a public asset.

English Heritage's Conservation Principles (2008), the *Alberta Historical Resources Act* (Province of Alberta 2021), the *Standards and Guidelines for the Conservation of Historic Places in Canada* (Parks Canada 2010), the *Municipal Heritage Partnership Program* (2010), and the *World Heritage List* (UNESCO 2021). Together, they frame the protection of heritage as a public matter.

4.3 The Role of Cultural Resource Management in the Protection of Heritage

✖ For the next week, staff and volunteers donned hazmat suits and logged 12-hour days sorting the sodden artifacts. Some needed a rinse; others, such as a birdseye maple bedroom set and the town tax rolls from 1905 to 1949, had to be trashed, just like thousands of other keepsakes in thousands of soaked homes across the province. One after the other, the mud-caked items were packed into 200 boxes, hastily labelled, and loaded in the freezer trailer.

"People give us these precious items as a public trust," [said Irene Kerr]. "As a museum curator, that was the hardest thing. You feel you've failed."

- Irene Kerr, Museum Director and Curator, Museum of *Highwood* (White 2014).

UNESCO, founded in 1945, is a significant intergovernmental organization who plays a substantial role in the guidance, management, and protection of cultural and natural heritage globally. It hosts an influential conversation in the protection of heritage situated in museums, extensive built environments, and landscapes, and in intangible heritage contexts. Cultural heritage, in this context, is categorized as archaeological sites and historical industrial landscapes that may or may not contain movable artifacts or machines, intangible heritage, and modified or significant landscapes (Silverman and Ruggles 2007). UNESCO defines the role of conservation as “the measures taken to extend the life of cultural heritage while strengthening transmission of its significant heritage messages and values” (UNESCO 2009). Protection measures can be multidisciplinary and often take a team approach, specifically when it comes to protecting extensive industrial landscapes within a theory of minimal intervention, which has been rigorously defined through various charters³, requiring a specialized understanding of the process of conservation, as well as the techniques or materials required to engage in projects compatible with heritage. When we consider why we preserve in the first place, the protection measures needed to preserve significance to protect the integrity of the heritage are designed to preserve authenticity, and to extend the life of the resource by managing change (Loh 2010:73). Conservation principles are always being refined, but there are two relatively static and guiding philosophies that emphasize the importance of recognizing the values associated with a place and the use of minimal interventions as the main scope of the practice of conservation.

Understanding the role of conservation begins with an understanding of values, specifically values-based conservation, how it has been devised to extend the life of a material or place

³ “Minimal Intervention” has been a critical component of protecting heritage value and has been apart of the conversation within various charters beginning with the *Athens Charter* (1931) and expressed continually throughout the *Venice Charter* (1964), *The European Charter of the Architectural Heritage* (1975), *The Washington Charter* (1987), *The Declaration of Deschambault* (1982), *The Appleton Charter* (1983), *The Charter for the Protection and management of the Archaeological Heritage* (1990), *The Burra Charter* (1999), *The Xi'an Declaration on the Conservation of Setting of Heritage Structures, Sites and Areas* (2005), and *The Paris Declaration* (2011). All build upon others and discuss how to engage communities within conservation to understand that it is a continual process, define minimal change, artifactual value, patina, respect for the fabric of heritage, illustrate a need for documentation, and create an understanding between interventions. Specifically, regarding preservation, restoration, rehabilitation, reconstruction, and redevelopment. The main message linked between all these charters is that conservation is a continual process.

that has outlived its expected use (Clavir 1998). It also informs how values have evolved to include how communities define or recognize the value of heritage (Loh 2010). Because the presence of heritage is considered public history, it is used to affirm an identity, create a narrative, and foster a connection to a broader story in profound and tangible ways. But there is a distinct difference between the theory of conservation, the act of preserving, and the goals of heritage preservation. Each present different challenges and provide a different role in the protection of heritage. Preservation is a prescriptive process used to stabilize the fabric, form, or significance of a place through preventative actions designed to slow deterioration (Parks Canada 2010). Conservation, as a concept, is defined by an overarching paradigm driven by a shared philosophy that guide the way that people consider heritage and is used to frame goals and priorities to preserve the value of heritage. Preservation considers the actions taken to protect the interpretation of heritage informed by the decisions made by people from the past (Chorley and Jones 1964:97).

The conservation of historical properties or heritage is an overall perspective guided by a shared philosophy to protect, preserve, or manage an environment within the social, economic, and political constructs of our society today (Clark and Conlin Casella 2009, 2010; English Heritage 2008; Fitch 1982; Parks Canada 2010; Oberlander, Kalman, and Lemon et al. 1989; Pedersoli, Antomarchi, and Michalski 2016). As a principle, it is considered a dynamic process (Loh 2010). It provides a framework to formulate ways to manage cultural change, while recognizing that some heritage could be lost throughout the process. Heritage management is designed to keep an eye on heritage through condition assessments and may result in designing treatments to slow the deterioration of heritage informed by the understanding that heritage is comprised of both physical and intangible values (Parks Canada 2010). What interventions are chosen are directed by a series of guidelines designed to encourage minimal intervention through a holistic process. Any actions, interventions, or treatments designed to preserve heritage often require recommendations by specialists who help communities formulate a plan after careful consideration and research into all the possible ways that heritage could fail. In

Canada, the *Standards and Guidelines* offer suggestions to help manage the process of preservation and are heavily invested in the theory of minimal intervention, specifically as it pertains to the materiality of heritage, its physical fabric, and their character-defining elements (Parks Canada 2010).

Traditionally, the approaches and processes used to conserve cultural heritage were only accessible through formalized practice by academics and cultural-heritage managers who would assess a situation and provide a prescriptive method. Today, there is an abundance of scholarship and discourse devised that warn of the threats to heritage by anthropogenic hazards, such as civil disorder, accidents, visitor traffic, looting (Pedersoli, Antomarchi, and Michalski 2016; Smith 2013); through urban renewal projects (Thorp 2006); or agents of deterioration, such as physical forces, thieves or vandals, fire, moisture, pests, pollutants, light and UV, incorrect temperatures, incorrect RH, and dissociation (Canadian Conservation Institute 2017c; Pedersoli, Antomarchi, and Michalski 2016). Conservation principles are geared towards best practice, are guided by the type of heritage being conserved, and how it is being used in a contemporary way. Although conservation doctrine outlines a series of guidelines aimed to minimize risk from daily exposure and emphasizes to do no harm, the process of applying interventions or making decisions when there is no support available can complicate the simplicity of conservation and preservation.

As a movement and a theory, conservation is a relatively simple concept to understand. When heritage requires care, we are asked to choose methods that will do the least amount of harm or cause the least amount of change. If heritage requires intervention respect the heritage and use *in kind* processes and materials (Parks Canada 2010). When it comes to emergency planning for heritage by those with little experience, the categorizations, lists, standards, guidelines, historical acts, and local heritage management schemes can challenge the ability to formulate processes. This can create an appetite to not take any action at all, especially when a site has not hit all stabilization targets within conservation plans. When heritage is not protected, it is prophetic at best, to make a guess as to how a hazard could

change cultural heritage (Taboroff 2000). Prophecy conveys that prior knowledge is exact and when prophecy is the only risk reduction strategy available, it is time to look at why heritage matters and how values underpin protection. When we do that, we better convey what can be lost through agents of deterioration or environmental hazards. Considered an important exercise, identifying risk relies on understanding value.

Understanding the sociocultural values assigned to heritage and the context behind why values matter is central to both Conservation and Risk Management. The value of heritage is determined by how the heritage is tied to the past or to current experiences. These dimensions provide an understanding of a community's perspective on heritage and signify part of a community's history. Heritage value is determined by the qualities identified in a heritage resource. Attributes may include an excellence of craftsmanship, technological advancement, artistic merit, influence within a community or exemplary of a specific type of out-dated-technology and how it presents the evidence of a process history. The historical or associative value is characterized by the materiality itself, its role or community association, how it demonstrates unique evidence about the past, and regional distinction (Mason 2006). Sociocultural values inform significance or rarity, frames how projects are considered in planning, specifically when cost / benefit analysis is in play to guide decision-makers through community development or emergency management planning (Nas 1996). They are also used to gauge liability. McClelland et al. (2013) has observed through a study of community values that there is a distinct difference between the values used to designate a site, the values emphasized to manage or intervene for all conservation matters at a place, and the values considered essential by the community supporting or managing a site. Understanding how values are derived by both professional experts and the untrained public have been studied extensively because of the variety of meanings that different people can express and how these values can change through time (Clark 2005, 2010, 2014a; Low 2002; Mason 2002; McClelland, Peel, Hayes, and Montgomery 2013; Mourato and Mazzanti 2002; Throsby 2002).

The values identified by stakeholders relating to heritage can be classified as the aesthetic, economic, social, political, architectural, or spiritual attributes of heritage and are considered within planning and development and conservation projects (Clark 2005, 2010, 2014a; Kalman 2014; Hodge1998; Russ 2017). Although assessing value has become an accepted first step within historical development, the recognition of value can be a conflicting process and the consequences of getting it wrong within emergency planning could mean that an important feature of heritage could be diminished as a result (Municipal Heritage Partnership Program 2010d). Whether values are covert and accepted, coexist or conflict, assessing the values of cultural heritage is considered, “an important reference both for informing decisions and for evaluating their results” (Mason 2002:7). Values-based conservation recognizes that communities are essential to the story of heritage because the people, who make up the community of which the heritage is a part, provide an intrinsic contribution to planning and influence its ongoing protection. The values assigned to heritage reinforces its ‘authenticity’, which is used to conserve the integrity of the heritage that defines part of a community’s social public history (Atakul, Thaheem, and De Marco 2014; Birch and Wachter 2006; Clark 2005, 2010, 2014a; Kalman 2014, Tierney 2007; Thorpe 2006).

Values are important within heritage preservation, community-archaeology, art history, architecture, and community planning (Peterson 1972). They inform conservation principles, focus historical preservation projects, guide research designs, and impact how people are engaged in their communities, their roles in conservation, planning, and decision making. This includes emergency management and the understanding of how value defines essential public infrastructure, informs various levels of protection, and dictates how a community uses public places during periods of normalcy as well as during an incident. “Urban environments are continuously changing, both physically and socially; a value typology for urban heritage must reflect and respond to this changing nature” (UNESCO 2010).

The people who are tasked with protecting heritage are also the same people tasked with providing support to heritage in an emergency. As I have shown, valuation is at the forefront of

preservation because “no society makes an effort to conserve what it does not value” (de la Torre 2000:3). How, then, can we isolate what hinders a community from identifying a historic district’s at-risk vulnerable heritage and preparing it against flooding when it has been an ongoing risk? Well, that also stems from value. When considering how communities use heritage, who oversees heritage management, and how values frame significance, the problem of protection becomes a problem of perception. In order to reframe heritage defined by a series of sociocultural values within emergency management, the values need to shift away from the cultural values towards the cost of recovery, loss of significance, and networks of support if heritage is lost through disasters. When sociocultural values support a site’s relevancy, or primary programs that generate substantial capital and benefit to the community, it is useful to know what is at stake if values are diminished. Without showing the fiscal benefits to protecting the sociocultural values that have been painstakingly established and preserved, there is no reason to protect heritage at all. If the value of heritage is to be understood beyond the heritage value, it must be viewed through the complexity of risk to the value of the heritage. Because these are two different concepts, it is important to show all values to the community, which is far more complex than its heritage value.

“Knowing that social inequalities are correlated with disaster vulnerability is not the same as being able to explain casual linkages and processes that shape vulnerability” (Tierney 2006: 113). The challenge with this reality is that the way that inequalities are perceived, when it comes to heritage, impact the systems that are devised to support it. Ownership and management frameworks which serve to identify, protect, support, conserve, and pass heritage roles and responsibilities from one organization to another, blur the understandings of greatest risk and can become vulnerabilities themselves. The priority of risks linked to the heritage can be found by doing a condition assessment within the range of damages that could occur through visitor use, seasonal weather-related events, maintenance, and development (Ontario Ministry of Culture 2005). Conservation standards, devised nationally and through local museum associations, consider how deterioration can contribute to the loss of significance, impact

heritage and objects through the lens of the loss to heritage value because of impacts to the integrity of the heritage. Easily attainable and interpreted, the following examples demonstrate how heritage value can be diminished or lost when impacted by a natural hazard, The Sendai Framework has categorized and described anthropogenic impacts and through agents of deterioration (Sendai Framework 2015):

1. Flooding/agent of deterioration - water: Damages are caused directly or indirectly. Floods can vary in form, very quickly, or slowly as water travels along land. Common sources: overflowing rivers, damaged infrastructure (e.g., levees; lift stations), firefighting, cleaning procedures, rain, and groundwater.

Flood water can damage both heritage structures and archaeological sites through:

- Erosion near structures or foundations
- Detach wooden structures
- Inundate services
- Contaminate archaeological sites due to contamination, staining
- Damage to collections or artifacts from water and humidity, efflorescence
- Mold, loss to collections, biological growth, archives
- Cause movement or collapse of structures
- Loss to municipal services (if a part of a district)

2. Fire/agent of deterioration: causes direct and indirect damages very quickly. “Common sources: lightning, gas leaks, fireworks, faulty electrical, smoking, candles, arson, construction and renovation work, forest or grass fires” (Sendai 2015).

- Fire can damage all parts of a building and contents
- Smoke and heat can damage exterior / interior finishes and objects or artifacts
- Damage to collections or artifacts Winds and Tropical Storms
- Cause movement or collapse of structures · Loss to collections, archives
- Loss to municipal services (if a part of a district)

3. Land or Mud Slides and Flows, and Avalanches: are often a secondary hazard and are often connected to sloping landscapes. Inundate structures with debris, material and are usually devastating to whole communities.

4. Earthquakes / Tsunami: cause direct and indirect damages

- Detach wooden structures
- Inundate services
- Loss to some or all collections, archives
- Contaminate archaeological sites due to contamination, efflorescence
- Damage to collections or artifacts from water and humidity, staining
- Cause movement or collapse of structures
- Loss to municipal services (if a part of a district)

5. Vandalism/agent of deterioration: can cause direct and indirect damages.

Common source: economic, political, ideological motivated, etc.

- Disappearance of artifacts, looting
- Destruction, breaking windows, bombs
- Disfiguration
- Graffiti

6. Sea Level Rise and Coastal Change: can cause direct and indirect damage. It is dependent on a primary hazard, climate change or hurricane, cyclone or tornado.

- Damage to dykes
- Landscape through erosion or friction that can lead to exposure or the destabilization of cultural features, such as archaeological sites or graves
- Cause flooding
- Loss of coastal communities, traditional knowledge

Although the above list compiles the more common results of hazardous impacts to heritage, it is offered as a starting point to frame risk for a later conversation about vulnerability and how it can frame a range of damages that could occur. Emergency management scholarship is driven by building capacity and encourages opportunities to share methods, information, and lists that can help identify risks to vulnerable systems (Schweitzer 2020).

The value of heritage underpins the conservation of historical districts. Some values will be shared between certain people, while others not. Values can challenge the presence of heritage within communities, its public use, protection, and planning. When heritage is present, history is never lost, and its presence implies some type of cohesive social network. It is these values that make heritage conservation and use worthwhile and why people may value heritage. Industrial heritage districts are complicated landscapes and are often challenged by a layering of regulations, interested communities, and land use that could be seen as beneficial in some cases and used to facilitate an idea of growth and development. In other ways, industrial heritage districts may be seen as liability. Heritage landscapes facilitate many conversations, but how they are framed within broader emergency management schemes can conflict with all other messages, interests, and may even exclude the voices that conflict with the City's view of essential public assets.

When we consider the vulnerability of community industrial heritage we must account for and understand the risks caused by agents of deterioration and by disasters themselves. When deciphering why communities struggle to develop disaster plans or advocate to be included in community-wide disaster planning, heritage must be evaluated by its exposure and sensitivity to hazards. Communities may not have the necessary capacity to drive disaster planning and

include heritage into the system designed for a swift recovery (Daly 2015; Pedersoli, Antomarchi, and Michalski 2016). When disaster plans accurately frame the problems, the system devised as a result will accurately frame resiliency. Understanding risk is a baseline requirement in disaster planning. Understanding value is a baseline requirement in conservation, preservation, and heritage management. The range of risks in an industrial historic district requires a different way of thinking. What makes heritage vulnerable is how it is connected to the systems that have been created to support the heritage and the community. When vulnerability is recognized, the problems can be communicated, and strategies can be designed.

It is the integrity of heritage that encapsulates authenticity. The goal of conservation is to preserve the historical simulacrum by protecting the heritage, which can then be leveraged to generate the interest, funding, or capital necessary to move through the complex process of preservation (Jerome 2014). Contention exists between the values assigned to heritage by visitors, the values recognized by heritage managers within conservation, and the values known by those who provide governance. When visitors are essential to a site's sustainability, authentic experiences are expressed through the integrity of the heritage. However, there is a distinction between the created values, the values used to designate a site, and the values emphasized to manage or intervene for conservation matters at a site (Clark 2014a). For Canadian National Historic Sites, Cultural Resource Management (CRM) policy developed by Parks Canada frames the valuations of heritage within the *Commemorative Integrity Statement* (CIS) and emphasizes three priorities when managing cultural heritage resources, these are:

1. Resources that relate to the reasons for designation of the national historic site or symbolize or represent the site's importance are not impaired or under threat.
2. Reasons for the site's national significance are effectively communicated to the public; and,
3. Site's heritage value (including those not related to national significance) are respected in all decisions and actions affecting the site (Parks Canada 2019).

Today, conservation planning, and development includes the preservation of intangible heritage, encourages the integration of various interpretations of value, and includes processes

and/or actions that reflect a variety of perspectives of value (Munjeri 2017). Risk reduction, whether through the lens of conservation or management, works most effectively when there are multiple stakeholders participating in the process of preservation or plan development. This can be complicated by the business of heritage and how an organization identifies their mission and the actions taken to achieve their vision.

Cultural heritage is often entangled within a confusing political, economic, and social framework with one part of the system linked to nation-state governments (e.g., National Park Service, Parks Canada). Whomever may *legally* own the heritage, the local community (e.g., a Friends Society) more likely manages its day-to-day operations. Conservation principles are designed to guide decisions and are used to encourage the preservation of heritage. The use of heritage can mean different things, but at its foundation, conservation is designed to reduce loss and to enhance the experiences that engage people with heritage. When it comes to protecting preserved heritage against hazard risk, powerful emotions can be evoked and cause a disconnect between legal and financial responsibility with day-to-day care. Personal connection, in this context, can impede development of a viable response to this need. Although many sites struggle to manage the cost of operations, they continue to create access to conserved ‘public heritage’.

4.4 Disaster Risk & Industrial Historic Districts

The water had reached the ceiling, tossing artifacts, caking every surface with several inches of Highwood River silt. Over in the basement. . .where the museum stored 10,000 artifacts...the muck was knee deep. “It was like a bomb went off down there.”

-Irene Kerr, Director and Curator of the Museum of Highwood in High River, Alberta (White 2014).

Climate disasters have become a crucial public issue within the discipline and industry of cultural heritage. “Cultural heritage, encompassing the archaeological and historical built environment and movable heritage, is at risk from natural disasters. . .” (Taboroff 2000:71).

Reports from key agencies alert us that the intensity and frequency of hazard events have increased throughout North America.

The United Nations Office for Disaster Reduction (UNDRR 2020:9-23) reported that, from 2000-2019, economic losses were recorded at 2.97 trillion US dollars resulting from 7,348 disasters which claimed 1.2 million lives and affected 4.03 billion people. There were 3,254 significant floods and 2,034 storms recorded (e.g., hydrological, meteorological, or climatological events) (UNDRR 2020:6). In another example, the “Human Cost of Disasters 2000-2019” records that there have been significant increases in other categories, including drought, wildfires, and extreme temperature events, as well as earthquakes and tsunamis. In Canada, The *Insurance Bureau of Canada* (IBC 2020:17) reported that the catastrophic losses in 2019 cost 1.3 billion; in 2016, losses totaled C\$5.2 billion, and in 2013 losses totaled C\$3.4 billion. As these data indicate, disasters are very costly. Climate caused events are expected to be more frequent and extreme and, if these trends continue, will impact a broader range of people and places (UNISDR 2018).

It is widely accepted that cultural heritage has become a component of many communities and countries across the globe and people appreciate their heritage, acknowledge that it contributes to their quality of life, and makes the places they dwell unique (Rodwell 2011; Spennemann 1999; UNESCO 2021). “Cultural heritage is one of the basic and most important expressions of human society, and its destruction can lead to irretrievable loss for humanity” (ICOMOS 2014:8). The topic of valuing heritage, defining heritage, and recognizing what heritage most secures heritage value is multidimensional and is considered essential (Bagnall 2003; Byrne 1991; Chirikure and Pwiti 2008; Harrison 2010; Hosagrahar, Soule, and Girard et al. 2016; Kirshenblatt 1998; Orange and Perring 2017; Schiffer and Skibo et al. 2001; Shanks and Tilly 1987; Smith 2006; Tilly 2000; United Nations 2015). The steps from designation to stabilization can take decades to achieve. The conservation and preservation process is intricate when industrial heritage is the focus of planning, specifically at the scale found in a historic district. It’s materiality alone is complex. It is complicated by the range of heritage

resources typically associated with heritage landscapes, the demands of conservation, and in the preservation of the integrity of the heritage as it exists in a contemporary environment.

Within the broader context of heritage at-risk in Canada, Europe, the United States, and Australia, through a series of recent disasters, the loss of cultural heritage has been felt deeply and on a personal level by communities (Houlihan 2018; Petesch 2019). Recoveries are extensive, people grieve the loss of heritage, and the loss of heritage can be felt across international boundaries (Pitrelli and McAuley 2016; Povoledo 2016). The vulnerability of heritage is growing and if communities are going to minimize the loss of cultural heritage, there has to be an emphasis placed on developing emergency plans and assessing heritage resources and identifying risk in order to reduce it. From there, communities must be able to create plans for action (Jigyasu 2013; Sendai Framework 2015; UNESCO 2006, 2017).

Despite this overarching call for action, cultural heritage is still not receiving sufficient consideration in disaster risk management planning, and the lack of integration of cultural heritage measures into national, regional or local risk management strategies is still a common **practice** (Romão and Bertolin 2022).

In 2013, Rohit Jigyasu, on behalf of UNESCO, spoke of a survey in a paper delivered during the *4th Session of the Global Platform for Disaster Risk Reduction* in Geneva. The survey looked at sixty sites most exposed to disaster risks in order to understand the level that communities were aware of disaster risk reduction and how it was reflected “within the management systems of various World Heritage properties.” The report identified that 41 properties from 18 countries are, “most at-risk from natural and human-induced hazards” (Jigyasu 2013:23). These statistics prove that the process of identifying at-risk heritage is challenging communities everywhere, regardless of the size or acclaim of the cultural heritage site. Although risks were identified, the statistics reveal that there is a struggle to create plans to manage risk to heritage. The study reports that, “37% of the cases did not identify risk within the management documents. . .[and]. . .30% of the cases knew the risks but held no concrete plan or any reference to mitigation...” within their established management systems (Ibid). These two scenarios characterize 67% of those surveyed. Twenty percent (20%) of the cases, “identified

risks and plans to mitigate were considered, but mitigation was not extensive enough or there were concerns as to the effective implementation of plans”; 10% of cases presented both risks and mitigation in an, “effective and extensive Risk Preparedness Plan”; and 3% of the cases knew, “the risks but mitigation [considered, was designed]. . .mainly for visitor safety and not the properties themselves” (Jigyasu 2013:23).

Whether planning is complicated by the size of inventory, environmental hazard type, how heritage informs landscape, or is reflective of the skills of those who are making plans, gaps exist within community planning at local levels. Assessing risk is the very foundation of an emergency management program (Canton 2020). Although the above data indicate that plans were developed for visitors and their safety, the lack of planning for the actual heritage points to the complexities associated with defining the critical heritage infrastructure from within cultural heritage sites. Risk management and disaster preparedness, then, are essential to cultural heritage integrity and preservation. Unfortunately, there remains a disconnect between disaster risk and the preparation of heritage in the pre-hazard phase. Although some research has resulted in manuals or emergency recovery plans (Kjølse Jermæs 2021), few focus on prioritizing heritage at a pre-hazard phase. Assessing risk requires a structured process to understand what is vulnerable in a specific place.

When industrial heritage has been slated for preservation, it is framed with a series of sociocultural values that acknowledge the authenticity of the heritage and often woven into existing protections considered for such uses and supported by the community that has formed around it. Lucien Canton (2020) warns that the most challenging problem to reconcile in emergency management is the assumption that the hazard is the risk. Canton (2020) explains that risk is a relative phenomenon. It is not fixed. Risk is as varied as the conditions those vulnerabilities are found within and “there is as of yet, no standard measurement of community vulnerability” (Ch. 6, Paragraph 6).

Environmental hazards, in and of themselves, do not cause disasters (Lewis 1999; Oliver-Smith 1986; Wisner, Blaikie, Cannon, and Davis 2008). Scholars have warned us that over time,

cultural heritage has become more vulnerable and “its exposure to a range of slow-and-sudden-onset natural and human-induced hazards threatens its existence” (Romão and Bertonlin 2022). Many industrial sites are situated in desirable natural and logistically active environments but, because of this, their heritage materiality and values are vulnerable to disasters (Loures 2008; Othman and Heba 2018; Chan 2011; Clark 2014a; Orange and Perring 2017). The scholarship that has grown from disasters has provided little consideration of integrating heritage into emergency planning for the heritage situated in historic districts. This deficit may result from the complexities of heritage management and the bureaucratic and fiscal burdens of those caring for collections of objects, machinery, standing structures and archaeological resources, in addition to the complexities of community engagement. The reality is that most often, the management of a disaster begins after an environmental hazard event moves through a community and heritage managers, and frequently, volunteers from a community, must address the fall out. Why does recovery so frequently become the starting point of heritage risk management? Because disasters, are caused by the vulnerabilities in a system, not by an environmental hazard alone.

Emergency management can be defined as the short-term measures taken to respond to hazards. They require a coordinated and rapid response to minimize the costs resulting from damages and, time as a community spends without resources, and are geared toward the protection of life (Alexander 2002). Disasters are not always instantaneous. They can be caused by a cascading event or occur slowly over time (Cutter 2018). The goal of emergency management is to create a series of actions and temporary supports that can be applied to important parts of a community before an event occurs so that people can ride out a storm and get life back to normal after it passes as quickly as possible (Mitchell and Harris 2012). There is a cost to conserving heritage and a cost to managing a site’s heritage value. The financial benefits of preserving heritage and making it accessible to communities does not always equate to the costs of conservation. If heritage is to be included in an inventory of essential public assets and managed by the professionals who have made emergency planning their business, we

need to tell them the reasons why heritage districts require more assistance, including their current contemporary uses and values to communities, specifically within the pre-hazard phase. Cultural resource management is not unlike emergency management. Both disciplines manage risk but managing risk impacts is a very different process than creating an awareness of what is at risk. There is often a reluctance to spend money now to avoid problems later, particularly on heritage. Conservation planners and communities who are driving localized heritage management activities are all too familiar with this problem. When we can frame the conversation and risk of the environment to the heritage in ways that are relevant for emergency and risk managers, we create ways for communities to increase their resiliency because they are better prepared before events. Mitchell and Harris (2012:1) define resilience as “a concept concerned fundamentally with how a system . . . can deal with disturbance, surprise and change”. [Resilient heritage]. . . refers to the idea that protection of cultural heritage may help to strengthen the resilience of a community and reduce the impact of catastrophe” (Luciani and Del Curto 2018:312).

When we consider the vulnerability of community industrial heritage we must account for and understand not only the risks caused by agents of deterioration but must also perform vulnerability assessments designed to evaluate the, “exposure and sensitivity to hazards, [with a focus on the]. . . internal ability of a system to adapt and recover” (Daly 2014:269). Daly (2014:269) explains that vulnerability assessments are more holistic than traditional risk analysis and, “recognizes that humans and the environment are inextricably linked.” When an environment and those who are in it are assessed as they relate to each other, the results better reflect the adaptive nature of such systems and truly reflect resiliency (Ibid). Part of this process requires an understanding of heritage value and an “evaluation of the sociocultural values, both tangible and intangible, of cultural heritage” (Grazia De Paoli, Di Miceli, and Giuliani 2020:3). By understanding the risks an environment can pose to heritage and by understanding what makes heritage vulnerable, we increase resiliency (Luciani and Del Curto 2018:312).

Building resiliency measures means that the source of risk is balanced within a system, “between anticipation and adaptation, order and chaos, resistance and resilience” (Longstaff and Armstrong et al. 2010). The process of assessing risk requires both a systematic approach and a deductive approach. It requires qualitative and quantitative data generated through value assessments, an understanding of the spatial environment, and a thorough record of heritage that can be connected throughout a landscape that is continually changing. Mitchell and Harris (2012:12) explain that to navigate and manage change, practices must use methods that strongly, “reflect . . .the diversity of disciplines” through the tools used to measure variation over time as needs or values change. The discipline of archaeology lends itself well to this because of the multidisciplinary methodologies that have become standard in field processes, the way records are created, and how environments are layered within topographic maps, satellite imagery, historic maps, and GIS. Together the data create the inventory of the physical vulnerabilities in a landscape which can then be further assessed for what features are critical within a hazards range of risk at a localized level. Scholars are developing resiliency-based methods but, “have struggled with the concept of resilience. . .[in real world applications for people who have little experience developing plans that provide]. . .useful prescriptive. . .policy guidance, and community-level assessment tools” (Longstaff and Armstrong et al. 2010:1-2). The discourse is evolving, slowly becoming more aware of the community’s role in the protection of heritage and have begun to provide, “community leaders and policymakers [with ways] to begin to think about resilience as it pertains to their own community’s unique circumstances” (Longstaff and Armstrong et al. 2010:1-2). Despite all the research that frames best practice regarding conservation within heritage management, there are few examples that identify both the risks and benefits of protecting heritage within a community that has developed complementary programming around heritage. Best practices must include guidance for how to locate and prioritize heritage through the lens of emergency planning in a way that complements preparedness planning framed by evacuation routes or relocation processes.

People can't protect what do not know of or understand. There is a solid foundation of attention given to the conservation of heritage, but what is not emphasized is how to build an emergency preparedness system for heritage that complements the current system being used. Further, there is a gap between an organization's abilities to fill this gap because its culture does not have the skills to understand the specific requirements of designated heritage value. This is considered a critical gap because of the emphasis placed on conserving heritage value through minimal interventions and best practice (Parks Canada 2010; Municipal Heritage Partnership Program 2010a; ICOMOS 2010). David Alexander (2002), an emergency management professional, states perfectly the challenges facing the protection of cultural heritage outside the profession of history. Although his work is twenty-years old, it appears in newer research because of the strength of the work. Alexander (2002:255) writes that cultural heritage is a "very important topic [*but*] beyond the scope of present [emergency management]" (emphasis mine). He knows. He already knew how complicated the process of preparedness planning was going to be and fully understood the liabilities connected to cultural heritage. Although the document he wrote, *Principles of Emergency Planning and Management*, was published in 2002 and is broad, it is very detailed and reflective of the discipline at the time. His goal was to "provide a general introduction to comprehensive disaster plans, with some reference to more specific sorts of plan, such as those needed for factories and hospitals" (Alexander 2002:x). He pushes his readers toward action, recognizing the importance of heritage but, at the time, leaves those actions undefined. Alexander offers a simple process pertaining to the potential value of heritage but recognized that there was much more work to be done in this area of research, specifically as it relates to the protection of "architectural works and archaeological sites" (Alexander 2002:255). He recommended that when planning for disasters within cultural landscapes, other specialists, like architects and engineers, should be part of the team because they can provide expertise in the identification of vulnerabilities within a historic structure. He suggested there be effort placed on creating documents, building plans, "at least partially drawn up" just in case of an unexpected event. He indicated that such drawings would be of

great value to a reconstruction project, or the estimation of costs associated with rebuilding (Alexander 2002:255).

Challenges associated with building resiliency of heritage are directly related to the regulatory parameters that exist within sites, include managing objects in accordance with conservation criteria and stabilizing aging infrastructure into safe spaces, dictated by their original purpose or historic use (Jokilehto 2000). Resilient heritage not only requires strategies designed so it can “bounce back” from either a natural or anthropogenic hazard, but strategies must consider the axiom “do no harm” and establish interventions that can be reversed, should superior solutions come to light (Parks Canada 2010). The significance of tangible heritage is carried through an object and/or a structure's history; its evidentiary or archaeological fabric and the “stories embodied in the pattern of change” (Kalman 2014:209). These stories include “how it was built, how it changed over time, and who changed it” (Clark 2014a:68). There is a long-held belief that the “purpose of any historic preservation—the one and only purpose—is to communicate the lessons of history, in order that the present and the future may learn from the past” (Chorley and Jones 1964:1). But museums or districts, “consisting of one or more restored buildings [, may] contribute. . .to the way in which North Americans perceive their past” and are, perhaps erroneously, bound by restrictions recommending the same minimal intervention strategies employed at singular cultural heritage sites or museums (Chorley and Jones 1964; Lowenthal 1968).

Although Alexander recognizes that heritage is worthy of disaster planning, he also recognized that creating documents was necessarily challenging, given the nature of heritage, and that, two decades ago, “there [would] likely. . .be little support for efforts to devote time and money to such an exercise” (Alexander 2002:255). Documents are expensive to create but are crucial when, “trying to estimate the probable future need of reconstruction work at each site. . . [and in determining]. . .the magnitude of vulnerability” (Alexander 2002:255). Alexander’s treatment devoted to cultural heritage is only a few paragraphs but speaks volumes. Though he left only a small reference, he felt compelled to acknowledge heritage. Its

inclusion, and what has not been said, makes his advice precious. Clearly, cultural heritage belongs in the discipline of emergency management, despite the many challenges and liabilities connected to cultural heritage. Alexander recognizes that, “there is a curious paradox about disasters. . .on one hand they are extraordinary events that require special organization and resources to tackle the damage, casualties [,] and disruptions that they cause, and on the other hand they are sufficiently frequent and similar to each other to be normal, not abnormal, events” (Alexander 2002:ix). As a seasoned practitioner who gained his skills from outside of the business of heritage, his acknowledgment comes directly from his own boots on the ground. Although the message is now decades old and his suggestions were few, his message echoes loud and true today. Cultural heritage is finite and non-renewable. It must be integrated into conservation activities and requires some sort of preparedness planning, even if all that can be done is documentation (Clark 2010; Jokilehto 2000; Letellier and Eppich 2015). This message is an ongoing theme today. Alexander’s message must be seen as a key signal during a process of identifying models that make sense to communities tasked with protecting their heritage. Alexander’s brief message has contributed to the foundation of this research and is fundamental to the conservation of heritage within the legacy of its message.

Disasters devastate not only the built or natural environment in ways that are dramatic but can also cause cascading trauma by eroding community spirit, contributing to emotional hardship, and, if heritage is lost, becomes “a sore impoverishment for communities” (Taboroff 2000:71). There is an extensive record of disasters which have resulted from loss of irreplaceable artistic and cultural assets. These experiences have triggered research on the impacts of disasters on moveable objects (Kjølsen Jermæs 2021). There are still gaps in the understanding of heritage risk management on the intersection of modern use of historic districts and providing methods for stakeholders who are designing disaster plans for their own heritage. As a discipline, this is evolving through practice and has yet to be formalized (Bertolin and Loli 2018; Vafadari, Philip, and Jennings 2015; Jigyasu 2021; Spennemann 1999;

Romão and Bertonlin 2022). As I discuss in the final chapter, the scholarship would benefit from further research, specifically in regard to building capacity.

Globally, previous research on the intersection of risk management and historic districts has focused on direct impact analysis, assessing level of risk awareness, recovery programs, broad scale risk reduction planning, and emergency response (Sendai Framework 2015; Romão and Bertonlin 2022). According to those who provide governance, if communities are going to minimize the loss of cultural heritage, there is a need to assess heritage resources for risk in order to reduce it, to identify vulnerabilities, and to create plans for action (Fearon 2013; FEMA 2010; Giuliani 2021; Pedersoli, Antomarchi, and Michalski 2016; Sendai Framework 2015; UNESCO 2012). Risk assessment has focused on specific disciplines with few focused on community-based vulnerability assessments that offer ways to deduce heritage most at-risk and strategies to assess sociocultural values. From an emergency management perspective, it is a long journey between conserving heritage to risk assessment and then to preparedness planning within the *Disaster Management Cycle*, particularly when an industrial historic district is the subject of concern. Scholarship within emergency and disaster management provides all the necessary tools but does not account for the theory of minimal intervention, of perpetuated loss specific to heritage value, community value, or the future impacts of lost heritage within a broader community.

Heritage risk management, as a specialization, has yet to be formally recognized. In the face of climate change, historic districts, heritage, and communities are all at risk. The toll that disaster recoveries can take on a community has been well documented (Bier 2006). Much study has been devoted to understanding how climate may change our world, through coastal erosion, sea level rise, and drought. With heavier precipitation events, there will be elevated flood risks (ISDR 2008). This is problematic because “the most vulnerable industries, settlements and societies are generally those located in coastal areas and river flood plains. . .which are already prone to extreme weather events” (ISDR 2008: 03). Most discourse examines the physical processes of disasters broadly, defines terms, identifies environmental forces,

documents processes required to consider risk, and, as a requirement of heritage, sustainability. When it comes to supporting communities through the processes of risk reduction, prioritizing heritage, determining values, or creating emergency planning tools, the discourse is largely silent. Recent literature is emerging that outlines methods to salvage heritage objects and this is beginning to examine the value of heritage to the process (Kjølse Jermæs 2021). Few recognize the *value* of heritage (Ibid). As we move further into the uncertainties of climate change, we need to rethink risk management, disaster preparedness, recovery processes, monitoring strategies, and must provide solutions to assist communities who are working through the process of preparing their heritage for unforeseen events.

As heritage professionals, we recognize that we need to make changes yet, heritage is often not included in the existing conversations around emergency management and risk preparedness by municipal planners or for an audience of people who are not formally trained. Neither is heritage vulnerability discussed when it is tangential to economic or community impacts. There exist well-established themes, such as social organization during an emergency, protecting business continuity, variability of impacts for different socio-economic groups or communities, and the necessity of effective communication (Adler 2006; Alexander 2000; Foster and Giegengack 2006; Geis 2000; Haddow, Bullock, and Coppola 2011; Nas 1996; Tierney 2006; Wisner 2004). However, processes are lacking which outline ways to prioritize heritage in historic districts for protection against the loss of heritage value of those large-scale inventories that underpin designation, especially those that have multiple sites of varying age. Their protection begins with their integration into already established emergency plans. In order to convey the future impacts of lost heritage, conservation scholarship will need to develop a language around value that challenges the vulnerabilities throughout the business of heritage, the impacts on heritage integrity, authenticity, and the perceived value of designation.

The restrictions imposed by conservation guidelines and the recommendations designed to conserve heritage, may unintentionally be negatively impacting heritage within emergency

planning. How one person may view an option for an intervention may unintentionally cause a change to its heritage value. A perceived value of heritage might be different from its evidential value and even cause acceleration of deterioration. In this time of accelerating climate change, this acknowledgement bears more weight and importance than perhaps might have been previously realized by conservation doctrine and practitioners. Plenderleith (1972) warned that a cautionary approach “has been found to be [an] essential [focus] in conservation work [and] ... experience has taught us that one cannot always rely on nature to provide a second chance if something goes wrong” (Plenderleith 1972:xx). The cautious approach is critical to protecting cultural heritage value. To what are we aligning our caution? Caution must be considered within all aspects of strategic risk management planning, which is considered a “process of implementing decisions about accepting or controlling risk” (Taboroff 2000:75). This process includes the assessment and identification of risk, the development of phases designed to mitigate at-risk heritage, and the estimated length of time needed to construct, restore, or repair heritage and gather essential documentation. Researchers have stated that there is no single correct way to conduct a risk assessment, and may use either a qualitative (e.g., interviewing) or quantitative (e.g., coding) approach or both (Günlü and Pirnar et al. 2009).

Formal designation and the restrictions imposed by traditional conservation initiatives indeed protect the practice and scholarship but are lacking methodologies that support identifying how to prioritize heritage to build a community’s local capacity to care for their own heritage at-risk. Communities need to be able to ensure that the intangible elements, as well as the tangible elements of the history, are included within risk protection strategies. The statement presented by Plenderleith (1972) above confirms that conservation practice is designed to protect the multi-dimensional aspects of heritage, known or unknown. Part of the reason restrictions are imposed within interventions is so we can eliminate liability of those who will come later and so we don’t unintentionally erase history that has yet to be discovered. When you use a minimal approach, changes are a result of time, so we eliminate

blame. If we are going to minimize impacts by unexpected events, we have to know what the factors are that define at-risk heritage, directly, as dictated by the values assigned to them. We must also understand the types of heritage at-risk, the documents created, and what the communities' priorities are for the heritage, as well as the inherent values that triggered designation originally.

Today, conservation planning, and development includes the preservation of intangible heritage, encourages the integration of varied interpretations of value, and includes processes and/or actions that reflect a variety of perspectives on value. Values are no longer defined by the objects of heritage alone but are derived from a broader range of considerations inclusive of people who form the community who created and/or value the heritage. Risk reduction works most effectively when there are multiple stakeholders participating in the process of plan development and will require heritage professionals to educate communities about the complexities of conservation planning and development. These include how the protection of heritage is guided by conservation principles, such as those outlined in the *Standards and Guidelines* (Parks Canada 2010) and *Collection and Museum Guidelines* (CCI 2021) wherein the intention of preserving heritage value secures a district's recognized significance via designation. Cultural heritage is often entangled by political, economic, and social frameworks with at least one part of the system linked to nation-state governments (e.g., National Park Service, Parks Canada). Whomever may legally own the heritage may not be the local community (e.g., a Friends Society), that *manages* the heritage or a cultural site's day-to-day operations. Both entities inform visitors and interested community members about the reasons why a site is considered valuable and create experiences that engage people with heritage through activities, frequently, designed to generate funds (e.g., community classrooms, concerts, events). However, when it comes to protecting preserved heritage against hazard risk, powerful emotions can be evoked; the disconnect between legal and financial responsibility and day-to-day care and personal connection can impede development of a

viable response to this need. While many sites struggle to manage the cost of operations, they continue to create access to ‘public heritage’ reflected in minimal programming fees.

Conservation principles and archaeology are well designed to work alongside disaster studies because of how each discipline assesses risk, documents change, identifies variables that impact heritage, and contribute to recognition of intrinsic or community values connected to a site’s unique history (Alexander 2002; Birch and Wachter 2006; Canton 2020; Cutter 2018). All require an understanding of temporal processes (facts that define the age of a resource or contribute to its changes), materiality, the values represented in the heritage, and the distinctive attributes affected by different levels of intervention. Currently, no readily available examples exist of how to identify at-risk heritage, as defined by conservation principles, for use by communities (who, while vested, lack the formal heritage training of professionals). It is essential to know who will define the roles of agency over vulnerable heritage and how are they connected to ownership, autonomy, liability, or specialization. Restrictions resulting from designation, as well as professional standards or guidelines, create an expectation (perhaps erroneous) of defacto protection through the philosophies governing conservation principles. In reality, though, they offer little by way of incorporating the higher levels of protective measures (resources, procedures and applied interventions) that may be necessary to ensure the vulnerabilities of its contemporary use and also safeguard the heritage value.

4.5 A Prelude to a Storm

Industrial heritage districts are landscapes with complicated histories and can be challenged by a layering of regulations, interested communities, and land use that could be seen as beneficial in some cases and used to facilitate an idea of growth and development. While in other ways, could be seen as a liability. Knowing that valuation is intrinsically interconnected with significance is important. As communities negotiate the range of prevention that has been illustrated, they will need to access the conversations relevant to

their political, economic, and cultural systems that are developing research around designated heritage within all the levels of liability they exhibit (Kincaid 2017; Sesana and Bertonlin et al. 2019; Spennemann 1999; Wright 2006). Cultural heritage is framed as important assets, but without adequate knowledge to devise preparedness plans, how heritage is seen to have protection does not equate to actual protection before an event or during an event (Taboroff, 2000). When people seek the reasons to preserve heritage, they must know that protection through designation can only go so far. Designation is honorary and does not guarantee any protection at all in the face of disaster.

As the business of heritage moves towards inclusivity, we can trace its complexities, and understand how conceptual frameworks can entangle efforts to act because of those complexities to which they are bound. This chapter was designed to explore the ways that industrial heritage has been protected and demonstrate the connection between heritage and risk. Industrial heritage is vulnerable, whether it exists as a solitary unit or is part of a recognized / designated district, and there are external and internal factors that distinguish heritage value. While we have much to learn from risk management, there remains a disconnect between disaster risk, the values of heritage, and the preparation of heritage within a range of risk. “The harm to cultural heritage increases in the absence of adequate risk estimation, evaluation, and minimization measures” (Taboroff, 2000:74). The strength of the scholarship of values-centered theory is found in its message that materiality alone does not define the value of heritage. If that was the case, people may not have protected industrial heritage in the first place. The challenge is knowing what values contribute most to a site's significance and protection.

With the increasing frequency of climate-driven disasters and their impact on heritage, one would think scholars will have widely studied the intersection between heritage, conservation, and risk. However, while there has been an interest in disaster studies and heritage, the field is vastly underdeveloped in the practical and technical aspects of disaster management, especially as these relate to the management of historical industrial heritage

sites during a state of emergency (Atakul, Thaheem and De Marco 2014; Bianchi and Tampieri 2016; Birch and Wachter 2006; Daly 2014; Dawdy 2006; Günlü and Pirnar et al. 2009; Pedersoli, Antomarchi, and Michalski 2016; Spennemann 2007; Taboroff 2000; Thorp 2006; Will and Meier 2008). Currently, there are two general approaches to disaster research. The first concentrates on natural hazards and risk reduction. They define how environmental processes move through landscapes, are affected by climate and weather, and how landforms are changed by extreme events and trigger responses from community infrastructure, vulnerable demographics, urbanization, and density (Dilley 2000; Hewitt 2015; Lewis 1999; Oliver-Smith. 1986; Wisner, Blaikie, Cannon, and Davis 2008). These studies and themes are typically conducted by meteorologists, climatologists, volcanologists, geographers, and geologists. The discourse explores hazard mapping and the probability of what types of events could occur based on a region's physiography.

The second area of research is concentrated in social sciences and focuses on response, recovery, risk transfer, communication, and preparedness planning. There is a copious amount of discourse outlining how to define or identify risk with examples that apply within a variety of theoretical frameworks to better understand or break down the barriers related to vulnerable communities, protection, management of economies, and mitigation. This scholarship is primarily interested in impact and adaptation studies, policy development, moral dimensions of emergency management and response, risk transfer, and the barriers that create ineffective communication. There is a particular interest in the role of risk reduction or risk transfer within private and public sectors and the social or human cost of disasters (Benson and Clay 2000; ISDR 2008; Taboroff 2000; Tierney 2006; UNISDR 1995-2015; van Aalst and Burton 2000). Strategic planning has occurred that is aimed at minimizing the impact of cascading hazards on communities as climate changes and the frequency of events has increased in the last two decades (e.g., berms or levees) (Australia ICOMOS 1991; James 1993; Widell 1995).

Values-based conservation strategies frequently operate through a top-down approach, especially when the identification of vulnerable heritage is filtered through conservation

priorities. What is needed is bottom-up thinking to understand how heritage has been embedded into a community and reimagined through the scope of risk. If an inventory of heritage far exceeds the available resources outside conservation expectations, communities will be challenged by disaster planning for historical resources within the context of protection. Understanding how value underpins protection is an important first step in heritage protection and preparedness. How values indicate overall public value (or loss of value) of cultural heritage must guide decisions to establish the context of heritage within policy development, maintenance, and application of conservation principles through management (Clark 2005, 2010, 2014a; Conrad, Ercikan, and Friesen et al. 2013; Hewison 2012; Moshenska 2017). The values that drive development of historic properties and those that relate to ownership are considered differently yet are distinguishable and recognizable as interrelated concepts. These factors directly inform a site's disaster management plan and will preserve the public's interests as value is determined through cost-benefit analysis or through actions designed to engage preservation initiatives and protection (Atakul, Thaheem, and De Marco 2014; Chan 2011; Jameson 2003; Jerome 2014; Jokilehto 1999, 2016; Kalman 2014; McClelland, Peel, Hayes, and Montgomery 2013; Moshenska 2017; Zeayter and Mansour 2018).

This literature review was designed to explore the multiple ways that industrial heritage has been protected and build a connection between heritage and risk. It has pointed out that industrial heritage is vulnerable, whether it exists as a solitary unit or is apart of an entire district. Conservation and values-centered theory are relatively high level top-down issues, especially when the identification of vulnerable heritage must be first filtered through conservation priorities and a series of community values. Although most industrial heritage is supported and funded by communities they can be challenged by the reasons for designation. The materiality of heritage is often managed by specialists and in their absence creates an additional burden on a community that is managing an extant range of historical resources within the context of protection.

Historic districts are valued because of how they balance vulnerable tangible and intangible heritage on complicated landscapes. Their designation and integration into communities and heritage tourism has relied on the efforts, creativity, and energy of their communities. How they have been rehabilitated within that community has allowed them to be reimagined as active centers that offer programs which have become essential lifelines for people whose stories they represent. They support economic development, promote sustainability, and celebrate the working-class; a cathedral to worship the honor and integrity of their skills, their contributions to the many and their legacies. Although the scholarship has deconstructed the reasons why industrial heritage districts are valued one message remains clear, designation does not guarantee priority or protection in Canada, it is merely recognition.

5 Research Design: Identifying Vulnerability

The protection of the heritage in the Historic Clay District began as a grassroots effort. This research is built upon those efforts and considers the time and capital invested in the preservation of the heritage through the last forty-seven years. This research design mirrors the vulnerability assessment process to identify and map vulnerable heritage. Emergency management planning uses a variety of action-focused processes in order to teach people how to view risk, prevent unnecessary loss through training and using tools to identify and map vulnerabilities. UNC Institute and MDC, Inc.'s (2009) Community-based Vulnerability Assessment Guide was used because it provides a series of nine steps to assess risk and vulnerability within a community (UNC-IE and MDC, Inc. 2009:6). Five have been used to inventory and map the vulnerable heritage and sociocultural values in the Historic Clay District's flood prone environment. This guide was chosen because of its ability to bring a complex process into a simplified form which is more useful to communities. It offers a series of steps to gather the information needed to develop "strategies for reducing the risks from disasters" (ibid). It teaches a community how "to estimate the number of people at risk and location of buildings at risk, including critical facilities" (ibid). It examines the "communication links and networks that are vulnerable to disruption during and after a disaster" (ibid). The key steps that have been outlined in this research design focus on identifying hazards through the lens of a vulnerable community as a whole. I simply inserted heritage within the phases focused on identifying and mapping areas of greatest risk and used the information to inventory and map areas used by the public or critical to the public's use of these areas. For example, in addition to areas for delivery of public programming, areas used to house historical resources for that public programming, even if the public does not enter them directly, are critical to that public programming.

UNC-IE and MDC, Inc.'s guide places an emphasis on research in order to develop risk reduction strategies which are key to the resiliency of heritage. In this heritage context, research was constituted by documenting and interpreting what forms the site's essential

heritage. The value of heritage is understood through the process of defining its significance. Essential heritage is that which supports the continued integrity of a site's significance. During the literature review, historical research, document analysis, and experience gained as a First Responder, this research took place.

5.1 Research Goals and Objectives

In this research study I have positioned myself as a First Responder, an archaeologist, and researcher. By placing myself into the center, I can better understand this perspective to recognise what communities may be struggling with and try to find methods to enhance the awareness of vulnerable heritage. It has been influenced by insights gathered during the recovery program between 2013 and 2016 in the Medicine Hat Clay Industries National Historic Site. It has allowed me to see how community perception and cultural values drive protection, increase risk, and impose additional vulnerabilities. The objectives of this research are:

1. Contribute to disaster management strategies through the lens of community archaeology and expand the knowledge of the City of Medicine Hat's cultural heritage;
2. Understand the factors that impact a heritage district from preparing essential heritage resources against disaster;
3. Interview members of the community and heritage specialists who were involved with the disaster recovery procedures at Medalta and the Medicine Hat Brick and Tile Company sites; and
4. Expand the understanding of risk management at the Historic Clay District.

In addition to the above research objectives, the purpose of the study, broadly, is to better understand the experience of assessing the vulnerability of heritage through the lens of risk management. This better informs the tools and processes available to a community who are designing plans for their safety, business operations, and their heritage as it exists within the culture of their community. I am generally interested in trying to understand the challenges in the process when risk is focused on heritage. Critical to this is how heritage is vulnerable, how it is valued, and understanding the challenge in prioritizing heritage. When an emergency is called in a place like Medalta, focus will be on the business and priority will become visitors, children, staff, essential utilities, administrative records, and technology. Heritage must be

leveraged into this system in the pre-hazard phase. The lack of inclusion of heritage currently, required attention to the following questions during research:

1. What defines the heritage value of resources found within the Historic Clay District?
2. Do cultural heritage values impact disaster planning for potential heritage resources?
3. How can risk management tools like conceptualization models, priority lists, or heritage profiles be used to minimize negative impacts on heritage, which will lower the impact on a community?

I used a Risk Management Perspective which allowed me to look at the whole activity of emergency planning, specifically through a process of assessing vulnerability, and how it can be used to inform disaster planning. Archaeologically, the goal was not only to record the heritage impacted by the last flood but to understand the complexities of the values of the heritage found in the Historic Clay District. This process allowed me to tease out the contradictions and tensions that exist between the use of heritage and the process of establishing a disaster plan. Specifically, the materiality of the industrial heritage and how it hinders its priority and inclusion in planning because of its size, location, and the need to protect the integrity of its heritage values.

Emergency Management is a practice informed through a series of priority actions (Alexander 2002; Burtles 2014; Canadian Conservation Institute 2017a; Canton 2020; Dorge 1999; Haddow, Bullock, and Coppola 2011; Kapucu 2008; Kapucu and Garayev 2013; Waugh 2007). The practice we think of today was built from a foundation that integrates activities that can be applied to any vulnerable system. When push comes to shove and actions need to be taken, actions will reflect what yields the greatest benefit for the community and will trigger the protections. I experienced this lesson during the recovery of the heritage while in the field. Recovery was straight-forward. I had to identify and isolate damaged heritage and develop interventions that would stabilize the heritage that had been impacted in order to minimize future damage. What I learned, was that the recovery of heritage is far from straight-forward. When heritage is not understood beyond its programming use value, the community who has been tasked with developing disaster plans may not recognize why its protection matters. The recovery was collaborative, intensive, and the lessons learned could likely

contribute to many dissertations. Although the damages were primarily isolated to the heritage found in the Medicine Hat Brick and Tile site and Medalta Potteries, it illustrated the cost of disasters to the whole community for programming, events, the ability to generate capital, and delayed projects.

Developing the historical timeline of disasters allowed me to recognize that flooding has been a consistent and costly type of disaster in this district. Flooding has caused extensive damages, contributed to structural instability of historic buildings and features, the displacement of *in situ* archaeological remains and contamination. The goals were to stabilize the heritage and design process to remove sensitive artifacts (e.g., master plaster molds) and, to restore or rebuild essential structures indicative of the site's heritage value. Flooding has been an ongoing problem. It was the catalyst to the permanent closure of the Medicine Hat Brick and Tile Company / I-XL, in 2010. With all this disaster history, damage to the infrastructure, and cost to recover, there is still no formal disaster plan leaving heritage vulnerable for future events.

The primary focus of this dissertation has been to understand why communities supporting historic districts struggle to develop disaster plans so they can advocate for inclusion into broader regional support when there is a known cost and a repeatable disaster on record. I have done this using a multi-disciplinary activity approach within a socio-historical system to understand the complexities inherent to heritage and community action. Activity-based learning is a commonly used method in emergency management to teach preparedness planning, understand processes, or imagine situations. There are three types of risk that can lead to confusion in the development of disaster planning posed at the community level: preventable risk, strategic risk, and external risk. This district is at risk of all three. I conducted a vulnerability assessment because it bridged the gaps between these three risk types and was a lacking component of the recovery program. The vulnerability assessment process was object-oriented and artifact-mediated within the whole District.

Although the vulnerability assessment process is broadly included within risk management, heritage requires that an emergency manager, who must account for the environment, expand their scope to include history, culture, and role of heritage before an actual emergency occurs (Chen 2013; UNC-IE and MDC, Inc. 2009; Butler 2012). The following diagram presents the process.

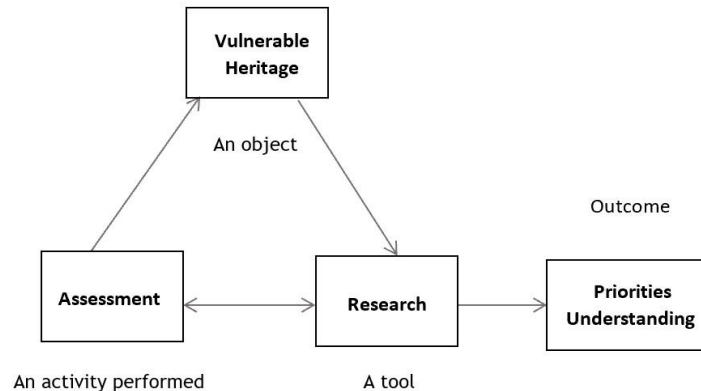


Figure 5-1: The process informed by activity theory based on Chen, Sharman, and Upadhyaya 2013 and UNC-IE and MDC, Inc. 2009.

This dissertation aims to understand how communities have recognized what values inform a sense of place and the value of the heritage worth protecting through designation, or through a process of placemaking in order to include them in disaster planning. Emergency planning for heritage at-risk benefits from understanding the vulnerability assessment process and creating heritage profiles so that communities can identify its essential heritage. It can be challenging to design preventative actions or preparedness plans for all heritage located at the scale of a district. Therefore, the objectives of my work were to create tools, simplify processes, identify the complexity of research, and how to prioritize a site's critical heritage infrastructure so that it is included within emergency planning. How a site is used will mean there may be many people throughout the district at any given time. In an emergency, the people will be the priority. Heritage in an emergency is secondary.

Conservation strategies designed to preserve the heritage during non-emergency periods, protect the integrity of the heritage through maintenance. This is not enough protection during an emergency. Because preservation measures are designed to slow the deterioration of the

material remains, they are not necessarily sufficient to withstand emergency conditions. First Responders require an awareness through an emergency response or disaster plan of what heritage is historic within the contemporary presentation. Without such a plan, it is challenging for those who are unfamiliar with the heritage at first glance. With the level of conservation that has occurred throughout most of the Historic Clay District, what is historic and holding heritage value is hidden in plain sight. Therefore, expecting a community to know what heritage is at risk, requires tools and a plan. It is unrealistic to expect staff and volunteers to prioritize the heritage at-risk within various magnitudes of flooding, without being able to accurately portray the values that guide the use of the heritage.

This research seeks to identify how value assigned to heritage complicates disaster planning and what places it at risk if lost. The methodology is multi-disciplinary. I have integrated my own past experiences in disaster recovery. My research broke down into five phases: historical research, literature review, site analysis, document analysis, and vulnerability assessment. Contemporary preservation documents helped isolate the district's essential heritage and informed the sociocultural values that defined the use of the heritage. Analysis of the Friends of Medalta's documents drove this research and were essential in the process of prioritizing heritage, creating heritage profiles, and enabled development of the resulting emergency maps. The process equipped me with an understanding of how values drive the use of heritage, protection, and its inclusion into disaster planning.

As a case study, this story easily represents the struggles many communities face when assessing risk to their heritage to develop risk reduction strategies. Disaster planning requires an understanding of heritage's complexity, what makes it vulnerable, critical, and how its significance and use places heritage on the list as an essential public asset. This community-centered study provided the reasons why people commit to conserving heritage into a place, how heritage is used in programming and protection. Previous research engaged communities through a values-centered approach preservation process (Bailey Consulting Services 1978[1981]; Commonwealth 2002; Finkelman and Manning 2008; Friends of Medalta Society

2018; Norquest Museum Consulting Services 1998; Pannell, Kerr, and Forester 1991; Robertson Weir Ltd. 2003, 2004; Simpson, Roberts, and Wappell 1993[1995]; The Co-Design Group 2002).

It provided the understanding of how values guide the conservation of historical properties and inform the significance of heritage, interpretation, and use. These studies are often criticized for oversimplifying and not including a broader range of values (Baird 2017; Kalman 2014; Mason 2002; McClelland, Peel, Hayes, and Montgomery 2013). For values to work effectively, a complete set of values is required, particularly those used to frame economic challenges, the social processes connected to the burden that preservation can place on communities, and the conflicts that can arise when values do not support all aspects of planning (Mason, 2002; de la Torre, 2000). In order to identify the values connected to the validity of protection, I had to identify what values drove initial preservation efforts and the current use of heritage.

Due to the complex nature of heritage valuation and its recognized use, the community's certainty of linking values to the use of heritage can only be done once a typology has been derived. In order to understand what hinders a community from developing disaster plans for heritage at-risk, I required a deeper understanding of values that drive best practice to isolate the challenges of disaster planning. Once a series of values can be identified, communities can see what heritage is important and the challenges presented alongside the ascertained benefits of the values in play through the lens of emergency management and sustainability. When we do that, heritage protection will no longer be static, facilitating a greater diversity of values that can reflect sustainability while providing tools to those managing heritage to a broader range of stakeholders.

5.2 Literature Review

In order to prioritize heritage, I had to evaluate how heritage defines a site's essential heritage. I also required an understanding of why industrial heritage became integrated into a destination and how early visions for industrial heritage influenced their inclusion as a museum

or within a community historical development. To do that, I had to frame the concept of heritage risk management through a study of discourse surrounding Risk, Community Archaeology, Industrial Heritage, and Heritage Conservation. Presented in the previous chapter, they have provided the relevant background regarding the development and use of industrial heritage districts, why heritage is preserved, and how industrial heritage is used in repurposing projects. I was particularly interested in how risk is interpreted, how heritage is determined or used, and the challenges facing communities regarding curation (e.g., balancing use and agents of deterioration), safety, and long-term conservation.

5.3 Site Survey

Archaeological survey of the site was conducted with the community in mind and framed through a risk reduction strategy facilitated through the Emergency Preparedness Demonstration Project. Funded by FEMA, the UNC Institute for the Environment and Manpower Development Corp. (UNC-IE and MDC, Inc.) (2009) partnered the program resulting in a guide, led by David Salvesen titled, *Community-based Vulnerability Assessment, A Guide to Engaging Communities in Understanding Social and Physical Vulnerability to Disasters* (Cooper Jr. 2022). Their accessible guide was designed to uncover vulnerability and develop strategies with communities through a process to build “awareness of and preparedness for disasters” (UNC-IE and MDC, Inc. 2009:2). It was useful in this research to identify and document data required to assess vulnerable heritage within a range of risk. The first four steps informed the methods used in this study; the final step informed my results:

1. Identify, inventory, and map likely hazards.
2. Identify, inventory, and map physical vulnerability.
3. Identify, inventory, and map socially vulnerable populations (heritage).
4. Seek and integrate community input, (considered a Next Step).
5. Create an accessible and understandable product, or tools, that assembles and analyses information conceptually and map to show vulnerability (UNC-IE and MDC, Inc. 2009:9).

Of particular importance was its focus on a traditional method of survey and mapping without a digital aid (e.g., computer or iPad). The process uses the above questions designed to gather

data necessary to categorize, group, and describe the built heritage, its functional type through its building materials, and if there were any archaeological features connected to a factory. These, together, create the district's historical infrastructure. The categories were broadened through my experiences during my residency at Medalta Potteries, as both a First Responder, and as an archaeologist and enhanced by lessons learned in the field and through the process of developing an *Emergency Operations & Fire Safety Plan* (EO&FSP) (Jacobson, 2018). The framework offered by UNC-IE and MDC, Inc. (2009) has been designed to be used by someone with no experience in heritage or emergency management. The questions create the categories needed to organize the essential data for a vulnerability profile of the heritage using the philosophy, principles, and priorities of conservation discourse. The process unfolded through a series of tasks, or actions, as defined by the *Disaster Management Cycle* (Figure 7-3).

These questions drove the data acquisition and can be modified or extended to mirror different site-specific information relevant to heritage that may require additional measures or exhibit different materiality than what was identified in this research. They are:

1. *What type of heritage is it?*
2. *When was it built?*
3. *Is it designated?*
4. *What is its materiality?*
5. *What level of conservation does it exhibit?*
6. *Are there any areas that may be contaminated?*
7. *Is the heritage being used?*
8. *Where is it located on the landscape?*
9. *Are there other historic buildings or features nearby?*
10. *Are there rooms within buildings that are at risk, or features within rooms at greater risk than the building?*

These questions were filtered through the Friends of Medalta Society's mission statement in 1997:

Through the collection, preservation, exhibition, and interpretation of a comprehensive collection, including buildings, manufacturing equipment, and products, the Friends of Medalta Society hopes to foster an understanding and appreciation of the clay products industry, its importance in the development of Medicine Hat, and its impact across Canada (FOMS *Purpose and Mandate*, Simpson, Roberts, and Wappell 1993[1995]).

5.4 A Background Study of the Historical Record associated with Heritage Inventory, phase one fact-finding using Statement of Significance

To isolate additional historical data that informs designation, regulation, boundaries, land area, and all other relevant details requires an extensive fact-finding process beginning with the Statements of Significance. A Statement of Significance is a record of heritage registered into the Alberta Register of Historic Places (HerMIS n.d.) This document can be used to frame a research strategy and is useful for understanding essential facts pertaining to designated heritage. Statistics include the date the heritage was designated, a description, a brief history of its historic use, and how many buildings are associated with the heritage site. Specific data pertaining to the heritage are also found in this document, a list of the character-defining elements of the heritage, provides a UTM location, and a legal land description. Recognition is defined by type, date, what criteria informed significance (e.g., theme), and its historic function. Heritage is also described through its architectural significance. A methodological outline is presented at the end of this chapter that stages discovery beginning with where to find information, what information can be identified, and attached to the methods that will guide the formulation of tools to enhance the development of an emergency or disaster plan.

5.4.1 Historical Records

Historical records are used to correlate all relevant baseline data to create an inventory of essential heritage and understand what themes have driven designation. Given the complexity of the cultural and industrial history of the study area and its landscape, I conducted a historic and contemporary survey using primary and secondary sources. The process allowed me to isolate comparative data (historic, environmental, and archaeological) and examine how the

district and heritage has changed through time. I used them to understand the district's environment across the timeline of the disasters in order to identify whether previous events created debris, altering the original landscape, and potentially burying further resources of concern. It is not uncommon for large industrial districts to change significantly through time due to changes in industry practice and land use change.

These landscapes can contain secondary features, such as ceramic waste deposits, due to past highwater events. A very large pit of discarded brick was exposed during such an event in 2014. These deposits are valuable in archaeology because of the evidence they could contain for sites with limited evidence of its historical contribution to the heritage district's collective story. Beyond archaeology this feature is an important vulnerability in this landscape. The area where the pit opened was connected to a failure in the City's lift system at this site and played a crucial role in why lands flooded in 2013. There are more sites like these throughout the landscape and could contain heritage from any one of the factories in the district and play a role in future disasters.

Historical records provide relevant and important data required to create an inventory of heritage that currently exists. The following documents allowed me to identify where archaeological features may be in the landscape, how the site may have changed through environmental modifications (e.g., berms, land modifications, and locations of buried waste deposits), and what agents create deterioration. Historical records are a necessary aspect of assessing heritage, specifically for value, significance, and integrity. A list of historic and primary documents, including newspapers, maps (e.g., fire insurance maps, land-use), previous reports, commemorative integrity statements, structural drawings, geological surveys, relevant feasibility or historic studies, interpretive and strategic plans are detailed below. To understand what makes heritage vulnerable, a background study was necessary.

This analysis has used primary and secondary sources to provide information for the heritage and the archaeology in the district. The following depositories were accessed:

- **Archives:** These depositories store historical paper documents or records. Many communities have their own localized organization and can be associated with a university,

museums, or historical society. Each province in Canada has their own archive alongside national organizations.

Because of the current pandemic, digital archives were primarily used to acquire historical data after March 2020. This has not been ideal. I was able to do most of the archival research before restrictions were announced. I think that the experience of visiting an archive and conducting research is much more beneficial because it allows a researcher to pivot when discoveries are made as leads are identified. Using only digital archives requires a stronger baseline of knowledge in order to articulate what you require in order to order the materials that may be required within restrictions and modified operational hours.

- **Museums or Historical Societies:** Another type of depository, they are often managed by members of the local community. The wealth of information that can be found in these sites are often comprehensive and may contain rare local books, papers, photographs, and other artifacts. Often managed by local historians, they are reflective of local knowledge and contain a vast amount of local history.
- **Libraries:** Local library's containing special research collections were useful in this research. The Medicine Hat Public Library holds an extensive collection of local historic newspapers. These sources were used to identify previous disasters, offered community perspectives pertaining to these events, and how the local community felt about heritage designation and programming under development in the Historic Clay District. They were useful in understanding the community effort and appreciation that has gone into the preservation of the heritage in the District.

The following sources were consulted to understand where heritage exists within the landscape, what heritage could be at risk, and analyzed to gain an understanding of the values that drove preservation, current programming, and protection. They were used to consider the vulnerability of the heritage and the community because of the various types of information they hold. They are as followed:

1. **Building Plans and Elevations:** Documents that contextualize the construction of a building and are primarily produced by an architect or a draftsman. They can be found in various locations, such as a communities Public Works or Planning and Development Department, local engineering firms, or a local archive and museum.
2. **Directories or Gazetteers:** Community specific publications that compiled business or local community information (individuals, business, or services). Produced yearly, they were alphabetised and record postal information, physical locations, and offered maps or township plots. Often containing local advertisements, they also listed architects, and offered details on various types of industry: construction companies, building suppliers, retailers, wholesalers, or manufacturers.
3. **Historical Visuals:** Before photography became widely used, many sites, landmarks, monuments, or buildings were recorded in sketches, postcards, visual art, or paintings.
4. **Land Titles:** A legal property record. Details pertaining to a parcel of land can be found on these records, as well as, the number of buildings located on a property, and ownership.

Sometimes, they provide details indicating a sale of a property, whether it was transferred through inheritance, a mortgage or if a property was being leased. It can also provide dates of any changes in ownership.

5. **Fire Insurance Plans:** Created for companies who specialized in selling fire insurance. They were primarily produced during the early 19th century until the 1970s. They are considered a type of cartography offering enough information about a building to assess the risk of selling insurance to the owner.

They are useful archaeologically, because they provide a record of what was present in a landscape and can provide an indication of what could exist in a subterranean environment. Maps are colorized based on materials and include a legend, or key. The legend interprets the buildings and features recorded on the map. They offer the shape, size, number of stories, and provide details on its use and lot size. These maps record street names and can record a community's infrastructure. Often amended, many are found with updates applied to the map through a small patch. Many Fire Insurance plans are digitized today and can be found in university libraries, museum archives, and in community planning and development offices. There were many companies in Canada that produced these maps. The complete set depicting what is now the Historic Clay District was constructed by *The Canadian Underwriters Association in 1955 (this company tended to produce maps after 1911)*.

6. **Local newspapers:** Records created by local news agencies. Community-focused, they often include details pertaining to new development, disasters that could have occurred, buildings under threat, or announce buildings that have been demolished. They include advertisements for local industries or businesses and can record bylaw changes, announce the designation of local historical buildings and record public opinions on development via interviews.
7. **Statements of Significance:** These documents describe reasons for designation after a site has been evaluated and designated. A record of all relevant statistics pertaining to designation and emphasize Character-defining features of the heritage. Date of designation is recorded and offer a description of important historical events and people. They provide a specific location. In Alberta, they are found on the Register of Historic Places and available online. They are valuable because they can identify what heritage supports significance, while directing where to locate heritage in a factory or landscape.
8. **Commemorative Integrity Statements:** Contain all relevant data to the historical significance of a Nationally designated site in Canada. They provide a useful starting point in planning or managing a heritage site and can be used to guide operations.

These documents inform the district's living history, use, and the cultural connections to the heritage. They include details about the design, style, and construction of the factories. They have been useful to locate the details not easily seen in contemporary landscapes. The documents were used in many of the phases of this research to evaluate the integrity of the heritage, identify what materials has been used in the construction of the factories, and how industries change through time to identify and map all features that fall into the site's critical heritage infrastructure.

Although this data will be presented in this research within a range of flood risk, the details inform the understanding of the historical industrial themes each factory is associated with. The factories in this district are tied the beginning of brickmaking using soft-mud production methods, the start of pottery production in the region, and reflected in the types of products produced and shifts into specialized manufacturing techniques resulting in products like electrical conductors and mass-produced hotel ware. It is this history that has been ascribed as the site's "heritage value" and points to the language describing an evolved landscape in the Statement of Significance (SOS). When this information is known, it can be correlated to a disaster plan.

5.5 Document Analysis, Defining Values

Assessing the vulnerability of heritage is distinctly different from assessing community vulnerabilities. It involves a thorough understanding of the type of heritage being preserved, the site's history, parameters of regulation, conservation standards, age, location, historic technology (e.g., fireproof materials), the frequency and type of events that have already impacted the heritage, economic support, and the community that supports the heritage. These factors are specific to cultural heritage and must be considered within all aspects of strategic risk management planning concerned with the "process of implementing decisions about accepting or controlling risk" (Taboroff, 2000:75).

I evaluated government and public documents, planning documents, contemporary inventory studies, archaeological reports, and conceptual plans because of how they inform community value and heritage value. They offer a unique vantage point on how citizens were engaged in the process of defining a common vision for the future of the heritage and its use. Because the heritage was seen as a "model of urban renewal" the authors of the preservation documents became key informants connected to the development of the site collaboratively developed with the community (Friends of Medalta Society, 2003). I was particularly interested in understanding how value informed intention or contributed to the way heritage was

conserved or selected for public use. I was also interested in those managing the long-term preservation of the heritage who identified the ascribed heritage value and how their valuations aligned with historic significance or the historic integrity of the tangible aspects of the heritage.

Throughout the history of preservation, regardless of how long people worked on conserving the heritage, each person viewed the use of heritage differently (e.g., aesthetic, social, historical, scientific, or spiritual). In order to isolate the cultural values represented in heritage, I analyzed the documents for language, authorship, goals, and focus. This process was designed to retrieve quantifiable facts regarding the tangible heritage located in the Historic Clay District and the valuations the community defined. The way people preserve and use heritage indicates what heritage is essential to a site's function.

Strategic plans, interpretive plans, and conservation plans were analyzed during this phase of research. These documents are publicly available. Such documents are frequently located either in a museum's archive, a provincial archive, or a city's library or archives. How value is reflected in the history of documents can indicate what heritage may need preventative interventions or preparedness strategies to preserve heritage value. These documents were used to locate all relevant heritage in the district, identify how community value has driven use through an understanding of the organization's mission and vision, and how heritage has been framed as valuable so I could identify vulnerabilities. To understand why communities struggle to develop disaster plans, it was essential to identify what heritage required additional protection, preventative interventions, or expedient recovery after impact by a future event.

The *Architectural Preservation Process* (Duguay 1992) was reviewed to understand the development of sociocultural values used to frame past preservation initiatives. This process was outlined by the Alberta Government for anyone designating heritage for large scale development. It has been included in the document review as a tool to identify the steps of specialists and how the process of preservation informed the history of this part of the community's story.

The following document classes were coded for a series of sociocultural values to gain an understanding of the values that drove preservation, current programming, and protection.

They were used to consider the vulnerability of the heritage and the community because of the types of information they hold. They are as follows:

1. **Preservation Plans:** Describe the intention of conservation planning. These documents were prepared to provide the historical background of the properties, why heritage is significant, and outline a series of interventions that would be required to use heritage, how it could be repurposed, the costs associated with conservation, and offer the details pertaining to the built heritage and resources relevant to designation.

My analysis of the documents demonstrated that these plans are specialized and created by heritage professionals. For example, they provide drawings, sketches, and maps, emphasize minimal intervention, while offering rationale on the management of the heritage. They revealed the current contemporary perspective of the heritage value at the time of their compilation, how the heritage could be used by a community, and speculated about the type of programs that could be delivered to encourage visitors or attract business. They were useful to understand how the landscape was considered in planning and the history of the original intent of the heritage and why conserving it preserves the stories through the industry's use are key components of these documents. The site's historic conceptual design is evaluated in these documents to create a master plan of actions required to conserve the heritage and provided a series of priorities, phases, and goals.

2. **Interpretive Plans:** **Described** how heritage could be interpreted through the buildings, historic fabric, and the site's evolution since its beginning. Visitor experiences were a focus and provided an understanding about the business of pottery manufacturing and recognized the reasons for a site's commemoration as a significant site. The architecture, history, and cultural context were used to outline the stories, consider the visitors experiences and demographics, plan feasibility, historic themes, and comparisons with other heritage sites.
3. **Archaeological Site Reports:** In this research these documents provided a record of archaeological monitoring, inventories, and salvage projects undertaken during various construction or expansion projects at the site. They documented the subsurface environment before interventions were applied to a historical property. Archaeology in this context was used as a tool to validate the historical environment and recorded activities (South 1972). Archaeological methods were sponsored through capital projects as required.
4. **Historic Inventory Studies:** **Studies** located, identified, and described the sites buildings, machines, and production methods used historically. They offered details pertaining to a structure, the technology found within a factory, and compiled all relevant historic primary sources pertaining to a specific factory.
5. **Conservation Plans:** **Recorded** the current state of the heritage at the time the study was undertaken to highlight any vulnerabilities within the heritage and assign a series of interventions that could be taken to preserve the fabric of the heritage (Keck 1972). They included measured drawings, maps, and outlined damage and recommended when interventions should be integrated to minimize deterioration. Vulnerable areas of weakness were framed and outlined and recommended what heritage required treatment first. They also offered a baseline cost associated to interventions.

6. **Tourism Generator Studies:** Analysis of this document showed that heritage was a focus in the development of a tourism industry. It outlined how buildings or spaces could be used to develop programming specifically to encourage visitors. The documents provided suggestions on how to improve visitor attendance through interpretation, offered a perspective of how to maximize areas of use, and offered information pertaining to themes that could be integrated alongside the heritage conceptually to enhance experiences. This was a conceptual document designed to inspire planning, inform conservation, and indicated ways buildings could be used as galleries, studio, visitor reception, administration, support services, and basic food service. A series of conceptual drawings were included.

My experience as a first responder during the flood recovery program played an important role in how these documents were chosen. For example, it was during this period of document analysis that recorded field notes became useful way finders to additional sources of information. These additional sources enabled analysis to extend beyond the realm of the heritage value into broader community vulnerability through the cost of the disaster to programming, visitor use, and staff obligations. My role as a First Responder provided unique insights: I had firsthand knowledge of conflicts as they emerged between risk, heritage management, and community use. These lessons taught me to articulate the impact to contemporary use of heritage if not safeguarded from loss.

I used these documents in other phases of research to provide the details about heritage value found in archaeological site reports, historical descriptions, maps, and associated archaeological inventory studies created as preservation projects occurred in the district. I found the documents, such as the Commemorative Integrity Statement are essential in preservation planning and were used to understand the relevance of each factory within the site, additional features of the district that were not easily recognized but, indeed, connected the factories within and across the landscape. The value of the documents extends to additional contemporary interpretations through the experience of the authors. The documents were the work of specialists, and their skill is readily seen. Their value extends to additional contemporary interpretations through the experience of the authors. This phase of the process was focused on becoming familiar with the heritage found in the district, specifically related to form, function, design, style, and historical use. These were critical data, used to list the site's

critical heritage infrastructure which supports the district's designation, authenticity, and value to the region.

I used the archaeological reports and historical inventory studies to locate heritage. These documents provided data that allowed me to correlate historical value, community value, and have been integrated into conservation efforts. They were useful not only to inform archaeological potential but provided a record of the site's transformation into a viable historic district, something that will be described later in this dissertation. One archaeological monitoring program was undertaken by a founding stakeholder who was specialized in ceramics and the material culture located in the District. His contribution created a foundational document that records the manufacturing process history of the Medalta Potteries site in 2000 (Forbes 2000). Although the archaeological record is limited, there is an extensive record that inventories all of the found and potential archaeological evidence in the district (Heitzmann 2001), three historical monitoring programs (Dau 2001, 2011; Forbes 2006), one impact assessment (Wickham, 2007), one archaeological research, recovery, and preservation project (Jacobson 2013), and a detailed historical study (Sanders, 2004) to guide my overall analysis. These reports were designed to understand the historical environment, the subsurface environment, and reflect an evolution in the presence of archaeological study. These records are the evidence that supports the inventories located in the district that are not easily recognizable when walking into the factories today.

My analysis of the archaeological studies, although they varied in detail, were key to understanding the known presence of archaeological resources and pointed to locations of further potential. In their design, I was able to ascertain how archaeology has been used in the management of the district, thus far, and learned that archaeological methods began as a means to validate architectural plans, access locations for other specialists to review foundational supports, and to test whether construction would encounter the evidence of earlier industries or historic occupations. The Society's goals to preserve the integrity of the heritage's materiality required, at times, the strength of archaeological methods to identify,

sort, document, and catalog the features and artifacts found in the context of each building's history. In this context, the primary role of the archaeologist has been as a documentarian while the community discovered the potential of their heritage as they moved from building-to-building deciphering occupational sequences and temporal sequences as seen through the record of buried infrastructure. These interventions guided the journey of the recovery of artifacts associated with the history of the site and its people.

As primary sources, I found these documents useful as records of the site's foundational knowledge and provided useful spatial baseline data. The identification and use of historical inventories, the images found within, and the cultural cues they recorded enhanced the identification of the values that distinguish Medicine Hat's industrial heritage, in the buildings, their style or use, and the types of technology required to manufacture the clay products during historic operations. While they may highlight the reasons why heritage was designated, they also provide facts needed to locate vulnerable heritage and yet unrecorded archaeological resources.

The community of Medicine Hat appreciates their industrial history, which is evidenced by the number of documents created. People only record what is special to them and, as a result, these records tell a contemporary story about preservation that can be used to inform protection. This research considers these documents as a community record that also happens to identify historical use and value. The values that drove preservation and community development fostered these studies. Together, these documents evidence the interdependent relationships between archaeology, heritage management, and disaster planning. When used together, these documents provide the details required to create a contemporary community profile that reflects a site's valued vulnerable heritage. In so doing, they convey how the community of Medicine Hat experiences their place within history, perceive this aspect of their story, and what they want the heritage to convey to the public about them. This is the synergy of preservation.

5.6 Identifying Community Vulnerability, Coding

The heritage in the District holds a series of sociocultural values. The major objective of this chapter is to identify what values were used to preserve heritage, what values are used to support established programs, development of projects slated for preservation, and have they can be disrupted by recovery to prioritize heritage in disaster planning. The *Community-based Vulnerability Assessment* guide (UNC-IE and MDC, Inc. 2009) outlines a series of steps that teach communities how “to identify and map areas of greatest risk, vulnerable people” (e.g., neighbourhoods, socioeconomic community data), and property (e.g., schools, hospitals, churches) (UNC-IE and MDC, Inc. 2009:9). The process benefits from the above sources is a recommended approach to understand how to prioritize vulnerability. In order to understand what hinders the development of disaster planning by communities when it pertains to protecting heritage, preservation planning documents can yield some useful data within the process of understanding the factors that are at risk and **may be** stalling communities from attempting to try.

The documents were chosen because of how they can mirror the range of values to triage the heritage against flood risk, to clarify how *in situ* heritage is integrated into the use of programming to assign priority, inform goals, and trigger what values might be impeding the development of preparedness planning. They were chosen after the flood recovery program commenced and contributed significantly to all areas of my research, specifically in the design of my results in Chapter VI and the identification of the District’s heritage at-risk.

This research considers these documents a valuable starting point and reliable record of the living history that can be used as a tool create evidence that people can use to understand how flooding could interfere with ongoing preservation efforts and community programming. Value assessments in this study provide the information necessary to illustrate the interdependent relationship formed between archaeology and heritage management and cultural value and community use. The value of heritage informs the inventory of a site’s essential heritage. Only a tool, they can be used by those managing an extensive inventory a

method to aid in discussions to refocus a variety of business goals for programming, to reorient an organization's mission and/or vision, specifically if an imbalance has been found in value if they create a vulnerability to the protection of heritage and prioritize goals to establish risk reduction strategies. The values are only an indicator. Through the lens of risk, value assessments are useful in disaster planning because of how they can inform the prioritization of heritage in disaster planning within a range of risk.

The values assessed in this research have been identified to understand the early collaborative planning process of the preservation of heritage informed by the community's shared vision for the future. How they are used to frame the risk and benefits of protecting heritage can be useful in an exercise of determining the cost-benefit of preparing heritage. This conversation is beyond the scope of this research. The values that have been identified in this study are designed to understand the process of identifying community value, how it is framed by the business of heritage through its use, and what programs could be compromised by the recovery or loss of heritage and how it could impact a sites to sustainability, feasibility / cost, useability, and in the development of heritage in order to frame a rationale to the benefits of prevention, preparedness, response, and recovery. Value assessments are not complete without a community discussion. This process frames the documented values. It provides a method of understanding of how heritage is informed by community value as it relates to heritage value. How they are activated is a community task. The exercise is relevant in assessing risk and considered and provide the baseline data needed to create a vulnerability profile to assign priority, understand rarity, gauge replacement costs, and how recovery could impact programs that integrate heritage. This knowledge is useful in the discovery phase and create space for a community to imagine how heritage is used within all aspects of the business of heritage.

5.6.1 Sociocultural Value Data

Coding was systematic and began with an understanding of how heritage was framed through each document's purpose, site, and the goals for future use. The type of document defines its use and was specific to the team of professionals participating in its development. Each document reflected a language, influenced a scope of research, and drove planning, goals, priorities, and informed the context. Themes emerged and as a result, I created a database of sociocultural values that communicated the cultural values of heritage found in the Historic Clay District. These will be discussed later.

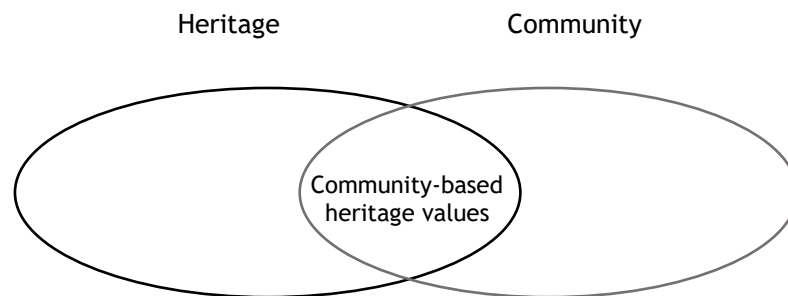


Figure 5-2: Risk Mitigation Priority Criteria.

5.6.2 Methodological Outline to prepare for Coding

The following methodological outline was used to identify a series of sociocultural values pertaining to the use of heritage in the District. This method was used after heritage value was established. The documents were filtered through the four following themes identified in the Friends of Medalta Society's *Strategic Plan 2018-2022* (Friends of Medalta Society 2018); they are:

- **Sustainability:** informs how heritage is a nonexcludable asset. In its nature it is a public asset and cannot be consumed by one person or one group of people. It must be seen as a shared asset that contributes to the overall community's health, quality of life, and a contribution to generating opportunities.
- **Usability:** defines how heritage is used to facilitate social connections, networks, and creates a sense of place. How it is used in programming or through the goods and services it provides.

- **Feasibility/Cost:** how the presence of heritage reflects collective decisions. How heritage can influence economic value, as a driver of decision making, funding, how it influences land value, resource allocation, or replacement costs.
- **Development:** how it has been incorporated as a driver of a local economy or community development as an unrivaled and unique place that cannot be replicated because of its significance and authenticity.

To determine a set of community-based values, relevant to a vulnerability assessment in this context, it is important to understand the basic function of the business that surrounds the heritage and the role of value in a process of collaborative early planning used to frame a sense of place. How is the heritage used? What programs are most vulnerable within the range of risks? How would they be affected by a recovery program that could include extensive repair or even reconstruction? The challenges associated with creating disaster plans require understanding the answers to these questions from the perspective of the community through the themes of sustainability, feasibility, usability, and development.

I coded the documents in the order of their development to trace the process of the Friends of Medalta while they were engaged in the preservation of the District. The goal was to create a timeline that informed how preservation was managed, what values guided conservation and interventions, and what priorities were identified and executed. The documents were then categorized by proposed use, author(s), the goals of the project, and objectives of project implementation through the actions required to achieve conservation.

The language in the document was coded as it referred to preservation, goals, use, and the protection of the heritage. This was essential to understand the distribution of values and how they can change through time. Specifically, this informs how the development of the site influenced the mission and vision of the Friends of Medalta Society, how it influenced partnerships, and if those partnerships supported conservation, programming, and how heritage could be used. What I did not anticipate was the heavy presence and influence of the business of heritage. The documents chosen reflected a timeline of conservation, preservation, and informed the background necessary to understand the role of archaeology, heritage value, use of heritage, and how preservation informs the process of prioritization to manage risk. The

values are used to prioritize heritage and inform preventative interventions or action through the phases of the *Disaster Management Cycle*. This illustrates how the tool can be used to design a disaster plan informed by the heritage at risk.

The values that emerged during coding revealed the specific ways that heritage has been incorporated into the community through its presence, inclusion, and use as a place. A discussion of these values is included in my analysis chapter framed through the motive to plan for heritage at-risk. The degree of loss of *in situ* heritage is defined by its value to programming and the vision or mission defined by the community. How they impact the business of heritage can be seen through the documents and how an organization supports the protection of heritage as seen through its mission. Through this process, a problem of perception has been identified. The process of coding, although time consuming, informed vulnerability. Identifying vulnerability is a first step to creating an action to prioritize heritage that can restore and strengthen networks, or strategically realign programming to focus on how heritage contributes to the sustainability of its use in the community. Heritage has been used throughout the site for programming and to support operations, but does this support the protection of the heritage? The values identified from these multi-disciplinary qualitative and quantitative studies defines how to prioritize protection.

5.7 Using a Classification System for Organizing the Inventory of Vulnerable Heritage to Establish a Heritage Profile

The data specific to the heritage, was organized into a classification system designed to label and group the characteristics of the heritage (e.g., materiality, location, age, branding, and designation information) in order to compare and discern the relationships between heritage, flood risk, and use. Roderick Sprague's (1981) Functional Classification system from 19th and 20th century sites were consulted alongside UNESCO's Cultural Heritage Classification System. Both are considered useful methods of constructing broad categories to organize at-risk heritage, specifically as it relates to the development of a vulnerability profile. It can be

expanded upon as the heritage or site changes, used to develop programming, or to record new sources of information. It is also useful during an emergency as a tool to prepare heritage requiring relocation and can aid in the recovery of heritage.

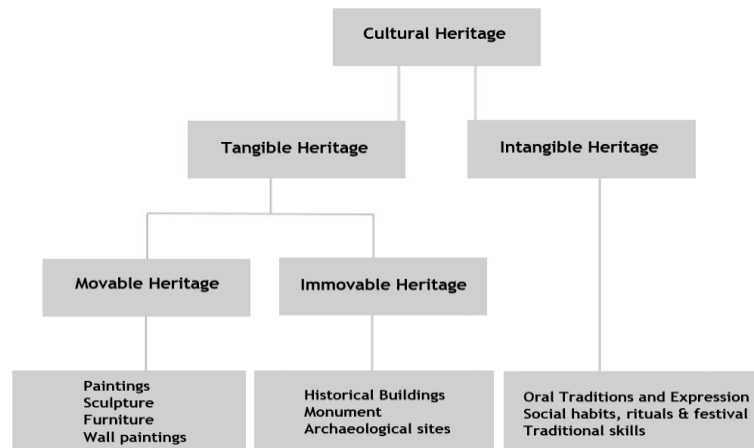


Figure 5-3: UNESCO cultural heritage classification model (UNESCO 2003).

Sprague's (1981) system provides a detailed classification typology that can be used to organize materials or artifacts located in any of the factories, specifically if they have not been inventoried through their multi-materiality exhibited in the heritage within UNESCOs Framework for Cultural Heritage (FCS) (e.g., tools, fabrics, pottery, machines, and shoes) (UNESCO 2003). This functional classification scheme orders artifacts into a category based on intended function, context, and "generally regarded more meaningful than simple typological groupings in that they allow for the interpretation of behavioral patterns" (McMahan and Thompson 2002:68). Functional typologies have been used in research to explain behavioral patterning on colonial sites in the Carolina's (South 1977). South's categories include "kitchen artifact groups, . . . architectural group, furniture groups, arms group, clothing group, personal group, tobacco pipe group, and activities group" (McMahan and Thompson 2002:68). They provide an overview of an artifact assemblage that can be inventoried through a building's original intent, use of tools, and applied to the history isolated in primary source data. Simple and relevant to the process of emergency response which can pose time constraints, the

system can be activated during preparedness planning or directly before an event. A preparedness strategy using a categorization system is useful during a documentation program, within the development of emergency planning, or during an event to capture the process of relocating inventory that may require further analysis. Typological classification systems can be populated by any type of data, whether it is correlated to risk, heritage, or archaeology.

Functional Group	Artifact Class	Frequency
Clothing Group:	Buttons Laces Leathers Shoes	X X X X
Kiln Group: *This group can be framed by room and further broken down into activities or use.	Saggers Stilts Glaze Testers Burner Chargers Kiln Rods	X X X X X
Activities Group:	Plaster of Paris Molds Trimming tools Sponges	X X X

Figure 5-4: Example of Categorizing Artifacts using a Functional Classification System based on Sprague 1981.

The heritage in this study will be connected to a functional classification system based on the factories' historical theme to illustrate how to populate a framework. These frameworks were chosen because they are flexible, can adapt, and inform a process of organizing data or artifacts required to formulate a preparedness plan or preventative interventions.

5.8 Summary

This research is one step in a process designed to identify the factors that make heritage vulnerable so that it can be mapped into a range of risk to identify what heritage is most at-risk. This methodology included a literature review, document analysis, a process of coding, and classifying data. These methods have been chosen because they support a risk assessment process. The results of each of these streams of research are only baseline data. **UNC Institute for the Environment and Manpower Development Corp's** (2009:2) Community Based Vulnerability Assessment guide, designed to "engage communities in understanding social and physical vulnerability to disasters," has informed my methodology. Its steps are:

1. Identify hazards likely to affect the community/heritage
2. Identify and map areas of greatest risk
3. Identify and map vulnerable people and property
4. Inventory and map centers of use
5. Community/heritage ground truthing
6. Putting it all together

Steps one to five informed each of my methodological processes outlined in this chapter. The following chapters formulate step six. This research is a process to understand the complexity of problems created by a disaster. It is systematic and deductive. In its design, it is relatively simple. It is complicated by the subject of heritage.

My process has been both scientific and reflective. It was inspired by the community I worked alongside. I have used archaeological and archival research, and my experiences to identify a range of community values connected to the heritage. It is only a matter of time before climate change will impact the heritage in unforeseen ways. Traditional heritage management methods designed to save everything is not feasible. The historic industrial landscape located in Medicine Hat is a unique and rare cultural landscape in Canada. Its existence has a thin veil of protection as a designated place but, the characteristics of its natural environment, historical use, inventory, rebranding, and the distinction it has achieved through the preservation of the inventory found in the district is vulnerable. This research is critical to understand what keeps communities from developing disaster plans for heritage in a disaster-prone environment, specifically one that has a long recorded and documented history.

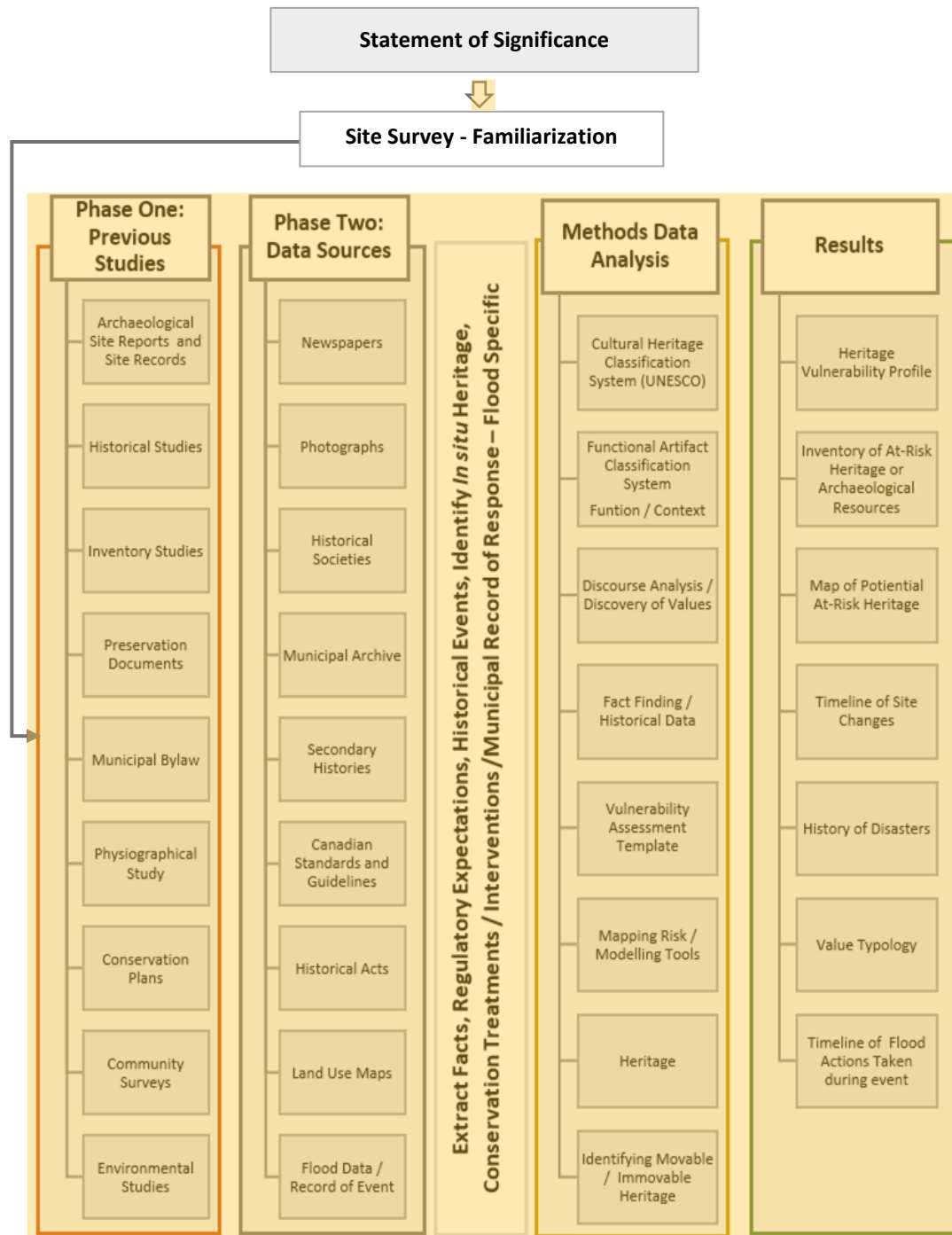


Figure 5-5: Methodological Process of Data Acquisition, Methods, and Results (Image credit: Jacobson 2022).

6 Results: Identifying Vulnerability

The history that defines the heritage's story of vulnerability in Medicine Hat and how it is seen in a historic landscape requires more than an understanding of site formation processes, the history of what drove industrial development, or an industry's role in a national story. The comparative relationship between people and heritage hold value. Value is what creates the desire to see the potential in something that another person might not. The story that becomes relevant through a lens of vulnerability is where this regionally distinct and industrially specific heritage is found on the landscape, how it has been integrated for use, the level of risk associated with it, what makes it vulnerable and in need of additional protection. In the case of the pottery and brick factories, their historical disuse to eventual reuse, is a regionally distinctive process. To understand the relationship that people have with heritage, the values that people attach to heritage must be identified and mapped. There is a complex relationship between the choices to preserve, seen through a series of values and found in the symbolic attributes of the heritage. Original intent can be lost through time and what makes heritage valuable may shift. When values are reidentified they are understood and their meaning can be integrated into decision-making models to understand the cost of preservation, what is in need of protection, what is at risk if additional protections are not applied and frame the benefits in investing in the process and study. Once isolated they can be framed within the development of new applications, programs, or policy.

The purpose of this research was to explore how people perceive risk and value to generate an understanding of the types of values associated with heritage, its use, risk, and protection in order to understand why communities struggle to create the tools to help them mitigate disasters. These data have been previously understood through the process of preservation and seen in the presence of the heritage, the goals of preservation, and the decisions made by those who supported the process and establishment of the Historic Clay District. Because this type of study has never been done for the heritage in the district, the

values in themselves become indicative of a new conversation that frames vulnerability within the heritage still standing beyond its intended use. Only then can the value be used to understand what challenges communities in the development of disaster planning.

This research will not answer all questions, identify all values, or decide how heritage is protected. What it does offer is a perspective in the conversation around risk and how vulnerable communities are protected. In this case, decades of effort, capital, and time. The heritage found in the Historic Clay District share features with other sites in Canada, the United States, and Europe through their pottery and industrial histories. Historically the factories found in this district were reflective of the time and unremarkable. What makes them special today is in the rarity of the number of sites held in Medicine Hat's Historic Clay District and its inventory of industrial kilns, warehouses, and machines found within the landscape and how they trace the shifts through time and record the changes in technology as the factories became more specialized as demands grew. History has made a case for the heritage through the stories of settlement, the movement of capital and investment, and the people who became the actors in the stories.

This chapter focuses on the results of data generated from the process of preservation, the vulnerability identified through the inventory of the heritage, and the reasons behind their preservation. How heritage has been used through various valuations become strong indicators that inform a vulnerability profile of the heritage. The sites critical heritage will be illustrated below. A total of ten values symbolizes how heritage supports the sustainability, feasibility / cost, useability, or the development of this district through its use and will be summarized as the 'Use of Heritage'. Finally, this data will be mapped in the following chapter to illustrate the relationship between heritage at-risk and the values associated with its use. I will then discuss the challenges of assessing risk through the disaster management cycle, and how values complicate the process of planning, prevention, or preparedness. Including heritage into disaster planning, not only protects the heritage but provides an organization the foundation for a business continuity plan. When we accept that no system is perfect, we can view

vulnerability through a risk reduction strategy. The heritage value of the following collection of at-risk heritage will frame the discussion offered in Chapter 7 as it relates to disaster planning as a tool to frame a vulnerability assessment process.

6.1 What is the State of Heritage Today?

The Discovery and Inventory of the Critical Heritage

The key to identifying priority is establishing a clear scope by defining the boundaries of analysis. This chapter presents the results gathered from a historic and contemporary survey of documentation designed to identify heritage value and what community value has been assigned to the heritage, used to inform a place, and applied to the business behind the preservation of community heritage. It took a process of document analysis to isolate the business aspects of the industry devised to promote community spirit in a way that allows them to feel and touch the past. I incorporated archaeological data and my experiences and understandings as a First Responder to identify and map the relationships between the use of heritage, the environmental risk of flooding to the location where the heritage exists and what are vulnerable in the complexities inherent to a large-scale industrial heritage district. There is a relationship between those managing the heritage to those who visit this district. There is also a relationship between the heritage, its history, and those who must plan risk reduction measures. This data establishes the baseline information required by a community to inform their understanding of what is at risk to begin a conversation to create a disaster plan that can enhance site viability, economic vitality, and continued use. When data is accurately framed communities can consider the options, outcomes, and costs associated with preparing goals, delegating actions, and can be used to drive the goals related to preparedness planning within the business that has integrated the heritage using the disaster management cycle to frame the conversation.

There are seven historic industrial factories in the Historic Clay District. Five are historically significant. Three are designated. Each contain an inventory specific to a significant

moment of this district's industrial development and define their heritage value. They are all tied to themes of the district's industrial beginnings as each site became more efficient through innovation and enhanced technology.

Current Inventory in the Historic Clay District

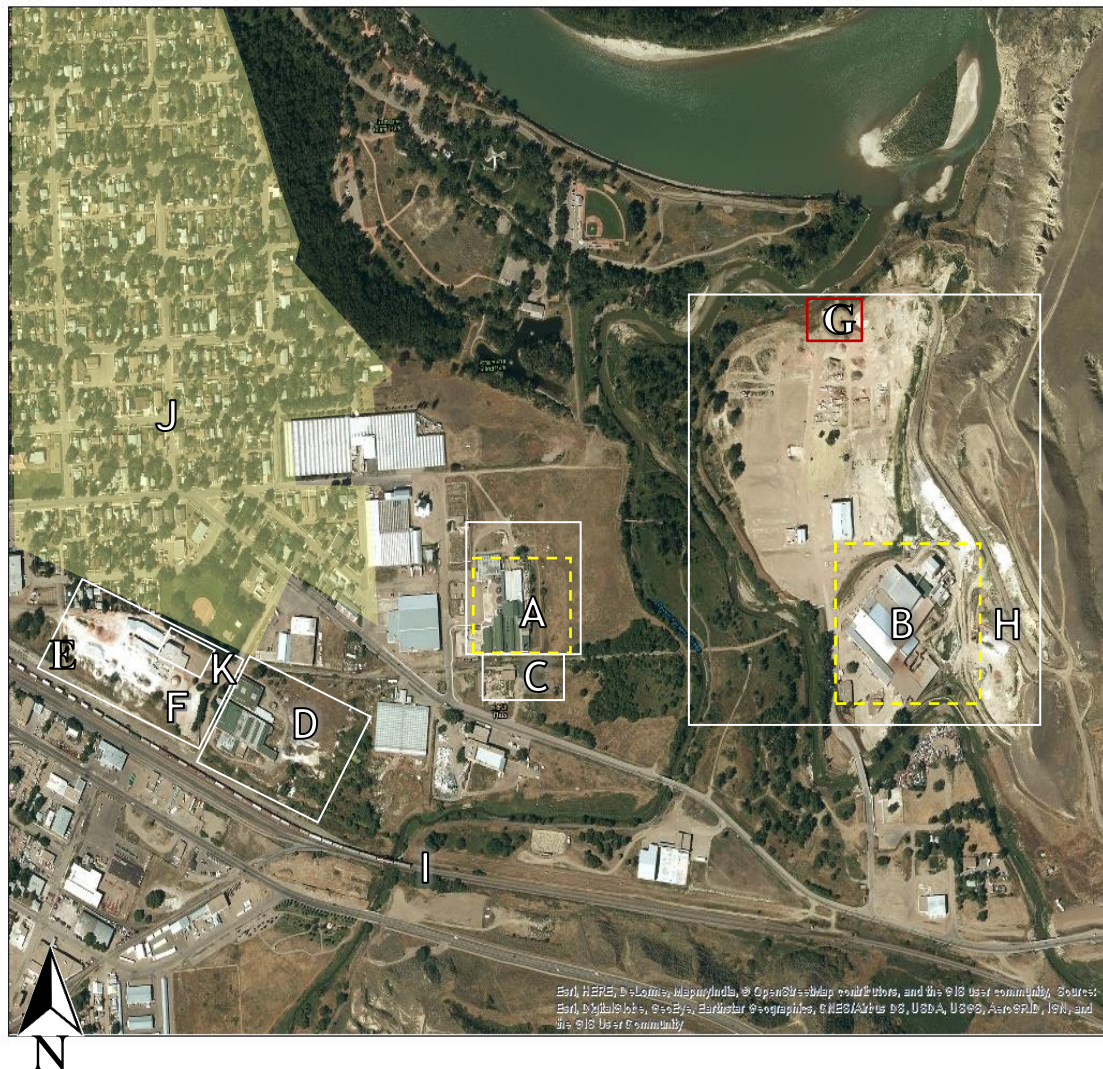


Figure 6-1: The Historic Clay District, otherwise known as the Medicine Hat Clay Industries National Historic Site. A: Medalta Potteries. B: Medicine Hat Brick and Tile Company Limited / I-XL. C: National Porcelain Company Limited. D: Hycroft China Company Limited. E: Plainsman Clays. F: Alberta Clay Products Company Limited. G: Purmal Lift Station. H: The Clay escarpment. I: The Canadian Pacific Railway main line. J: Residential neighbourhood in which many of the clay industry workers lived during the area's industrial heyday. K: Historic Gas Wells (Map created using ArcGIS software by ESRI. ArcGIS and ArcMap 2017) (See Appendix 4 for full attribution and copyright licensing information).

These themes mirror the development of the industry of the clay products that were created in this region of Alberta. The development of the Canadian west was swift. How this site changed and adapted to the population of Alberta is reflected in the products transported throughout Canada. There was a time that the Beehive Kiln was a familiar inclusion in the landscape of many communities. On a technical level, the beehive kiln was relatively unremarkable. It was efficient for its purpose and considered a reliable feature to the development of industrial pottery manufacturing. When travelling through the prairies today, there is little to no evidence of these kilns that once dotted the landscape. Because most of the kilns are now gone, the ones that remain in the District are rare.

The following layout is intentional in order to illustrate the kinds of lists or tools required to plan for disasters. It also frames outcomes of the study required to create these lists in order to illustrate the challenges communities face when attempting to design a disaster plan. The following heritage inventories have been detailed through each sites Statement of Significance found on the Alberta Register of Historic Places. For the sites that do not hold designation, their inventory was compiled through previous archaeological and historic inventories. The information detailed has been intentionally framed as a vulnerability profile. The structure has been informed through UNESCO's Classification System. The heritage will then be located within a range of flooding using a community-focused projection model created by the Government of Alberta to frame and teach a process of assigning priority. In order to achieve an accurate understanding of what values guide community intention, I will list the values identified through primary preservation documents. How they inform use and will frame the discussion in the next chapter. This chapter will focus on the results from various types of research used to assess vulnerability. Each study produces a specific feature of heritage and value. Using archaeological methods, I can compare the relationships between heritage at-risk, how it could exist in a range of risk to create a regionally specific vulnerability profile.

Historic Clay District's Historical Factories

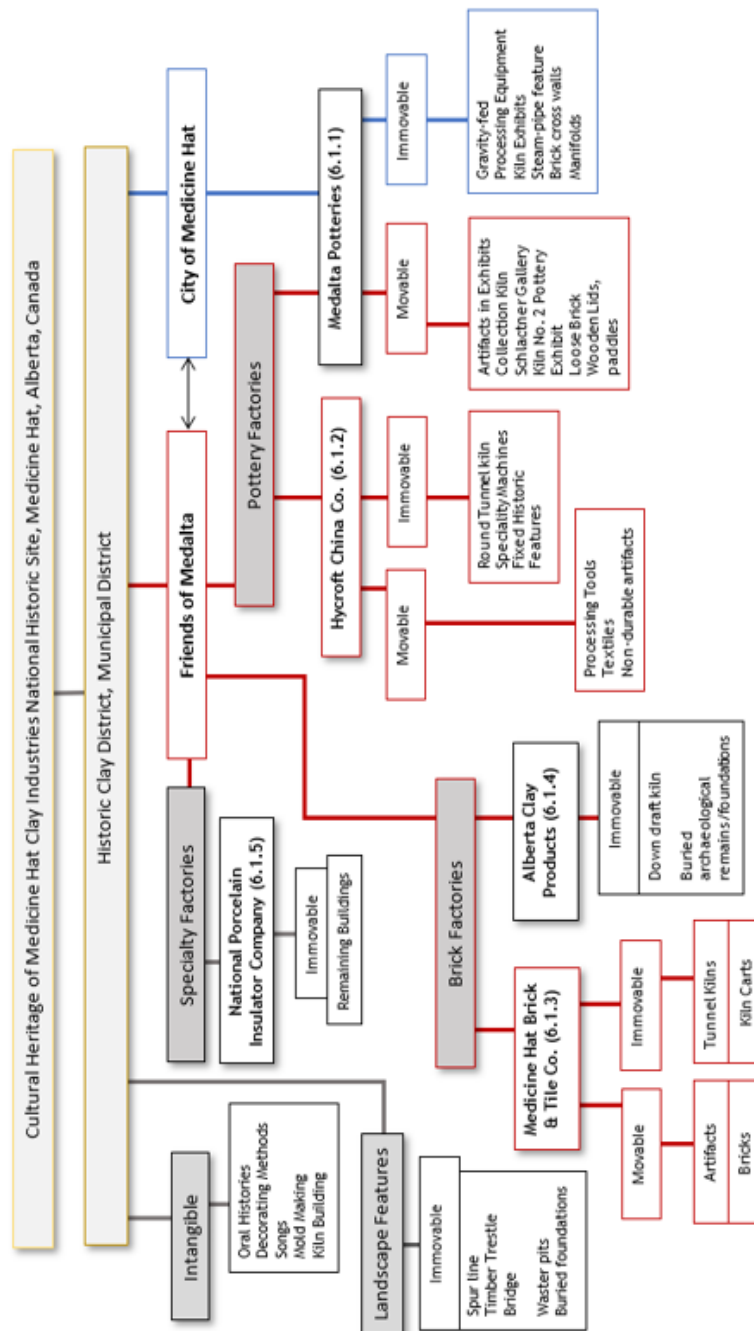


Figure 6-2: Heritage found in the Historic Clay District based on UNESCO's classification system within the site's Partnership Framework (UNESCO 2003).

Critical Heritage Profiles by Ceramic Products Type

6.1.1 Pottery Factory - Medalta Potteries Site

Originally built in 1912, expanded in 1920, 30s, and 60s (Wright 2006:5).

Industrial Landscape: Evolutionary Theme(s), *The Emergence of Pottery Making*.

The site has been known as:

1. The Medicine Hat Pottery Company 1912 - 1914
2. Medalta Stoneware Limited 1915 - 1924
3. Medalta Potteries Ltd. 1924 - 1954
4. New Medalta Ceramics Canada 1958 - 1960
5. Sunburst Ceramics Canada 1960 - 1966

Description of Historic Place: Medalta Potteries is an industrial complex dating from 1912 “located on an 89.65-hectare lot in southeast Medicine Hat. It consists of four circular brick beehive kilns and five rectangular brick and wood warehouses with gable roofs” (Alberta Register of Historic Places 1996)

Built: 1912 to 1950

Designation: Provincial Historic Resource

Regional Authority: Province of Alberta

Designated: 1996/01/12

Significant dates: 1912 to 1960

Designated Theme: Developing Economies: Extraction and Production (Alberta Register of Historic Places 1996)

Historic Function: Industry: Crafts Production Facility (Alberta Register of Historic Places 1996)

In situ Vulnerable Heritage Resources (HR) and Exposed Archaeological Remains (AR) located in the Medalta Potteries Site in the Medicine Hat Clay Industries National Historic Site as Exhibits. There are waste pits located on the east side of the main complex. Total area of Buildings: 75,241 sq. ft.; Land and Property: 1.73 acres. The site has been designated.

Movable Primary Resources: These resources are located in the Medalta Potteries Collection Room, Library, and throughout Administrative Offices. Most of the photographs have been digitized.

- Images
- Product Catalogues / lists
- Newspaper articles, advertisements, and clippings
- Photographs, 1912 to 1960s
- Appraisal, Canadian Appraisal Co., February 1929
- Fire Insurance Plans, full set created by *The Western Canada Insurance Underwriters' Association*, July 1955
- Objects in Collection Spaces and throughout Museum

Immovable *In situ* Resources (historical and archaeological tangible):

- Subterranean footprints of the factory complex: buildings, building remnants, and archaeological sites
- Four exterior standing Circular “Beehive” Kilns
- CPR Spur line

- Subterranean footprints of additional structures like the Stable
- Kiln inside Building 13
- Chimneys
- Brick Cross walls in Building 12
- Manifolds and Steam Pipe system Building 12
- Gravity fed mixing and storage features in Building 10, one contains an intact wooden paddle mixer
- Natural Gas piping
- Conveyor systems
- Clay Grinder with standing feeder
- Saggar Press
- Transfer Tracks
- Machinery
- Subterranean footprints of “horse stable” buildings
- Middens connected to the former railway front to the four “beehive” kilns
- Surface middens
- Subterranean waster pits containing pottery sherds, brick and other by-products of plants operations
- Subterranean pipes, airducts, and machine pits

6.1.2 Pottery Factory - Hycroft China Site

Originally built in 1937 (Wright 2006:5).

Industrial Landscape: Evolutionary Theme, *Efficiency, Innovation, and Technology*

The site has been known as:

1. Medicine Hat Potteries 1938 - 1955
2. Hycroft China Ltd. 1955 - 1989

Description of Historic Place: The Hycroft China Ltd. Factory site includes a 1938 factory building, a 1947 warehouse, a shed housing the natural gas works and a railway right-of-way (Parks Canada 1995).

Built: 1937 to 1937

Designation: Provincial Historic Resource

Regional Authority: Province of Alberta

Designated: 1995/08/16

Significant dates: N/A

Designated Theme: Developing Economies: Extraction and Production; Expressing Intellectual and Cultural Life: Architecture and Design (Parks Canada 1995).

Historic Function: Industry: Crafts Production Facility (Parks Canada 1995)

Current Function: Leisure: Historic or Interpretive Site

In situ Vulnerable Heritage Resources (HR) and Exposed Archaeological Remains (AR) located in the Hycroft China Site in the Medicine Hat Clay Industries National Historic Site as Exhibits. Total area of Buildings: 73,812 sq. ft.; Land and Property: 10.50 acres. The site has been designated.

Movable Primary Resources: These resources are located in the Medalta Potteries Collection Room, Library, and throughout Administrative Offices. Many smaller tools are located within

various spaces in Hycroft *in situ* and are associated with a phase of production. Most of the photographs have been digitized. Plaster Molds are located in the Hycroft China Site.

- Images
- Product Catalogues / lists
- Newspaper articles, advertisements, and clippings
- Photographs
- Objects
- Plaster of Paris Master Molds
- Tools (decorating, mold making, production, etc.)
- Textiles
- Plaster of Paris Master Molds (previously located in Medalta Potteries)
- Produced but unsold table and novelty wares
- Fire Insurance Plans, full set created by *The Western Canada Insurance Underwriters' Association*, July 1955

Immovable *In situ* Resources (historical and archaeological tangible):

- Intact production line
- Subterranean footprints of the factory complex: buildings, warehouse, building remnants, and archaeological sites
- Standing Circular tunnel Kiln with product throughout the system *in situ* when power was shut down in 1989
- Railway siding
- Chimneys
- Natural Gas piping
- Transfer Tracks
- Machinery
- Equipment
- Subterranean waster pits containing pottery sherds, brick and other by-products of plants operations
- Subterranean pipes (sewer and natural gas), airducts, and machine pits
- A gas house, remnants of a previous industry "Alberta Rolling Mills" Ltd. exist on property
- Middens of waster products, Plaster of Paris from mold construction, green wares, imperfectly glazed or mis-glazed ware.
- Subterranean footprints of a previously established "Steel Rolling Mill" complex: buildings, concrete pad

6.1.3 Brick Factory - Medicine Hat Brick and Tile Co. / I-XL

Original brick plant built in 1885, expanded continuously through to 2008 (Wright 2006:6).

Industrial Evolutionary Theme: *Industrial Beginnings*

The site has been known as:

1. McCord Brick 1885 - 1887
2. Purmal Brick Company Ltd. 1909 - 1912
3. Medicine Hat Brick Company Limited 1912 - 1914
4. Gas City Brick Company Limited 1915 - 1918
5. Gas City Products Company Ltd. 1921 - 1925
6. Medicine Hat Brick & Tile Co. Ltd. 1928 - 1971
7. I-XL Industries 1971 - 2010

Built: Earliest Occupation: 1885, Medicine Hat Brick and Tile - 1909 to 2010

Designation: Provincial Historic Resource
Regional Authority: Province of Alberta
Designated: 2012/10/04

Description of Historic Place: The Medicine Hat Brick and Tile Company site is a collection of industrial buildings related to that company's brick-making and other clay-working operations (Alberta Register of Historic Places 2012).

Significant dates: 1912 to 1960

Designated Theme: Developing Economies: Extraction and Production (Alberta Register of Historic Places 2012).

Historic Function: Industry: Crafts Production Facility

In situ Vulnerable Heritage Resources (HR) and Exposed Archaeological Remains (AR) located in the Medicine Hat Brick and Tile site in the Medicine Hat Clay Industries National Historic Site as exhibits.

Total area of Buildings: 177,850 sq. ft.; Land and Property: 4.08 acres. The site has been designated.

Movable Primary Resources are located in the Collection:

- Plans of the Medicine Hat Brick and Tile Co.
- Product Catalogues / lists
- Newspaper articles, advertisements, and clippings
- Photographs
- Minutes and newsletters
- Fire Insurance Plans, full set created by *The Western Canada Insurance Underwriters' Association*, July 1955
- Objects, tools, products, supplies
- Brick
- Sewer pipe and construction materials produced at the site

Immovable *In situ* Resources (historical and archaeological tangible):

- The factory complex: buildings, building remnants, and archaeological sites
- Kilns, foundations of Harrop & Swindell tunnel and dryers inside factory complex.
- Two Periodic Kilns
- Brick Chimneys
- Transfer Tracks
- Machinery of various types and materiality
- Clay Processing equipment
- Conveyor systems
- Subsurface water deposits
- Laboratory
- Office
- Historic Gas Well

6.1.4 Brick Factory - Alberta Clay Products Site (1909-1962) / Plainsman Clays Limited (Still Active) (Wright 2006:6).

Industrial Landscape: Evolutionary Theme, *Efficiency, Innovation, and Technology*

Designated: No

In situ Vulnerable Heritage Resources (HR) and Exposed Archaeological Remains (AR) are located on the property owned by Plainsman Clays in the Medicine Hat Clay Industries National Historic Site. Historical features connected to the Alberta Clay Products are located throughout this commercial industry. One “beehive” kiln remains standing.
Total area of Buildings: 22,277 sq. ft.; Land and Property: 0.51 acres.

Movable Primary Resources:

- Images
- Product Catalogues / lists
- Newspaper articles, advertisements, and clippings
- Extensive Collection of Photographs, original construction (1909 to 1910)
- Fire Insurance Plans, full set created by *The Western Canada Insurance Underwriters' Association*, July 1955

Immovable *In situ* Resources (historical and archaeological tangible):

- Subterranean footprints of the factory complex: buildings, building remnants, and archaeological sites
- One standing Circular “Beehive” Kiln
- 17 round kiln foundations beneath rubble, and are still susceptible to loss
- Railway Right-of-way
- Subterranean footprints of additional structures like the “Coal Shed”, heat chambers, pipes and chimney stacks, and historic gas well

6.1.5 Specialty Ceramic Factory - National Porcelain Insulator Company (1947-1974) (Wright 2006:6).

In situ Vulnerable Heritage Resources (HR) and Exposed Archaeological Remains (AR) are located on the property owned by the Friends of Medalta Society in the Medicine Hat Clay Industries National Historic Site.

Historical features connected to the National Porcelain site are directly south of the Medalta Potteries site across the spur line.

Total area of Buildings: 5,325 sq. ft.; Land and Property: 2.48 acres.

Designated: No

Movable Primary Resources:

- Images
- Newspaper articles, advertisements, and clippings
- Photographs
- Objects, all debris or product failures may have been used to reroute creek
- Fire Insurance Plans, full set created by *The Western Canada Insurance Underwriters' Association*, July 1955

Immovable *In situ* Resources (historical and archaeological tangible):

- Subterranean footprints of a previously established “Crayon Factory” complex: buildings, concrete pad
- Possible waste sherds from this industry were referenced in an archaeological inventory conducted in 2002 as possibly “used to fill the creek valley to the east” (Heitzmann 2002:12).

6.1.6 Spur line & associated Wooden Trestle Bridge

Movable Primary Resources:

- Images
- Newspaper articles, advertisements, and clippings
- Photographs
- Fire Insurance Plans, full set created in 1955
- Objects in Collections, various lengths of a historic spur line found during an excavation in 2010 to 2011 during the removal of the concrete cap in Building 13. They were used as a cantilever to support a historic loading dock out of Building 13 that faced functional spur line. Building 13 was the Historic Kiln Room (SF No. 1311), south end of building (Jacobson 2010:82).

Immovable *In situ* Resources (historical and archaeological tangible):

- 1.2-kilometer Canadian Pacific Railway spur line
- Historically ran from The Medicine Hat Brick and Tile Company through Medalta Potteries, National Porcelain and onto Hycroft China and through Alberta Clay Products
- Previous construction activities in 2011 at Medalta Potteries identified an extensive subterranean waster dump falls along a former track line within what was a route to the four-exterior circular “Beehive” kilns. There is a possibility that there could be other archaeological remains along both sides of this spur line that span its entire industrial use within a densely used industrial area of the City of Medicine Hat.

The heritage and buildings located at Hycroft China Co. are currently the most unstable. It exists as a repository because it has fallen into a state of disrepair that exceeds the resources required for stabilization. This site is unique in the province and Canada because it contains a complete series of artifacts, machinery, and an intact production line from when it closed in 1989 (Wright 2006). The collection is robust because it was running at full capacity one day and forced to close the next resulting in the power being turned off and left (Forbes 1978). The presence of the people who worked in the factory is evident everywhere. There are notes still stapled to some of the shelving edges, jackets hanging on nails, and multiple boxes of unsold original products. Every detail of a working factory that otherwise is often missing is preserved in this factory.

Currently, it provides storage and protects a series of historic plaster of Paris master molds, business records, and some collections of locally blown glass from a historic regional glass factory. It recently underwent a condition assessment by Jeanie Gartly in 2020 that resulted in a Conservation Plan. Progress on this site was suspended after flooding in 2013, but

interest has begun to refocus on conserving initial efforts and moving forward with earlier plans. The business of heritage and the process of preservation is complex within this community development. This inventory of *in situ* heritage and historical resources is tied to the complexities that frame conservation and connect it to a series of conditions requiring specific prescribed treatment.

These resources have been incorporated into urban renewal within community development and are supported using a business model. The business of heritage is a “discursive practice,” which can shift the meaning of heritage within the collective memory when leveraged for sustainability or redevelopment (Raab 1980:540). This heritage represents a portion of the critical heritage infrastructure in the Historic Clay District that is not currently considered an essential public asset. Although the heritage preserves the important social history and supports designation, there are no plans to minimize the effects of a disaster. When heritage located in a range of flood risk is compared to individual programs delivered through the site, how they can be impacted can be determined. Although this site is used, it is only used as storage and awaits complementary programming. It is a focal point of this designated area, yet it is not considered “essential public infrastructure” within local emergency management plans (McEntire 2007).

6.2 The Values

This section summarizes the community values identified in the documents developed through the lens of sustainable development, specifically preservation plans, an interpretive plan, a co-visioning event, and through the site’s Strategic Plan. The values captured from their perceived intent and filtered through their use today as they support the district’s sustainability, feasibility/cost, useability, and development.

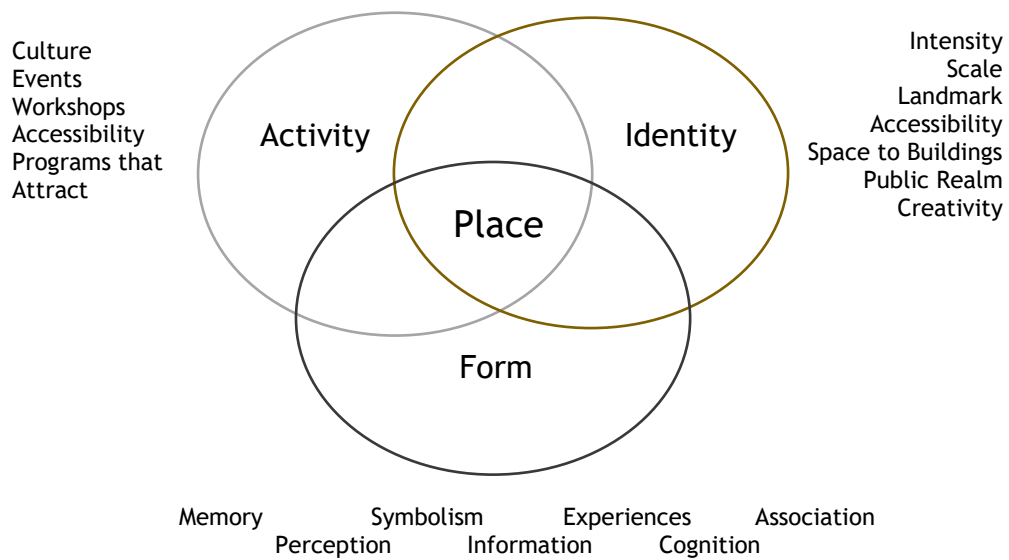


Figure 6-7: Value of Heritage, Sense of Place.

The goal of this process is to assess risk through the prioritization of the heritage. Community-based values are informed through the presence of the heritage but do not define the process of prioritization. Value is a key feature of risk that is vulnerable to impact. Together, values can be considered in planning for the management of at-risk heritage. The process of coding was useful to understand how heritage is framed or used and has a benefit to future conversations when decisions are required, to provide rationale, or inform the cost/benefit of emergency planning when there is limited time and capital resources. Understanding all possibilities will offer an opportunity to assess capacity, the management of operations, or consider the state of resources. It is important to note values “are contingent, not objectively given”, they are dynamic and always changing.

The following ten values have been described by their use in, for, and by the community: aesthetic, creative, education, interpretive, attachment, scientific, marketing, experiential/spiritual, academic, and historical. Each value was identified as they contribute to the sustainability, feasibility/cost, use, and/or the development of heritage or the impact caused by disasters for their continued use.

1. **Aesthetic:** defines the visual qualities of the heritage in the district, whether it is interpreted as beautiful or sublime.

The aesthetic value of the heritage is defined as the visual qualities of the heritage, the scale of the collection, and how it is represented as a monument in the city of Medicine Hat. It is seen through its materiality and location on the landscape—the collection as a series attached to a place. There are clear differences between each factory. How they were constructed in the landscape through their buildings and exposed features and their preservation. Their preservation illustrates the difference in the architectural and technological expressions used to build industrial factories. Aesthetic values are also seen in the different styles of kilns, the gas sheds, and fireproofing technology seen through the changes taking place in the industry. The aesthetics tied to the heritage is a community-based value through its monumentality and can be consumed by anyone. The heritage as it stands, as a working-class cathedral, has been central to the reasons why heritage has been preserved in the district.

2. **Creative:** identifies the development of craft- or work-related and how clay making in a historic pottery influences capacity, design, building, or craftsmanship.

Creativity is at the center of the educational offerings and links the industry of the past to the present art of ceramics. It is used to highlight the uniqueness of Medicine Hat's clay heritage and its potential for the future. The research suggests that creativity has been at the core of site development as an opportunity for ongoing use since the first plan was submitted to the Government in 1978 (Simpson, Roberts, and Wappell 1993[1995]). Creativity has been used to foster collaborations with other institutions through the development of creative programming.

Although industrial ceramics removes many of the indicators of individuality, the heritage inspires self-directed learning with interactive exploration. The process, enhanced by the heritage, is fueled by creativity as a mutual exchange of ideas and philosophies between the

artists and the heritage, and influences the awareness of the heritage as a manifestation of creative activity. Marketed as a creative hub, it offers interaction between artists internationally, instilling a belief that creativity is enhanced from a broader perspective. The early mission of the organization pertaining to the development of the program includes the heritage as a complementary force as a foundation to “create a vibrant future through contemporary ceramic practice by providing participating artists with a place for time to reflect, space to focus and realize, and community for context and dialogue” (Manning and Finkelman 2008). The audience of this value is varied and covers a broad spectrum. The creative use of this district has activated and formed networks throughout the province and nation and has developed a connection to international associates. Many of the artists who have been through the Artist in Residency Program have made Medicine Hat their home.

3. Educational: how heritage supports education.

The educational value of the heritage is found in the methods of production, manufacturing process history, experts, and those skilled tradespeople who held the potter's skills. Clays must be mixed, glazes formulated, and these processes are deeply generational—each step requiring different tools, knowledge, or skill. Shaping, drying, trimming, firing, glazing, and decorating are all processes that have been integrated into programming. Although programs are designed for various age groups, the process of clay making is adapted to each style or age of the participant. The machines of this industry have been harnessed into STEAM programming, academic research, and used to inform museum demonstrations and interpretive programming. This value is not seen only through the process of making pottery. The institution has provided artists an opportunity to learn about gallery operations, displaying and exhibiting art, and the nuances of marketing their ware. There are volunteer programs that encourage people to find their own niche and offer their efforts to enhance the District's community by providing support to the District's educational programming, art classes,

heritage management, archives and library, and archaeology when the site has been actively engaged in recoveries.

4. Interpretive: creates program context through how heritage is used to tell stories through museum exhibits, design, layering of texture, and themes.

The interpretive value of the heritage is most used through the museum program and uses the heritage to curate a story of the clay products industry, the workers, and the movement of raw materials and products. It is central to the function of the heritage and secures the preservation of the site, the collection, and has been used through the museum to frame some difficult stories connected to a place with a significant history. The factory historically began as a gendered workplace, but became a place women were employed, specifically during wartime labor shortages creating a foundation for the inclusion of women. During the Second World War, there is a history of POWs working in the factories as well. The clay products industry in Alberta includes the history and manufacturing traditions that predate and overlap with the craft. It is in this intersection that people, students, and the community explore the similarities and differences between tradition towards industry through museum exhibits. The layering of the fabric of the heritage, its use within outdoor spaces, the sights, sounds, and texture have been the focus of much attention and capital resources.

Original kiln carts sit on transfer tracks. A jacket or two on a nail and the integration of dirty old boots create context that speak to the presence of the people working in the factories. The theme of the interpretive program reminds the visitor that life in the factory, on this landscape, was a little more difficult than what we experience today. Without the pots, life would have been harder for many people. The interpretive value of the heritage found in the Medalta Museum inform Canadian folklore and its presence connects to a broader national story and history through the pots, machines, and vast spaces filled with gears, belts, steel tracks, and dusty old mounds of unused clay.

5. Attachment: how the heritage informs a sense of place, identity or contributes to social cohesion.

This value informs part of the City's character. It is infused with a local and regional identity, informs a vista, defines its place, and its presence anchors the story of the clay products industry to the people who made Medicine Hat their home. Its presence and use tell the stories of a resource-based community, which has become a focus of social histories written by local citizens and a defining feature for the neighborhood of the River Flats. The factories physically connect to what remains of the factory houses, contribute to residential patterns, and correlate the street names to the historical use of the district. There is an attachment to the heritage, not only through its surrounding physiography, but it informs the repurpose of the industry to reimagine a place. The presence of the heritage stands as a signatory feature of Medicine Hat's identity as a "Brick City." The function and design of the buildings reflect a working-class character and are accessible and tied to the greater community through a path and trail system. Their presence speaks to the attachment some local citizens had when they took on the challenge of designing a plan to protect them. Their presence is tied to themes of loyalty and legacy, cumulative effort, and time. Their presence speaks to the diversity of the clay products industries that formed in Medicine Hat over time and are respected in their role in the industry.

6. Scientific: defines the way that heritage is used to promote shifts in technology through programming and preservation.

Production processes are framed by live demonstrations using historical tools and machinery and encourage students and visitors to engage in the process. Heritage has been used to teach children about gears, pulleys, and drive shafts as part of a production line. Although historically, the experience of working in the factory was not easy or glamorous work, the heritage has evoked the experience to frame more difficult conversations about the

industrial heritage landscape and its impact on the environment. The factories were purposefully built through time, adapted, expanded, and modernized.

The machines and technology have resulted in the integration of STEAM programming. Summer field trips learning about nature and outdoor summer science camps have been offered through the natural spaces offered in the District. The layering of the fabric of the heritage, its use within outdoor spaces, and the texture it provides creates a heritage experience that reveals where we have come from. The heritage experience has been framed through technology to capture the audience. The messages in this value are tied to life in the factory, the intensity of the job, the size of the machines, and the depths of the systems created to move clay into spaces, where they were mixed into slips in others and formed in the workshops for firing in the kilns. Archaeology has influenced the District and has been featured as holding scientific value.

7. Marketing: How heritage is used to market relevancy, tourism, and programming.

The marketing value of the heritage found in the advertising, recruitment, and how the heritage is communicated to a wider audience to encourage tourism, promote the Artist in Residence, the Museum in Medalta Potteries, and as a stop within the Canadian Badlands. Marketing includes brochures, online social media and a website, postcards, newspaper announcements, and exhibits in the local airport and locations sponsored by Travel Alberta. Medalta has been presented within contemporary marketing as “a jewel in the Canadian Badlands” (Travel Alberta 2007-2022).

The Historic Clay District has formed a broad online audience and local professionals have used the heritage within professional images as part of their company brand. There are hundreds of images throughout the internet connected to travel reviews and been a focus of one or two blogs. Campaigns have quoted history, include images of the kilns, archaeological digs, heritage programs, and incorporate the pots and dinner ware on company business cards.

The “Beehive” kiln has become the district’s logo and featured on letterhead, announcements, and advertising. When thinking of Medalta, separating the kiln from the recall would be difficult. It has been framed as a worthy stop along the way to further destinations.

8. Experiential/Spiritual: describes how heritage is used to convey a sense of wonderment through its discovery.

This value is connected to experiences that have been crafted from the aesthetics of the heritage. The design of the path the interpretive program takes a visitor on a journey to experience the history. The artifacts are assessable alongside the character that has been preserved. The heritage experience guides the tours intentionally to evoke a sense of discovery, wonder, and awe in the sublime nature of the heritage. Its rustic beauty and preserved gritty aesthetics are layered with interpretive elements that include videos, projections, and sounds of the factory. Site specific experiences are devised through pop up for galleries in the kilns, unique dinner experiences, and through the programming enhancing community classrooms, lectures, and special seasonal themed events. It is used to frame music festivals, specifically folk and jazz, and has contributed to the development of local music written from the recorded history of former workers who lives were spent on the factory floors.

The lights in the kiln foundation exhibit can be seen from above on a glass cantilevered bridge that is surrounded by glass barriers to create an uninterrupted view of the heritage. These features allow the viewer to experience or visually explore the archaeological sites once hidden underneath the concrete floor. Steps, darkened walkways, overhead pulleys, and drive trains all create an experience of being somewhere that feels familiar but always out of reach. The factories were purposefully built through time, adapted, expanded, and modernized. It was home to skilled tradespeople, engineers, and mold and pattern makers. These stories are tucked into corners and seen on features in the museum to inspire a sense of awe.

9. Academic: how the heritage anchors advance opportunities for research through heritage, art, or archaeological study and form relationships with outside institutions.

The academic value of the heritage has been speculated in the documents but has yet to be fully realized. There is space allocated and a concept designed for use for academic research and study, but the heritage designed for this feature has yet to be stabilized. There have been extensive archaeological recoveries, research projects, but are framed around construction activities and a flood recovery. Archaeology is used as a tool within a preservation process that supports capital projects. The heritage as a preserved landscape informing the future goals to use as a site and “Centre of Excellence” to develop, enhance scholarly pursuits, archaeology programs and heritage trades. There is a collection of history and heritage available for study and has been used primarily by local historians, students, and community members. Although the potential of this value is great, it has yet to be fully realized. However there have been some substantial histories written by Canadian scholars.

10. Historical: how the presence of heritage informs the site’s historical value.

The historical value is immediately identifiable, and a major objective of all actions taken within the historical records pertaining to the conservation of the heritage in the District. It is seen in the choice to preserve the *in situ* record through the artifacts preserved, the buildings, and archaeological sites that support the age, technology, level of integrity, and its associated archival or documentary potential. The historical value has driven the record of preservation, the community who supported its development through time, but also is tied to the economic value seen and used in the District within all facets of its presence. Historical value is the physical record of actions and capital attached to its story and is the basis of all preservation activities. This value will be framed through a discussion in the next chapter framing the heritage value for the entire district.

To conclude, the values identified could be collapsed into the five themes outlined through the Burra Charter: social, political, historic, cultural, and spiritual values. I am

hesitant to broaden the categories because they may not reflect the values required to understand how heritage informs the landscape and operational capacity. Mason (2002:8) warns that if values are collapsed too broadly into a category, they can become hidden in a “black box”. Once in this box, the whole of the understanding of how the value of heritage is used as value become less significant. A broader scope of values creates a clearer understanding and offers an opportunity to identify and activate the values missing. This is considered a useful approach within the range of information required to prioritize heritage within emergency or disaster plans. When you can see all the ways heritage creates value, you can see the very interconnected ways heritage has been used, is appreciated, and even crucial to broader development schemes.

Value connects heritage to a community. What has been preserved reflects the goals and decisions that has been made through time. The heritage located in this district is more than an object or a structure; it is evidence of a cultural process of created meaning and is determined by individuals and those who share memories. The value assigned to the heritage underpins its protection, use, and links it to community economic development, prosperity, and to a very long history of disasters. The heritage value assigned to the site’s essential heritage secures this District’s significance, but is only protected through designation, which is determined through recognition and does not provide rationale outside of heritage value. Its reuse exhibits a series of community values through the opportunities that have been created for the community of Medicine Hat as the Medalta Potteries, Medicine Hat Brick and Tile, and the Hycroft China site are reimagined within its industrial landscape through place-making and sustainable development. What defines these historic properties as important heritage is through its history. What makes the heritage special is how it has been integrated into the public environment.

The Medicine Hat Brick Clay Industries National Historic Site, as a case study, defines the complexities of locally designated historic districts and the vulnerabilities connected to heritage that has been preserved as a place that holds a distinctive character and has been

reimagined through specific land use regulations. Although this site is used within a variety of local programming and is the focal point of a locally designated area, it is not considered "essential public infrastructure" within local emergency management plans. This study proves that there is a relationship between heritage preservation and disaster management, and it is an uneasy one. This relationship, or lack thereof, has been complicated by heritage philosophy, its defined use, various perceptions of value this heritage holds, the level of conservation each factory exists at, and the physical development of this heritage district. The values that have informed the site's designation, has influenced the process of preservation, provided reasons for relevancy, and drives the site's message, staffing, the business of heritage and marketing. The values identified in the types of qualitative and quantitative data that can be used to understand risk and can provide the reasons why it could be included into community-wide emergency management planning. Emergency management is a framework not a philosophy.

6.3 Challenges in Protecting a Historic Clay District, A Flood Recovery

Heritage is at risk due to disasters, conflict, climate change and a host of other factors. At the same time, cultural heritage is increasingly recognized as a driver of resilience that can support efforts to reduce disaster risks more broadly. Recent years have seen greater emphasis and commitment to protecting heritage and leveraging it for resilience; but initiatives. . . need to be encouraged and brought more fully into the mainstream of both disaster risk reduction and heritage management.

-Rohit Jigyasu (UNESCO 2013)

Flooding has created significant challenges for the Medalta Potteries and the Medicine Hat Brick and Tile Company sites, specific to the long-term conservation of the archaeological remains and historic resources. Damages range from the subtle movement of four bricks to the complete collapse of structural features. All damage will have a lingering effect on the management of heritage resources in the future. Originally, the Medicine Hat Brick and Tile Co. were weeks away from opening to the public in July 2013. The flood stalled the opening and caretakers were once again cleaning up silt, debris, and decontaminating the facilities so visitors could enter the site without any potential harm.

Flood damage can be extensive and all-encompassing, with recovery efforts requiring the skills of many different types of specialties. Efforts to rebuild are time-consuming and took a physical toll on the staff of Medalta Potteries and the Medicine Hat Brick and Tile Company. Morale aside, the financial cost alone of clean-up and repair has been high. There was a loss of capital during essential recovery and disinfecting procedures, but the additional strain on staff and the physical degradation of the resources were extensive and will present ongoing challenges caused by the change in the landscape. Decisions to protect in situ archaeological remains identified in the sites are affected by the structures standing on site in relation to subterranean features. The goal of the recovery was to avoid impacting any character-defining features found in the sites and to minimize hasty decision making that could lead to unintentional loss or demolition due to human error, gravity, or through a misunderstanding of thermal differences, expansion and contraction, efflorescence, infestation, or the presence of contaminants within the features infiltrated with floodwaters. The recovery program aimed to address issues with a sense of caution so that interventions could be reversed, if necessary, in the future. Recovery was guided specifically by the following two Standards (Appendix 2)(Parks Canada 2010):

Standard 7: Evaluate the existing condition of character-defining elements to determine the appropriate intervention needed. Use the gentlest means possible for any intervention. Respect heritage value when undertaking an intervention (Parks Canada 2010).

Standard 9: Make any intervention needed to preserve character-defining elements physically and visually compatible with the historic place, and identifiable upon close inspection. Document any intervention for future reference (Parks Canada 2010).

Range of Flooding, Medalta Potteries, 2013

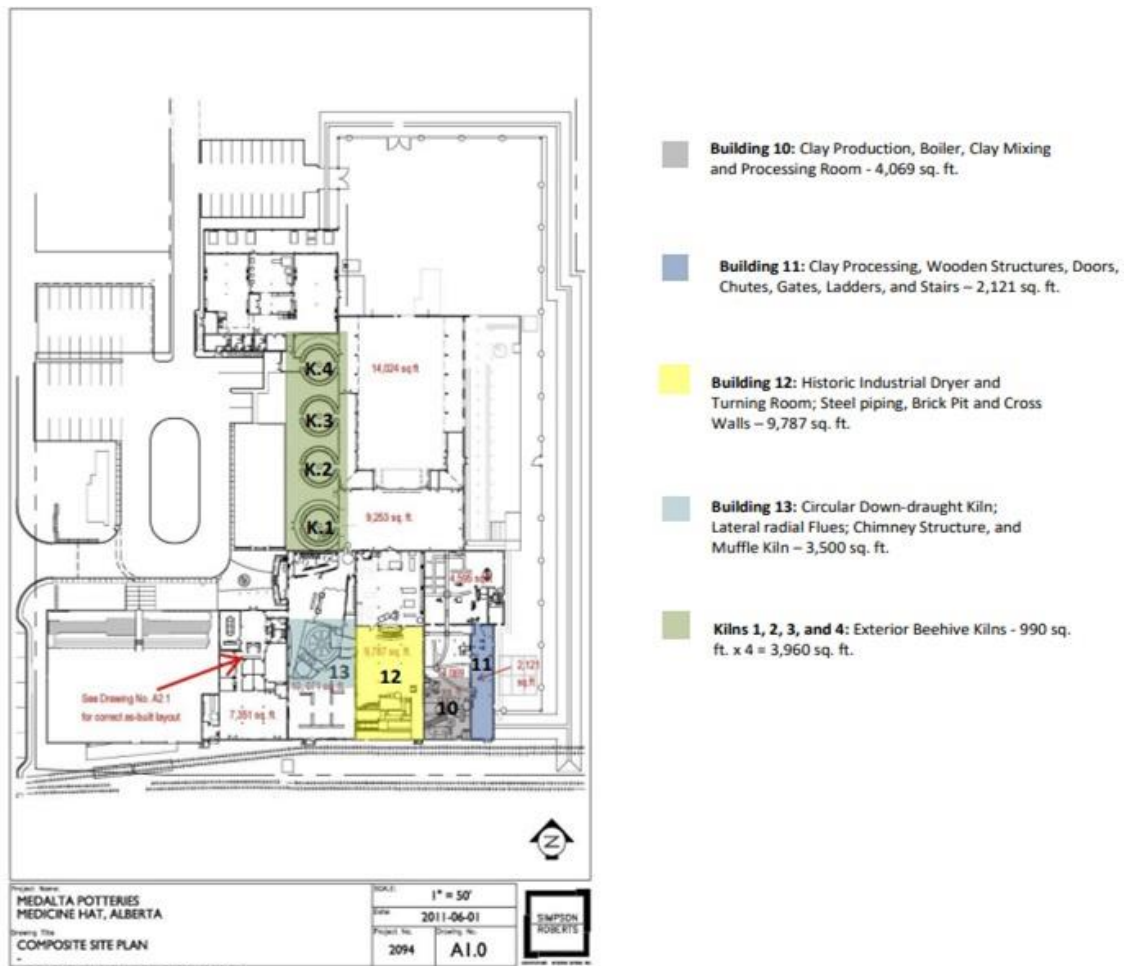


Figure 6-8: The Medalta Potteries site: square footage of affected areas and locations of historic and archaeological resources impacted by flooding (Modified by Jacobson 2016, Base map: Simpson and Roberts 2011) (See Appendix 4 for full attribution and copyright licensing information).

The 2013 flood event was the most recent environmental disaster in the district. “Flooding in the Medicine Hat area typically occurs because of high river flows” (Medicine Hat Flood Study; Government of Alberta 2020:2). There are occurrences that flooding can occur in other ways, but when it comes to the landscape that supports the heritage, overland flow has been the contributing factor when it comes to damages or loss to heritage.

Since the site began the conservation-preservation process in 1974, there have been two fires, four floods, one high water event, a critical heritage management shift, and a pandemic (See Figure 6-10). Flooding has been the most prevalent and ongoing problem that presents various challenges in the preservation of heritage in the district. It was the catalyst to the permanent closure of the Medicine Hat Brick and Tile Company / I-XL in 2010, which at the time, was continuously producing brick since 1885.

Range of Flooding, Medicine Hat Brick and Tile Co., 2013

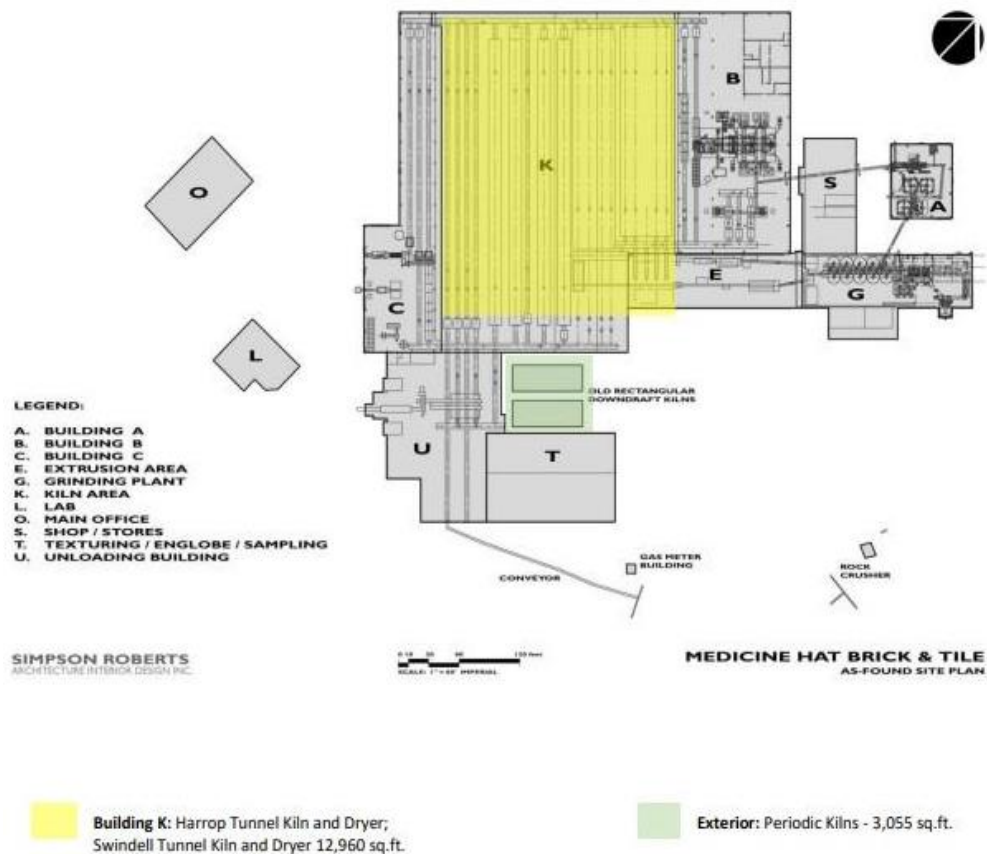


Figure 6-9: The Medicine Hat Brick and Tile Co. site: square footage of affected areas and locations of historic and archaeological resources (Modified by Jacobson 2016: Base map: Simpson and Roberts 2011) (See Appendix 4 for full attribution and copyright licensing information).

A History of Disasters in the Historic Clay District, Medicine Hat, Alberta, Canada.

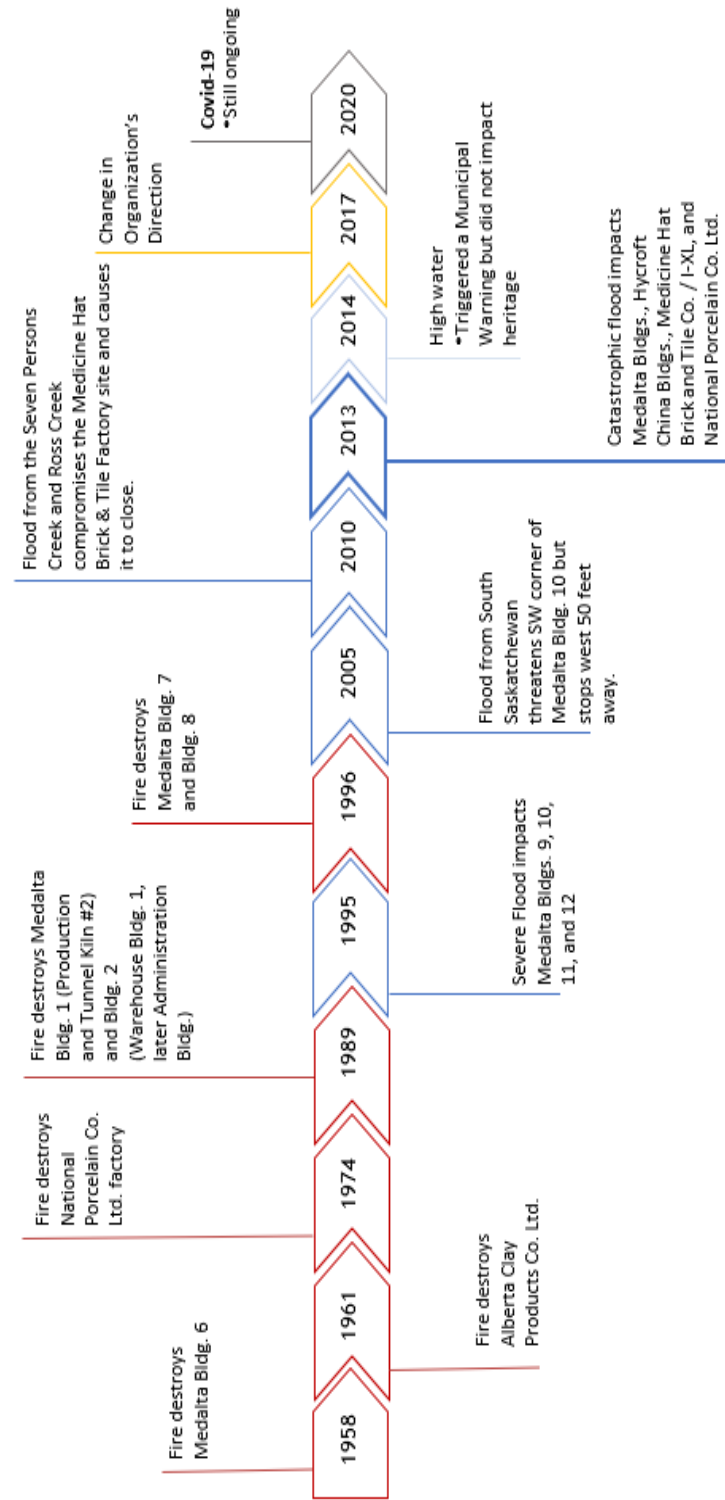


Figure 6-10: A History of Disasters. Timeline created from Document Analysis, Historical and Archival Research.

What remains has been destabilized significantly and speculating how it will react to another flood event is predictive at best. Not only are buildings moving in new ways, but there have been new issues with higher concentrations of moisture that rise to the exhibits' surface that was not a problem before flooding. Some brick features found within the remains of one industry reveal step cracks, deep fissures, washed out mortar, cracked foundations, and as a safety measure, has been vacated by staff or visitors because there are areas within that are too unstable to be safely occupied full time. The main contributing factor that has led to the changes seen throughout the Historic Clay District has been caused by disasters. The site has required millions of dollars of capital to relocate sensitive artifacts (e.g., master plaster molds), decontaminate spaces, stabilize water scoured remains, and restore or rebuild essential components of essential structures indicative of the site's overall heritage value. Disasters have been a constant issue in this district and have contributed to losing some "critical historic infrastructure". All of the damage will have a lingering effect on the management of heritage resources in the future.

Not all heritage has been lost to flooding. Fire has played a significant role in what exists today. Fire has contributed to the inventory in the district before many of the sites became designated. Those that have been altered after designation were integrated into conservation plans as required. Whether fire or flood, disasters and emergencies have impacted the built heritage found within the Historic Clay District. Each catastrophic event has required a substantial investment /reinvestment in human resources, equipment, funding, and research studies triggered by these events by various heritage/non-heritage specialists. "There was more lost through flooding and through fires than any willful decision to dismantle anything" (Spoken by Lorne Simpson, Fandrich 2019). Repeated flooding has created additional wear on the landscape and has introduced new challenges for the long-term preservation of some of the cultural remains impacted in the Medicine Hat Clay Industries National Historic Site.

6.4 Environmental Risk to Vulnerable Heritage

In 2021, the Government of Alberta released a flood risk modelling tool designed to assist communities better plan for different flood events that could impact the landscape within the province. Considered still in ‘draft’ form, Medicine Hat has been included in the early hazard studies. Many communities have yet to be included, but it is a tool designed to help communities assess risk and identify vulnerabilities.

Flood prone heritage located in the Medicine Hat Clay Industries National Historic Site (1:75 compared to a 1:100-year flood event).

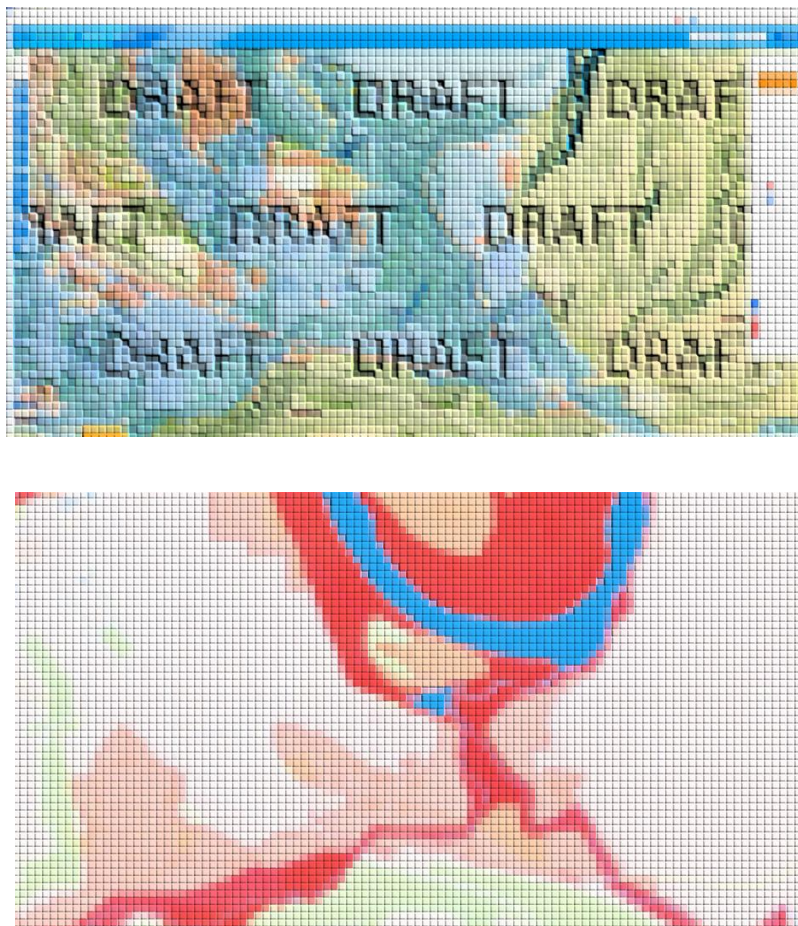


Figure 6-11: Top: Projection of Affected Historic Clay District Heritage using Alberta's Flood Portal projection model. 1:75 to a 1:100-year flooding. (Image source: Alberta Government 2022). Bottom: Recorded range of the 1:100-year flood that occurred in Medicine Hat in 2013 (gis2.medicinehat.ca/imap/ 2016).

The tool is relatively straightforward. The likelihood scale on the right and a toolbar on the left can be positioned to compare various ranges of flooding through multiple base map views. The sliding scale provides a visual illustration of different magnitude events ranging from a 1:2 to 1:1000-year flooding event. The usefulness of the modeling tool was reviewed by engineers from the City of Medicine Hat, who stressed the model is still in an early stage. They pointed out, the tool exhibits areas in the community that may not flood but appear to in the projection and caution it has yet to include the berms or the effects of dams controlling river flows (Gallant 2021). The Municipal Works Department shared when “it is for technical purposes, engineers can wade through it, but if [it is] intended for the public, [we would] like to see more clarity” (Brown 2021). The City’s planning department will continue to rely on actual flow levels when planning their emergency response because the projections may not fully “align with the study’s classifications” (Gallant 2021).

This tool currently has not integrated all the environmental interventions completed in the City (e.g., berms) and projects direct overland flooding. The actual flood data recorded in 2013 shows similarities. This comparability is useful to illustrate a process of prioritization, visualize, or frame heritage within a range of risk. Although it has not been approved for final use, its presence indicates that there is ongoing research to build community capacity and framing risk is important and essential to communities. These tools are an important sign that reducing risk is a community issue and, in their attempt, include those who may not have skills with software in GIS. In this case, it has been useful to demonstrate a process and contextualize how to prioritize heritage found in a landscape. When tools, such as this flood model, are used their development is acknowledged as relevant, reinforcing their effectiveness. Not all tools will identify all risk. Their power is in the ability to visualize risk or compare what is vulnerable from a position of managing risk.

When risk is known, it can guide the protection of heritage value, inform a sequence or a series of steps, and create an opportunity for people to imagine different scenarios, design preventative measures, or preparedness strategies. When risk can be viewed in a meaningful

way to people with little experience in planning, it can convey vulnerability as a worthy priority. Even in its inherent limitations, the tool conveys risk. It can be used to teach how to assess risk. The alternative of not trying could present a greater unforeseen risk. This research considers this model a useful teaching tool for framing the benefits of emergency planning in a way that is engaging.

There are three main challenges to community-based disaster management: the availability of tools, accessibility in use, and context within a site-specific place. As it currently stands, the challenge of planning for communities is complicated because tools hold no relevancy. They often frame a series of steps, provide checklists, and recommendations in the design of a plan. It has been acknowledged by the Government of Alberta that “maps are not expected to match previous floods due to different river flows, variations in location conditions, and assumptions made as part of the flood study” (Alberta 2021). Nevertheless, it has also been acknowledged that the modeling tool “was prepared in accordance with generally accepted engineer practices, using the best data available when the flood study was conducted” (Alberta 2021). Its strength is in its attempt. There are few tools that can frame the impacts of flooding to a wide range of stakeholders, decision-makers, and funding organizations through a single scope. This tool, although still in development, is of value to the communities that have been modelled. Although, there is still some work to do and flood risk should be supported through flow data, as a tool to frame a process of prioritizing heritage that overlaps history, community value, and goals for use it offers an interface that is useful. Not-for-profit organizations, like the Friends of Medalta Society, can benefit greatly from this type of tool in the development of their own emergency management plan to frame emergency exercises, training, and to imagine possible scenarios. The potential and possibilities for community-led risk management could be endless when combined with additional data.

“Since 2013, the city has built nearly seven kilometers of flood protection measures at a total cost of \$30 million, including grant funding from the province and Ottawa” (Gallant 2021). To date, they have yet to be tested. Given the practical nature of Emergency

Management, robust data is required during decision making. In this case, through the lens of community value and the heritage value. It has been my experience that there is a need to validate the necessity to plan for flooding, examine what is vulnerable in a flood-prone landscape, and to determine a list of priority heritage that can benefit from additional protection frameworks, preventative interventions, and preparedness planning. This Historic District requires inclusion in broader local protection schemes, but until then, tools like this are useful to present a worst-case scenario. Although the tool is still in draft, it has been useful to correlate what heritage is at risk and locate what socio-cultural values are vulnerable. These can be used to populate a map, inform an inventory, and prioritize risk.

The following charts will present the heritage at risk and associated community values created from a series of map projections using *Alberta Flood Portal's* projection model to frame a process of prioritization. *In situ* heritage located in the District was compared to a 1:10, 1:20, 1:35, 1:50, 1:75, 1:100, 1:200, and 1:130-year flood event for the following sites: Medalta Potteries site, Medicine Hat Brick and Tile Co., and Hycroft China Ltd. Statements of Significance, a background study, site survey, and document analysis have been used together to locate, identify, and isolate the Historic Clay District's most at-risk heritage assets. Risk preparedness strategies recommend that communities identify vulnerability early, specifically during the pre-disaster phase, to minimize "rapid decision making that, in the long run, can be more harmful to the recovery and rebuilding efforts" (Thorp 2006:16). I have been able to capture what heritage could require preventative interventions or preparedness planning to stabilize remains before an event occurs to enhance and minimize recovery programs required to conserve impacted heritage.

TABLE 1.6: Historic Clay District, Vulnerable Heritage and Exposed Archaeological Remains in Range of Flood Risk

Heritage Resources	CV	1:5	1:10	1:20	1:35	1:50	1:75	1:100	1:200	1:350	Des'd.
Medicine Hat Brick & Tile Co., / I-XL	1; 2; 4; 5; 6; 9; 10					X	X	X	X	X	X
Alberta Clay Products	1; 5; 6; 9; 10								X	X	
Medalta Potteries	1; 2; 3; 4; 5; 6; 7; 8; 9; 10				X	X	X	X	X	X	X
Hycroft China Site	1; 5; 6; 9; 10						X	X	X	X	X
National Porcelain	1; 5; 6; 9; 10				X	X	X	X	X	X	
Plainsman Clays	1; 9; 10							X	X	X	
Clay Escarpment	1; 5; 6; 9; 10										X
Canadian Pacific Railway main line	1; 5; 10						X	X	X	X	
Historic Spur line(s)	1; 5; 6; 9; 10			X	X	X	X	X	X	X	X
Historic Gas Wells	1; 5; 6; 9; 10					X	X	X	X	X	X
Residential neighborhood	1; 5; 9; 10			X	X	X	X	X	X	X	
Current Roadways	1; 10		X	X	X	X	X	X	X	X	
Bridges	1; 10		X	X	X	X	X	X	X	X	
Buried Archaeological Remains	1; 3; 6; 9; 10			X	X	X	X	X	X	X	X
Exposed Archaeological Remains	1; 2; 3; 4; 5; 6; 7; 8; 9; 10				X	X	X	X	X	X	X
Kilns	1; 2; 3; 4; 5; 6; 7; 8; 9; 10					X	X	X	X	X	X

*Des'd - Formally Designated Resources X = yes

CV: Community values associated with presence of heritage:

1. Aesthetic; 2. Creative; 3. Educational; 4. Interpretive; 5. Attachment; 6. Scientific; 7. Marketing; 8. Experiential/Spiritual; 9. Academic; and 10. Historical (See Section 6.2 for full description of each value identified).

Figure 6-12: Designated Vulnerable Heritage Resources and Archaeological Remains at-risk of flooding as defined through their relative sites within the Historic Clay District, Medicine Hat, Alberta, Canada. Blue box is the first range of risk to heritage by direct flow flooding.

TABLE 2.6: Medicine Hat Brick and Tile Co., Vulnerable Heritage and Exposed Archaeological Remains in Range of Flood Risk (6.1.3).

Total area of Buildings: 177,850 sq. ft.; Land and Property: 4.08 acres

Buildings include production, clay processing, drying, firing, natural gas, and storage	1:5	1:10	1:20	1:35	1:50	1:75	1:100	1:200	1:350
Footprints of the main factory complex with office, warehouse, various additions, building remnants						X	X	X	X
Harrop / Swindell Tunnel kilns and dryers						X	X	X	X
Laboratory (1960s)					X	X	X	X	X
Two Exterior Rectangular-shaped Periodic kilns with Chimney Stack and intact hopper / Kiln cart rail tracks (1940s/50s)						X	X	X	X
Overhead Conveyor system that moves raw material into factory complex						X	X	X	X
Gas well						X	X	X	X
Refuse / waste piles of detritus bricks, sewer tiles and other examples of the plant's produce, many stamped with a variety of different trademarks reflecting the site's corporate evolution						X	X	X	X
Dynamite shack and gas regulator building									
Office Building (1955)						X	X	X	X
Ross Creek embankment					X	X	X	X	X
I-XL Buildings north of the Medicine Hat Brick and Tile Co.						X	X	X	X
Roadways into historical site, Porcelain Street SE		X	X	X	X	X	X	X	X
Buried remains - archaeological sites		X	X	X	X	X	X	X	X
Bridge over Ross Creek					X	X	X	X	X
Spur line					X	X	X	X	X
Clay Escarpment used to acquire raw materials					X	X	X	X	X
Parking Lot					X	X	X	X	X

Figure 6-13: Designated Vulnerable Heritage Resources and Archaeological Remains at-risk of flooding as defined through their relative sites within the Historic Clay District, Medicine Hat, Alberta, Canada. Blue box is the first range of risk to heritage by direct flow flooding.

TABLE 3.6: Medalta Potteries Site, Vulnerable Heritage and Exposed Archaeological Remains in Range of Flood Risk (6.1.1).

Total area of Buildings: 75,241 sq. ft.; Land and Property: 1.73 acres

Buildings include production, clay processing, drying, firing, and storage	1:5	1:10	1:20	1:35	1:50	1:75	1:100	1:200	1:350
Footprints of the factory complex: buildings, building remnants, and archaeological sites				X	X	X	X	X	X
Building 9, Clay grinder, press, and processing features upon and above production floor					X	X	X	X	X
Building 10, Gravity-fed clay processing vats and pits below production floor				X	X	X	X	X	X
Building 10, Boiler below production floor				X	X	X	X	X	X
Building 10, Chimney stack				X	X	X	X	X	X
Building 11, remaining piles of raw clay below production floor				X	X	X	X	X	X
Building 11, Bucket Conveyor below production floor				X	X	X	X	X	X
Building 12, Manifolds and Steam Pipe System below production floor				X	X	X	X	X	X
Building 12, Brick Cross walls below production floor				X	X	X	X	X	X
Various Kiln Foundations inside Building 13 w/ two lateral flues below production floor				X	X	X	X	X	X
Building 13, Natural Gas Piping above production floor in trusses									
Building 13, Chimney foundation (concrete and brick) below production floor				X	X	X	X	X	X
Surface Middens of Waster Sherds					X	X	X	X	X
Standing Exterior "Beehive" Kiln No. 1					X	X	X	X	X
Standing Exterior "Beehive" Kiln No. 2					X	X	X	X	X
Standing Exterior "Beehive" Kiln No. 3					X	X	X	X	X
Standing Exterior "Beehive" Kiln No. 4						X	X	X	X
Parking Lot				X	X	X	X	X	X

Figure 6-14: Designated Vulnerable Heritage Resources and Archaeological Remains at-risk of flooding as defined through their relative sites within the Historic Clay District, Medicine Hat, Alberta, Canada. Blue box is the first range of risk to heritage by direct flow flooding.

TABLE 4.6: Hycroft China Co., Vulnerable Heritage and Exposed Archaeological Remains in Range of Flood Risk (6.1.2).

Total area of Buildings: 73,812 sq. ft.; Land and Property: 10.50 acres

Buildings include production, clay processing, drying, firing, natural gas, and storage	1:5	1:10	1:20	1:35	1:50	1:75	1:100	1:200	1:350
Footprints of the main factory complex with office, warehouse, outbuildings (gas well buildings & sheds), building remnants							X	X	X
Original locations the hand painted - company's logo - along south wall to be seen while passing the industry via rail and the north entrance near when entering the parking lot from Wood St. SE							X	X	X
Inside main factory complex, intact production line with all objects, equipment, and tools in situ							X	X	X
Factory equipment, artifacts, and stored contents							X	X	X
The railway siding that runs between the factory complex and warehouse						X	X	X	X
Midden of plant debris that include subpar product, plaster of Paris used in mould making, located east of factory						X	X	X	X
Production Line and in situ equipment, gas-powered machinery							X	X	X
Circular tunnel kiln							X	X	X
Punch Clock and board with employee cards							X	X	X
Curved wall features and glass blocking							X	X	X
Box and Kiln Room, loading dock, shop, and pallet and dishes storage							X	X	X
Various locations of brick masonry							X	X	X
Loading docks supported with brick masonry w/ intact and in situ railway siding							X	X	X
Canadian Pacific Mainline that runs along the south end of the factory complex						X	X	X	X
Buried remains - archaeological sites						X	X	X	X
Well site south of building							X	X	X
Roadway into historical site, Wood Street SE						X	X	X	X
Parking Lot							X	X	X

Figure 6-15: Designated Vulnerable Heritage Resources and Archaeological Remains at-risk of flooding as defined through their relative sites within the Historic Clay District, Medicine Hat, Alberta, Canada. Blue box is the first range of risk to heritage by direct flow flooding.

6.5 Summary

To understand why industrial heritage is preserved, why methods of conservation matters, and whether heritage should be included in community-wide emergency management plans as essential public infrastructure, is found in the early stories of industrial history as people were enticed to move into the Canadian prairie landscape. This chapter has shown the results of various studies reflective of the motivations of industry, the resources are evidence to the history, where they exist in the landscape, and the intensity of their presence. These results inform a baseline understanding of the critical heritage inventory found in the district and become tools within emergency planning. When we use heritage to tell stories we must tie the significance of the heritage not only to the reasons why we are here now, but through the path taken. When we frame heritage and history through a visitor experience focus may divert from the vulnerabilities tied to the heritage. Just because a kiln may be standing, does not mean goals or actions have been developed to protect it outside the philosophy of conservation to define a sense of place. There was a time when almost every major community had either a small pottery or a brickmaker. Their presence and the products they created provided an essential service. Although, the study of industrial heritage's materiality alone will provide a sufficient understanding of what makes heritage worth protecting and emergency focused preventative steps or planning may intentionally pose an additional risk. The story is not complete without recognizing the community who has invested in the development and integration of the heritage. That is achieved through the details and the values.

7 “I’m Going to Smoke this Pipe Anyways...”

Rumor has it that Medalta was struggling to keep up with demand. So, they took a chance on a Scot who was apparently able to make 600 bottles each day.

He arrived in Downtown Medicine Hat with only two things: his suitcase and a pipe. Three if you count his talent, which turned out to be as good as advertised.

But despite his quality work, a pottery factory is no place to smoke. So one day the powers-that-be approached him with an ultimatum: either the pipe goes or you do.

“Well,” he said, “I’ll solve two problems for you.” And with the pipe between his teeth, he got up and left the factory.

The owners, who weren’t quite used to having conversations turn out that way, ran after him. Eventually, he sat back down at his pottery wheel - in the non-smoking factory - and got back to work. With his pipe.

-Medita Advertising Campaign highlighting Medalta’s Industrial Stories, in 2010. (See Appendix 4 for full attribution and copyright licensing information).

Leaders have always been eager to get to the future. This philosophy drove the speed and settlement of the West and is told through the heritage remaining. There was a time when men would walk in their father’s muddy footprints into the production of pottery (Antonelli and Forbes 1978; Baldwin 1993; Burrison 1995; Sweezy 1994; Zug III 1986). Turning and trimming, glazing and firing are all skills passed down from their father, who were taught the same skills by their father before. What began as a craft passed down through many generations became harnessed into an industry directly contributing to what we know and experience today. It was not so uncommon to see a kiln on the Canadian prairies. It was also not uncommon to witness them being pushed over to build another or shift a place from one activity to another, with an intention to recalibrate the use of technology or enhance efficiency. Bricks, construction products, and pottery begin the story in the district and are the same products leading to the factory’s eventual demise as essential industries manufacturing products for a city as it grew into a viable and sustainable community. The clay products industry in Medicine Hat was affected by shifts in consumer demands as new products and technologies created more

affordable options, eliminating a reliance on the earliest forms once considered essential. Others were pushed out through unfortunate disasters. These are the stories that make this district significant today and are seen through the presence of its *in situ* heritage. Sure, the history is lovely and makes for a fascinating story, but without the presence of an unbiased record, there is no authenticity. It is the integrity of heritage that ensures its presence which might otherwise be relegated to history. Those who lead and can embrace the uncertainty of the future by considering multiple points of view are better prepared to make predictions about the future. The message in this story is the riskiest response when considering the future is taking no action at all.

“[C]hange only occurs with persistence, partnerships, and public outreach” (Little 2007:248). When we integrate what people value into research, “archaeologists have the potential of telling a much broader and inclusive story that makes connections to the past and the present” (Little 2007:248). It is crucial when trying to create relevancy to those who intersect with heritage through the lens of emergency management, whose goals are focused on business continuity and the protection of life. What this study has tried to do is prove that historic districts require more support when an emergent event is imminent because there is little room to expand the boundaries of protection when the clock is ticking after a warning has been issued.

There is an assumption that when heritage has been developed into a destination that it represents a homogeneous collective perspective, and the communities that it represents want to see its ongoing protection (Chirikure and Pwiti 2008; Baird 2017; Smith and Waterton 2012). This is, in fact, not always true and shown through the lack of inclusion that heritage is given within global statistics concerning disaster risks (Jigyasu 2013). “Heritage is usually not taken into account in global statistics concerning disaster risks; nevertheless, historic cities, monuments, archaeological sites, museums, and cultural landscapes are increasingly affected by threats both natural and manmade” (Ibid). As I have shown above, cultural heritage sites, museums, and historic districts are not always isolated within local communities, they are

multidimensional places that “contribute to social cohesion, sustainable development and psychological well being” (Jigyasu 2013:8).

Natural hazards do not create disasters. David Alexander has communicated that the communities impacted not only experience the outcomes for years afterward but are the factor that ultimately creates a disaster (Alexander 2002). Wisner, Blaikie, Cannon, and Davis 2008 (2004:49) define a ‘hazard’ as a natural event (e.g., earthquake, hurricane, or flood) that can range in intensity, duration, or time. It results when a natural environmental event intersects with a social, political, or economic environment that is unprepared, causing damage to property, impacting human life, and disrupting community well-being (Geis 2000; Wisner, Blaikie, Cannon, and Davis 2008). While a disaster is “an event, concentrated in time and space,” they cause people to experience “severe danger. . .and disrupt the “physical appurtenances. . .causing all or some essential functions within a community to fail” (Fritz 1961, 655, *as stated in* Mileti 1999:210). How disasters change the built environment can be drastic (Hewitt 2015; Lewis 1999; Oliver-Smith 1986; Wisner, Blaikie, Cannon, and Davis 2008). How they alter the landscape of the unrecorded or unknown heritage resource is unpredictable. What we know, hazardous events will weaken the infrastructure of heritage, and when we are unsure what is connected with heritage, the result of an impact can mean that some historic or community values will go unrecognized. When heritage is still undergoing preservation, there are aspects of that heritage that are unknown, and those tangible or intangible features may be at risk of loss and may never be recoverable.

In Canada and the United States, ‘disaster management’ is an “umbrella term used by emergency and disaster assistance practitioners to describe a wide range of activities related to preparing for and reacting to all forms of disasters” (Bigenwald and White 2003). These activities are intended to reduce or avoid loss from a hazard, aid victims, provide protection, aid in recovery, promote sustainable livelihoods, and create methods to build capacity to increase resiliency. The disaster management cycle process outlines five phases designed to stage time to create meaningful actions framed through preparedness, emergency response,

recovery, prevention, and mitigation. Historic industrial districts require an additional level of assessment. This assessment focuses on the values of the heritage, the capacity of the community that is taking the lead in protecting the daily functions at a site, and managing an inventory of heritage resources (e.g., structures, artifacts, fixed elements within the landscape). Industrial heritage landscapes contain all the practicalities of the natural landscape while holding the heritage that characterizes the history that “evoke[s] the human activities that took place at the site” (Parks Canada 2010).

7.1 Defining the Vulnerability of Heritage Value

Modernization as a Motive and Foundation for Disaster Planning

Several recovery projects have occurred to salvage the heritage impacted by a disaster but few offer value-focused prioritization processes outside of recovery (Kjølsen Jermæs 2021). Mason (2002) describes conservation methods of assessing heritage value consider heritage through the “analysis of art”, object, architectural history, “formal and material composition”, and physical condition. He also discussed how conservation methods inform an “understanding of the evolution of and use of objects”, places and its original elements. What this means is that by preserving the materiality of the heritage we protect the original artists intent and how it relates to intrinsic factors, such as design or composition, and/or extrinsic factors, such as environment. Establishing value has enabled me to locate the heritage in the district that directly ties a story of technological change that mirrors the development and modernization of the prairies (Australia ICOMOS 1979; Lipe 1984; English Heritage 1997; Frey 1997; Mason 2002; ICOMOS 2010; Riegl [1902], 1982).

The purpose of assessing the value of heritage is to understand the history most important to a community’s identity. When the scope narrows on the collection in the Historic Clay District, we can isolate the value through its entire landscape. The process is one of deduction that starts with the broader theme history presents, in this case, Alberta’s southern plains landscapes with its meandering river system. This system created the land, clay and fossil

fuels. These details tie the development of the site and secures its significance as the “gateway to the west” (Pannell, Kerr, and Forester 1991). This is important because the heritage in the district is tied to stories of value. As I demonstrated in this study, significance through context is better understood when it is cross-referenced to a contemporary study within a region or nation to learn how often a type of heritage has been preserved. Thus, even a small heritage district can contain the last remnants of a larger regions industrial heritage can be overlooked and undervalued.

Industrial heritage inventories require a systematic study of its values. How value is interpreted requires a nuanced understanding of the stories connected to its historical context. Where it exists and how many features remain tied to history, and how they inform its materiality. In this study, there are seven sites situated in the Historic Clay District: Medalta Potteries, Medicine Hat Brick and Tile, I-XL, National Porcelain, Hycroft China, and Alberta Clay Products, which contains the last remaining kiln. Some remains are woven into the Plainsman Clays, still, in operation today, while others are tied through the railway. Together, this collection reflects the clay products industry between 1885 and 2010. In their physical construction and how they define a production line through its construction materials: brick, timber, steel, and mortar, their presence is not only tied to their material design and architecture. It is also tied to the integrity of the fabric as they are related to one another. For heritage managers, materiality is the clearest indicator of value and can be inventoried through its function and context.

This part of the process requires knowledge of what heritage is fixed to the structure, what heritage is unfixed, and their level of preservation. These data inform actions. The heritage inventory records the features and their precarity, for example, whether they could be dislodged or moved from an *in situ* location by a disaster. For example, during the recovery in 2013, features within each building required relocation, decontamination, and assessment of potential further damages. This type of documentation requires a detailed understanding of the broader themes associated with the heritage (Clark 2010). For this site, for instance,

modernization is central to its development story and heritage value. The finer features, those that could be damaged or dislodged are the details that can be lost. In the next section, I discuss the complexity of heritage value throughout the District.

7.1.1 The Beginnings of the Clay Products Industry

Understanding the features that indicate value within a heritage inventory is critical to designing a sound disaster plan. The process starts with an understanding its historical context. For example, the Medicine Hat Brick and Tile site *is* the first brick site in Alberta and the start of the clay products industry. The history of the site links to the contemporary gas industry. It was the regions first natural gas works. The history is linked to brick production: the site changed ownership, brands, and management seven times throughout its one-hundred- and twenty-five-year history. Although the first brickyard was a small operation, the site today holds of evidence of all of these industries. The heritage that remains, was established in response to the consumer's changing needs. When trends changed, improvements enhanced, and technologies advanced. When consumers demanded, industry adopted and integrated the changes. These changes led directly to the site's characteristics and landscape evolution.

To understand what heritage represents requires an understanding of modernization. In a physical sense, we see these changes through the buildings: an office, laboratory, clay mixing building, kilns, gas regulator shed, and dynamite shed. These structures share a history with smaller brick factories from “the pre-1914 era, along with structural elements dating from the 1920s when the company was known variously as the Gas City Clay Products Company, and the Medicine Hat Brick and Tile Company” (Alberta Register of Historic Places 2012). The features that correlate to each industry are woven into the sites broader theme of modernization. Yet, the heritage designation focuses on a period 1928 to 1971. This period does not adequately account for or protect all histories, such as the remnants of the Gas City Brick Company Limited, dating 1915-1921, and represented by the limited remains of the lower brick walls and parts of the wooden substructure (Heitzmann 2001:14).

To undertake a heritage risk assessment requires identifying value and developing a strategy to conserve and protect the material culture. The current inventory at the Medicine Hat Brick and Tile Company includes a series of early brick dryers, two tunnel kilns (a Harrop and Swindell), rectangular down-draft kilns (Periodic kilns), and a chimney. These features are brick which are often assumed to be durable by first responders. The integrity of the structures requires understanding of their current and historical condition. What is often overlooked are the bricks intangible heritage such as histories of firings and the activities of the kiln tenders. When well-meaning first responders or community removes the soot or charring of the brick it can change the color. These activities remove the site's history and heritage.

Understanding the complexities of tangible and intangible heritage is key in disaster planning within conservation priorities. The goal of conservation is driven by the theory of minimal intervention and the preservation of historical assets and histories. These features inform the 'grittiness' which reflects the site's industrial history. This grittiness represents the site's heritage and historical values. Understanding these nuances are essential. They guide processes required during a recovery, especially decontamination of sites after a flood. Often, decontamination teams will power-wash spaces, removing evidence of it's historical use. If this evidence is removed, we remove the evidence of the site's stories of change. We also, alter its integrity and authenticity.

A preventative intervention could be as simple as devising procedures that first responders can follow that protects the subtle features. For example, identifying the types of disinfectants or tools that minimize harm. A preventative intervention will lesson procedural mistakes and loss to intangible features. This approach also links to the preparedness strategy. As described earlier, a preparedness strategy is an important component of planning in that it is designed to predetermine recovery programs that begin immediately after a disaster. Protecting kilns found in a designated landscape, not only protects their materiality, but also protects the stories of the entire histories of the clay products industry.

The heritage value that needs protection is identifiable through history and reflects the time, age, nature, and location of the earliest materials within the heritage inventory. However, not all the heritage at this site is essential to the authentic story of this community's beginning in the brick industry. The collection tells a story about change as it evolved through shifts in manufacturing and the harnessing of new technology to stay relevant in a competitive market. This heritage ties to a significant theme through its physical remains that start with a small soft-mud brick plant built by a former Mountie who dared to get his hands dirty.

Conserving heritage preserves people's stories. When considering the heritage value of the Alberta Clay Products site, it must involve an understanding of all the remnants that remain because what is left speaks to a different kind of beginning through the historical intention of becoming the most prominent brick factory in the region (Hayward 2001:14). It was founded as a large-scale capital venture, specifically by an American group of investors responding to the city's incentives. Because of these incentives, the heritage value of the last kiln memorializes a specific moment between those looking to invest in a place and frames the story across an international line. The story of incentive includes the complications of a journey to a new place. This journey becomes the story. Although one kiln remains, it tells a story of its establishment, partnerships, and the technology. In 1909, Alberta Clay Products began as a four-story rectangular-shaped building complex measuring 256 by 80 feet built on a brick-lined base and through the construction of a series of 14 round downdraft kilns, each between 30 to 40 feet in diameter (Heitzmann 2001:6). It was powered by four gas wells, produced five railcar loads of bricks daily, and was equipped to manufacture "red-pressed bricks stamped with an 'ACP' brick mark, sewer pipe, building flue, and drain tiles" (Sissons 2019).

One kiln cannot tell the whole story. It is the history of how fourteen kilns became eighteen and tied to the records of the production of brick and the firing of kilns between 10- to 21-hours a day continuously throughout the week (Hayward 2001). The kiln represents this story of significance and is a tangible reminder of the space that would have been required to establish the size of this industry. It informs a story of swift creation. The kilns provide a

record of the labor, the market, and efficiency required to produce the ware to stack eighteen kilns. The site's heritage value is not seen through its footprint alone from a risk perspective. It is seen in the integrity of the last kiln standing. The stories, photos, and documented records signify the size of the operations, record the kilns and inform the historical record that describes this site's production level through the record of the hundreds of people employed (Hayward 2001). In this case, the heritage value is tied to the production of construction materials, and its success informs its significance as Canada's largest clay production plant that produced bricks and clay sewer pipes in various sizes and types (Heitzmann 2001). Because there is only one, a full documentation program could be a preventative action to the loss of the heritage that speaks to this history.

Today the region identifies strongly with clay and natural gas. The brick factories and their kilns protect the evidence of the establishment of natural gas as a major economic driver of the industry. Gas fueled the success of Medicine Hat's community and led to the eventual establishment of various manufacturers, all producing different goods and products. These sites hold evidence of the City's early gas works. They have been captured through photographs, but to date, the kilns are not recorded archaeologically. An archaeologically informed record is different than an architectural drawing. Archaeologists record all details, including profiles, stratigraphic sequences, color, and relationship to the landscape features. They are essential to recording the heritage and history of a site. They are essential in disaster planning. They are a record that secures the community's creation story.

The contributions of these sites cannot be overemphasized. Although both sites contribute to an early role in the development of essential building materials, their record secures their current role as a signatory feature monumentalizing the development and expansion of western Canada (Parks Canada 2000b). Yet, these sites are at risk. The Medicine Hat Brick and Tile Co. sits in a flood-prone environment. While it is true that the Alberta Clay Product's last kiln sits outside the range of historical flood risk, it is still undesignated and undocumented. This is an opportunity to prepare and plan for heritage by including measures that can be as simple as

documenting the site and knowing the history of previous flooding. Ideally, this would include detailed archaeological drawings alongside other technically informed records developed by engineers or architects.

A small but significant action of preparedness can be as simple as knowing where previous floods inundated structures and to what level. The Medicine Hat Brick and Tile Co. owners recorded a previous flood after it retreated in 2010 by placing a line on the corner of a wall. Although rudimentary, it is an indicator and a record of risk. This one line can direct a series of preventative actions within this range of risk. Specifically, during the development of a historical inventory. A simple line can start the conversation that can illustrate the impact that flooding can have on heritage. The materiality of brick is durable. It was not only valued for its aesthetic and practical qualities but for its ability to resist the implications of heat. It holds up ‘better than [a] stone in a fire’, which can be prone “to spall, crack, [and can] disintegrate in a fire, especially after being pounded with high-pressure water” (Wermiel 2000:82-83). It is complicated by the presence of various types of materiality and history.

7.1.2 The Emergence of the Pottery Industry

The story about the heritage value of Medalta Potteries is told through the emergence of pottery production in Southeastern Alberta (1924-1954). It is informed by who built the factory (an American steam pipe fitter by trade), its eventual prominence in the Canadian market, and how its construction identifies its historical use. Construction began in 1912. It was rebranded five times. However, the name Medalta became synonymous with a “Canadian Product, made from Canadian clay, Canadian Labour and Canadian Capital” and shipped boxcars filled with a product “equal in quality to any made in America” (Getty 1994:14). The remains of the original buildings and the last remaining kiln foundation is what secures the site’s prominence and tell the stories of urban development. The factory site comprises an interconnected composite structure containing multiple buildings, one detached building, and four exterior round-down-draft kilns. It protects the remains of some distinctive machinery and equipment associated

with clay processing, storage, turning, drying, firing, shipping, and packaging. It was also the first factory that drove preservation initiatives and defined how the progression of conservation developed in the District. Medalta was an industrial leader between the 1920s and the late-1940s. Understanding these industrial histories is central to the theme of the museum's interpretive programs. It influences how the site is preserved and used today.

The Medalta Potteries site was designated as a provincial resource in 1979 "by virtue of its in-situ resources characteristic of the ceramics industry, and its impact on the development of that industry in Canada" (Simpson, Roberts, and Wappell 1993[1995]:16). This statement informs the District's essential inventory. Early preservation documents created clear goals, objectives, and priorities that guided conservation and formed the philosophy used to frame a sequence of preservation activities for each factory including conservation planning. The conservation principals developed by the lead architect in the 1990s to preserve this site continue to guide the site's preservation today. This document guides the district's conservation strategy. It emphasizes *in situ* heritage. Their presence informs the rarity of the collection today. It places an importance on authenticity, materiality, and the physical remains. What it fails to account for is how to protect the *in situ* heritage from disasters. More importantly, it does not capture the importance of intangible heritage in the interpretation of a site's history. While conservation has been focused on preserving the kiln exhibit, a cast-iron steam pipe system, and the original 'old' factory, it cannot account for the stories of laborers, the skills, or intangible activities that are specialized to the industry. In other words, we miss the complex histories of this industrial landscape.

My approach is to view these features as critical heritage infrastructure. Viewing it this way provides clarity to the complex interconnected histories and stories of the site. It protects not only the tangible *in situ* material culture, but also the intangible heritage. This framing prioritizes communities. It connects the heritage of Medalta Potteries to the development of a neighborhood, informed by industry and seen in the presence of the industrial heritage alongside the factory workers' houses. Its presence defines the earliest vision and mission for

the development of the district. The heritage value contributes to Medicine Hat's history and prominence as a significant manufacturing center. Its protection preserves stories of capitalism, economic determinism, modes of production, and the establishment of the working class (Hayward 2001). It tells the story of a community determined to preserve the remains in the district.

7.1.3 A Story of Efficiency, Innovation, and Technology

The story exhibited through the remains of Hycroft China (1955-1989) is connected to the shift in the clay products industry experienced as technologies developed highly efficient systems of production enhanced by the machines and technology of the day. This site was built to mass-produce ceramics for an already established competitive market. Designated as a Provincial Historic Resource in 1995, it is significant because of its "association with southern Alberta's important clay-products industry and its fine and largely intact example of modern factory architecture of the time" (Gartly 2020:10).

Defining the heritage value of this factory is seen through why it was built, through the success of Alberta Clay Products Ltd., and was designed to be a state-of-the-art facility. It was modeled after the American pottery factory, Homer Laughland of Pittsburgh, and considered the people who would work in the factory (Antonelli and Forbes 1978:83). It considered the safety of its factory workers, but it was also "aesthetically pleasing with Art Moderne architectural elements, curved walls, and glass block windows" (Gartly 2020). Its factory building, and adjacent warehouse, separated by railway siding, are all indicators of the site's heritage value defined around efficiency allowing for ease of moving product back and forth between both buildings (Heitzmann 2001; Norquest Museum Consulting Services 1998). The individual pieces of heritage identified in the manufacturing plant are the machines that indicate its use of available technology through its Miller Automatic Jigger Machine and circular tunnel kiln, considered at the time as a mechanical wonder that provided two significant

advantages: production speed and labor reduction (Simpson, Roberts, and Wappell 1993[1995]:49).

The District's intangible heritage is defined through the number of people employed, how the complex was designed with them in mind and equipped to improve the working environment through its construction and the advancements in the industry. Early documents record these details, highlighting ways to improve a factory through the subtle details about enhanced firings and communicating a need for lunchroom benches (Brick and Clay Record 1923). Hycroft China created a system to improve the employees' performance by including more windows, skylights, and equipment like loudspeakers that could broadcast radio programs and records throughout the workday, specifically to boost worker morale (Gartly 2020:10). Soft drink coolers and a water fountain were installed on the factory floor (Simpson, Roberts, and Wappell 1993[1995]:49).

What heritage remains speaks to stories of innovation, efficiency, and the technology seen through the presence of the production line; its heritage value is also informed by how the owners considered the well-being of the workers who were at the center of the industry's success. Hycroft China Ltd. played a significant role in the clay-products industry between 1937 to 1988, its earliest story began under the brand Medicine Hat Potteries (1938-1955). The inventory: a 1938 factory building with all original interior elements, original machinery, an engine room, "drying ovens, a glaze application machine", salt glaze kiln, a circular tunnel kiln, a 1947 warehouse, the railway right-of-way, a small natural gas works, and the two exterior painted company signs informs the integrity of its heritage value (Alberta Register of Historic Places 1995).

Through time, several modifications were made to the district by the many various business owners to increase each factory's productivity and efficiency. These modifications and the heritage are central to why collections of unremarkable heritage become remarkable. This history and the inventory of the heritage prove authenticity. Its integrity is what protection measures preserve. Although this valuation is dense, and the integrity of the remains situated

in the district varies from site to site, preventative measures or preparedness strategies ensure that the foundation of the narrative is told through the presence of the *in situ* remains as an unbiased record. The process of preservation formed through the preservation documents can trace the interpretation of the heritage that mirrors a story of development.

For hundreds of years, stories and knowledge have been passed down orally through generations. The legacy of the stories in the clay products industries was once told through the pots in their shape, fabric, and form (Antonelli and Forbes 1978; Baldwin 1993; Burrison 1995; Sweezy 1994; Zug III 1986). With industrialization, these stories are not as equally tied to early lessons through oral history to ensure that production methods are secured. Instead, the earliest stories of industrial pottery are told through technology and how it represents the potter's role. When considering the value of heritage in its material form, it is crucial to connect the elements in the story that is removed when there is no record of an inventory. You may find references made to the stories through social and historical accounts, but they can only be seen as a representation of a story based on the values that the new storyteller infuses within. The physical inventory of heritage is objective, without bias, as much as it can be when a market and business has developed around it. The protection of heritage protects the most objective elements of the story. If the heritage location is unknown that speaks to the story, then there is little reason to protect it.

The successfully preserved historic industrial district reflects a commitment of time, community support, and capital. To transform the remnants of history into a viable community asset that serves the needs of a community. Its authenticity is tied to the undisputed representation of a site's transformation. There has been a substantial investment in this site, yet it fails to be included in Medicine Hat's list of Essential Infrastructure (City of Medicine Hat 2018). As a result, there is a need to develop a process to assess risk and build a vulnerability profile that can identify where to start. When the inventory is known, it can inform a site's critical assets and frame how repeat flood events can impact its use. This approach would be useful for other sites dealing with potential disasters.

The historical value of the inventory in the three factories found in this district is tied to three primary phases of technological change: the beginnings of industry, the emergence of pottery, and the shift to efficiency and innovation as seen through advancements in technology through the heritage that remains. This study sought to conserve and ensure the safety of the heritage that informs a temporal sequence. This process included an archaeological analysis that inventoried heritage through documents, material culture, maps, and my experience as a First Responder. This approach sought to identify the role that significance plays outside the realm of recognition and in the protection of heritage. While conservation plans are seen as valuable studies and outline a stabilization process, I argue that they do not yet identify vulnerable heritage. Adopting a heritage risk valuation approach may offer protection of these sites. It is crucial to plan, especially in cases where capital resources are limited. I have observed that staff size does not equally reflect the demands preserved heritage required. Preserved heritage requires a continual evaluation and a capacity to respond during an emergency.

Heritage conservation is a form of preparedness planning, but without an underlying understanding of the range of risk and the development of preparedness planning crucial to the themes that have guided conservation, they will remain two separate issues (Kjølse Jermæs 2021). When thinking about the Historic Clay District, we find a variety of materials. Most are brick, but many of the earliest features are timber. These materials are at the most risk for flooding events and the differences between materiality defines categories within a classifications system that can direct preparedness planning.

This study presented the results of a vulnerability assessment. I identified and mapped heritage and its value. But its contribution extends beyond this study. The lessons learned include how risk is perceived by individuals matters. The cost of not preparing for a disaster has far reaching consequences for communities of connection. Each factory represents a phase of history. Its loss could negatively impact the heritage industry that supports the economic growth and viability of the community that relies on the significance of this heritage. Although

the historical values are connected to the presence of the heritage, they are indicative of its materiality, age, technology, level of integrity, and associated archival or documentary potential. They cannot account for the community that are required to protect, preserve, and recover the heritage when it is impacted by a flood.

7.2 Use of Heritage, Place

The primary use of the Medicine Hat Clay Industries National Historic Site has been as a tourist destination. The site has been designed to facilitate a “culture of creativity” (Friends of Medalta Society 2018). The goal of the community has been to enhance the role of the museum and the district’s role in the broader contemporary environment is as a stop in the Canadian Badlands. Although the academic community has regarded it as an asset that serves “the diverse interests of heritage, the arts, and culture, education, community enhancement, economic development, and tourism,” it is primarily used as a contemporary art facility, for events, and as a museum (Wright 2006:2).

The Medalta Potteries site is currently a multipurpose business facility that has established guided and unguided tours. It provides a coffee shop and gift shop and frames historical pottery making through a living reproduction studio within the museum demonstrating how industrial ceramic ware was produced using historical tools like jigs. Some machinery still operates to provide context for the viewer but operates at a reduced capacity. An education program designed to host community classroom events for local school-aged children is established and built to serve various grade-associated curricula. It has a contemporary art gallery featuring seasonal art exhibits, offer openings for artists who attend the residency program, and host exhibitions using Medalta’s objects and artifacts through place-making themes. It provides programming to adults through continuing educational opportunities offering space to the community to host lectures and meetings. It has developed a local Market for the community who meet and offer their ware, specialty craft goods, and locally produced food. There is an indoor and outdoor event space for celebrations, meetings, concerts, and corporate parties.

The Shaw Centre located at the north end of the Medalta Potteries site, provides studio spaces, a glaze laboratory, and kilns for artists who participate in Medalta's Artist in Residency program.

Although the Medalta Potteries site is used most by the local community, it is supported through tourist-focused programming intending to bridge a gap between the visitor and the experience (Friends of Medalta Society 2018). There have been plans that include the ongoing production of brick, an extension of the formula created for the contemporary ceramic artist in residency program, and additional site tours. Since the Medicine Hat Brick and Tile Co. entered the inventory of designated heritage, numerous events have incorporated the heritage through seasonal brick-making seminars, professional development workshops, and has hosted multiple demonstrations at the site. The historic laboratory has been rehabilitated into an Artist's Lodge and the site has been the subject of many local photographic series and a local social history documentary. The space it provides offers additional storage to preserve the artifacts associated with the inventory (Jacobson 2017[2019]). At this point, it is too early to predict how the heritage will be fully integrated for use within their business model, but there has been much interest by the avocational community to create a rail experience using the historic spur line to move people through the district (McKinnon 2019; Onieu 2022).

The heritage found in the Historic Clay District is used to enhance an experience in the community the accessibility of the outdoor spaces and has been integrated into the community's trail system. The main use for the Museum is as a repository that has an interpretive program that tells the story of the Clay Products industry in Alberta and Medicine Hat. The development of the Museum was essential to the preservation of the fabric. There is a Collection integrated into the site that contains thousands of artifacts, site-specific paper archives, and is developing a curatorial research program. The Collection is focused on protecting this community's industrial memories, identity, and share these stories through the presence of the features and artifacts within the site. Its role in the community is a

destination, perpetuating a concept of sustainable development and contributes to a unique sense of place.

The heritage used and located in the Historic Clay District has been framed within The Friends of Medalta's recent Strategic Plan, *A Slow and Steady Burn*, 2018-2022, and outlines the organization's goals. They have been summarized as follows: (1) continue to build sustainability by creating sustainable programs, build a development program that cultivates relationships and offers a multi-level engagement strategy towards financial stability by developing strong partnerships, investments, and "build agile internal mechanisms that facilitate a culture of creativity, growth and inclusion for the board, staff, volunteers, visiting artists, and visitors"; (2) to preserve, protect, maintain, activate, and revitalize the buildings, land, and physical assets of the Historic Clay District; (3) to ensure an understanding of the FOMS collection by establishing policy, enhancing cataloging, and developing a curatorial research program; (4) to connect, strengthen, engage, communicate, and enhance Medalta's role in the community of Medicine Hat, audiences, visitors, and "the broader contemporary creative community"; (5) engage onsite experiences and enrich their visitor experiences, and; (6) improve tourism and provide compelling reasons for visitors "to make Medalta a destination of choice" (Friends of Medalta Society 2018).

Creativity is the foundation of programs delivered at the site. It has been the legacy of the maker through time that has influenced the development of the programming. It is the heritage that echo the skills, that drive the programming through its contemporary Artist in Residency Program. There are three types of residencies that artists can participate in: a year long residency, a flex residency, and a month-long study designed to create a place for makers to form a creative community. Artists work on the site to develop a portfolio for graduate school, while others use it as a chance to escape and recharge their creative enthusiasm. The residency is designed to immerse artists in an environment to focus on and explore new ideas and techniques. The artists are encouraged to push their work to new places. The primary goal of the residency is to form a community between artists from around the world to share,

communicate, and learn skills which may lead to new paths or as a step in their development throughout their career. Residencies are applied for, juried, and Artists are chosen specifically to create a diverse group of people who can learn from each other. They are hired as staff in the reproduction studio, the gift shop, and lead various workshops or firing programs for the broader community.

Currently there are adult pottery classes and creative workshops, Kids' Clubs, and summer programs. Medalta Potteries provide space to host local Community Classroom programs for local students and deliver Field Trip experiences. Community Classroom programs are curriculum-based programming that "moves classroom learning to Medalta" (Friends of Medalta Society 2022). The teachers on staff work with local teachers to develop custom multi-day "interactive learning experiences" (Friends of Medalta Society 2022). Although there is specific programming created by Medalta' onsite teachers, local teachers are encouraged to work with staff to "tailor the activities to the learning needs of the class and individual student" (Friends of Medalta Society 2022). These classes are supported by a production studio used to reproduce historic Medalta forms using the inventory of Master molds that were left at the site and can be integrated into a custom set of dishes.

The remaining programs available at Medalta Potteries focuses on the use of their Reception Gallery. It can be rented for celebrations for up to 200 guests. The Museum has been rented for photo sessions for weddings, local corporations, and graduations. There is an event staff on rotation that provides services for various events. The presence of the heritage has been used as setting offering opportunities to explore the trajectory that pottery has taken. It has been used to frame experiences, teach, and offered as a place where communities can celebrate important moments in their lives. The presence of the visiting artist is essential to the business model that encourages them to push their own boundaries of clay making by integrating traditional methods with industrial techniques, themes, or advancements through advancements in the industry provided through technology such as 3D printing.

The district has fully embraced the development of the creative culture. The experience of the heritage as a component of a culture is infused into the following Vision Statement:

The Friends of Medalta Society is dedicated to developing the Historic Clay District as “A world-class cultural district with a heart of clay” (FOMS 2022).

Their Mission Statement reads:

The Friends of Medalta Society (the “Society”) fosters an understanding and appreciation of the Medicine Hat Clay Industries National Historic District (known as the “Historic Clay District”), its importance in the development of Medicine Hat, and its impact across Canada through collection, preservation, exhibition and interpretation (FOMS 2022).

The heritage has contributed to the community which has formed in Medicine Hat. Pottery making was a craft passed through oral history through an apprenticeship with a master potter. The process was direct and suited to mastering the required technical skills. In its new role within the District, creativity is the focus with an emphasis on the individual and directed by the artist. Although the heritage is embedded into the community and forms part of its regional identity, its main role is as a place where people are encouraged to develop their craft. Creative expression is synonymous with the site and the business considers itself an incubator, a rejuvenator for established artists, with programs that have become internationally recognized and respected. The creative value of the site has influenced pottery making today. All programming, outside of the Collection is connected to art and functions as a creative industry.

Most of the built historical structures found in the District have been protected by the Friends of Medalta Society and through formal designation. The Medalta Potteries Site is currently the most developed. The heritage has been preserved at the Medalta Potteries site using skillfully directed conservation interventions to “adapt ... existing historic structure[s] for modern use while retaining as much of the original building material as possible” (Alberta Historical Resources Foundation and Alberta Culture and Multiculturalism 1992:2). The interest in developing the Medalta site began in 1971 to 1975, with a team of researchers from the University of Alberta who began the process of determining the site’s historical value and

emphasized that conservation interventions preserve the heritage in ways that the site's authenticity could be preserved through its materiality (Bailey Consulting Services 1978[1981]). Time shows that early recommendations were considered and supported by the greater community of Medicine Hat and were central to what exists today, how the site is accessed, what programs are featured, and what story has been told.

During early planning initiatives developing Medalta into the museum it is today, the community was asked to participate in a visioning event. The Friends of Medalta Society hosted a participant-led co-visioning event to develop ideas for the use of the heritage in the district. The event was one day long. Seventy citizens participated in the study representing thirty-five community groups, organizations, and the general public. They ranged in age, some as young as nine years old. These community members participated by "lending their vision" alongside artists, former workers, ceramic artist-in-residence, seniors, and school board officials (Co-Design Group 2005:19). Participants were broken up into four groups; children were separated as another. Each team was led by an "architect-artist" from the Co-Design Group. Participants were asked to "look ahead to a time when the site would be in full operation, and to imagine a day in the future, a normal day, or a special event, in any season, and [to share] what they might like to experience or see going on" (Co-Design Group 2005:3). This event was designed to showcase the heritage as a destination. It included tours of the heritage at Medalta with participants arriving as though they were tourists and "were asked to note the qualities of the site, the kilns, the vast factory spaces, the landscaping, the orientation to the sun, the views of the clay cliffs, and were asked what areas could be improved upon" (Co-Design Group 2005:7).

This single event captured the enthusiasm of the participants from the community. Some participants from the Elm Street School were asked what they would like to do at the heritage area. One participant responded, "'I am drawing me watching someone make something out of clay,' explaining, 'No one is working there anymore, so I'd like to see how they make stuff like bowls'" (Pruden 2001). Another participant commented on the process and was documented in

a local interview stating, “This historic designation belongs to the community, to the province and to Canada as a whole. We can help but the effort is very much a community thing, and the whole community will benefit” (Ibid). This event captured community vision. Although the site’s preservation has been phased, the history of the site has been maintained and influenced significantly by the community. The event was co-sponsored by Parks Canada, The Friends of Medalta Society, and supported through grants from the Alberta 2005 Centennial Fund, and Alberta Community Development (Co-Design Group 2005:2). What this event proves is the district is more than a grassroots effort. Currently, the District identifies itself as center of engagement, it has been informed through years of academic research and community spirit. The use of heritage influenced by the citizens of Medicine Hat informs programming and preserved, reveals the passage of time using the voices of the community, from the past and the present.

Community priority in the protection of heritage has guided the reason why it was preserved. Its early organizational mission articulated its fundamental purpose and has been used to guide the prioritization of heritage within the design of the site today. The buildings of Medalta are owned by the City of Medicine Hat, all the improvements and exhibits are owned by the Friends of Medalta. The community has invested significantly in the development of this public space, therefore it becomes a responsibility to inform the community about the exposure of risk, to protect the early efforts.

The preservation of the heritage in the district has created an extensive range of stakeholders and shareholders who have become part of the culture formed around the heritage. As it stands, the Friends of Medalta vision that guides the site’s use within the heritage does not support a mission to protect its heritage value. It reflects a cultural identity. There is a real cost associated with disaster. The requirements of financial capital and donations to preserve this site are enormous (Alberta 2019; Stephenson 2011). For example, between 2000 and 2021 the site received approximately C\$8.5 million. As these numbers show, the heritage provides incentive for community to participate in its preservation. Whether the

reasons why communities struggle to develop preparedness or prevention plans are caused by the challenge of inventory, capacity, capital, or use - the alternative (not having an emergency plan) could cause a substantially larger cost. The failure to consider the costs associated with recovery will challenge disaster response when the next flood occurs. This will jeopardize the business, the cultural identity, the community connections, and the heritage.



Figure 7-1: Kiln foundation located in Medalta's Reception Gallery (Image Credit: Jacobson 2014). Highlight of this researcher recording damages (Image Credit: Colley 2014) (See Appendix 4 for full attribution and copyright licensing information).

7.3 A Vision and Mission of Risk Reduction

Effective risk management systems incorporate tools, like conception models, alongside qualitative data to identify types of risk and devise ways to minimize the negative impacts on heritage. Emergency planning for an industrial historic district must consider the historic landscape and the entire community within its management strategy. It must not only preserve the physical and visual connections that illustrate the interrelations between the heritage and its historical industry but designed to include the “communication networks, and adjacent human communities” (Cutter 2018). The goal of disaster management within a historic district, in contrast is multi-faceted. It must identify the tangible and intangible vulnerabilities connected to *heritage*, understand the risks and benefits of protecting it within the business of heritage, and create a series of actions designed through preparedness planning to help reduce the impacts to the heritage and, therefore, the *community* protecting the heritage.

Many organizations and programs discuss heritage at-risk. Historic England (2020) offers a guide to create an emergency response plan and how to prioritize objects in a collection, but it fails to include the impact on communities or their inclusion emergency response and recovery. Pedersoli Jr., Antomarchi, and Michalski (2016) developed a guide through a partnership between the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) and the Canadian Conservation Institute (CCI). This document has been titled, *A Guide to Risk Management of Cultural Heritage* offers an *ABC Method* for risk analysis. None of these guides include a strategy to understand how value can frame heritage, how heritage supports community use, nor focuses on localized planning by communities of people who are not heritage professionals. The paucity of maps as tools in these guides create a significant weakness for communities’ use of them and therefore render them impracticable. Likewise, the importance heritage profiles and classification systems from community perspectives are essential for prioritization. As I argue here, the entire process of risk reduction requires a process of understanding value.

One useful document to this study has been the Getty Institute's (1999) *Building an Emergency Plan. A Guide for Museums and other Cultural Institutions*. It lays out a process to develop an emergency plan for a museum and creates an understanding of how an organization can work synchronically by assigning tasks, understanding roles, visualizing emergent events, and discussing the roles of planning and people. Its value to industrial heritage is how it provides tools to assess risk, but it does not scale to a landscape level. An industrial heritage landscape, the size of Medicine Hat's, requires a different approach, one that accounts for a range of risk, materials at risk, and the level of capacity of the community required to plan for the heritage.

Medalta has a complicated economic and partnership framework. The district is bound by a complex network of policies that dictate how the site is managed and used. For example, heritage has been leveraged "beyond [a] Historic Site Model" that has been activated through creative enterprise and tourism (Wright 2006). It is marketed and framed through a business model and as a result, its vulnerability must be seen as a component of a business continuity plan. "At the individual site level, disaster plans are essential" (Taboroff 2000:76). If heritage values are not recognized appropriately within planning, they will not be prioritized during an emergency. As I have found, this disconnect between heritage and business models has consequences for how heritage is protected. For example, if a community leads with a business model when a disaster occurs, the community will be focused on visitor safety and administrative foci. First responders, on the other hand, may only focus on the features in the site that adhere to building codes, fireproofing, fire alarms, and other key elements in any preventative effort. Heritage value is nowhere in their thinking.

Taboroff (2000:71) has discussed that many of the disasters seen in cultural heritage sites are because people have "an inadequate knowledge of the assets, which can lead to a failure to calculate the true cost of loss and damage." As I have demonstrated in this study, without adequate understanding of the heritage most vulnerable, our responses will fail the non-monetary values associated with heritage and lead to a disorganized response to risk

management. Our disaster planning approaches must adequately address the vulnerabilities of heritage. At this time, they do not. With increased climatic and disaster events, our heritage remains vulnerable and intensifies community impacts (Daly 2014; Taboroff 2000; Tierney 2006).

Hubbard's (2009) assessment of risk provides insights that can be applied to understanding an industrial heritage district. He defines three kinds of risk: preventable risk, strategic risk, and external risks. Industrial historic districts viewed through a business model are at risk of all three. Planning risk scenarios for heritage are time sensitive and require tools designed to minimize the impacts to heritage. Preparing heritage to withstand disasters requires knowledge of its architectural vulnerabilities, previous damages, locations where there could be structural weakness, and human impacts. Yet, during an emergency, teams will be focused on a specific task, such as evacuation of visitors, shutting down utilities, safeguarding technology, protecting administrative records, or preparing sensitive features to be moved to a secondary location (Alexander 2002; Sendai 2015). Without a heritage profile and plan in place, when an emergency occurs, first responders will be making choices through their perception of what is at risk and what is valuable (life and safety issues will be first and foremost during an event). As I have argued in this dissertation, to protect heritage we must invest in the development of conceptual tools and preparedness plans.

Some of the most useful tools I have found from risk management approaches include the disaster management cycle, vulnerability profiles, inventories, lists, and the challenges identified in the environment. These tools can be adapted to provide a heritage manager a way to conceptualize risk to design strategies to protect heritage. They can be used to assess risk. In the Medalta case, such an approach to the historic flood would have provided additional tools to heritage managers and first responders. For example, a detailed management plan would have laid out specific risks to the industrial landscape and the heritage inside each factory. It could have been used to inform and frame what heritage is most vulnerable in its historic and contemporary use (e.g., industrial vernacular heritage). It also could have outlined

where it is located (e.g., hazard-prone environment), what materials were used in their construction (e.g., hot lime mortar and brick, wood, or metal cladding), where it exists within a contemporary environmental landscape (e.g. along a river), and is integrated into peripheral environments (e.g. demographic profile).

These criteria underpin this research and have been incorporated into the scope, range, and goals for risk assessment in its very design. This has been intentional. My goal was to understand why disaster planning challenges communities and influenced the production of my earlier results. The following criteria, compiled from various sources, informed the emergency plan views I developed and are useful at understanding emergencies at a local level (Drdácký, Milos and European Parliament 2007; Jokilehto 2000; Sendai Framework 2015-2030; Taboroff 2000; UNESCO 2006):

1. A disaster plan should include all cultural heritage, its buildings, structures, contents, and all associated landscapes. Reference to where it is situated within a larger city should be included.
2. All planning benefits from integrating all relevant heritage considerations within a site's overall disaster preparedness and mitigation strategy. This includes all legal policy, regulatory statutes, criteria, standards and guidelines.
3. Preparedness requirements should be designed specifically for the heritage site in the focus of the plan and consider vulnerability and risk.
4. All essential documentation of heritage, its significant attributes, current structural status, list of associated intangible heritage, and any history of prior disaster response that may have occurred at the site should be compiled.
5. Maintenance programs for historic sites should view cultural heritage from a risk perspective and incorporate monitoring for damages caused by "agents of deterioration".
6. All stakeholders should be involved with planning and emergency response goals, understand the risks, and provided with training.
7. During an active emergency, the securing of heritage features should be considered a high priority, understood as time sensitive, become a process of documenting the event, and if possible, include crisis mapping.
8. Conservation principles should guide all phases of disaster planning and mitigation.

Each component above can be framed within one of the stages of the Disaster Management Cycle.

The 5 Stages of the Disaster Management Cycle



Prevention: the phase to identify potential hazards to devise safeguards through risk reduction and **vulnerability studies**.

Mitigation: this phase involves applying interventions to enhance disaster resiliency and create preparedness plans for temporary measures for heritage at-risk

Preparedness: this phase involves acting out readiness strategies to become familiar with the process within a time frame equal to an event. This process informs the risks still present and vulnerable. A phase of training.

Emergency Response: this phase requires immediate action before, during, or directly after an emergency occurs. This phase relies on plans made during the preparedness stage.

Recovery: this phase involves all actions taken to assess damages, apply for financial aid, and may include a process of decontamination, repair, rehabilitation, or rebuilding. This phase could take many years.

Figure 7-3: Heritage-focused Disaster Management Cycle based on Warfield 2018 and City of St. Louis 2022.

There is additional knowledge useful in implementing a risk assessment process. The following list is offered to generate ideas, identify vulnerability, and connect the variables within urban spaces to heritage at-risk. This list is by no means exhaustive, it has been compiled from various discourses, intended to inform potential complications and frame conversation during planning (CCI 2017a,b; Jokilehto 2000; Taboroff 2000; Sendai Framework 2015; UNESCO, 2006):

- Land-use.
- Access to the site, transportation routes, or historic rights-of-way.
- Engineered structures, bridges.
- Physiographic location within the landscape: near a river (e.g., meandering versus oxbow), on a flood plain, terrace, slope, aeolian landscape.
- The relevancy of heritage - often people are not intentionally eliminating heritage from the equation when identifying risk, they may not be thinking about it.
- Regulatory and authority structures (decision makers).

When heritage is supported through a business model, the following factors will need to be understood during planning:

- Age of the heritage and fragility of resources.
- Cost of research.

- Access to the training necessary to work around heritage during a disaster, including Emergency Response (EMS).
- Access to specialization, labor, volunteers, or access to EMS in the hours before a disaster impacts a location.
- Awareness that a heritage site is comprised of more than structures.
- Heritage not included in overall community disaster management plans.
- Perception of heritage value and risk.
- Understanding that the past holds relevance in the present and symbolizes resilient systems and traditional knowledge systems.
- What heritage holds designation but are considered special by their local community and are not legislated for protection - designation does not mean protection in a disaster.
- Essential documentation or history connected to a site.
- Conservation plan has not been developed.
- Risks are location and skill specific.
- Inventory outlining what heritage is found at a site.
- Access to skilled trades or craftsman.
- Limitations created by confidentiality agreements, between stakeholders managing the inner corporate workings inherent to business practice, regulatory matrix.
- Archive locations and backups.
- Access to funding or economic resources to protect heritage or to rebuild.
- Lack of sharing the raw data for research, cost of losses, tied into 'politics of disaster'.
- The effects of changing weather patterns and events due to climate change.
- The "failure to calculate the true cost of loss and damage due to the difficulties that surround assigning value on the nonmarket aspects of heritage" (Taboroff 2000:71).

I believe that an integrated approach is essential to emergency planning. Take, for example, a disaster event at Medalta Potteries. Without a plan, the staff will be focused on evacuating people. Artists will be prepping their studios. The Collection Manager, Site Superintendent, and potential volunteers will be focused on securing the buildings and collections. Each team is focused on their specific responsibilities. If heritage has not been considered before the event, the uncoordinated actions will compound in ways that leave the heritage vulnerable and at risk. I designed the following series of maps to highlight an integrated approach to planning focused on Medalta Potteries. At a landscape level, each factory will require an individual plan like that which I have provided for Medalta Potteries to create the full emergency plan for the entire district. Together, they can be used to conceptualize the complexities of an emergency when *in situ* heritage is embedded within various locations. The *in situ* heritage located in the Medalta Potteries factory is both

moveable and immovable. Both types of heritage will require its own preparedness sequence. The sequence will need to compliment the range of steps that will be required within different departments. These factors will impact disaster planning for this district.

I designed these maps to highlight areas where heritage is at risk. They are community-centered and identify areas of use. In this dissertation, the following maps only illustrate resources found in the Medalta Potteries site but can be repeated for each factory in the District. Medalta Potteries has been colorized by identified community use and can be compared to the above descriptions of community value within flood risk according to previous inundation zones. This is intentional to highlight areas most at-risk and would benefit from preparedness planning to safeguard historic and established community value. All entrances/exits, utilities, safety equipment and water shut-down valves were recorded on-site in 2018. These maps are further informed by the contextually appropriate heritage profile presented earlier through the lens of historic value, accessibility, and resources within and can be correlated to ranges of flood risk. This facilitates vulnerability assessment and can be linked to the Statement of Significance which informs the site's character-defining elements. Areas containing moveable or immovable heritage have been labelled distinctly. These maps can be organized and used to complement an organization's emergency plan. Evacuation routes can then be added to these maps for site specific planning when an emergency is called. These maps are the baseline of developing emergency response plans. It is recommended to print these maps at large scale during planning so a risk committee can interact with them and make notes directly on the maps to inform official planning documents.

Cultural Map: Areas of Use (Attach Section 6.1.1)
Moveable and Immoveable Heritage Resources located in Areas of Use

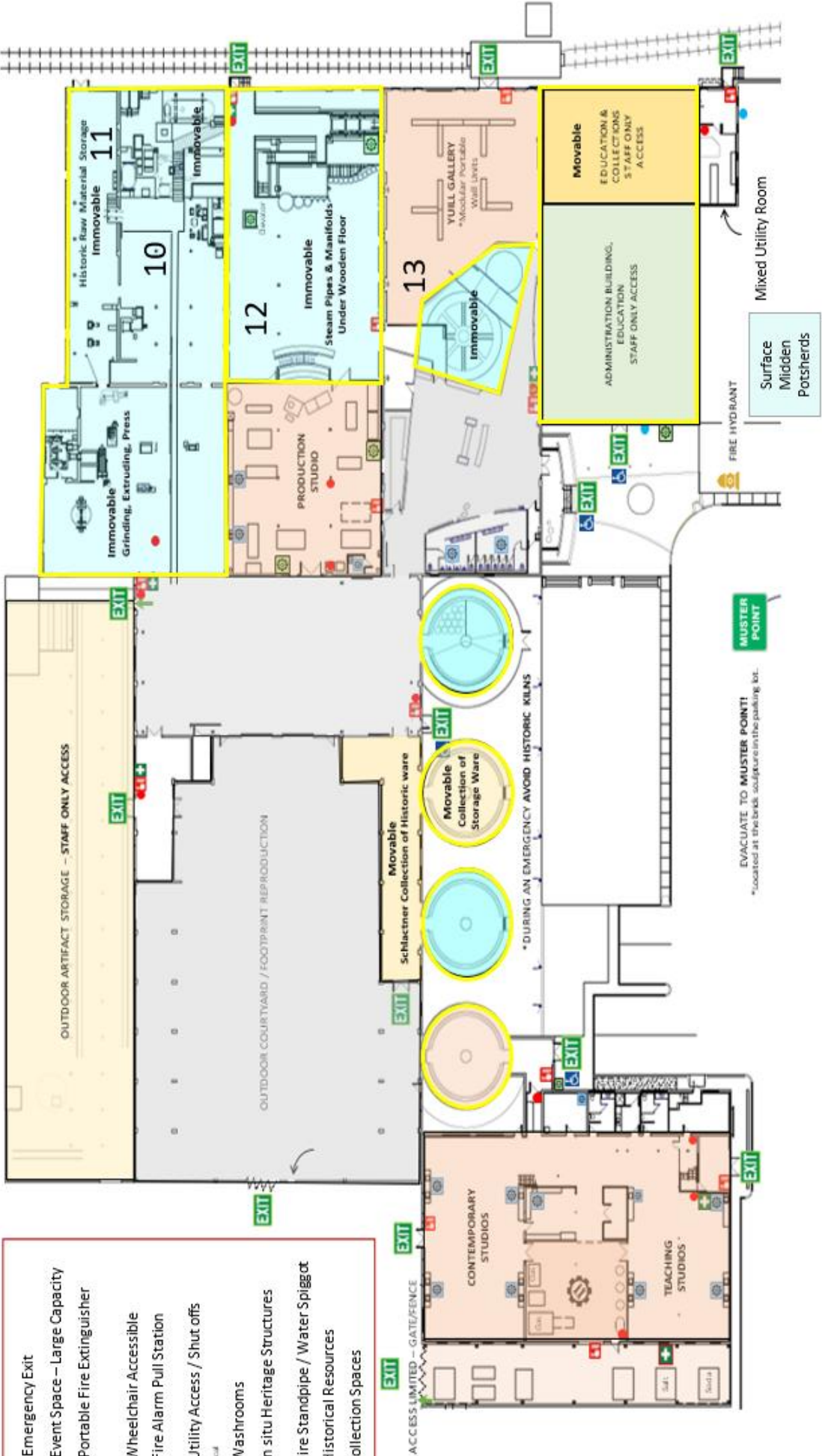
Medalta Potteries Site

SHAW CENTRE AND MEDALTA POTTERIES NATIONAL HISTORIC SITE



LEGEND

	Emergency/Exit
	Event Space – Large Capacity
	Portable Fire Extinguisher
	Wheelchair Accessible
	Fire Alarm Pull Station
	Utility Access / Shut offs
	Washrooms
	In situ Heritage Structures
	Fire Standpipe / Water Spigot
	Historical Resources
	Collection Spaces



- Interior Immoveable Heritage:
- Four exterior standing Circular “Beehive” Kilns
 - CPR Spur line, South Exterior
 - Subterranean footprints of additional structures like the Stable
 - Building 10, one contains an intact wooden paddle mixer
 - Gravity fed mixing and storage features in Natural Gas piping, South end of Building 10
 - Saggur Press, north end of Building 10
 - Transfer Tracks, Building 10
 - Machinery, Building 10
 - Bucket Conveyor and Drive Shaft systems, Building 11
 - Brick Cross walls in Building 12
 - Manifolds and Steam System, Building 12
 - Machinery, Building 12
 - Kiln Exhibit, *in situ*, Building 13
 - Chimney Foundation, Building 13
- Exterior Immoveable Heritage:
- Subterranean footprints of a previously established “horse stable” building
 - Middens connected to the former railway front to the four “beehive” kilns, west exterior
 - Surface middens, west exterior
 - Subterranean waster pits containing pottery sherds, brick, and other by-products of plants operations
 - Subterranean pipes, airducts, and machine pits

Figure 7-4. Cultural map: Areas of Use, Medalta Potteries, Medicine Hat. This map is an example of how a single site within a district can be conceptualized to show areas of use. It has been labeled and areas where this is moveable an immovable heritage are identified. It can be further assigned evacuation routes and used to design preparedness plans. Light orange areas, creative spaces, teaching/learning. Grey areas, event spaces. Teal, historic & used in the museum’s interpretive programs. They can be inventoried, and a removal / preparedness plan can be correlated to contemporary use and evacuation routes. Green, Collections. Yellow, administrative. (Map modified by Jacobson 2022; Base Map: Simpson and Roberts 2014) (See Appendix 4 for full attribution and copyright licensing information).

Although there are challenges within risk perception, when vulnerability is unknown, risk will hinder mitigation measures. The purpose of the exercise above is to illustrate features that must be considered during plan development. Conceptually, these maps reveal previous impact that are still at risk because the factory, itself, has not changed. How it is used is clearly defined and tied to the value of the heritage as a place. It cannot be understated, the importance of assessing risk to heritage early, specifically as it relates to the tangible and intangible heritage at-risk. It is complicated by intensities of emergencies, people, evacuation routes, tasks, and limited time. We cannot always control what happens to an entire collection of structures on a landscape, but we can influence how heritage is managed at smaller scales. Through a record of heritage vulnerability, including a list of critical *in situ* heritage, they become important tools. Through the addition of adequate preventative interventions and preparedness planning, vulnerabilities can be identified before, preventative measures applied, and systems of response can be designed in ways that minimizes risk to heritage managers, while increasing the resiliency of the heritage. When they are repeated for all the sites in a District within expected ranges of risk, we can focus on people impacted by the recovery or loss of heritage.

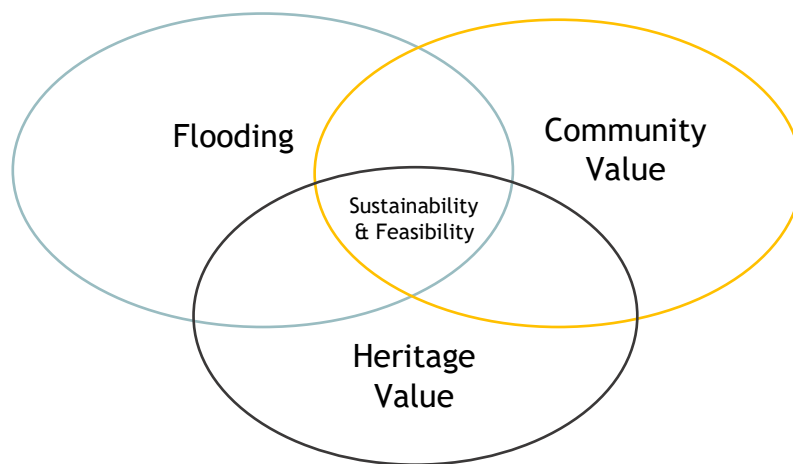


Figure 7-6: Heritage Vulnerability Assessment

Even though vulnerability and resiliency are central to disaster management, you cannot manage what you cannot measure. Risk reduction is a process requiring effort by various stakeholders, practiced, and driven by a vision and mission focused on preserving heritage. The challenges that communities face determining risk and devising a plan, can be mitigated, in part, through a well-crafted vision or mission statement. Industrial districts are complicated landscapes. They are bound to a series of conversation priorities. To ensure that a risk assessment is successful, heritage managers must consider all parts of an organization. Their assessments must include information such as, regulation, histories, and a wide-eyed acknowledgment that disasters *will* happen.

7.4 Value as an Indicator of Prioritization, Balancing the Values

As I recommend here, mission statements that capture objectives of long-range goals can be used to drive a strategic plan focused on the protection of industrial heritage. Strategic plans are key risk management tools to distill priorities and build capacity to protect heritage and ensure it as a goal and activity of use. Mission statements drive cultural identity which instigate the reason for a site's establishment as a not-for-profit. Values should be considered goals which have been conceptualized. Value of heritage must be understood as well as how it is used, the management of risk to it, and the approaches used to minimize negative impacts (Parks Canada 2010; Municipal Heritage Partnership Program 2010a). Hubbards (2009:202) outlined "three key improvements to enhance risk management: adopt a language and philosophy of modelling uncertain systems, be a scientist, and build the community, as well as the organization." I would add to this, that effective risk management processes must include a defined strategic plan with well established long-term goals. These must include a disaster plan with a clear series of maps that are reflective of a site's use, vision, and mission.

I have noticed that language and values used to create an organization's culture can impact the emphasis on protection. I adhere to the idea that risk must reflect a "language of probabilities and that means getting rid of the risk analysis methods that do not speak that

language” (Hubbard 2009:202). Probabilistic modeling methods emphasize what is necessary as opposed to all of the other methods, regardless of the investment that has been made previously (Hubbards 2009). Language used to frame an organization, models the vision of an organization and its environment. A well-crafted mission statement communicates in ways that guides behavior toward a vision which ultimately expresses the use of heritage. One of the most effective tools available to heritage managers is an organization’s vision. Value can then be used as a unit of measurement that reflects both currency and action toward that vision.

To be clear, articulated statements of mission and values do not, in and of themselves, ensure best practice. To be effective, they must enmesh with a series of steps and actions. In the case of running a community-focused organization, those who manage the organization are responsible for all assets and must take an all-hazards approach. While this dissertation, presents a story of flooding, the studies and plans used to understand value have elucidated the imbalance between the value of heritage and how it is used by the community and included in emergency planning for the district. This research seeks to demonstrate that by framing an understanding of heritage and cultural value, the goals of the past can interweave with the goals of the present in ways that acknowledge the impact on heritage. As I have argued throughout, stakeholders may not always agree. Medalta’s message that it is “better to preserve than repair, better to repair than restore, and better to restore than reconstruct” is one to which we should all adhere (Bailey Consulting Services 1978[1981]).

The value of the heritage today builds from the foundation established through the materiality of the heritage, its kilns, and the space the heritage provides to the community. What this story is missing is a plan to achieve the protection of the heritage via a plan for disasters. Risk reduction works most effectively when multiple stakeholders participate in the process of plan development. This research has benefited from the direct involvement with and by the community through the recovery project: disaster planning *is* a community-value driven exercise. Conservation standards offer best practices and articulate the complexities of protecting heritage with the engagement of stakeholders in conversations aimed at defining

what heritage value means to them. Value is an indicator that defines priority. Therefore, the value of heritage must be included in disaster planning. Sociocultural values may change through time but, at any point in time, they can be used to create balance between use and conservation.

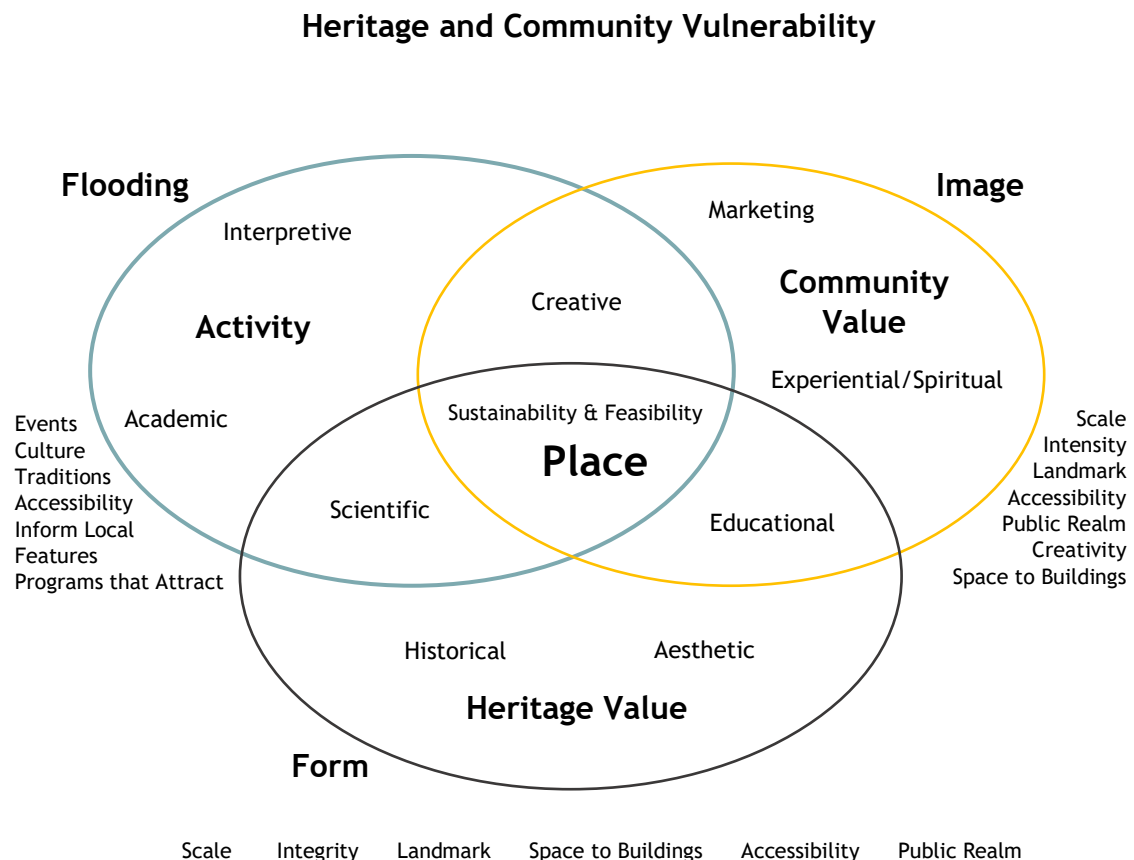


Figure 7-7: Heritage and Community Profile.

Not all standing heritage is critical to maintaining the significance of a heritage site. Managers must identify what structures are most essential to maintaining a site's heritage value and ensure that, during an intense event, it is this heritage that is prioritized for protection. To create meaningful recovery procedures, it is important that there is a clear understanding of what heritage is essential and vulnerable *before* an event occurs. Not only

does this allow communities to direct their actions, but it allows them to ensure that the most pivotal structures are maintained so that they can be salvageable and prioritized for disaster recovery. This ensures opportunities for resources to be allocated to the most significant features or structures and that resources will not go to less significant or redundant heritage which, if lost, will not negatively impact the site's significance.

Whether industrial infrastructure has been reused as a museum, restaurant, an entire historic conservation district, or as a singular cultural heritage site, industrial heritage communicates more than a long-told story of its rise through capitalism. Such heritage echoes the ongoing story of its reinvention through the development of new, viable business spaces, unique residential suites, or community centers driven by a sense of social purpose without interpretations "implied [through] smokestacks" (Bookspan 2000:8). Industrial heritage has become popular in sustainable development circles because of how its use can help balance competing ideas within projects, not only because of its existence within a landscape, but how it can be used to include the social, natural, and the economic needs of a community (Chan 2011; Clark 2014a; Loures 2008; Othman and Heba 2018).

7.5 Putting it all together, Business Continuity

This study has proven that we inherit where heritage sits within a hazard-prone environment. Through the case of the industrial heritage in Medicine Hat, I have shown that the key to identifying priorities is to establish a baseline of understanding value. I argued that industrial heritage has been preserved because of the role that the heritage plays as an authentic record for designation. I recommend that a project management approach be considered when defining the boundaries and scope of heritage in a site. This includes a detailed assessment of the hazard vulnerability. The heritage will inform the type of analysis, and the understanding of how significance can change through heritage damaged or lost, will point to the reasons to protect. It will require managers to not only create inventories, but also

to develop a disaster management plan. This plan should be based within the current and evolving understandings of risk management and heritage.

The complexities of risk, heritage, and the communication of value, explain why communities frequently struggle to create emergency or disaster plans. It also explains why there are so few tools or methods available. As I outlined earlier, there are a suite of tools available that could help communities identify, map, and prioritize heritage through its inherent vulnerabilities. However, the process, although relatively straightforward, benefits from a classification system, a research strategy, and a list of materials (the critical heritage inventory). Whether a risk is being assessed through a single hazard or within an all-hazards approach, a community must know how to develop research, become informed, and build strategies. These efforts build capacity and protect the reasons for preservation.

Developing a risk management approach for complicated heritage landscapes requires an understanding of what drives the use of heritage. In the case of the Historic Clay District, the “big picture” was framed through the organization’s vision and mission and related to sustainability, feasibility/cost, and the use of heritage. Values are indicators of areas of potential impact, specifically as they relate to recovery. If we consider that recovery programs create a series of challenges that can disrupt an entire business operation, we then narrow the gaps of its use. In this study, I identified a set of socio-cultural values that inform the use of the heritage and place. These values also indicate the contemporary community’s perception of value. When we place these factors into a range of risk, we see what programs will be impacted.

This is a community-focused study. I have sought to understand what challenges communities are facing when trying to develop a disaster plan. I conducted a vulnerability assessment that resulted in the development of two tools: a heritage vulnerability profile, and emergency maps to facilitate emergency planning. They were informed by the history of disasters and the flood projection model. Because this community is challenged by the presence of a substantial heritage inventory, I developed a classification system to organize the

heritage that can be placed into an emergency planning document to prepare for an emergency. Communities drive preservation. I have learned that prioritizing heritage in a district is no small task. It is complicated by its historical value and recorded heritage value. Designation offers only a starting point.

Assessing the vulnerability of heritage requires us to consider all the burdens imposed by a site's history within the parameters of regulation and conservation standards. Creating resilient heritage is not only about protecting its history, but also about encouraging it to adapt to change as circumstances change around it. Resilient heritage protects all cumulative and invested effort from those who have devoted themselves to the process of designation, ongoing care, maintenance, restoration, and conservation efforts, as well as from the specialists and those who provide support through funding, administration, and documentation. Studying the inherent nature of heritage and its resiliency ensures that changes are recognized, people's identity is protected, and plans can reflect heritage value shifts (Garcia 2016; Loulanski 2006 Redmond 2005; Stanton-Geddes and Soz 2017; Redmond 2005:72).

7.6 Summary

Niinimaa, a “one-time textile conservator for Calgary’s *Glenbow Museum*” who spoke with Patrick White, from the *Globe and Mail* after the 2013 flood, communicated the disconnect between heritage and risk (White 2014). While she was trying to manage the pace of the recovery against the inventory of heritage, she spoke about the struggle she was experiencing in locating adequate methodologies. Niinimaa shared that the required information was challenging to find, stating, “as far as I can tell, this is new ground, to have so many museum items so wet and dirty. They don’t teach this in school” (White 2014). How heritage is integrated within preparedness strategies is as much a quality-of-life issue as it is an economic one. Many communities around North America have repurposed industrial heritage as centers engaged in broadening community spirit, attracting creative professionals who repurpose the heritage through artist-led regeneration projects and businesses (Thorpe 2006).

I have demonstrated the necessity of identifying resources most symbolic of a site's historic use as documented in its Statement of Significance while ensuring that the heritage reflects the carrying capacity of a community in a way that minimizes their efforts but not their voice. To do that, there must be a connection made between the values that could be impeding the convergence between risk, heritage conservation, cultural production, and sustainable operations. I have illustrated that the value of the heritage in the district echoes through the community's spirit, which flows into an understanding of risk. This defines the tools to be harnessed to frame, assess, and reduce risk. It is the exposure to risk that creates a vulnerability and is the first challenge in planning for heritage at-risk. Exposure, like heritage, is guided by value. Whether through heritage, community or through the business of heritage, the first and most important tool is a *vision*, designed to protect heritage, and must be used as the guiding force for an entire organization. Because this district is supported through the programming, heritage is framed and valued through its community.

Industry has had a powerful impact on the Canadian west. In the case of Medicine Hat's historic brick factories, they have been around longer than Alberta has been a province. Medicine Hat Brick and Tile Company site began as the first brick manufacturing site in the future province, when parts of the community of Medicine Hat were still occupying tents as primary shelter. The soft-mud brick produced at this site was used to create the earliest architecture in the prairies. Its fabric is filled with the spirit and sweat of those who created the bricks themselves that remain today: testament to their values of hard work, creativity, and knowledge of their environment.

8 Safeguarding the Cathedrals of the Working Class

“I thought we’d be back at work the next day,” said Irene Kerr eleven days after a State of Emergency for flooding was called and the area around the Museum of Highwood had to be evacuated. “We had no idea what was going on,” she said. “People were angry. I was thinking of our collection, but nobody would give us an exception. We were told in essence that it was a police state.”

-Irene Kerr, Director and Curator of the Museum of Highwood in High River, Alberta (White 2014).

Disasters are a matter of public record. The record they create preserves what actions were taken and what actions were not. Whether directly or indirectly, a vast number of heritage sites will be changed in some way through disaster and while we live in this reality, we will see the consequences of climate change throughout the record. “All too often heritage management is concerned with the effects of disasters on sites and historic places once the disaster has happened” (Spennemann 2007:771). Although our climate emergency has become a critical issue for communities throughout the globe, we still have an opportunity to share and learn from sites like the Historic Clay District to improve the methods of risk assessment, prevention, and preparedness planning for heritage at-risk for communities tasked with creating disaster management plans. “Although emergency powers and special measures are needed when disaster strikes, the requirements and exigencies are predictable enough to be planned for. Indeed, disaster planning is both eminently possible and an obligation of the civil authorities responsible for the safety of workers. . .and members of the public”, it is challenged by the presence of heritage (Alexander 2002:ix).

Emergency and disaster management is a practical framework and there are no theories that underlie these processes that can identify all vulnerabilities within a community. It must be recognized that emergency management is a process whereby philosophies can be connected and used to filter the risks and benefits of preparing heritage within the framework designed to preserve it. Without disaster planning that considers prevention and preparedness strategies, the scholarship has warned, time and again, that we can only speculate how a hazard could impact the presence of cultural heritage when it is unprepared. In our moment of

climate crisis, cultural heritage sites and historic districts are currently excluded from broader scopes of emergency management planning (Taboroff 2000). The use of industrial heritage within community redevelopment has been a highly successful initiative. The business of heritage has not only created beautiful places to live, but it has significantly contributed to the science of sustainability and conservation. Industrial heritage sites contribute to a community's economic development and pushes the boundaries of social well-being by creating opportunities for people to express their own creativity.

There has been a call to action by UNESCO, ICOMOS, and various other regional organizations, like the Alberta Museum Association and Parks Canada (Luciani and Del Curto 2018; Stovel 1998). Communities have been asked to take seriously the consequences of climate change on vulnerable heritage. These organizations have stressed a need to begin the process of assessing risks so vulnerable heritage can be protected by the damaging effects of environmental hazards. At this point, there are no benchmarks that can be prescribed or used to trigger an intervention because there are few meaningful case studies that communities can use against their inventory of heritage. What this research has shown is that when we apply a multi-dimensional approach to the study of vulnerable heritage, we can identify the vulnerabilities within the complex management structures.

The systems used to legitimize the inclusion of heritage were designed to protect the heritage in a time when the industry may not have been seen as historically significant. These mechanisms were accepted because the alternative was their decay. When we identify the vulnerabilities using archaeological methods and document analysis, we can deconstruct the process of preservation to reveal what heritage is most essential. When we can build tools that can assist communities who will be creating disaster plans, they can identify and prioritize the heritage that is critical to their site's historical value and their community story. When priority can be assigned the heritage that most supports significance it can be considered within protection schemes. When we isolate the values that drive initial preservation, the community can reconnect the values to the programs that support operations and the ongoing conservation

of the heritage. Once we do that, they are in control of how to preserve their heritage and they continue their story of community effort.

When we know what needs the most protection, we can devise ways to minimize vulnerability and lessen the burden of recovery when a warning has been called. Risk management is "a process whereby risk is evaluated to facilitate the introduction of hazard-reducing strategies" (Smith 2013:86). As we increase our understanding of risk and heritage, we can see how heritage secures significance. How heritage is valued can drive the development of preventative interventions. When we know what defines a district's critical heritage infrastructure, we can acknowledge the vulnerabilities connected to the loss of heritage. As I have shown, some risks can be planned for, while others cannot. What we have learned from the scholarship of risk management is that environmental hazards do not create disasters, vulnerabilities do.

Emergency Management is a field within Disaster Planning. It is concerned with understanding the environmental and anthropogenic hazards that pose risk and contribute to vulnerability so that actions can be taken to improve resiliency. Resiliency is created through carefully crafted response and recovery procedures aimed at minimizing damage, reducing loss, and decreasing the traumatizing effects that they can have on people who are in impact zone (Wisner, Blaikie, Cannon, and Davis 2008). "In response to the increasing damage caused by disasters in recent years and the dramatic losses of cultural heritage that often accompany these events, numerous organizations, meetings, and research projects have turned their attention to the specific aspects of prevention and risk preparedness" (Will and Meier 2008:10). "They have created documents that reveal a survey of regulations, tools, programs and practical examples, alongside a series of recommendations for the protection of cultural heritage during natural disasters" (Will and Meier 2008). ICCROM has created a management manual specifically addressing risk preparedness for World Cultural Heritage, and several organizations like UNESCO and ICOMOS have participated in the development of an

international “Inter-Agency Task Force” for Risk Preparedness for Cultural Heritage (Will and Meier 2008:11). This program led to the formation of the Blue Shield in 1996 (Ibid).

There has been a lengthy conversation in heritage resulting in a series of reports and surveys that frame the importance of disaster management. They also explain why risk reduction is a crucial necessity and offer tools to help a community prepare a disaster plan. But these, like many others, are top-down approaches that do not consider the business of heritage within community development, nor recognize the people who might make up the risk committee. The people who staff and volunteer at Medalta in the Historic Clay District are artists, seniors, clay technicians, and volunteers. Most are acutely aware of the heritage’s values but are unskilled in the identification of vulnerable heritage and the business that forms around the heritage. Industrial heritage districts, like the Historic Clay District, literally exhibit or preserve extensive inventories of heritage resources. On any given day, there could be fourteen people on site. When faced with disaster, there is little additional help available. Defining risk through the lens of conservation within the broader concepts of community, businesses, and land-use strategies is a complicating process when the philosophy of preserving heritage is not the focus of conservation or the realization of the economic value.

Risk reduction planning in a community-run heritage district is a problem because of concern for liability connected to the business that forms around the heritage, the physical remains of heritage, how it exists within community development schemes, and the priority between use and conservation. When the stakeholders are the only line of defence, there is a reliance on the specialists, but because there is no mandate to place certain specialities within in the system of the site’s overall operational function, protection is disjointed. The challenge of emergency management is really a challenge of crisis management and if communities are being asked to prepare their heritage inventories, reliable systems need to develop with the intention to build capacity within the teams of people who are handling the complexity of the task. The business of heritage has made a case for the protection of the heritage and when the business of heritage is in the lead, their specialty is the retail experience of heritage, and its

role is secondary to an experience. But, contrary to popular belief, this issue is more of a management and leadership issue facilitated by the business of heritage. When we asked communities to become engaged within the process of heritage management, we did not include them in the process of learning. The actual fracture is in the system, designed with good intention to protect heritage in collaboration with government support. If we expect communities to do the work of disaster planning, they require bottom-up approaches that complement top-down efforts. Communities need to understand that protection isn't just having things but keeping them from being taken away from the unexpected. When we do that, we foster adaptation and action, not just expectation. At-risk heritage is hinged to the business of heritage. How heritage contributes to contemporary development requires methods that drive conceivable not probable solutions.

It doesn't matter if heritage or community are being assessed for vulnerabilities, the process is methodical. It starts with one question. What do you want the future to look like? Assessing the value and vulnerabilities of heritage has been approached in various ways. In a historical landscape, risk assessment requires more than just locating heritage on a landscape. It requires understanding all the risks to heritage and devising ways to minimize vulnerabilities. Scholarship has pointed out that planning and the problems that arise during the process do not stem from the difficulty of the task but from confusion about how to do it. And, in a world that cannot predict how climate change could alter our world, the challenge of planning is connected to uncertainty. But, when it comes to considering the protection of the Historic Clay District, uncertainty **cannot be a reason** for not creating a disaster plan when there is a long history of flooding, a detailed recovery that took **many years** to accomplish, and **a record of** costs associated totalling C\$4,000,000 dollars. When a community agrees to conserve heritage at the capacity that exists in the Historic Clay District, there is an agreement between those who started the process with those who agreed to **continue** those efforts that would need to be taken to preserve the heritage. To help them do that, we can quantify uncertainty through vulnerability assessments and focus on the actions to provide ways to make the tasks easier

that respect best practices but moves beyond toward improved **practice**. As we move forward in a world that will be challenged by climate change, how we manage heritage will need to be more inclusive even when they might challenge issues of legacy or loyalty. Building resilient heritage requires an understanding of what is precious, valuable, and central to a site's significance. It also requires an understanding of the community and a site's organizational identity and capacity. The vulnerabilities connected to heritage is not only found in its materiality, location, age, and condition. The vulnerability of heritage is the community, the business of heritage, and the language used to drive the mission and the vision of an organization. When the mission does not align with the vision it can create conflict and uncertainty on what actions need to be taken.

There are pressures associated with preserving heritage through the standards, guidelines, and conservation priorities outlined by museum associations or conservation institutes. Although well meaning, they have been designed to preserve the integrity of heritage, not the business of heritage or the people who are the stakeholders. This reality is challenging to reconcile, because it is communities who are required to prioritize risks from the list of environmental hazards and agents of deterioration in ways that are minimally invasive with an intention to do no harm. The challenges that cultural heritage districts pose within the realm of emergency management is found at the core of site development. I can only believe that it was unintentional, because to be the kind of person who does not fear the process of resurrecting industrial heritage into the mainstream requires a certain kind of enthusiasm that does not shy from liability. But, when it happens and it has been transformed into something beyond imagination and you only provide a veil of protection, liability must be removed from those who did exactly what could not be done. It must be recognized that designation does not promise protection in a disaster, this could undermine the reasons for the designation, and endangers the good work that has been done by dozens of people through time. Managing risk requires an understanding of change. If something is not working, then it needs to change. In this case, a small shift in how we perceive the benefits of heritage within community planning

and development, including the business of heritage, could create an opportunity to study the mechanisms that bind to protection as a risk reducing strategy in and of itself. When we do that, we head in the direction where history takes us.

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Appendix 1: Industries in Operation, under Construction, and Approved for Development in Medicine Hat, 1913

Table 1: Industries Established and in Operation in the City of Medicine Hat, 1913 (Industrial Bureau of the Board of Trade 1913: 63)(Jacobson 2013).

Industry	Amount Invested.	No. of Employees.	App. Ann. Payroll.
Alberta Bedding Co.	30,000	40	40,000
Alberta Clay Products	500,000	200	150,000
Alberta Iron Rolling Mills Co.	150,000	90	125,000
Alberta Foundry and Machine Co.	60,000	40	25,000
Alberta Linseed Oil Mills	50,000	20	20,000
Alberta Steel Products Co.	15,000	25	25,000
Preston Planing Mills	50,000	50	50,000
Medicine Hat Brick Co.	250,000	100	100,000
Rosery Flower Co.	50,000	10	10,000
Industrial Iron Works	40,000	15	18,000
Gas City Planing Mills Co.	20,000	15	18,000
Alberta Bottling and Extract Co.	10,000	10	10,000
International Supply Co.	25,000	10	10,000
Medicine Hat Milling Co.	200,000	25	30,000
Kaiser Cigar Co.	10,000	10	10,000
Medicine Hat Coal Co.	300,000	25	27,000
Medicine Hat Steam Laundry	30,000	20	15,000
Medicine Hat Pottery Co.	150,000	65	60,000
Ogilvie Flour Mills	1,000,000	175	200,000
Canadian Pacific Railway	—	650	1,250,000
Other Small Industries	—	100	100,000

Total n = 21

Table 2: Industries in Construction in the City of Medicine Hat, 1913

(Industrial Bureau of the Board of Trade 1913: 63)(Jacobson 2013).

Industry	Expected Investment.	No. of Employees.	App. Ann. Payroll.
Alberta Glass and Bottle Co.	85,000	50	50,000
Medicine Hat Crayon Co.	75,000	50	40,000
Medicine Hat Pump and Brass Mfg. Co.	50,000	50	50,000
Medicine Hat Concrete Products Co.	25,000	20	20,000

Total n = 4

Table 3: Industries with Approval to Build in the City of Medicine Hat, 1913

(Industrial Bureau of the Board of Trade 1913: 63)(Jacobson 2013).

Industry	Expected Investment.	No. of Employees.	App. Ann. Payroll.
Maple Leaf Milling Co.	800,000	150	140,000
Manitoba and Ontario Mills	800,000	150	140,000
Canada Cement Co.	1,000,000	250	200,000
Medicine Hat Steel Co.	250,000	50	70,000
Alta.-Sask. Paper and Strawb'd Prod. Co.	150,000	75	75,000
Hunt Cement Plant	1,000,000	250	200,000
Medicine Hat Radiator Co.	100,000	60	350,000
Gt. West. Iron, Wood and Chemical Wks.	1,000,000	300	350,000
Saskatchewan Bridge and Iron Co.	100,000	150	180,000

Total n = 9

Appendix 2: Canadian Standards and Guidelines

Standards for the Conservation of Historic Places in Canada

GENERAL STANDARDS PRESERVATION (ALL PROJECTS) Pages 21 to 23:

Adapted from <http://www.historicplaces.ca/media/18072/81468-parks-s+g-eng-web2.pdf>

1. Conserve the heritage value of a historic place. Do not remove, replace, or substantially alter its intact or repairable, character-defining elements. Do not move part of an historic place if its current location is a character defining element.
2. Conserve changes to an historic place that over time have become character-defining elements in their own right.
3. Conserve heritage value by adopting an approach calling for minimal intervention.
4. Recognize each historic place as a physical record of its time, place, and use. Do not create a false sense of historical development by adding elements from other historic places or other properties or by combining features of the same property that never coexisted.
5. Find a use for an historic place that requires minimal or no change to its character-defining elements.
6. Protect and, if necessary, stabilize an historic place until any subsequent intervention is undertaken. Protect and preserve archaeological resources in place. Where there is potential for disturbance of archaeological resources, take mitigation measures to limit damage and loss of information.
7. Evaluate the existing condition of character-defining elements to determine the appropriate intervention needed. Use the gentlest means possible for any intervention. Respect heritage value when undertaking an intervention.
8. Maintain character-defining elements on an ongoing basis. Repair character-defining elements by reinforcing their materials using recognized conservation methods. Replace in kind any extensively deteriorated or missing parts of character-defining elements, where there are surviving prototypes.
9. Make any intervention needed to preserve character-defining elements physically and visually compatible with the historic place, and identifiable upon close inspection. Document any intervention for future reference.

ADDITIONAL STANDARDS RELATING TO REHABILITATION

10. Repair rather than replace character-defining elements. Where character-defining elements are too severely deteriorated to repair, and where sufficient physical evidence exists, replace them with new elements that match the forms, materials, and detailing of sound versions of the same elements. Where there is insufficient physical evidence, make the form, material and detailing of the new elements compatible with the character of the historic place.
11. Conserve the heritage value and character-defining elements when creating any new additions to an historic place or any related new construction. Make the new work physically and visually compatible with, subordinate to and distinguishable from the historic place.

12. Create any new additions or related new construction so that the essential form and integrity of a historic place will not be impaired if the new work is removed in the future.

ADDITIONAL STANDARDS RELATING TO RESTORATION

13. Repair rather than replace character-defining elements from the restoration period. Where character-defining elements are too severely deteriorated to repair and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements.

14. Replace missing features from the restoration period with new features whose forms, materials, and detailing are based on sufficient physical documentary and/or oral evidence.

Appendix 3: Response and Recovery in the Historic Clay District

Impact assessment and field reconnaissance

The goal of the 2013 flood recovery program was to conduct a visual survey of the Historic Clay District, identify the heritage impacted, assess, and document the damages that occurred. The field studies' objective was to conduct a systematic survey to search for and evaluate the range of damage and provide the most comprehensive information required to assign appropriate recovery management strategies to decontaminate and stabilize the heritage or archaeological remains. These actions were followed by a detailed background study of the damages identified to propose a series of interventions reflective of damage and acceptable within Canada's *Standards and Guidelines* (Parks Canada, 2010). A review of previously documented programs was conducted to consider the long-term effects of interventions on heritage. This process was challenging because there were very few studies identified. Two sources found warn that hasty decision-making could create additional irreversible damage to heritage and communicated that clean-up must proceed with caution when designing recovery programs.

Step 1: Phase One: Impact Assessment

The objective of the impact assessment was to determine how heritage was impacted through a walking survey. The Medicine Hat Brick and Tile Co., Medalta Potteries, National Porcelain, Hycroft China, and the Alberta Clay Product site was inspected. Details recovered during this process were documented in field notes, sketches, and photographs. A hand-held Global Positioning System (GPS) unit was used to record UTM coordinates within the study area. All coordinates were recorded using UTM projection with NAD 83 as the datum. Any archaeological resources encountered during the survey were evaluated, documented, and left *in situ* until the sites were decontaminated and dehumidified.

During the survey, I was watchful for historical debris within each building, level of saturation, and types of damages resulting from flooding. I walked the spur line to Seven Person's Creek and surveyed the railbed for damages. Any heritage located above grade was inspected to delineate any areas of high archaeological potential that might have been exposed. I inspected heritage for scouring, loss of form, and any deformation resulting from water moving in and out of areas. While identifying and documenting damages, I searched for any evidence on the ground surface that could indicate any damages to the subsurface environment that could threaten buried archaeological resources.

All heritage that was damaged was recorded based on its orientation to each factory. Any heritage identified as impacted was photographed and documented. A total area of 39,452 sq. ft. of historical and archaeological resources were flagged for damage. Damages ranged from minor to severely impacted, requiring rehabilitation. The Medalta Potteries Site, specifically Bldgs. 10, 11, 12, 13, and its exterior kilns experienced damage. The Medicine Hat Brick and Tile Site, its interior tunnel kilns, dryers, and its exterior kilns required documentation, inventory removal, cataloguing, and decontamination. The National Porcelain site, although directly impacted, is an undesignated empty building used for storage, only requiring a thorough cleaning. A large midden of waste sherds of historical industrial products and debris was contaminated, requiring decontamination. A historic loading dock outside the Medalta Potteries site was also damaged, requiring rehabilitation. The midden and loading dock were not flagged for immediate interventions because of the range of damages to the interior spaces inside the Medalta site.

The impact assessment was primarily concerned with a range of damages, the movement of structural features or artifacts, and the level of contamination. Because many of the damaged archaeological remains were found inside exhibits, there were challenges accessing the heritage by recovery teams. The use of glass barriers and a cantilevered walkway with a glass insert is designed only for visitors. They offer various unobstructed sightlines, suspend viewers over an archaeological site, and enhance a sense of wonder. They can create

challenges to recovery planning because of who must enter a space and the kinds of materials that may be needed to recover the heritage. If people cannot move safely around heritage, people pose an additional risk to the heritage from tripping or falling. This assessment also identified how heritage was accessed and gauged the level of difficulty imposed by those who may need to move through contaminated spaces. The difficulty was further enhanced by the types of archaeological remains found within an exhibit, their construction, age, and condition. All archaeological exhibits were constructed with the viewer in mind, not people who may need to enter a site with tools, machines, or materials. Obstacles were identified, and challenges accessing sites were reflected in the interventions chosen, the types of equipment employed, tools required, materials, and workforce needed to apply interventions.

Although time-consuming, the initial phase allowed heritage specialists to identify affected archaeological and historical remains, and any safety issues connected to the structures or features to gather all necessary data to create an action plan. The impact assessment created the understanding of the extent of damage while highlighting the recovery procedures and the challenges that the recovery team could face. Recovery procedures can potentially create an additional risk to heritage during the assessment phase designed to identify the range of impact, future vulnerabilities, and the recovery of the heritage or archaeological resources within the scope of long-term preservation within a site's continued use. Some areas could not thoroughly be examined until certain features within spaces were stabilized through dehumidification, especially in areas where the historical features were indicative of the room's historical use.

Step 2: Phase Two: Historical Resources Condition Assessment and Documentation

Immediately after the impact assessment, a condition assessment was conducted to record the damages in detail, research a variety of interventions, and build recovery procedures reflective of the damages while respecting conservation principles and objectives. Recovery

processes considered the types of tools needed, workforce, materials, and what safety parameters would need to be in place during projects. All heritage and archaeological remains identified during the impact assessment were further diagnostically assessed, tested for bacterial contamination, and underwent dehumidification during meetings with specialists and project design. This phase was comprised of the following steps:

a) Before clean-up, affected archaeological remains and historic structures were examined. Damages were recorded through detailed descriptions, measured drawings, documented through photographs and field notes.

b) Agents of deterioration that could cause additional threats to resources related to the aftereffects of the flood were identified. They were:

- humidity
- pollutants (chemical, surface, and airborne)
- dust
- movement, damage, or erosion
- debris
- insect and rodent infestation
- accessibility by staff and restoration personnel

c) Resources requiring stabilization were determined, described, and the necessary intervention was outlined, monitored, studied, and documented.

d) Potential long-term issues such as rising dampness or changes in humidity caused by exposure to floodwater was identified.

Step 3: Phase Three: Conservation Strategy Decontamination, Inventory & Stabilization Program

Solutions for a long-term preservation plan were initiated based on the condition of remains determined in Phase Two. Each structure was prioritized and managed due to its sensitivity to seasonal change. Due to the archaeological sensitivity of specific historic structures, Phase Three included the development of a series of maps that recorded any artifacts or structural remains identified as sensitive, susceptible to future changes, or requiring capping to protect them from additional damage caused by exposure, gravity, future water events, infestation, or human interaction. This phase produced an extensive record and included maps, profiles, plan views, field notes, and photographs. Phase Three was comprised of the following steps:

- a) Installed temporary shoring: for personnel safety and to decrease damage to the historical materials.
- b) Assessed stabilization options: in consultation with qualified structural engineers and contractors.
- c) Interventions: structures were dried, cleaned, stabilized, or repaired to protect against future damage, using the following strategy:
 - Removed mud, water, and any flood-soaked wallboard or insulation.
 - Initiated a drying-out cycle consistent with the archaeological remains and historic structures, including plaster and wood, using a gradual natural ventilation process in selected spaces and generator-powered fans where necessary. Mechanical dehumidification or heating equipment, which may cause additional damage or even fires, was not used. Instead, small mobile units were placed strategically.
 - Removed mold once the building structure or archaeological remains were dry, requiring a manual excavation of contaminated parent material as the site was not designed for larger scale mechanical equipment such as rubber-tired excavators, conveyors, or small skid steers.
 - Removed material on, around, and within structures and archaeological remains using vacuums with contained bags and HEPA filters to minimize the impact on the people visiting the space, as the site maintained daily operating schedules.
 - Mold was removed manually in sensitive areas (after decontamination of mold spores) using organic brushes, trowels, sand, and buckets. When necessary, materials were disinfected.
 - Sensitive archaeological remains were managed in consultation with the Provincial Conservator.
 - Ozone and non-destructive methods of decontamination were used on the remains according to their materiality. Areas of high sensitivity and exposure were tested to ensure contaminants were no longer present on the remains after procedure commenced.
 - Loose, fractured, and dislodged artifacts, structures, or remains were cleaned, assessed, and put back into their original locations. All artifacts were inventoried. Those not placed back into the exhibits were relocated into storage, accessed, bagged, inventoried, documented, and recorded in a digital catalogue.
 - Recommendations were offered to enhance preservation of heritage that could be further affected by gravity or erosion over time.

Step 4: Reconnaissance, Re-evaluation of interventions

Once the recovery program results were completed and compiled, evaluated, and implemented, an archaeological reconnaissance of the study area was undertaken in the summer of 2017. The site was examined to validate interventions applied to archaeological sites, industrial landscape features and to locate any details that may have been missed during the recovery program in interconnected buildings, structures, or features within the Historic Clay District

Appendix 4: Copyright Documentation

The following images found in this document are from the public domain or licensed for reuse under Creative Commons license 3.0. Please see the following:

1. Figure 1-1: “Location of Medicine Hat, Alberta, Canada” contains a screen capture of “Alberta, Canada” sourced from *Google Maps*. 2019. Retrieved from, maps.google.com. November 2019. Image is found on pg. 2.
2. Figure 6-1: The Historic Clay District, otherwise known as the Medicine Hat Clay Industries National Historic Site (Map created using ArcGIS software by ESRI. ArcGIS and ArcMap 2017). Image is found on pg. 123.

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1. Figure 1-2: “The Medalta Potteries site flooding, June 2013.” by Barry Finkelman. This image is located on pg. 5. Permission was granted for use on April 28, 2022.
2. Figure 2-1: Map showing Municipal Boundaries of Alberta (Altalis 2022). Altalis. Scale: 1:20 000. (GIS data). Geo-Administrative Areas (GIS Data). Altaalis 2022, Alberta: M. Berry, April 27, 2022. Using ArcMap Version 10.8. Redlands, CA: Environmental Systems Research Institute. <https://www.altalis.com/map?id=113>, accessed April 27, 2022. Permission was granted for use on May 3, 2022 by Megan Berry. Image located on pg. 14.
3. Figure 2-2: “South Saskatchewan River near Medicine Hat, Cypress County, Alberta, Canada.” Image source: <http://www.stockaerialphotos.com/> This image is located on pg. 16. This image was created on July 31, 2015. Permission was granted for use on March 24, 2022, by Keith Walker from Peak Aerials. Please see the following link that details licencing: <https://www.stockaerialphotos.com/licensing-agreement>
4. Figure 2-3: “Coulee view along the South Saskatchewan River, Medicine Hat, Alberta.” by Robert Colley. This image is located on pg. 19. Permission was granted by Robert Colley for use on April 30, 2022.
5. Figure 3-2: “A Panoramic View of Medicine Hat’s Industrial District” (ca. 1913). Catalogue/Image No. 0525.0115. Image source: Esplanade Arts and Heritage Center, 401 1 St. SE, Medicine Hat, Alberta, T1A 8W2, Canada. Image is considered part of the “Public Domain.” Permission to use verified by Philip Pype (Archivist) on May 3, 2022. It is located on pg. 37.
6. Figure 3-3: “Aerial View of the Historical Resources located within Medicine Hat’s Historic Clay District” (Image source: *Fire the Spirit of Industry Campaign*, Friends of Medalta Society, 2004:12). Permission granted by Mike Onieu, the Executive Director of Medalta in the Historic Clay District and signatory for the Friends of Medalta Society on May 2, 2022. This image is found on page 38.
7. Figure 6-8: “The Medalta Potteries site: Square Footage of Affected Areas and Locations of Historic and Archaeological Resources Impacted by Flooding” (Modified by Jacobson 2016, Base map credit: Simpson and Roberts 2011). Permission granted by Lorne Simpson and signatory for Simpson and Roberts on April 26, 2022. This base map is found on pg. 144 in this dissertation.

8. Figure 6-9: “The Medicine Hat Brick and Tile Co. site: square footage of affected areas and locations of historic and archaeological resources” (Modified by Jacobson 2016: Base map: Simpson and Roberts 2011). Permission granted by Lorne Simpson, signatory for Simpson and Roberts on April 26, 2022. This base map is found on pg.145.

8. Figure 7-1: Kiln foundation located in Medalta’s Reception Gallery (Image Credit: Jacobson 2014). Highlight of this researcher recording damages (Image Credit: Colley 2014). Permission was granted by Robert Colley for use on April 30, 2022. This image is found on pg. 179.

9. Figure 7-4: “Cultural Map based on Areas of Use, Medalta Potteries, Medicine Hat” (Base Map: Simpson and Roberts 2014). Permission granted by Lorne Simpson, signatory for Simpson and Roberts on April 26, 2022. This base map is found on pg.187.

10. Figure 7-5. “Flood Map based on Areas of Use, Medalta Potteries, Medicine Hat” (Base Map: Simpson and Roberts 2014). Permission granted by Lorne Simpson, signatory for Simpson and Roberts on April 26, 2022. This base map is found on pg. 188.

PROSE:

11. “It takes a special kind of imagination to look at the crumbling walls and dust filled factory floors of an abandoned industrial site and not only see something profound but see something worth saving. To imagine a landmark, a hub for artists, a place for community [and] students.

None of these things seemed obvious a few decades ago when the remnants of Medicine Hat Alberta’s once booming clay industry had largely been relegated to history. Of course, everyone loves a happy ending, but people of a certain age will tell you that this could have just as easily been a story of a grand vision that was never realized.

As the last of Medicine Hat’s clay industry gradually became victim to rising costs, imports, and even a few natural disasters, what remained were artifacts, a handful of abandoned factories, and a few people who could see the potential in what had been left behind.”

Spoken by Luke Fandrich, filmmaker, in his documentary titled, “Clay, Creativity, and the Comeback”, released in 2019. The above prose was transcribed from the documentary. Fandrich’s film captures the stories of those who have been involved in the development of the Historic Clay District. Permission was granted by Luke Fandrich on April 29, 2022. This prose is found on pg. 24.

PROSE:

12. “Nothing speaks more of the spirit of industry than the hard work, determination, and industriousness of the people who created Medicine Hat’s vibrant clay industry throughout the early and mid-20th century. Their perseverance produced a major industrial centre that shaped the history of Canadian industry and the economic and social history of Alberta” (“Sharing a Vision” *Fire the Spirit of Industry Campaign* 2004).” Permission granted by Mike Onieu, the Executive Director of Medalta in the Historic Clay District and signatory for the Friends of Medalta Society on May 2, 2022. This prose is found on pg. 32.