THESIS

GREEN CRIME, SPACE, AND PLACE: AN EXAMINATION OF THE ROLE OF ENVIRONMENTAL VICTIMS IN THE TREADMILL OF CRIME

Submitted by

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ABSTRACT

GREEN CRIME, SPACE, AND PLACE: AN EXAMINATION OF ENVIRONMENTAL VICTIMS IN THE TREADMILL OF CRIME

This project uses the concepts of "place" and "space" as defined by the geography field to examine the role of environmental victims in the treadmill of crime theoretical framework. The current roles of environmental victims within the treadmill of crime are primarily complacent actors or environmental activists. This study uses in-depth interviews, critical content analysis, and geospatial mapping to further explore how environmental victims respond to environmental harm as enacted by the treadmill of crime. Through applying space and place to the analysis of environmental victims, we find a more nuanced understanding of environmental victims' responses to environmental harm. Through examining a community's sense of place, we find that the environmental victims' role is more complex than simply abiding with exploitation or pushing against it. In this case, environmental victims employed agency through this manufactured sense of place to accept further extraction in their community.

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CHAPTER 1: INTRODUCTION

The drive across Southern Missouri is beautiful. I drive Eastbound through rolling hills covered in bare white oaks and shortleaf pines, and I am reminded of the hours I spent in these woods as a kid. I resided in the Ozark hills from ages two through twenty-three and I spent weekends running through nooks and trails between the trees, always near a creek or river. An unmistakable sound in the Ozark woods is that of water running, spilling over stones and trickling from fallen trees. This sound is ever-present here, ranging in volume based on the size of the stream. The deeper one treks into the trees, the clearer the stream. In most isolated spots, every pebble and minnow are discernable against the brown riverbed. The quality of the water near Ozark towns tells a different story. Creeks near Springfield, Missouri, one of the Ozarks' largest towns, hold unpleasant items such as plastic water bottles and an off-putting muskiness that is much less inviting than the crystalline creeks of the woods. This was not something we often thought about as kids playing barefoot in the streams. It was the creek, so we played in it. The natural bounty of the Ozarks offered infinite learning possibilities for us rural kids. We learned about the wildlife in the area, such as which snakes we should avoid, and which were friendly. We learned about the surrounding landscape, the caves and tunnels carved into limestone bedrock. We trekked deep into these caves on field trips, including the famous Fantastic Caverns, featuring a jeep tour and educational programs about the history of the area. The history and prevalence of the mining industry in the Ozarks were always mentioned on these trips. These lessons primarily focused on the mining legacy and how this economically shaped the region as we know it today. Little was mentioned about modern-day mining practices or how they physically affected the area (Bonne Terre Mine 2020). Although we constantly played,

floated in, and swam in the rivers and creeks, the effects of the industries that put food on our family and friends' tables rarely crossed our minds.

Today, there are approximately twenty-two government-designated cleanup sites in the Missouri Ozarks. This means that, throughout this natural playground, pollution that is harmful to its residents and the surrounding landscape persists. Centuries of extraction, such as lead mining, distributed toxic substances throughout the region. As humans continue to live and recreate here, these substances significantly affect their health. Most of the social-ecological research centering human responses to pollution highlight *resistance* to those responsible for this, pushing for cleanup and for polluters to be held accountable (Brisman and South 2014). This is not the case in Fredericktown, Missouri, a town in the heart of the Southeast Lead Mining District of the Ozarks.

This study attempts to answer the following questions:

> How have extractive processes shaped Fredericktown residents' experiences and perceptions of environmental victimization? What are some of the crucial factors that contribute to the legitimization of ecological disorganization? And how has that conceptualization shaped their community identity and personal history?

This study uses in-depth, semi-structured interviews, geospatial mapping, and critical content analysis to examine the relationship between a rural community home to several Superfund sites and the extractive processes on which they have historically relied. In this study, Fredericktown residents and those living in the surrounding area are considered environmental victims. These residents were immersed in extractive processes or its resulting waste their entire lives (Environmental Protection Agency 2021). The methods listed above uncovered several findings - most significantly, informants in this study favorably responded to the opening of a Cobalt mine

at the Madison County Mines Superfund site even when past mining operations resulted in extensive pollution and environmental health problems (Environmental Protection Agency 2021). Fredericktown residents do not view themselves as environmental victims and embrace the lead mining legacy of their geographic area. Five major themes were uncovered through this study, aiding in the understanding of this response by area residents – a shaping of the historical perception of Fredericktown residents through mining, a shaping of space and place through the presence of hazardous waste, residents' frustration with the EPA's presence in Fredericktown, a denial of health problems connected to mining, and a positive outlook for a local cobalt remediation process because of their sense of place. This project reveals the importance of investigating rural sites whose exploitation and invisibility to outside attention has been manufactured by state and corporate actors, and the importance of incorporating multitudes of methods to investigate environmental victimization. Mixed methods methodologies such as geospatial mapping and in-depth interviews reveal the hidden processes present in these areas called rural black sites. The themes unearthed through this research relay the ways meanings related to environmental degradation are shaped by extractive processes and environmental harm and the social formation of a "site of acceptance" (Malin 2015) for environmental injustice. This understanding can aid in exploited communities' collective effort to alleviate environmental harm as well as their pursuits of economic stability.

CHAPTER 2: BACKGROUND

In the United States, The Ozarks region spans southern Missouri and expands into northern Arkansas, northeast Oklahoma, and southeast Kansas. Rivers, streams, and forest dominate the hilly landscape (Xu and Chen, 1997). Much like the rest of what is now known as the United States, this land was carved up by European settlers for the purpose of profiting from its natural resources. This led to the prominence of mining as a dominant economic force throughout the Ozarks. Southeast Missouri is one of the greatest producers of lead ore in the world and is coined the Lead Belt for this reason (Allert, Fairchild, DiStefano, Schmitt, Brumbaugh, and Besser 2005).

The first Europeans to enter the Ozarks were, in fact, looking to mine. De Soto and a crew of workers emerged in 1540 on their Mississippi expedition, closely followed by Coronado and in 1715, M. de la Motte Cadillac, all on a search for gold. La Motte Cadillac broke ground in what is now Fredericktown, Missouri, uncovering lead rather gold. This was the creation of Mine La Motte, a lead mine that thrived here for centuries after (Randolph 2017). Randolph writes that legends of buried gold and treasure persisted through the industrial revolution, drawing more settlers from the East to the Ozarks hills (2017).

The industrial revolution affected the Ozarks in a few major ways. By 1900, the Ozarks was home to over 35,000 farms - a 90% increase over the previous twenty years. However, mining remained a prominent industry in the region. Setting a precedent for the domineering mining corporations that ruled the area, the majority of the mining profits were not distributed to working Ozarkians. Instead, industrialists championed themselves as economic saviors and job creators for the working class in the area. The majority of mining profits rose directly to those at

the top, the local elite. These are the origins of the Ozarks' uneven economic landscape (Perkins 2017).

Today, the Ozarks' economy is largely dependent on tourism, due to the abundance of lakes, rivers, and streams in the area. This region is intertwined with the White River Watershed, which shapes the livelihoods of Ozarks residents, as well as their preferred recreational activities. The physical geography of the waterways and karst shaped the Ozarks' culture from the region's early days of settlement. Ozarkians worked with and around the landscape in order to survive. From the very beginning, there was a deep interconnection between people, land, and water in the Ozarks (Morrow 2011). These cultural ties have persisted through the Ozarks' timeline, as exemplified through Missouri's outdoor recreation sector today. In 2017, 3.1% of jobs and 2.2% of the annual gross domestic product in Missouri came from the outdoor recreation industry (Missouri Economic Research and Information Center 2019). Sixty-one percent of Missouri residents participate in outdoor recreation each year and are more likely to participate in fishing and camping than the average American (Outdoor Industry Association 2020).

Demographic data on the Ozarks as a cohesive region are difficult to find, as it is made up of four different states. However, the majority of the Ozarks lies in rural Southern Missouri. Because of this, and the Missouri's connection to lead mining, this project centers the Missouri Ozarks. Between the years 2013 and 2017, only seven percent of rural Missouri residents identified as non-white. Missouri counties with the highest poverty rates are nearly all located in the south-Central and Southeastern region of the state, or in the Missouri Ozarks geographic region (See Maps 3 and 4). Additionally, nearly all of Missouri's counties that qualified as persistently poor are in the Ozarks (meaning that these are counties in which 20% or more of its residents have lived in poverty for at least twenty years (Missouri Department of Health and

Senior Services 2019). The geographical focus of this research, Fredericktown, Missouri, lies deep in the rural Missouri Ozarks.

Fredericktown, Missouri is a town in the Southeast Missouri Mining District with a long history of mining. The town began as a lead mining site in 1715, when M. La Motte Cadillac began surface lead mining here, while searching for gold. This was the primary form of mining in the area until 1864, when subsurface mining began. Lead extraction dominated the local economy until 1972. During this time, this method was used to extract 8.5 million tons of lead, making Missouri the largest lead producer in the United States to this day (Hooste and Hogwaerts 2016, Seeger 2008). When the lead mining sites eventually closed, 13 tailings and chat deposit sites were left over in the Fredericktown area. Chat is a poisonous gravel-like by-product of lead smelting, heavily present in Southeast Missouri Mining District (Environmental Protection Agency 2007). In the Southeast Missouri Mining District, neatly 250 million tons of this waste was left behind. This waste exists in the form of chat piles, tailings piles, and slime ponds (Hooste and Hogwaerts 2016). Lead contamination of the town and surrounding area were also left behind. This contamination exists in the soil, surface water, and groundwater. Other environmental harm recorded in the area was the depletion of vegetation in the area surrounding a smelter, tailings runoff through water systems, and tailings that have been transported and moved by wind (Seeger 2008). These contaminated materials were then used to build foundations for residential homes, as well as driveways and topsoil.

The Environmental Protection Agency (EPA) identified seven operable units, or specific areas where cleanup is taking place within the Madison County Mines Superfund Site (Department of Natural Resources 2010). One is the Northern Madison County Unit, which includes the Mine La Motte Recreation Association Subsite. This area is composed of 250 acres

of tailings; Slime Pond, a 100-acre lake that is still in recreational use; Harmony Lake and Harmony Lake tailings; as well as four other former mining sites. The other operable units include “residential yards, public areas, child high-use areas, roadways, right-of-ways, storm water drainages and potable groundwater at private wells” (Environmental Protection Agency 2021), several other tailings, and the Little Saint Francis River Watershed. The Anschutz Subsite, also known as the Madison Mine, is an area southeast of Fredericktown that includes “all mining and mine works locations and adjoining areas” (Environmental Protection Agency 2021). The Anschutz subsite consists of four major tailings areas, a metallurgical and sediment pond, old mill remnants, pars of an old smelter, a chat pile, a mine dump, and contaminated water in the ground, surface and creeks. This is where Missouri Cobalt, LLC is now operating. The third operable unit, Madison Country Residential Properties, consists of “residential yards, public areas, child high-use areas, roadways, right-of-ways, storm water drainages and potable groundwater at private wells in halos of mine waste, mine workings and outfalls” (Environmental Protection Agency 2021). The Conrad Tailings Subsite consists of the defunct Ruth mine and mill, as well as a tailings pile, contaminated surface water, mine waste, and a contaminated tributary to Mill Creek as well as its floodplain and over bank deposits. Additionally, it includes “adjacent road right-of-ways and drainages, mine waste pile wind-blown contamination; groundwater impacts within the mine waste locations; and all other associated mine works locations and outflows” (Environmental Protection Agency 2021). According to the EPA, this subsite was fully cleaned and capped in 2018 and responsibilities were transferred to the State of Missouri for long-term management in September 2019 (2021). Operable Unit Five consists of three subsites: the Catherine Mine, Skaggs Tailings Mine, and Little Saint Francis River. Together these sites include mine waste, contaminated ponds,

drainages with surface water, overbank, floodplain deposits, a residential soil repository, tailings piles, and mine mill works. Remedial efforts are in their final stage in Operable Unit 5 and will transfer to the State of Missouri for long-term maintenance in 2021 (Environmental Protection Agency 2021).

Operable Unit Six is the Silver Mines Operable Unit and "includes all other known and undiscovered mining-related contaminated areas including but not limited to the Silver Mines area with the Einstein and Apex mines; Hickory Nut tailings locations 1, 2 and 3 (3 has been removed), nearby groundwater, surface waters and sediments in the unnamed runoffs to the Saint Francis and Little Saint Francis River; road right-of-way; public drainage ways; and mine works locations and outflows" (Environmental Protection Agency 2021). Additionally, part of this operable unit is on US Forest Service property, which is developing an agreement with the EPA allowing the US Forest Service to "to perform assessment and removal action cleanup activities of mine waste impacts on USFS lands" (2021). The final Operable Unit is the Little Saint Francis River Operable Unit. This watershed "includes all surface water, floodplain soil, over bank deposits, and sediments in the Fredericktown City Lake and streams in the LSFR watershed that are not specifically addressed under other operable units" (Environmental Protection Agency 2021). A remedial investigation of the watershed is currently taking place, in which the EPA is removing contaminated soil from residential properties, capping and grading mine waste "through a phased process", collaborating with the Missouri Department of Health and Senior Services and Madison County Health Department to campaign for health education related to lead poisoning, and implementing a Voluntary Institutional Program (VICP) to monitor disturbance at any of these sites and to train residents in handling and disposal of contaminated materials (Environmental Protection Agency 2021). This exhaustive list of waste and cleanup

efforts at the Madison County Mines Superfund Site envelops Fredericktown and its residents. From all sides, community members are surrounded by the lingering effects of extractive processes.

2.1 The Consequences of Lead Exposure

Lead exposure is an incredibly serious risk to human health. Extensive research demonstrates that even low levels of lead exposure can disturb children's motor functions, lower IQ, and impair reaction time. These effects are correlated with behaviors such as disorganization, verbal and speech deficiencies, deficits in mathematical skills, learning and reading disabilities, lower exam scores, dropping out of school, being less attentive in class, higher levels of hyperactivity, inattentive behavior, restless behavior, Attention Deficit Hyperactivity Disorder, aggression, higher likelihood of misbehaving in school and at home, violent and aggressive behavior, antisocial behavior, delinquency, and crime (Narag, Pizarro, and Gibbs 2009, Neuberger 2009; Lynch, Long, Stretesky, and Barrett 2017; Gibbs and Boratto 2017). Sampson and Winter (2018) found that there is a link between childhood lead exposure and antisocial behavior, stronger than many other predictors in criminology. These effects are often seen very early in life (Sampson and Winter 2018). Additionally, the relationship between blood-lead levels and cognitive development is stronger in those of lower socioeconomic status (Narag et al. 2009).

Lead poisoning in itself can also economically impact a locality. The health problems listed above directly impair individuals' ability to create an income. The Missouri Department of Health and Senior Services estimated that the total economic burden of childhood lead poisoning on lifetime earnings is $61.6 million (2019). As of 2018, they found that of the Missouri children tested, 6.48% still had an elevated blood-lead level. Gould found, "For every dollar spent on

controlling lead hazards, $17–$221 would be returned in health benefits, increased IQ, higher lifetime earnings, tax revenue, reduced spending on special education, and reduced criminal activity" (2009). All blood-lead exposure is consequential. Even low blood-lead levels can have consequences. Blood-lead levels in children contribute to special education costs, reduced likelihood of success and graduation from school (high school and college), and overall lowers lifetime earnings (Gould 2009). The connection between blood-lead levels and the likelihood of participating in violent crime can also affect income (Sampson and Winter 2018, Fox 2017). Unusually high blood-lead levels in Madison County children played a significant role in the implementation of a public health education campaign by the EPA through their Superfund program (Environmental Protection Agency 2021).

2.2 The Superfund Program

The Superfund program or more formally, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), was enacted by congress in 1980. The goal was to tax non-renewable extractive industries, such as petroleum, and funnel this money into responding to hazardous substance release that could endanger public health and safety (Environmental Protection Agency 2018, Youngblood 2011). The tax collected $1.6 billion dollars over five years and was put to use in short and long-term cleanup projects. However, Congress failed to continue this tax and the fund was entirely diminished by 1995. Eighty percent of Superfund costs are now covered by taxpayers (Center for Health and Environmental Justice 2020, Government Accountability Office 2015). The Superfund program fell from its peak funding of $4.7 billion in 1997 to $225 million in 2020 (US Public Interest Research Group Education Fund 2020). Fredericktown is a long-term response action, meaning that the clean-up process, "permanently and significantly reduces the dangers associated with releases or threats of

releases of hazardous substances that are serious, but not immediately life threatening" (Environmental Protection Agency 2021). According to the EPA (2018), the three goals of CERCLA include establishing requirements surrounding sites, funding cleanup of the site when no responsible party is identified and providing liability for those responsible for the contamination.

The EPA's involvement in Madison County in collaboration with the Missouri Department of Natural Resources concerning "preliminary characterization of the site" began in the late 1980's (Environmental Protection Agency 2021). According to the U.S. Fish and Wildlife Service (2014), numerous sources documented mine waste in the streams of the Madison County Mines site between 1980 and 1995. They add that this waste continues to disturb the waterway ecosystems as wind and water erosion and human interference, such as permitted and unpermitted off-road vehicle usage, interact with it. These hazardous materials include lead, cadmium, copper, cobalt and nickel (U.S. Fish and Wildlife Service 2014). High blood-lead levels in children began drawing the EPA's attention in the 1990's (Environmental Protection Agency 2021). Fredericktown qualified for long-term remediation through the Superfund program after some residents discovered above average blood-lead levels in their kids (Environmental Protection Agency 2021). The Environmental Protection Agency officially began remediation in Fredericktown in 2003, after running a blood-lead study in the 1990's and finding that fifteen percent of children in the Fredericktown area had elevated blood-lead levels (Environmental Protection Agency 2021). At this time, the EPA determined that 42 percent of residential properties "which includes public use and child high-use areas such day care facilities, parks and greenways" were contaminated (Environmental Protection Agency 2021). In 2006, remediation was discontinued after 813 properties were remediated, but re-started in 2008

continued through 2012, remediating 880 more properties. Eighty-four more were remediated in 2016 and 293 residential properties were remediated between November 2017 and December 2019. Evidently, the EPA's residential cleanup contractor Environmental Restoration, Inc. was active in Madison County as of 2020 (Environmental Protection Agency 2021). Mine waste has been consolidated and capped at Operable Units One and Five, as well as at the Harmony Lake Waste Pile. The remediation and clean-up of the Madison County Mines Superfund Site was estimated to reach completion in 2020, but the clean-up process is ongoing (Environmental Protection Agency 2021). According to the EPA, "Missouri Mining Investments LLC purchased the tract of land at OU2 [Operable Unit Two] formerly owned by the Anschutz Mining Corporation in 2018 and entered into an Administrative Order on Consent with the EPA in February 2019 to perform supplemental characterization of environmental contamination within their property boundaries and to consolidate and cap the waste as a Time-Critical Removal Action. That waste consolidation and capping began in early 2020 and is planned for completion by 2022" (Environmental Protection Agency 2021).

The cleanup process consists of the removal of lead-contaminated soil, which is replaced with backfill and topsoil at residential properties (Environmental Protection Agency 2018). According to the EPA (2021), "Mine waste locations are also being addressed in a phased approach through grading and capping as Records of Decision are developed for those areas". In collaboration with the Madison County Health Department and Missouri Department of Health and Senior Services, the EPA implemented a health education program, intending to raise public awareness of lead's impact and presence in the area.

2.3 The Consequences of Cobalt Mining

The remediation of the Fredericktown superfund site has partially transferred to the hands of Missouri Cobalt, LLC as a part of the EPA Superfund Redevelopment Program. This program repurposes superfund sites in order for communities to "reclaim and reuse" them (Environmental Protection Agency 2018). According to Missouri Cobalt, LLC cobalt will "support the advancement of America's renewable energy resources, creating good jobs in Madison County and being a good steward of the environment" (Missouri Cobalt 2019).

Cobalt is a material used for lithium batteries in electric cars, aircraft engine parts, and other machinery. Cobalt mine tailings have been found to contaminate lakes with high levels of arsenic. In Ontario, lakes near a mining site contained high levels of arsenic nearly a century after mining in the area ended. This prevented natural ecological recovery in the area, even a century after mining ended (Sprague & Vermaire 2018). The population residing near cobalt mining sites in the African Copperbelt had elevated cobalt exposure (Cheyns, Nkulu, Ngombe, Asosa, Haufroid, De Putter, Nawrot, Kimpanga, Numbi, Ilunga, Nemery, and Smolders 2014). Excessive inhalation of cobalt-containing dust can result in adverse health effects (Leyssens, Vinck, Van Der Straeten, Wuyts, and Maes 2017) such as allergic dermatitis, asthma, rhinitis, and "hard metal disease" or lesions in the lungs (Lauwerys and Lison 1994). These health effects were found in those who work in the cobalt extraction industry and high levels of cobalt were found in the digestive systems of those who live in heavily polluted areas (Lauwerys and Lison 1994). These direct health consequences are examples of environmental harm and victimization. Through the Superfund Redevelopment Initiative (SRI), Missouri Cobalt, LLC opened a new cobalt mining site in Fredericktown and workers have begun to sift through old lead tailings to find usable cobalt. The goal of this initiative, according to the EPA, is "returning formerly contaminated lands to long-term sustainable and productive reuse" (2019). The hope of

Fredericktown residents and the EPA is that the operation can return to mining soon through the SRI (Environmental Protection Agency 2019).

CHAPTER 3: LITERATURE REVIEW

> "Capitalist production, therefore, develops technology… only by sapping the original sources of all wealth – the soil and the worker" (Marx, 1967: 505).

3.1 The Foundation and Influence of Green Criminology

Green criminology is an interdisciplinary field that addresses questions surrounding the generation and control of environmental and subsequent social harm (White and Heckenberg 2014). Therefore, the discipline includes contributions from many fields such as sociology, ecology, criminology, and criminal justice. An area of study insufficiently integrated into green criminology is that of the theoretical spatial concepts from geography (Hall, Angus, Potter, and Wyatt 2014). According to Murphy (2014: 1),

> "geographers… think of their work as being primarily rooted in spatial analysis, the explication of developments in different places, the elucidation of human-environment interactions, or the study of natural systems… and descriptions of geography's scope frequently make reference to some variant of these categories…"

Essentially, geography can be considered the study of place and space (Bell 1997). Space is defined as a physical location, or the exact coordinates of a locale. Place is the *meaning* that is added to this space (Bell 1997). These concepts may aid in analysis and theory-building in green criminology, a field that is based on one's physical geography and environment (McClanahan and Linneman 2018; Mao 2020; Natali 2016), can benefit from integrating the concepts of place and space, commonly used in the geography field, into the discipline. These concepts can aid in bridging existing gaps in green criminology literature relating to the understanding of environmental victims' reactions to environmental harm and their place within political-economic processes, such as the treadmill of crime.

Green criminology is a relatively new field. Michael J. Lynch proposed to integrate the study of environmental harm into radical criminology in the early 1990s (Brisman 2014). Traditional criminology aims to analyze crime through the lens of the criminal justice system and the social construction of so-called "deviants" within society. Critical criminology builds on this traditional understanding by proposing that much of "deviance" and crime as understood in this field, emerges from inequality and that often, the political and economic elites are to blame for what is considered "criminal" today (Donnermeyer and Dekeseredy 2008). Critical criminology offers an analysis that claims power relations influence the definitions and understandings of crime and victims (Opsal and O'Connor Shelley 2014). The emergence of green criminology as a facet of critical criminology is due to the study of environmental harm by criminologists and a push to understand it as a criminological process and to determine who is responsible for it (White and Heckenberger 2014). Green criminology now serves to analyze, dissect, and understand environmental harm, environmental victimization, and the social actors involved in these processes (Stretesky, Long, and Lynch 2014).

Environmental crime and harm are two concepts with broad interpretations that are central to the green criminology field. Environmental crime can be considered the breaking of an environmental law and regulations, such as violating waste dumping restrictions (White and Heckenberg 2014). Environmental harm includes these strict definitions of environmental crime, as well as broader processes that impair the environment, not traditionally considered "crimes" (White and Heckenberg 2014). For example, how do emissions from a production plant affect the surrounding community over long periods of time? A written law does not need to be broken in order for environmental harm to occur. Lynch and Stretesky proposed that criminology insufficiently addressed ecological harm, or "acts that cause or have the potential to cause

significant harm to ecological systems for the purposes of increasing or supporting production" (Stretesky et al. 2014: 2). This definition of environmental harm encompasses green criminology's critiques of mainstream criminology in that it clearly outlines a kind of harm that criminology has struggled to analyze, while identifying a systemic cause of this harm. The green criminology approach considers a few major questions regarding environmental harm. These are: who is committing the harm, why they are committing the harm (in that the motives behind environmental harm itself are being examined), and who or what is being harmed (Brisman and South 2013). Critical engagement with foundational criminological and sociological concepts planted the seeds for the development of these questions and green criminology as a field.

Since 1990, the green criminology discipline has grown significantly. Within this discipline, scholars discovered a way to implement their criminological understandings of ecological social problems. As with any significant social science field, criminology is built upon theory, or creating, organizing and understanding questions about the social world. At the core and foundation of social science lies the theoretical work of Karl Marx. Marx is best known for his theoretical framing of capitalism. In its essence, this framing explores the exploitation of workers and their labor by a ruling class, the bourgeoise. In order for capitalism to work, the ruling class must continue to exploit workers by paying them less than what they have earned through their labor (Marx 1967). Capitalism requires infinite growth, and this producer-laborer exploitation cycle must continue indefinitely. Ecological Marxism refers to the inherent contradiction between capitalism and the Earth's finite resources. If capitalism requires infinite growth, it must also require infinite natural resources. This leads to a material contradiction within this economic system. This contradiction is directly related to green criminology and Lynch's definition of the field. Marx's metabolic rift theory is also prevalent in the green

criminology field. This refers to "the material estrangement of human beings in capitalist society from the natural conditions of their existence" (Foster 1999: 383). As mentioned above, green criminology is considered a "critical criminology" field and therefore includes a conflict-oriented, or Marxist perspective of criminology (Ferrell 2013). This approach to criminology inherently challenges not only the purpose and definitions of laws and crime but includes a critique of the dominant modes of production in a capitalist world and their ability to alienate people from the natural world (Ferrell 2013). The political-economic approach to green criminology concerns the macro-level processes of the state and economy and their relationship to the environment (Lynch, Stretesky, and Long 2016).

3.2 The Treadmill of Crime

There are many approaches to the study of environmental harm, and this is due to the fact that the green criminology field is multifaceted and interdisciplinary. For example, green criminology considers the fields of political science, economics, and conservation studies among many others. The political economy approach to green criminology examines environmental harm within the context of macro-level political and economic processes and theories (Ruggerio and South 2013). According to Ruggerio and South, the political economy approach examines the "long-term outcomes of development processes and how these impact on the planet's limited resources" (2013: 365). A consequential political economy approach in green criminology is that of the treadmill of crime, made up of the treadmills of production and law (Lynch, Stretesky, and Long 2020). The treadmill of crime illustrates the interconnected nature of a capitalist systems' consequences with green crime (Stretesky et al. 2014).

The treadmill of crime is most easily understood through its namesake. The treadmill term emerges from the imagery of social processes continuously reinforcing one another with no

meaningful forward progress - much like running in place on a treadmill. The runner is constantly working, but not moving forward, remaining in the same place. The original treadmill theory, or the treadmill of production, serves to explain the processes behind the rapid increase in environmental harm and pollution in the United States following World War II (Buttel 2004). The foundation of the theory is the surge of capital in Western states during this era and the environmental and social consequences of this capital's placement. Capital was invested into newer production technologies that nulled the need for laborers in production industries. Therefore, capitalists, or the owners of this labor, had to increase levels of production in order to make a profit. While production increased, the conditions of society did not improve. Instead, the treadmill kept turning, progress halted, and resource extraction increased (Schnaiberg, Pellow and Wineberg 2002). The treadmill continued to chug as pollution and working conditions worsened (Gould, Pellow, and Schnaiberg 2004). Marx's contradiction of capitalism theory is easily located within the treadmill of production theory through its acknowledgement of ecological withdrawals and additions in order to produce infinitely (Lynch 2014), or as Mao, Jin, Hu, Weeks and Ye (2020: 6) state "it places the economy and ecological systems in conflict". This era marked a time of inattention to pollution and carelessness of its management. Gould writes, "Waste was mostly moved into the commons, with spillage into water systems, dispersal into air pollution, and dumping in land systems at some distance to cities" (2004). Physical environmental degradation is one of the most illustrative indicators of the harms caused by the treadmill since the 1940's. Subsequently, the environmental studies field began to offer critiques of capitalist expansion in the 1960s and 1970s (Gould et al. 2004). However, the mainstream neoliberal ideals of production and economic expansions as a societal good prevailed and the legal response to these environmental harms reflected this.

Lynch et al. added to the treadmill of production theory by acknowledging that many environmental laws and regulations in place tend to reflect the interest of treadmill of production stakeholders (2020). There are three actors and three propositions that make up this theory, or the treadmill of law. The first actors are producers, or those who create environmental harm through extraction and pollution, the second actors are state officials who enforce environmental laws and regulate the producers, and the third actors are citizens who resist these environmental actors. The propositions are, as follows:

> "1. The ToL will oppose (through state-corporate crime, if necessary) enhancements of environmental regulations that criminalize ecologically destructive behaviors of the ToP and its agents…
> 2. The state's enforcement of criminal environmental laws will not change production trends or limit ToP expansion…
> 3. Actors who threaten the ToP are likely to be defined as "green" deviants and criminals…" (Lynch et al. 2020: 3-8).

Opsal and O'Connor Shelley (2014: 576) demonstrate the relationship between the state and producers: "the industry needs to grow without regulatory oversight while the state provides a facade that industry is well regulated while simultaneously minimizing the culpability of industry or the reality of the harms that they cause" and Mao et al. (2020: 7) describe the treadmill of law as resulting "from the state's conflicting regulatory roles as the facilitator of capital accumulation and the protector of ecosystems". Additionally, Mao et al. (2020) found that environmental laws created by treadmill actors worsen ecological additions and withdrawals, which affirms victims of targeted communities, such as the economically disadvantaged. Producers and lawmakers enact environmental harm upon these communities, making them environmental victims. Anyone who is harmed by environmental processes is considered an environmental victim (Williams 1996). Green criminology is built around this topic as it is attempting to identify environmental crimes and who exactly they harm. Green criminologists state that there are more

environmental victims than any other sort of victim within criminology, due to the large scale at which environmental crimes occur (Williams 1996). Environmental victims are most often minorities and lower income (Williams 1996). In their study of energy-related environmental harms in rural Colorado, O'Connor Shelley and Opsal (2016) found that environmental harm was persistent and patterned, as opposed to occurring in isolated instances. The political and economic forces enacting the treadmills of crime and law produce massive environmental harms and, as a result, environmental victims.

Environmental victims are often overlooked in green criminology and the role of environmental victims in the treadmill of crime remains unexamined (Hall 2017). Within the treadmill, people exist as workers who collude with treadmill interests or as those resisting the victimization. They exist as a fixed entity. There is little exploration into how these social actors are affected and the many different ways they can respond and react to this victimization. While sites of resistance are most often examined in green criminology literature, environmental victims also exist at sites of acceptance (Malin 2015). There is a call for further investigation into the cultural positions of environmental victims in the field of green criminology (Hall 2017). Environmental victims can exist through direct environmental harm, such as direct exposure to polluted substances (White and Heckenberger 2014) or other forms of harm, such as effects on quality of life (O'Connor Shelley and Opsal 2016). Davies (2014: 308) examines economic harm as a form of environmental victimization. She writes,

> "From a critical social science perspective, victimologists… suggest that 'invisible' social harms and injustices take place within the global world that are worthy of examination. Such harms incur suffering akin to victimization, yet are rendered invisible for a number of reasons, including their non-crime status. Such harms impact substantially on the lives of their victims and the communities in which they occur, and, in turn, these injustices impact heavily on the work of social, health, welfare and criminal justice agencies and other regulatory bodies. It is not a crime to close an industrial plant, yet doing so in an area whose economic wealth is generated almost exclusively from a

> single industry causes significant further harms and losses that impact substantially in terms of costs to individuals, families and communities…"

Davies (2014) emphasizes that environmental victims can emerge from the social consequences of environmental regulation enforcement as well as from shifts in capital investment from the neoliberal elites. The reactions of environmental victims to these processes are crucial to understand, in that this can help environmental justice efforts respond to environmental harm.

3.3 Environmental Justice and Sites of Acceptance

Environmental justice concerns were fundamental to the emergence of green criminology as a subfield that challenges mainstream criminology (Brisman and South 2018). Environmental justice is considered "the distribution of environments among peoples in terms of access to and use of natural resources in defined geographical areas and the impacts of particular political decisions, social practices and environmental hazards on specific populations…" (Brisman and South 2018: 5). This approach focuses on the impacts of environmental harm on people, specifically those who are economically marginalized. As mentioned previously, the Missouri Ozarks are disproportionately poor. Therefore, when harmed, they are not the best equipped to adapt or bounce back from this adversity.

There is a wide gap in green criminology literature surrounding sites of acceptance to environmental harm. In a review of recent green criminology literature, Brisman and South (2018) indicate that much of the current literature studies responses to environmental harm that include the role of litigation, resistance and opposition to environmental harms, and the idea that radical response to environmental harm is necessary to stop ecocide and climate change (2018). However, green criminology's discussion on sites of acceptance is often included in the discussion of framing and cultural meaning (Lynch and Stretesky 2003; Brisman and South 2013; Brisman 2017).

In environmental justice literature, sites of acceptance include citizens who,

> "believe that natural environments must be used for industrialized production to meet society's energy needs, and they accept risks for the sake of the potential rewards, economic and otherwise, that development may provide… citizen attitudes in sites of acceptance have a multifaceted, historically contingent complexity…" (Malin 2015: 9).

Malin (2015) emphasizes that often, environmental justice literature focuses on sites of resistance over sites of acceptance, due to the examination of environmental activism and the neat fit into the narrative that community members fight back when harmed. Research on sites of acceptance exists in environmental justice scholarship, but without a nuanced understanding of the position of residents in these areas (Malin 2015). Malin (2015) calls for sites of acceptance to be more consistently analyzed in environmental justice literature. Additionally, sites of acceptance fit into a neoliberal logic that people may prioritize economic security to fighting back against environmental harm. She writes (2015:22),

> "We therefore know comparatively little about activism that creates distinct sites of acceptance for industrial production and its risks – that is, where activists define environmental justice as local sovereignty over land use decisions because of the unique ways in which their livelihoods and communities are embedded unto those landscapes."

There is a strong link between sites of acceptance and economically marginalized areas, including those with high rates of persistent poverty (Malin 2015). This thesis attempts to address the gap in green criminology literature at sites of acceptance. Specifically, this study examines environmental victims at a site of acceptance and their construction of meaning in response to living in a Superfund site.

3.4 Green Cultural Criminology and the Social Construction of Space and Place

Green cultural criminology developed as a need for the green criminology field to have a comprehensive social understanding of environmental harm, including one that is inter-disciplinary (Brisman and South 2013). In developing green cultural criminology, Brisman and

South indicate that their goal is to examine how cultural criminology and green criminology overlap and build upon one another. They argue that green criminologists should expand their understanding of the field, particularly "the intersection of culture, crime, justice, and the environment" (Brisman and South 2012: 130). Therefore, examining green cultural criminology can aid in the examination of green criminological theory, such as the treadmills of crime. Within criminology, cultural criminology is considered an area of critical engagement with "situational, subcultural, and mediated constructions of meaning around issues of crime and control" (Ferrell 2013: 254). In other words, cultural criminology attempts to make sense of the way the world is defined, categorized, and understood or its *meaning* in a variety of settings. Studying meanings can lead criminology researchers to understand the world of those studied within the field, regardless of their role. In this way, cultural criminology is key in green criminology (Ferrell 2013). Green criminology contests traditional definitions of crime, which in itself challenges the very meaning of foundational aspects of the field (White and Heckenberger 2014). For example, green criminology contests that crime does not only harm people, but that it can harm animals and the Earth itself. It also asserts that criminology can reassess the traditional definitions of perpetrators of crime, crime, and enacting justice. A green cultural criminology implements this critical framing within the study of environmental victims and their constructed meanings of environmental harm and exploitation (Ruggerio and South 2013). Additionally, a green cultural criminology can address the multi-faceted, nuanced nature of green criminology in its study of phenomena such as waste, how it is classified, and socially and politically constructed (Ruggerio and South 2013).

Largely unexplored theoretical spatial concepts within green criminology, such as space and place, can contribute to the significance of meaning in environmental crime. From the

geography discipline, social scientists have adopted the concepts of place and space (Kim, LaGrange, and Willis 2012). Space is defined as a physical location, or the exact coordinates of a locale. Place is the *meaning* that is added to this space (Bell 1997). Place and space are noted within criminology. Kim et al. (2012: 150-151) proposed the importance of the integration in criminology, writing "the sociology of place can serve to inform environmental criminology toward a better understanding of the spatial distribution of crime and crime prevention efforts" and that emplacement, or "the social-psychological process of turning a space into a meaningful, territorially defined, place" occurs when a group has found a home in a particular space and establishes boundaries that assign and reinforce a unique, collective identity. Kim et. al. found that place can affect crime, for instance through crime rates and the kinds of crimes committed. Therefore, place contributes to green crime and the way communities respond to being subjected to green crimes. Additionally, Kim et al. (2012) refers to the significance place adds to structural patterns, such as that between producer and laborer. Kim et al. (2012: 143) references Baldry (1999) to draw emphasis to this specific social hierarchy,

> "the control of work areas and the physical structure of work areas serve as mechanisms for controlling the labor force. The physical nature of the area provides cues for how one is to behave in an area and reinforces what behavior is appropriate or inappropriate. Work areas are often stratified by the size and location of the space allocated. Work areas also reflect who controls the physical location…"

Here, Kim et al. refers to a specific workplace, which in a mining setting can extend to the surrounding physical environment and community (2012). Therefore, a sense of place entails a connection to space, but also to those actors and processes that exploit it. Those at the top of the social hierarchy shape the conditions for individual responses to environmental victimization, or place (Kim et al. 2012). This spatial analysis is missing from the green criminological literature, particularly in macro-level political-economic understandings such as the treadmill of crime.

The spatial dimensions of green criminology also apply to a green cultural criminology of the rural. Rural criminology is a field in itself that not only examines criminology in rural communities but encourages critical criminology by surfacing place-based and ecological social problems in the field. Donnermeyer, Scott, and Barclay (2013: 85) write,

> "Rural places are not homogeneous, as the rural idyll suggest. They are contested landscapes. In that regard, how crime is talked about shows the way people who live in physical proximity to each other construct perceptions about crime, and how these perceptions are shaped by factors both external and internal to the locality. Hence, place-based criminological models would benefit greatly from a consideration of the role of ideology in shaping localised forms of human relations."

Through the study of rural places, green criminology can further understand the meanings assigned to these spaces and the way environmental harm affects environmental victims. According to Brisman et. al (2013), a green cultural criminology of the rural serves to counter stereotypes of the rural and to examine the complex issues that rural people face. This thesis attempts to further understand the shaping of environmental victims' sense of space and place by products of the treadmill of production, such as ecological additions. This is one of the most dynamic and human relationships that exists within the treadmill of crime and it is missing from the current analysis. Viewing the treadmill of production through the environmental victims' perceptions of their surroundings and lived experiences could therefore reveal new understandings of environmental and social harm produced by the treadmill of crime.

CHAPTER 4: "IF MEANING MATTERS, SO DOES METHOD"

In order to capture the meanings of exploitation to those in Fredericktown, or the "tangled human process by which crime comes to be defined and redefined, understood and misunderstood", multiple methods were used (Ferrell 2013: 263). The use of interviews, content analysis, and geospatial mapping employed a sensitivity and respect for the locality's meanings and values. Ferrell (2013) continues that meanings to those studied in cultural criminology matter to the researchers and therefore it is imperative to capture them to the best of their ability. Additionally, Ferrell (2013: 266) elaborates on meaning being successfully captured using qualitative methods over quantitative:

> "By their own necessary logic, surveys define a priori categories of abstracted meaning—meaning long removed from the social situations in which people negotiate understandings and emotions—and then require 'respondents' to conform their own memories and attitudes to these odd little abstractions. The 'data' from such surveys dehumanize those surveyed, draining them of their own meaningful experiences, and reducing their lives (or at least those small parts of their lives they care to report) to aggregated abstraction…"

Using respondents' own words and stories from interviews as data prioritizes residents' meanings, as does the use of newspaper articles and primary documents written by Fredericktown residents themselves. The meanings they have assigned to their space, or emplacement, deserve careful consideration and investigation. To the people of Fredericktown, the meanings of mining and lead waste are every day, or mundane. However, the analysis of their experience is crucial to the understanding of the response of environmental victims to green crimes and how this sense of place affects this.

The use of geospatial methods, such as mapping and map analysis, can aid in this understanding of place and space as well. This allows for an analysis of space and its relationship

to place. One can use maps to further understand emplacement, or the connection and development of meaning to one's environment. As mentioned previously, it is established (Kim et al. 2012) that geography contributes to crime, and therefore green crime. The methods used in this project are deliberately chosen to provide an interdisciplinary approach, applying the theoretical understandings of place and space to the response of environmental victims to environmental harm. The methodology chosen for this research project aim to capture the extensive theoretical concepts listed here, but especially the significance of place and space within green criminology.

4.1 In-Depth, Semi-Structured Interviews

In order to capture the complexity of the social processes at play in Fredericktown, multiple research methods were used. Primarily, in-depth, semi-structured interviews were used. Using a snowball sampling method, residents of Fredericktown and the surrounding area were interviewed using the attached interview guide (Appendix B). The purpose of in-depth, semi-structured interviews is to collect recollections, iterations, and attitudes that the empirical evidence of these interviews provides (Brisman 2017). These narrative aspects can demonstrate how these communities respond to extractive processes that do and can cause them harm. Brisman (2017) mentions that a green cultural criminology framework "devotes heightened consideration to the contestation of space, transgression and resistance in order to analyze the ways in which environmental harms are opposed in/on the streets and in day-to-day living". This can also aid researchers in understanding why these communities may accept these practices despite objective harm. This is a complex group of concepts that can be understood through the words of those in rural communities.

Sandberg and Ulgevik (2016) state that stories and narratives help researchers understand the complexity of their identities, values and cultures. Brisman, McClanahan, and South (2014) ask several key questions in relation to the complexity of culture in the context of green criminology such as, "do profits come only at the cost of the illegal and/or immoral use of low-paid or slave labor, or unsafe and hazardous practices, or avoidance and corruption of systems of oversight?". In the context of studying rural communities, land use approaches such as farming, and resource extraction are embedded in the local culture. This is essential in understanding the community's response to potentially harmful decisions, such as that to build a cobalt mine on an active Superfund site.

To meet respondents in Fredericktown, I reached out to local groups that provided contact information online, as well as visiting locations in town and the surrounding area and speaking with residents who worked here. Folks in Fredericktown were eager to talk. I was worried that being an "outsider" researcher would have an adverse effect on community members, but they seemed intrigued by this and incredibly willing to speak to me about anything related to my research. I am sure that it helped that I am also an Ozarkian, although from a different area of the Ozarks. Fredericktown residents were just as interested about my life and research in Colorado as they were my life in the Ozarks. Therefore, gaining contact with residential respondents was not difficult. Residents were also adamant that they "weren't experts on the subject matter" and would list other community members who they deemed to be more knowledgeable on the subject, despite my insistence that I simply wanted to speak with people who lived in the area. Regardless, it was easy to gain a sample because Fredericktown is a tight knit, yet open community. This fact aided in my gathering of respondents but could serve to be a limitation in the research. Although Fredericktown is small, there are clearly smaller

communities within the town that could cause bias within responses. This is part of why including key informants is so important.

Gathering key informants for this research was a bit more difficult. Informants who worked for government agencies involved in the remediation were constrained by bureaucratic processes that made it difficult for them to be as willing to speak with me, or it took quite a while for them to have paperwork and consent forms approved. My original plan was to speak to someone working at the Fredericktown cobalt facility, Missouri Cobalt. However, at the time that my interviews were conducted, the mine was not yet in operation and had not officially hired Fredericktown employees yet. Missouri Cobalt itself was new to the area and was not connected to those in the community yet. In the interviews, respondents used language that referred to them as outsiders, or that they were not necessarily a part of the community. Missouri Cobalt does not include a phone number on their website and did not respond to my emails requesting to speak to someone at their facility.

The population for interviews were six community members with no "key informant" status, and four key informants. In this study, key informants refer to those with a government position working directly with aspects of environmental harm. Within this population, key informants included a public health official, a government environmental scientist, a US Department of Agriculture employee (USDA), and a Missouri Department of Natural Resources (DNR) employee. The public health official employee is also a Fredericktown resident, the government environmental scientist works from a remote office, and the DNR and USDA employees live in the surrounding area. The age range of the population spanned from young adult (20's – 30's) to seniors. Interviews were conducted in secure locations in town, such as private rooms in the public library or the town's historic society building. All informants were

read the same script asking them to participate in the study and disclosing necessary information about the study before they agreed to participate (Appendix C). Informants were given a consent form verifying that they understood the nature and purpose of the study, as well as the facts that no harm would come to them for participating it and that they would remain anonymous and that they would be recorded (Appendix D).

Table 1. Participant Demographics

Demographic Information	Number of Respondents
Gender	
Male	6
Female	4
Professional Status	
Government Employee – State/Local	3
Government Employee - Federal	2
Working Professional	3
Retired	2
Age	
30-49	4

50-64	3
65+	3

A unique situation is applied to the interviews for this study. The interviews and follow-ups spanned from January to October of 2020 and within this time, the COVID-19 pandemic swept the United States. Colorado State University required all in-person research to stop during this time. In order to accommodate these constraints, four interviews were conducted over the phone. A secure application, Call Recorder, was used to record the interviews for later transcriptions. This inconsistency is a limitation of the study because in-person interviews could potentially yield different results than phone interviews.

The interviews were then transcribed and coded into several themes, including connection to the environment (land, water, and environmental waste), impressions of the EPA (positive, neutral, or negative), concerns about community health (concerned, neutral or unconcerned), concerns about the environment (concerned, neutral, unconcerned), and outlook for cobalt mining in the area (hopeful, neutral, concerned). In order to code, transcripts were uploaded to the NVivo software. They were read closely and carefully and organized into these themes. Each time a theme emerged in an interview transcription, it was highlighted and sorted into a theme by the software. This method was reinforced by extensive critical content analysis. The coding themes for the interviews were the same that were used for this critical content analysis, in order to maintain consistency in organizing the sentiments of residents throughout history.

4.2 Critical Content Analysis

Archives of Fredericktown's local newspaper are publicly available online. Nearly fifty of these articles, as well as EPA and other legal documents related to the Superfund site, were examined surrounding key dates in the mining, land use, pollution, and social history of the town and surrounding area. Analyzing these documents through a critical sociological lens alongside the collection of current impressions from residents toward these issues, and the visualization of environmental harm and land use provided an understanding that captures the complexity and historical contextualization in this case.

Nearly fifty local news articles, EPA documents, public health documents and legislative records were analyzed and thematically coded. Documents were chosen based on their content. An online database of local newspaper articles (Daily Journal Online, featuring primarily articles from Fredericktown's local newspaper, The Democrat News, were utilized) was analyzed for key words related to this study. The coding criteria included discussion of EPA presence in Fredericktown and remediation, discussion of lead and health or environmental degradation in the Fredericktown area, discussion of Cobalt in the area, and Missouri Cobalt's presence in Fredericktown. This project attempts to identify local perceptions of these processes and utilizing these key words to locate these articles allowed an objective approach to analysis. Then, when coding, sentiments towards these topics were identified. This was evident based on quotes included from those close to these topics and even content included in the articles by local journalists.

The qualitative software NViVo was used to identify themes and code this primary data, which was all publicly available. Major themes from interviews were identified and the documents were coded accordingly. The themes used for coding were perceptions of the surrounding environment (land, water, and environmental waste), impressions of the EPA

(positive, neutral, or negative), concerns about community health (concerned, neutral or unconcerned), concerns about the environment (concerned, neutral, unconcerned), and outlook for cobalt mining in the area (hopeful, neutral, concerned). These coding criteria were chosen because this study is attempting to identify locals' perception of these processes.

4.3 Geospatial Methods

This project applies visual criminology methods through the use of geospatial mapping and image analysis. Superfund sites, mining sites and other spatial pollution data were layered over a map of the town, demonstrating their proximity to community facilities (such as a public park and playground) using ArcGIS mapping software. The waterways of the surrounding area were also mapped in relation to the Superfund sites and community areas. Mapping was also used to demonstrate reference of wealth in the Missouri Ozarks and to demonstrate the proximity of Missouri's highest cancer rates to lead mining areas. A ready-made map attained from the US Geological Survey and was also analyzed as part of this section.

Natali and McClanahan promote visual mediums and methods in green criminology. They argue that the relatively new concepts introduced through green criminology require new methods of seeing the world. Particularly, they argue that methods capable of "synchronizing the spatial dimensions (global/local) and the temporal dimensions of the ongoing changes occurring in and to our environment" such as maps, are particularly helpful in studying these complex concepts (2017). This project examines a green cultural criminology of the rural and this inherently includes nonhuman life and ecosystems. Visual mediums such as geospatial mapping and analyzing images help to expand "ecological worlds" (Natali and McClanahan 2017). They argue that in order to assess the cultural implications of nonhuman entities such as the natural world, visual communication can be used because this is a way that humans connect with the

environment. Green cultural criminology can use methods such as geospatial mapping of data, but also as a means of theoretical contextualization (Natali and McClanahan 2017). Geospatial mapping specifically can be useful to understand the distribution of environmental hazards and their exposure to people. These hazards and people's behaviors around them vary greatly over space and simply understanding that they co-exist in place and time cannot paint the whole picture (Maantay and Lafferty 2011). These maps also serve as a tool in understanding a locality's space and sense of place. When studying sense of place, the spatial context is crucial. A reference to the spatial world of the subjects aids in understanding the emplacement process. Therefore, geospatial science is a necessary methodology in examining bottom-up approaches to green criminology.

Visual analysis is a method in green criminology and it aptly fits rural analysis (McClanahan and Linnerman 2018, McClanahan and South 2020, Natali and McClanhan 2017). McClanahan and Linnerman (2018) explore the rural as "black sites" in criminology. They use the examples of confined animal feeding operations (CAFOs) and rural prisons to illustrate rural areas as black sites, or sites "…whose redaction from the visual register is fabricated and normalized by the power of state and capital" (McClanahan & Linnerman 2018: 513). In their examples, the state and capital work together to create black sites in rurality, in that there is an inability to truly see what takes place here. Between corporate exploitation of the Lead Belt region and the EPA's compliance in further extraction in a contaminated Superfund site, Fredericktown becomes a black site. The true nature of Fredericktown as a polluted and economically withering area is hidden, not only from outsiders but from the citizens themselves. A visual methodology that explicitly illustrates the contradictions manufactured by the state and corporations is necessary to expose black sites and draw attention to what has been an attempted

redaction of an entire region. Through geospatial mapping and image analysis, one can directly *see* the mechanisms at play in the exploitation of Fredericktown.

ArcGIS Pro software was used to create the maps. Spatial data for waterways, active Superfund sites, and reference information were obtained from public sources such as the Missouri Department of Natural Resources and the US Census website. ArcGIS base maps were used for reference. Then, these data layers were placed over one another and edited visually in a way that appropriately communicated the relationships between place and environmental harm. The goal was to illustrate the proximity of environmental harm and mining processes to residential areas and waterways, and to demonstrate its relationship to health problems. In addition to creating original maps, maps created by outside sources were analyzed in order to add to this analysis. Similar to content analysis, this can aid in understanding the spatial relationship between mining processes and socio-demographic factors in the area.

CHAPTER 5: ANALYSIS

Through qualitative interviews, content analysis, geospatial mapping, and participant participation in Fredericktown, I discover five major themes that represent the informants' perceptions of environmental victimization and understandings of environmental harm. These themes are: a shaping of historical perception through mining, hazardous waste shaping space and place, denial of health problems related to mining, frustration with the presence of the EPA, and a positive outlook for the presence of Cobalt mining in Fredericktown. These categories primarily emerged from in-depth interviews and the analysis of primary documents in the local archive.

These themes were overwhelmingly present in the interviews. Nine out of ten respondents echoed sentiments that supported each of these themes, with a couple of exceptions. The first is the government scientist key informant. This respondent reflected these five themes, but as an outsider viewed the issues from a different angle. He and the local public health official acknowledged the relationship of lead to health. However, the public health official also reiterated that the community felt a sense of denial about these health issues. One local informant stated that she felt the remediation process was inconsequential, but it was partially beneficial because the presence of remediation workers boosted the town's economy. A local respondent who occasionally works closely with the EPA noted that he understood the cleanup was necessary but did not really understand the process, or its degree of effectiveness. Other than this, the themes identified in this research were nearly universally represented in the in-depth, semi-structured interviews. The themes were then applied to the coding of the content analysis

and reflected through the centering of mining history and narratives included in the fifty documents.

The earliest records examined included microfilm newspaper articles kept in the Fredericktown library, which chronicled the day-to-day life of early Fredericktown residents. These reports heavily featured mining news due to the prominence of the mining industry in the area. The newspaper analysis revealed that the recorded historical context matched the centering of mining in Fredericktown's cultural narrative. Madison County Historical Society, a local organization in Fredericktown, has a collection of historic maps, artifacts and documents related to mining, essentially a small museum. The attached questionnaire (Appendix B) that was used for the interviews centered around themes of residents' relationships with mining, the outdoors water and land resources, and their perception of past mining operations, EPA superfund process, and the opening of the new cobalt mine.

I wanted to know how respondents felt about a cobalt site opening in an incomplete Superfund cleanup site. The ideas for these questions emerged first from content analysis, as newspapers heavily reported positively on the opening of the cobalt mine and the EPA claimed this as an environmental victory in their documents. I was curious as to residents' feelings surrounding this redevelopment process. From this, I learned that residents heavily pushed back against environmental health concerns and that they generally viewed the cobalt site as a positive for the community. The emergence of denial about health problems and optimism surrounding cobalt mining emerged from the cobalt mining questions in interviews and residents routinely brought up the prevalence of Slime Pond and the local chat piles as their main form of recreation in the area.

5.1 "Seeing" Pollution

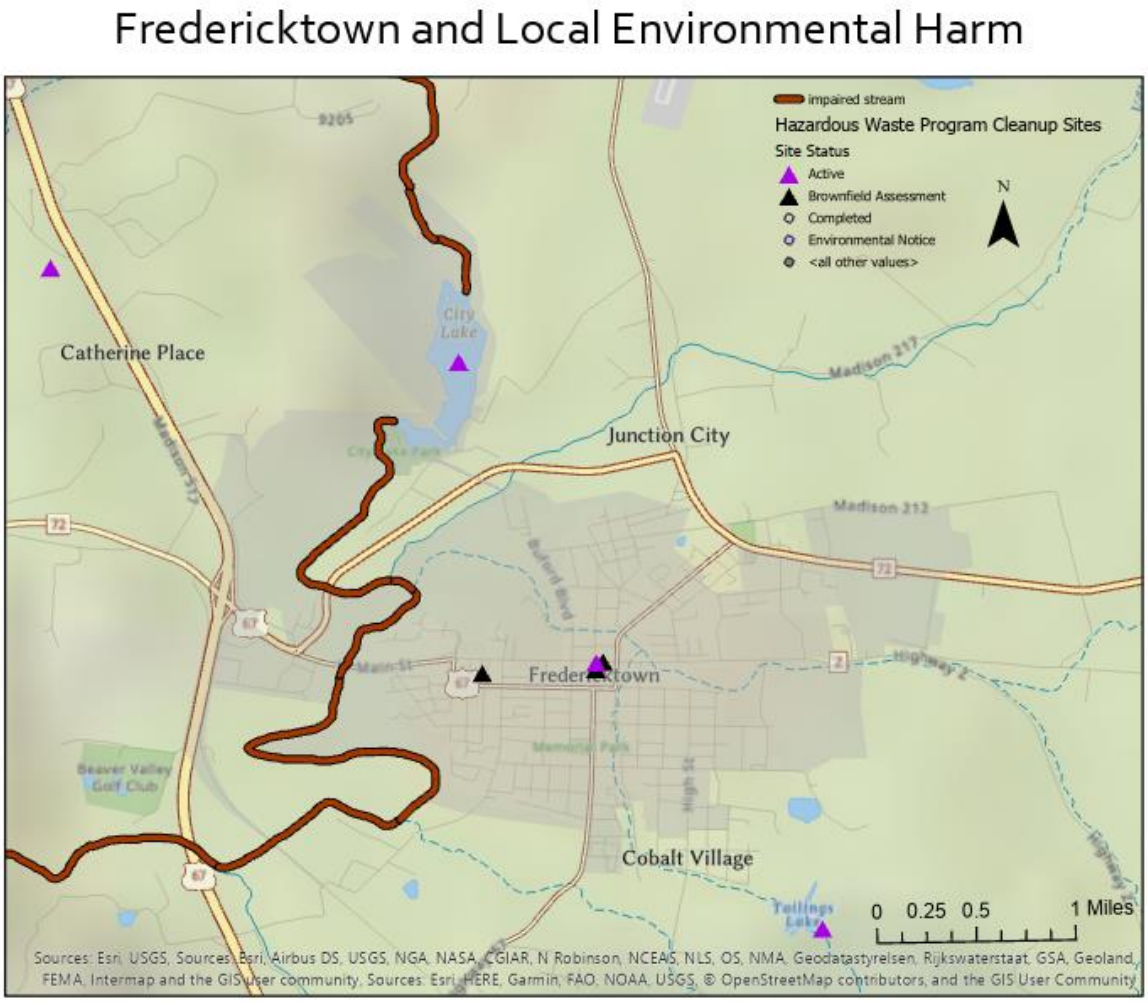
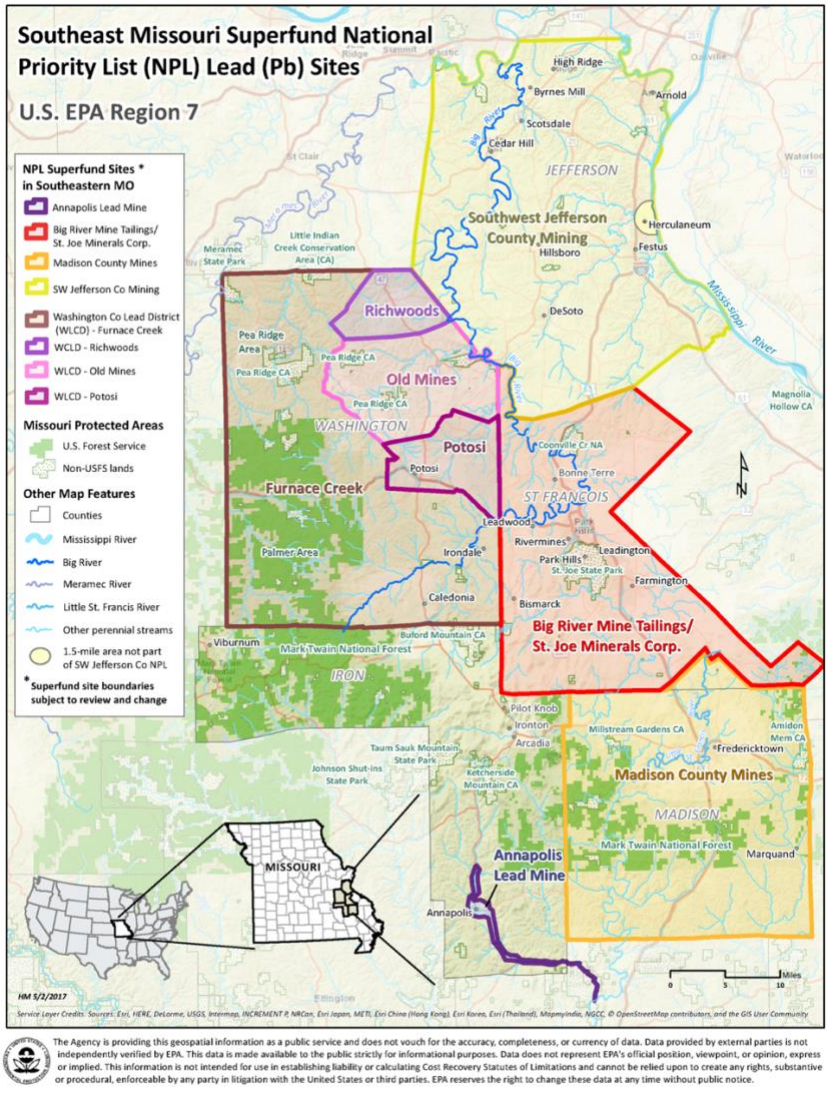


Figure 1. Fredericktown and Local Environmental Harm

The first map places cleanup sites spatially on top of a map of Fredericktown. Active cleanup sites and brownfield sites are located within the city limits, as well as within the nearby city lake. An impaired stream leading into the City Lake is also emphasized. Additionally, one can see the nomenclature of surrounding sites and their relationship to mining. Just south of Fredericktown city limits is Tailings Lake, which is also an active cleanup site. Cobalt Village also lies just south of the city limits. This map illustrates the proximity to environmental hazards mentioned previously. Not only are there multiple active cleanup and brownfield sites in Fredericktown, but

four of them are located at or near the center of town. The largest lake in the area is an active cleanup site, and an impaired stream flows into it. At the most basic level of geospatial analysis, this reference map tells a long story about environmental harm and its monumental physical presence in Fredericktown. The presence of not one, but several active cleanup sites in the center of the town, as well as in major water sites, are inevitably built into residents' perception of the world.



The Agency is providing this geospatial information as a public service and does not vouch for the accuracy, completeness, or currency of data. Data provided by external parties is not independently verified by EPA. This data is made available to the public strictly for informational purposes. Data does not represent EPA's official position, viewpoint, or opinion, express or implied. This information is not intended for use in establishing liability or calculating Cost Recovery Statutes of Limitations and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with the United States or third parties. EPA reserves the right to change these data at any time without public notice.

Figure 2. Southeast Missouri Superfund Nation Priority List Lead Sites US EPA Region 7 (Environmental Protection Agency 2017)

The second map presents a larger picture of the previous reference map (Map 1). As opposed to showing specific cleanup sites and their locations, it maps out the larger Superfund Sites of the Southeast Missouri Lead Mining District. It demonstrates the massive extent of these Superfund sites and their overlap with Missouri Protected Areas, such as Mark Twain National Forest, most of which are open for recreational use. One can also easily see the immense presence of waterways in the area (expand here and talk about the connection between waterways and the spread of heavy metal pollution). Again, this map is useful because it presents a new context for the relationship between environmental hazards, place and space. One can see the extent of the Superfund sites and their incorporation to parts of the Ozarks that are used for recreation, such as waterways, that are considered a significant part of the local culture (Interview #s 1, 8). The spatial extent and significance of this pollution demonstrate the surrounding of Fredericktown's immediate local area by Superfund cleanup. The immense presence of mining and its environmental harm are in plain sight.

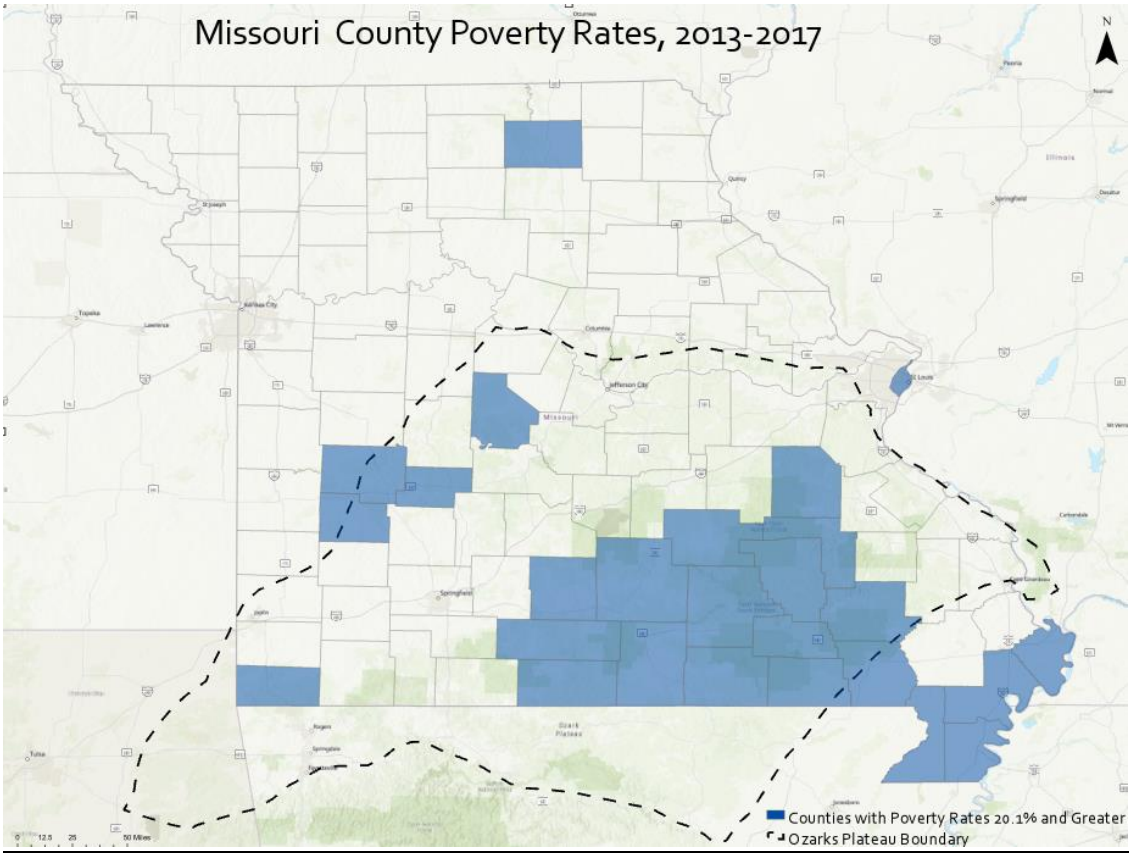


Figure 3. Missouri Counties with Poverty Rates 20.1% and Greater (Missouri Department of Health and Senior Services 2019)

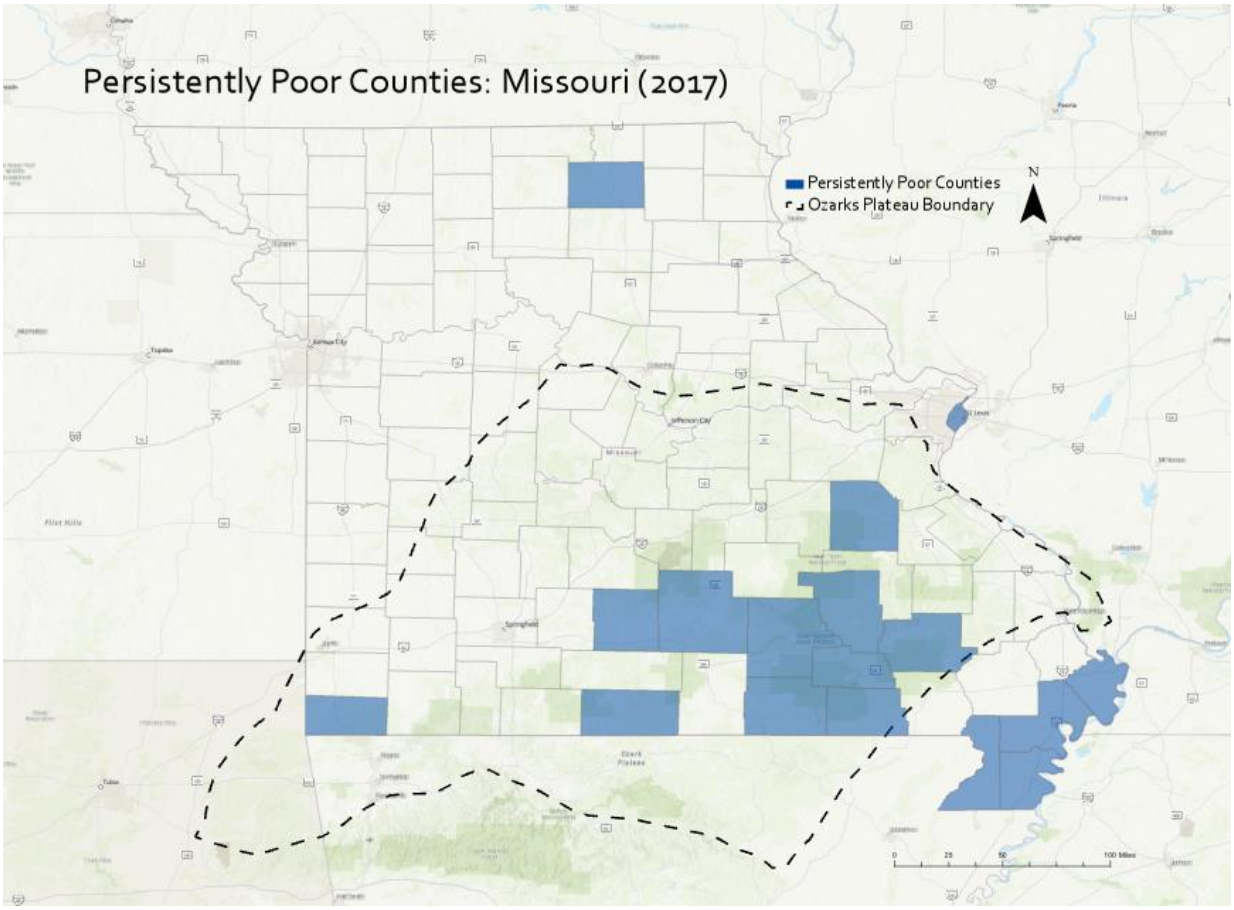


Figure 4. Greater and Persistently Poor Counties in Missouri (Missouri Department of Health and Senior Services 2019)

Maps 3 and 4 are included for reference to the socio-demographic section of the region, in order to spatially illustrate the relevance of economic disparity in the Missouri Ozarks. The poorest counties and the most persistently poor counties are nearly all located within the Ozarks plateau. It is also worth noting that the majority of these counties lie in the Southeast part of the state, although there is not a direct correlation between them and the Lead Mining District. However, the persistence of poverty in the area inevitably shapes the life experiences of those residing in this geographic region. As of 2018, Fredericktown itself had a median household income of $29,012 (Census Bureau 2018) which is substantially lower than the U.S. median household income from that time: $61,937 (Census Bureau 2018). This could potentially normalize the

presence of extreme poverty, further shaping the perception of environmental victims with producers.

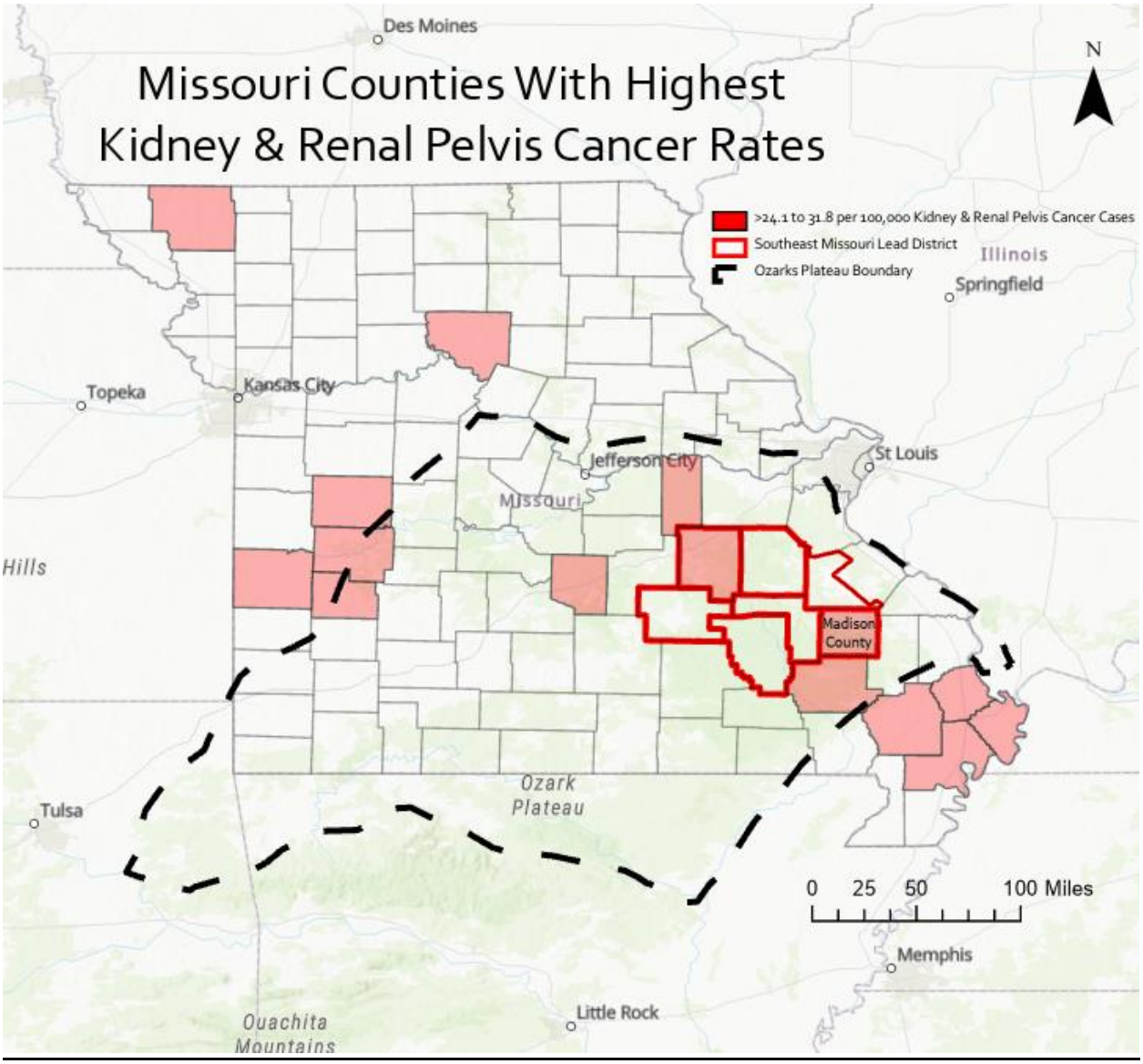


Figure 5. Missouri Counties with Highest Kidney & Renal Pelvis Cancer Rates

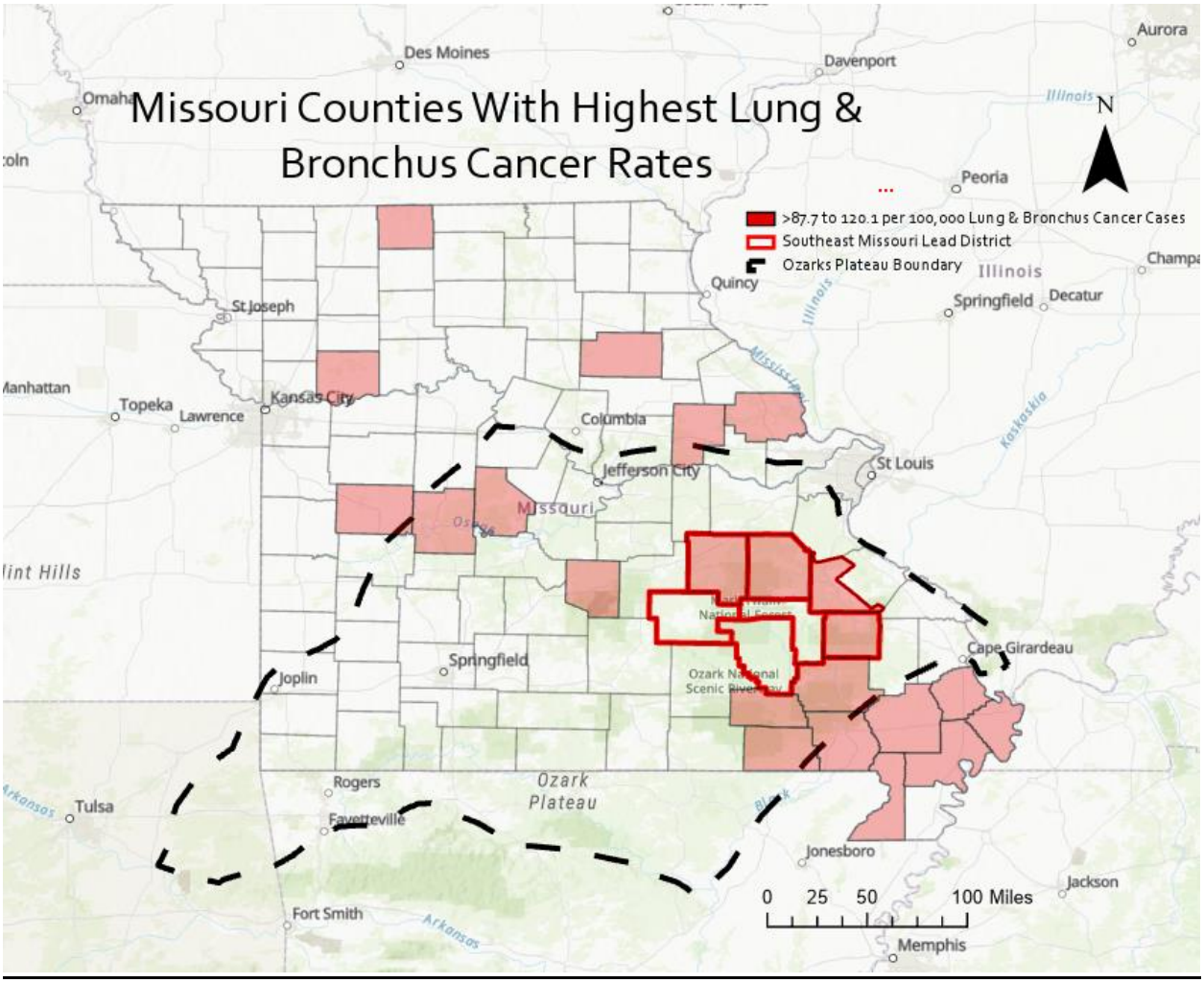


Figure 6. Missouri Counties with Highest Lung & Bronchus Cancer Rates

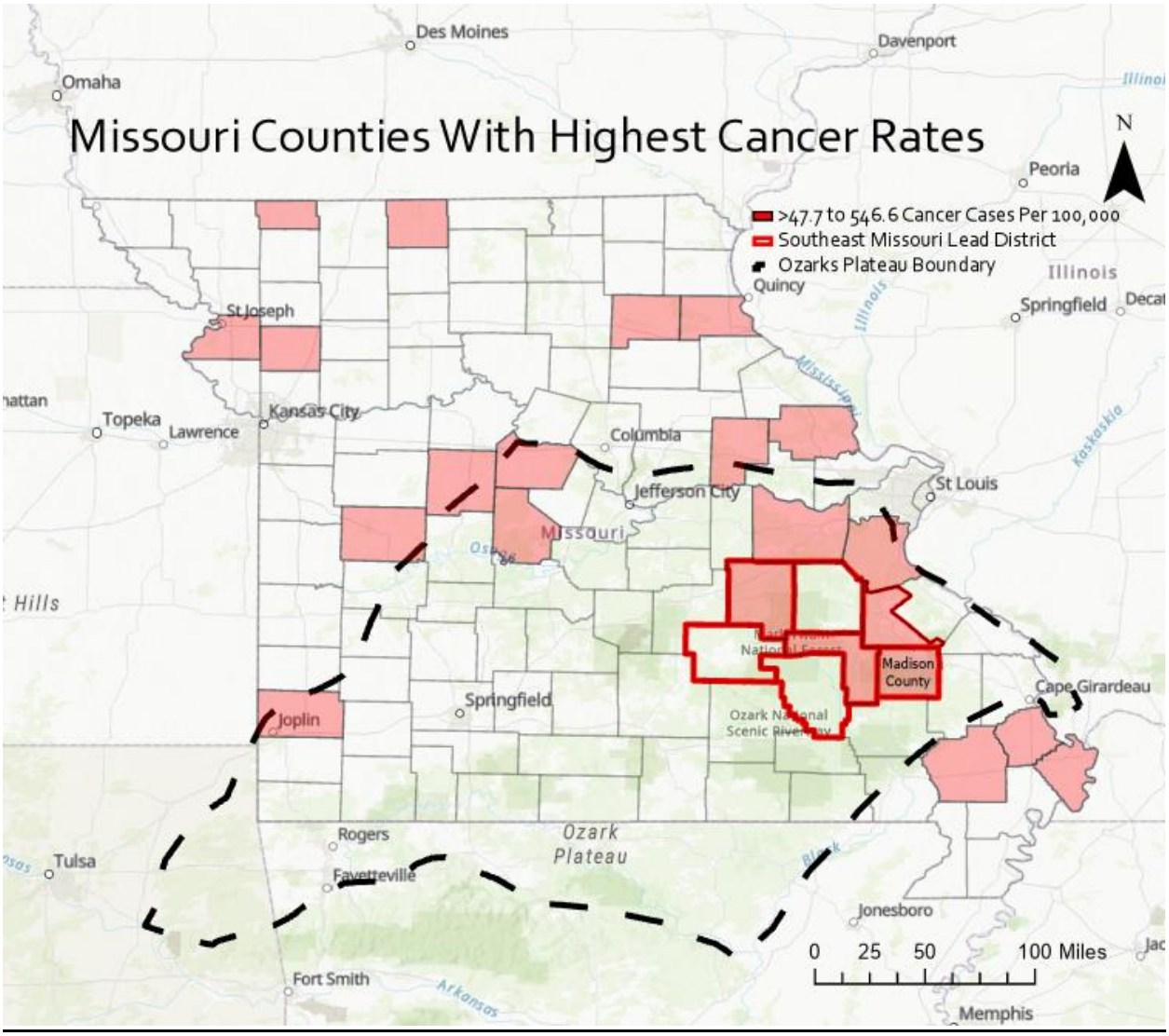


Figure 7. Missouri Counties with Highest Cancer Rates

According to the National Institute of Health (2020), the counties in the Southeast Lead Mining District in Missouri have some of the highest cancer rates in the state of Missouri (Map 7). Madison County in particular was in the highest range for overall cancer rates, kidney and renal pelvis rates, and lung and bronchus cancer rates. These maps illustrate the geographic connection between lead mining and environmental health.

The geospatial science field has extensive mapping analysis methodologies that can be applied through the use of geospatial software. Geospatial mapping is also useful in its application to any social science field. In order to draw direct correlations from theses maps, one would need to apply the appropriate geospatial methods and analysis. While this is a viable option of continued research in this area, it is not the purpose of the inclusion of these maps in this study. The purpose here is to instead tell a story through images. Side by side, they demonstrate a pattern and present more context to the aforementioned constructed meaning of one's environment and surroundings. The Southeastern area of the Missouri Ozarks is evidently inundated with exceptionally high cancer rates. Madison County is physically surrounded by high rates of cancer, potentially normalizing chronic health conditions in the area. These images supplement the narratives and historical evidence, provided by interviews and content analysis, that demonstrate experiences are shaped by surroundings.

Figure 8. Fredericktown Superfund Cleanup Site and Local Playground

Figure 9. Fredericktown Superfund Cleanup Site and Local Playground

Figures 8 and 9 are photos that I took on a field visit to Fredericktown in November 2019. They show a Superfund cleanup area directly next to a children's playground. The playground is not directly on the cleanup site but is just feet from the boundary. The interpretation of a health risk could easily be shaped by a playground's proximity to an environmental cleanup site. If children grow up playing this close to environmental hazards, let alone playing directly on them as many in Fredericktown did, it could easily normalize the health risks caused by the dumping of hazardous industrial wastes.

As previously discussed, images and maps can be crucial to analysis in green criminology. These maps and images serve to illustrate the shaping of meaning and material

conditions through the manipulation of this community's physical environment. The two first maps serve to visualize the physical location of Superfund sites and contamination in relation to Fredericktown. Map 1 was created by me using ArcGIS software and Map 2 was created by the EPA. These are a reminder of the prevalence of environmental harm in this area. Maps 3 and 4, maps I created using ArcGIS software, serve to illustrate the material economic conditions of this geographic area. Maps 5 through 7, also maps I created using ArcGIS software, demonstrate the physical prevalence of serious illnesses in a region dominated by lead mining. Finally, Figures 8 and 9that I photographed as an outsider doing fieldwork in Fredericktown, also serve to demonstrate the physical connection between environmental waste and the shaping of meaning in this locality. These maps and images allow the reader to visualize environmental harm, a concept that is difficult to define and picture, and to see the integration of environmental harm in reality in new ways to which they can relate. They also serve to supplement the themes "hazardous waste shapes place and space" and "dismissal of health concerns" that resulted from interviews and critical content analysis. Just as green criminology is a broad field, expanding and challenging definitions of crime and the environment, so too are its methods and analyses.

5.2 Mining and Historical Context

> "…OK so you're a Native American. You find this chunk of galena ….so you're going to look at this you're going to you're going to say this is really cool. You're not going to just like throw it on the ground and walk away… You're going to carry this around in a little pocket or pouch or something, you're going to be showing it to people. Look at my neat thing I found look at this thing I have. And you're going to show that to some French explorer and he's going to know what that is and he's going to say wow that is neat where did you find that." (Interview # 8, 10/26/2020)

According to journals of those present for the discovery of Mine La Motte and dramatized by an informant for this project, this is how the largest lead mining site in the world came to be in 1715 (Randolph 2017). The most popular story outlining the beginning of

Fredericktown states that Native residents of the area led French settlers to lead deposits. It is unknown which tribe these Natives were a part of, and if this was a peaceful interaction. Since then, until the 1970's, mining, especially lead mining, dominated the local economy (Interview # 8, 10/26/2020). The mines employed thousands of people and the area was the number one producer of lead in the world (Missouri Department of Natural Resources 2020). Many residents of Fredericktown and surrounding towns in the Southeast Missouri Lead Mining have at least one family member that worked for the mines in some way.

> "Several of them [respondent's family members] were miners. It was a culture and in our environment. It's part of our world. So I guess the sort of relationship with mining is a very good, fond relationship. Good memories with your family and ancestors and stuff…" (Interview #3, 2/11/2020)

The dominating presence of the industry transformed mining into more than just a means of making ends meet for Fredericktown residents. Mining became their culture and even part of their family history. Even those who did not have direct family members who worked in the mines state that they nearly everyone had some sort of connection to mining.

> "The older people, all of them had practically had some connection to mining… either they worked in the mines, or they worked in the office at the mines… So almost every family that's been here for any length of time has some connection…"(Interview #1, 1/8/2020).

Many relayed their families' experiences with mines and told stories of fond memories related to this, such as one resident who remembered often bringing her father lunch and seeing him emerge from the mine. Respondents with family members who were miners added that their families had an overall good relationship with the mining companies for whom they worked, and that they had a positive view of mining and mining processes, despite the resulting pollution and the economic drought that was left in its wake.

> "They had some excellent people here who ran the mines and they just became townspeople…" (Interview #1, 1/8/2020)

> "He had a very good relationship [with the mining company]. When he got sick the company was very good too…"(Interview #1, 1/8/2020).

Those who did not have family members who worked in the mines echoed these themes as well.

> "This town was built because of those mines. I mean, really… on our East side of town which is where the mines was… those houses are, a lot of them look just exactly alike and that's because they went in there and built all them houses, people that worked at the mines to live in..." (Interview #6, 10/13/2020).

The physical remnants of the mines and their presence in Fredericktown also influence a connection to the industry. A "newer" resident (having moved there about twenty years ago - this is still considered being "new" to the area due to the small-town culture) holds a distinct interest in mining and expressed that this interest started when he moved to the Southeast Missouri area because mining physically surrounding him. He stated,

> "…there's literally mines everywhere out here on national forest land, private land and there's hillsides that look like they've been bombed… you know there are three-to-four-foot pits all over the hillsides..." (Interview #9, 10/29/2020)

This newer resident was physically surrounded by mines, which led to mining becoming pervasive in his life and interests in other ways. While this resident did not have a family connection to the mines, the physical presence of mining remains shaped his sense of place. Now, this respondents' hobbies include collecting maps and archival documents about mining in the area. This physical presence of mines changed a person's perspectives and interests. This demonstrates the influence of processes as domineering as the lead mining industry in the Missouri Ozarks and its ability to shape the relationship between environmental victims and producers.

In Fredericktown, the last active mining site closed fifty years ago. However, residents still demonstrate a positive, loyal connection to the mines. According to respondents, many

residents have family members who worked in the mines and residents who did not have this family connection still speak highly of the mines and mining industry. Respondents spoke at length about how mining has always been a part of their life and the culture of Fredericktown. While many families lost their income and the social safety nets that the mining industry provided for the community, my informants stated that most residents remain loyal to the mining company and industry that left swaths of pollution and an economic drought in its wake (Interviews 1 and 3). In this way, the very meaning of a Superfund site as traditionally examined from the perspective of environmental victims is challenged. However, in Fredericktown's case, environmental victims fondly reminisce on an era when mining thrived in Southeast Missouri. They have embraced it and consider it a part of their culture. This connection to mining is seen in newspaper articles from the area as well. In an article about the beginning of lead contamination in 2003, the history of mining in the area is described as "rich". In most articles about the relationship between lead mining and environmental harm, there is a disclaimer seemingly attempting to make it clear that no one's family member was directly responsible for the harm. For example, a news article in the local paper from 2000 outlining the introduction of the EPA to the area, states

> "Mine waste products are clearly visible in the area where lead mining went on for nearly 300 years. It was pointed out French settlers started mining lead in the Mine La Motte area before anywhere else in Missouri and processing the ore was much cruder than at the more modern operations in St. Francois County." (Democrat News 2000)

These responses and narrative choices throughout primary documents demonstrate how an industry dominating an area can influence social forces as significant as culture, familial loyalty, and community. The above excerpts exemplify the deep connection Fredericktown residents hold to an industry and how this shapes their *meaning*, as outlined in green cultural criminology. They

also indicate that the legacy of mining in Fredericktown and the mining district do not only persist through family and community ties, while providing pointed examples of how the physical remnants of extractive processes can shape meaning. This exemplifies the political economic approach to green criminology. This approach emphasizes the immense influence that politics and capital have on environmental harm. Additionally, this theme reflects the relationship between producers and laborers within the treadmill of production. Laborers often collude with producers because they rely on the income provided by them.

5.3 Hazardous Waste Shapes Place and Space

According to interviews, on a Sunday after church service in the 1960's, families would go their separate ways to pick up supplies from their homes, picking up blankets and picnic baskets, full of sandwiches and sweets. Then, church friends reconvened at an area covered in what looks like vast sand dunes. Families, parents and kids, would trek through the dunes to set up their picnics and enjoy their Sunday. Parents sat, talked, and laughed as kids ran up and down the piles and slid down them on anything they can find. These dunes are the Fredericktown chat piles. Local farmers would add this chat to their crops as fertilizer. At this time, chat lined the roads and was present nearly everywhere in Fredericktown. This scene that certainly seems strange to outsiders was a reality to Fredericktown residents growing up. To this day, there is chat in the local St. Joseph State Park that is used for recreational four-wheeler and motorbiking competitions. People travel from around the country to compete in the locally beloved sport. A respondent who did not grow up in Fredericktown shared,

> "I would have paid extra money if I could have been raised here and played on the waste piles like all the other kids. I mean I'm just telling you how it was. They were playgrounds for all the kids. Everybody played on them, they slid down them on car hoods and on bent up pieces of plywood, anything they could get to play on there…" (Interview #8, 10/26/2020)

Ozarks summers aren't just hot, they're *humid*. Most days it's nearly ninety degrees and one can feel the water in the air. It's almost like a blanket, coating folks with moisture as soon as they set foot out the door. The priority in the Ozarks in the summer is to be close to a body of water. This isn't difficult either, as the hills are spattered with cool lakes and creeks. The summer attraction during the height mining in Fredericktown was known as Slime Pond.

> "…we would go out to what we called the Slime Pond, which is where all them tailings was piled up. And there's a lake in the middle of it and… we'd ride motorcycles or whatever on the tailings, which was just chat piles or sand. And, and, you know, that was just a great place to go play…" (Interview #6, 10/13/2020)

While many small-town residents' summer memories are filled with the creek, or the public pool, Fredericktown residents have chat piles and Slime Pond. A Missouri Department of Natural Resources water quality report outlines the recreational activities that take place there to this day.

> "This area was formerly used for producing and processing lead. Currently the property is used for recreational purposes including swimming, fishing, camping, boating, and hunting. The beach and approximately 50 camping sites are located on the western and southern areas of the lake on tailings. A children's playground is located in the tailings of the beach area. The tailings pile to the east and northeast of the lake is used for recreational purposes such as riding all-terrain vehicles." (Missouri Department of Natural Resources 2009)

This re-shaping of the environment by mine waste extended past just these piles and Slime Pond. Most respondents told stories of waste in other parts of Fredericktown.

> "When I was a boy there was a lake… even though it's private property of closed mine site, we went there and fished. Well, the soil around part of the lake.. was different colors. from the chemicals they used in the refinery part of it… but we went and fished at that lake all the time… and some of the soil around it would be orange and part of it would be blue and stuff and we ate fish from it all the time…" (Interview #1, 1/8/2020)

Content analysis revealed that residents' connection to mining waste is persistent. At a meeting about the remediation plans in 2003, a resident…

> "…mentioned he believes going after someone to clean up a site is a violation of the Constitution and ex-post facto laws. (something made illegal after the act had already been committed)… [the resident] explained dumping chat materials was not illegal when it was done and haulers should not face legal matters concerning the issue. .." (Democrat News 2003)

These responses demonstrate instances in which extractive processes have shaped meaning into a site of acceptance. The constant presence of a vast amount of waste literally surrounded residents and they regularly physically interacted with it. This, as opposed to a town without a common presence of environmental waste, could easily shape the *meaning* of waste to a community. The meaning of actual, physical mining waste evolved into something positive, a sort of natural playground for residents. Much like the physical presence of the mines themselves and of the presence in residents' families, mining was present in the surrounding land and water, shaping the meaning of environmental harm.

This finding is a result of thoroughly and carefully examining a rural black site, or a site that is considered invisible by all but their exploiters – in this case, the mining corporations and the government. The maintenance of a black site here allows this exploitation to continue through the treadmill of crime. Through this exploitation, a partially remediated Superfund site remains a cog in the treadmill. It is better that Fredericktown exists as a rural black site to corporate and state actors. For instance, the acceptance of mine waste as a playground in Fredericktown and the harmful health consequences of this acceptance illustrate this. This cultural behavior is unknown to outsiders. The narratives of those who reside here can illuminate social relationships that are not seen because of the area's obscurity and manufactured redaction. The first two themes – a legacy of mining and toxic waste shaping place and space – directly challenge a common understanding in green criminology.

5.4 Dismissal of Health Concerns and Frustration with the EPA

Another theme common in the responses from Fredericktown area residents is denial that mining is related to lead poisoning.

> "I'm going to tell you the truth. I don't think most people who even know that it was an issue here. If someone hadn't told them. I'm one of those people…" (Interview #6, 10/13/2020)

> "I have actually spent a lot of time in water growing up as a kid. We'd just play in the river all the time. And if you read any of the charts and stuff, they put out on all these rivers, they say that river is not healthy, but none of us has got three arms..." (Interview #3, 2/11/2020)

Additionally, residents mentioned that those involved in lead mining were deeply hurt and offended when it was mentioned that they potentially were to blame for health problems in the area.

> "People who… have lived here a long time are offended by this. They don't like their community being looked at and considered an unhealthy place to live or raise a family and to be an undesirable place because of the mines here. Because they know they lived here when the mines were here and they know there wasn't any problem and for somebody to come in and tell them and to suggest publicly with all the media… and everything else that lead mining areas are bad for your health and this is not a healthy place to live.. they are offended by that. So it's not just that they don't think there's a problem, they are offended by it." (Interview #8, 10/26/2020)

A key informant, a public health official, mentioned that the public health awareness campaign was revised because of former miners' concerns about being viewed in a negative light. The primary campaign included information about lead mining and its connection to health problems caused by lead mining. However, after receiving feedback from former miners, it was changed to a preventative campaign, encouraging parents to test their soil before letting their kids play in it and informing them of different ways children could get lead poisoning.

> "They just didn't want it to sound like they had intentionally done something wrong as the miners. It was an overall feeling of the lead miners after we changed our slogans, changed our approach in the education, we started to see better community reception and listening ears to the prevention message..." (Interview #7, 10/16/2020)

One respondent questioned the testing process of the EPA and that health problems came from lead mining at all. His main concern was that EPA testing does not speciate the lead or test it to identify exactly where the lead came from. He claims that most lead poisoning in the area comes from lead paint, rather than from mining.

> "As far as I'm concerned you just flushed the whole project down the tube if you don't speciate, or know what form that lead is in. How can you solve the problem when you don't know what's causing it. Their child lead study… may be the most disappointing… piece of junk I've ever seen…" (Interview #8, 10/26/2020)

The blood lead levels in children in the Fredericktown have gone down significantly in recent years. One of the study's key informants, an environmental engineer who works closely with Fredericktown, added that despite residential pushback, residents with kids who test for higher blood lead levels are invested in the remediation work that happens in Fredericktown. He stated that it is primarily senior residents with a strong connection to mining that grow defensive about the connection between lead and health.

> "There's been a significant drop… it went from like 13 or 14% of the kids they tested down to whatever the current national average is… so I think the program's been a big success. Yeah, it's still necessary… Okay, we've done the schools, we've done the big places where kids gather, we've done the City Park. If people have young kids that have tested positive, they're the first people on the phone to come get [the EPA] to do their yards… The people who pushed back are you know, 70 years old, it doesn't affect me, if it was going to kill me it would have killed me by now… but they're gonna die someday and who knows who's going to get that land… that's why I still think it's still necessary. It's not so much the current folks that don't have kids, but it's the future people… those houses are going to exist, those lawns are still going to exist 30 years from now… some little toddler is going to be in a front yard running around…" (Interview #10, 10/30/2020)

This tension between residents and the EPA is not only related to health, but to the entire remediation process.

Only two of the respondents who were Fredericktown residents responded positively to the presence of the EPA. One mentioned that it was potentially a plus for the economy, because Fredericktown residents were being employed to aid in remediation and those who came in to do

work would eat at local restaurants. Another respondent worked directly with the EPA and had a good relationship with the agents who were assigned to Fredericktown. He stated that any sort of environmental remediation or clean-up was a good thing, but also expressed skepticism at the necessity of it in Fredericktown.

The questioning of the purpose of EPA remediation was the most common sentiment among respondents. This, of course, correlates with the questioning of any health issues related to lead mining. Similarly, residents are skeptical of the need for remediation at all. Many residents pointed out that the soil is moved to another location and they don't understand how that is any better for the environment.

> "…when they first showed up, I'll just tell you truth, I thought this was the biggest waste of money. I just couldn't picture. You're taking all this dirt out of town and the whole thing that throws me off and it still is in my mind a little bit, they take all the dirt out of town and they say it's contaminated and they take it somewhere else and dump it out, which is just not too far down the road. Right. Well then, they bring all the dirt in and cover everything back up. That's fine. But what about the area where you took all that dirt to essentially gonna head right on down the lowland areas? And so I don't know how it's, I don't understand that whole process…" (Interview # 6, 10/13/2020)

> "…I talked to some truck drivers to see where they were taking that supposedly contaminated soil… They had sold it to the guy who's building a private lake in the south part of the county, and they were driving it straight from there, down to where that lake was and cleaning the dam, building a dam with that, with that soil potential for it to leach out later, or later if there's a big problem with it. But that's what that's what they were doing with that… So a lot of it is just going on the edge of town, there's a big, big long field where they've taken it all out… dumping it out there, but the rains gonna come unless they cap it really fast or it's gonna come and wash on that way back down the creeks…" (Interview #1, 1/8/2020)

This was also evident in the content analysis of local newspaper articles. An article from 2000, when the remediation process was first being introduced to residents, the newspaper stated,

> "While there were health concerns expressed by some property owners who have attended public sessions in Madison County, there have also be concerns about the effect of EPA activities on property values.

> Mine waste products are clearly visible in the area where lead mining went on for nearly 300 years. It was pointed out French settlers started mining lead in the Mine La Motte area before anywhere else in Missouri and processing the ore was much cruder than at the more modern operations in St. Francois County.
>
> Another possible reason lead content in soil is greater in that part of Madison County is that the lead was smelted there for many years. Most of the lead mined in St. Francois County was smelted at a facility in Jefferson County." (Democrat News 2000)

This segment reflects the hesitance to embrace remediation and to blame any of the environmental harm on more recent mining practices that may have included residents or their family members.

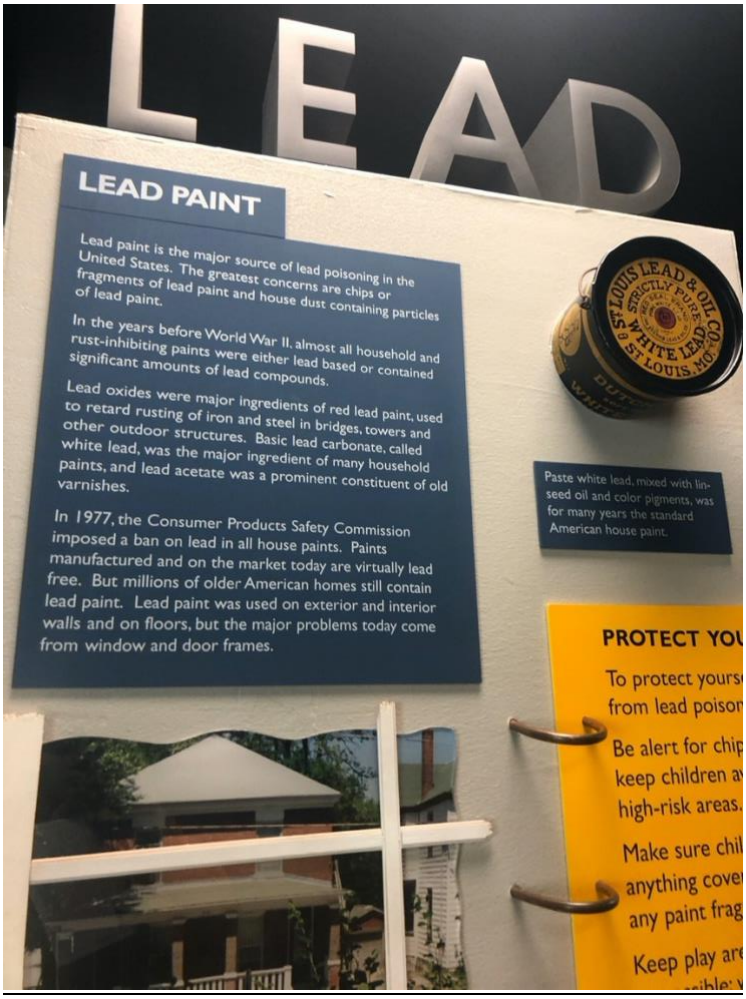


Figure 10. Placards in Missouri Mines State Historic Site Museum

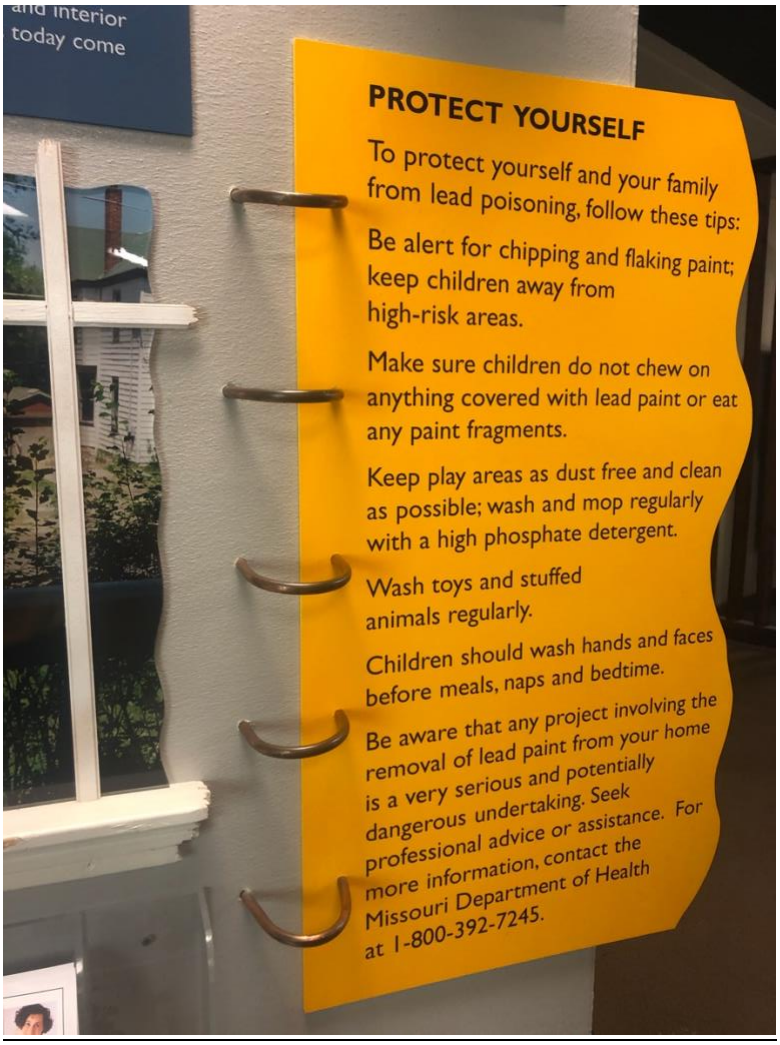


Figure 11. Placards in Missouri Mines State Historic Site Museum

Figures 10 and 11 are more photographs that I took during my field work in the Southeast Missouri Lead Mining District in November 2019. These placards neatly complement the narratives from the interviews and content analysis that residents of the Southeast Missouri Lead Mining District distance themselves from the connection between lead mining and environmental health hazards. These placards directly call lead poisoning a result of contact with lead paint in houses and do not refer to it as a result of playing in contaminated soil. They also refer to the tailings and slime ponds as recreational areas and do not directly make a connection to these and harm to health.

Despite the evidence that Madison County has high blood lead levels among children and that cancer rates here are some of the highest in Missouri, the meaning of these health problems is again shaped by the mining industry. The interpretation of health concerns as an inconsequential issue demonstrates this. This denial shapes the state's approach to remediating this Superfund site. For example, more pressure on the state from residents could result in a more thorough or expedited process. The EPA was able to apply the repurposing method here, because the community did not hold a strong, collective concern for further environmental harm. For example, one respondent stated, "None of us has got three arms… " (Interview #3, 2/11/2020) in response to a question about concerns about environmental harm left over from years of lead mining. The community's embrace of this denial, down to the narrative's inclusion in a local museum, ended up serving the purposes of the state and corporations in maintaining a rural black site and continuing the exploitation of this area.

This also persists in the response to the presence of the EPA. Again, Fredericktown residents are physically surrounded by remediation sites and have been for the past twenty years. The meaning of environmental harm is shaped by a loyalty to the mining industry rather than to the government agency cleaning their town. This theme is the most direct contradiction to the treadmill of crime framework. In the treadmill of law, citizens are either shaped by their economic interests and consented to the treadmill of production or represented by those fighting for environmental justice. This theme demonstrates citizens behaving in a nearly opposite manner, either denying health concerns altogether, or changing the narrative surrounding them so as not to contradict the mainstream positive mining narrative. In this way, residents of Fredericktown have co-opted the more dominant treadmill of crime ideology which serves to build their sense of place and space. The altering of a public health campaign narrative as

detailed by a respondent (Interview #7) demonstrates the strong allegiance to place in Fredericktown. A public health campaign and local newspapers carefully treading around a mining legacy reflects and serves to continue this cultural narrative. This is additionally present in the community's welcome of further extraction in their local Superfund site.

5.5 Positive Cobalt Outlook

As mentioned previously, the EPA remediation program is turning a portion of the Madison County Mines Superfund site into a cobalt mine, which, according to my informants, residents nearly unanimously agree is a positive thing for the future of the community. Primarily, residents think the cobalt mine will be helpful for the economy, which has suffered greatly since the mines in Fredericktown shut down in the 1970's. This region is well below the median US household income (Census Bureau 2018) and is surrounded by persistent poverty (Maps 3 and 4).

> "When the mines left… it was a hardship. It was another depression for this area. People just didn't know what to do. You know, there's so many people, their lives were wrapped around mining. And they had to leave and find work…" (Interview #3, 2/11/2020)

> "…our town is not a very large town. It's a town of 4,000 people and up until this, until this new cobalt mines thing opened there just really, wasn't a whole bunch of jobs here, factories here years ago. And they have since moved and went on and kind of left our town. So we're here dormant and most people will travel to St. Louis or even the town above us, which is still 30 minutes away to work…" (Interview #6, 10/13/2020)

Residents hold the possibility of a new mine in high esteem, as a glimmer of hope in their current economic darkness. According to respondents, this is despite other mining companies discussing the possibility of opening up mining again, coming in to assess the area, working up excitement in the town, but nothing coming of it.

> "I think everybody… is excited about them, uh, opening that thing back up mainly just because it was, it was good jobs and, uh, the cobalt is not, you know, anytime you speak of lead, it puts a sour taste in people's mouth. That's not what they're about, you know, they're there for the cobalt and nickel and copper, which was discarded years ago…

> they're getting all these tailings and redoing them again, and they're getting what the good stuff is, you know?" (Interview #6, 10/13/2020)
>
> "as long as I can remember you, you would hear whether you're talking about opening the mines and we'd heard it so much, it just become routine and people didn't really believe in it no more, you know? And, and then when this bunch it's got to now showed up and was actually… doing something… it kind of got the morale, the people built up and everybody was excited about it. So… we hope that it keeps going." (Interview #6, 10/13/2020)

Amidst the praises for the cobalt company's presence, there were a few concerns. A public health official in the area stated,

> " I hope it all goes well.… there's always concern that, you know, there'll be a breach in, a dam, some of their pools and stuff, that will contaminate the water, that kind of thing. But because we have flash flooding issues and that really can weaken a dam quick. So… I have concerns about that and water contamination, but all in all, I have faith in EPA and DNR…" (Interview #7, 10/16/2020)

The environmental engineer added that he has hope for the cobalt company to bring positive economic attention to Fredericktown but stated that it comes down to the company following the regulations they've put in place.

> "…if they [the cobalt company] do it the way they claim they're going to do it, it could be a very good thing… if they take the proper controls, which they said they will, I mean it's reprocessing tailings that would otherwise sit there in a pile. I would certainly much rather see those tailings made into something useful. But again, the devil's in the details. How… are they doing the things they're supposed to do? (Interview #10, 10/30/2020)"

Overall, despite these few concerns, residents maintained that they had faith in the cobalt company to follow regulations, and that they would not cause any more environmental harm in the area. Local newspaper stories included a positive outlook on the opening of the cobalt site as well. A story on the repurposing of the cobalt mine from 2019 stated,

> "The new property owners intend to re-open a former cobalt mine, which could employ hundreds of residents. EPA and the new owners signed an Administrative Settlement Agreement and Order on Consent to conduct the work.

> ‘Reopening the mine represents a tremendous economic opportunity for the Fredericktown community,’ said EPA Region 7 Administrator Jim Gulliford. ‘The property owners’ efforts to restore mining operations and clean up the mine demonstrate how economic and environmental revitalization go hand-in-hand.’” (Environmental Protection Agency 2019)

It is evident that the EPA framed the cobalt mine reopening in a way that promotes the economy in the area, reflecting the needs and sentiments of residents.

The above excerpts are further examples of the meaning of environmental harm being shaped by external processes. While the area’s economic stability left with the mines, they are still seen as a significant and beneficial part of the community to residents. Again, this is a reinforcement of the idea that meaning can be shaped by extractive processes. Although disproportionate health problems and economic hardship followed the closure of lead mines in the area for decades, the interpretation of another mining company coming to town is positive. Residents maintain that they have faith in the company and its regulations to protect them from environmental harm and economic catastrophe.

This is another instance of a contradiction in the current treadmill of crime theoretical framework. Again, residents embrace further extraction in their community rather than pushing back against it, as is their given role within the treadmill. Fredericktown has been exposed to ecological and social disorganization because of pollution caused by the extractive industries. Yet, their embrace of a new extractive process and industry demonstrates that they do not believe lead mining corporations are at fault for this. Both the community’s denial of health concerns and resentment for the current remediation process contribute to their welcoming of a new extractive process. The long history of Fredericktown’s exploitation by the mining industry allowed the area to dive into economic hardship for decades. Additionally, the state’s long-term, ineffective solutions to solving social and environmental problems here have shaped the

collective interpretation of environmental victimization and harm. These forces, acting in collusion, can serve to influence a community's sense of place.

CHAPTER 6: DISCUSSION

Green criminology is an interdisciplinary field, which necessitates the continuous re-examination of existing theories, concepts, and perspectives from multiple angles to understand the complex relationships between humans, the environment, and the social control institutions intertwining them. My findings demonstrate the necessity to integrate the concepts of space and place into the political economic approach of green criminology.

Green criminology builds upon Karl Marx's foundational social science theories (Lynch et. al. 2016). Ecological Marxism has further posited an inherent contradiction between capitalism, an economic system reliant upon infinite growth, and the necessary use of resources emerging from a finite Earth in capitalist production (Foster 1999). The treadmill of crime theoretical framework in particular is a robust political economic perspective in green criminology that investigates the perpetuation of ecological and social disorganization between state, labor, and capitalist actors. Originating from the treadmill of production theory, the treadmill of crime theory examines how intensified industrial production led to increasing ecological additions and withdrawals, or ecological disorganization. The treadmill of law outlines the legal response to this and demonstrates the role of the state and legal actors in reinforcing the treadmill of production through three major components: the producers, the creators and enforcers of environmental laws and regulations, and citizens who call for environmental justice in response to environmental degradation caused by the producers (Lynch et al. 2016; Lynch et al. 2020; Lynch 2014).

It also presents three propositions:

> "1. The ToL will oppose (through state-corporate crime, if necessary) enhancements of environmental regulations that criminalize ecologically destructive behaviors of the ToP and its agents…
> 2. The state's enforcement of criminal environmental laws will not change production trends or limit ToP expansion…
> 3. Actors who threaten the ToP are likely to be defined as "green" deviants and criminals…" (Lynch et al. 2020: 110-114).

The first two propositions reflect the reality in Fredericktown, Missouri. First, "the Treadmill of Law will *oppose* enhancements of environmental regulations the *criminalize* ecologically destructive behaviors and its agents" (Lynch et al. 2020: 110). The environmental harm in Fredericktown caused by the forces behind the treadmill of production are not considered "ecologically destructive" by state actors, or the EPA in this case. The EPA demonstrates this by enacting their repurposing program, opening a cobalt mining site on an unfinished Superfund cleanup site. Similarly, the EPA is not "changing the production trends or limiting the treadmill of production" (Lynch et. al. 2020: 112) but allowing it to keep turning through this repurposing program. Although the Superfund program states that it is responsible for legal issues surrounding environmental remediation, they transfer an unfinished superfund site to the hands of another extractive corporation. This repurposing program is not in place to hold actors accountable, but to aid the continuation of the cycle of exploitation via the treadmills of law and production. The third actor in the treadmill of law, the citizens that often resist these environmental actions, were not evidenced in this case study. This is because the community members in Fredericktown have a positive perception of the mining companies, despite the fact that the mining companies are at fault for the area's pollution and for the presence of the EPA in their town for years (Environmental Protection Agency 2018). The treadmill of crime does not provide a nuanced understanding of environmental victims' perception of environmental harm. The treadmill of crime is a macro-level, top-down approach to studying the effects of corporate

and state actors on environmental victims. The case in Fredericktown demonstrates that a bottom-up approach, taking into account the lived experiences of communities exposed to environmental harm is necessary in examining these processes.

The treadmill of crime theory is comprised of complex, moving pieces through seemingly simple terms and concepts. The political economy approach within green criminology indicates the necessity of examining the relationships between economic systems, political actors, and environmental crime. The theories as they exist in the literature now do not properly account for environmental victimization, or a bottom-up approach. However, appropriate attention has not been given to environmental victims' *perceptions* of these additions and withdrawals. Also through a top-down approach, the treadmill of crime theoretical framework only allows for a rigid understanding of the labor and civil society roles in the process of accumulation and environmental victimization**.** The specific harm resulting from these modes of exploitation, in addition to the environmental harm resulting from these processes and the interpretation of this harm by the victims are not explored.

The current treadmill of crime theoretical framework organizes concepts such as ecological harms, additions, and their relationship to larger economic processes, such as production. However, the abstraction as currently exhibited in the treadmill of crime cannot adequately explain the processes of environmental victimization and treats labor and community as monolithic entities, ignoring the complexity of the lived experiences of victims. This project demonstrates that green cultural criminology can integrate the concepts of place and space as defined by the geography field in order to provide the theoretical context for "meanings" and building the understanding of rural environmental victimization (Ferrell 2013).

A beneficial starting point in examining the treadmill of crime theoretical framework from a bottom-up perspective is the environmental justice approach, which centers systemically targeted peoples. This project began as an inquiry into the acceptance of these harmful social processes in Fredericktown. In investigating this response to environmental harm in this community, Fredericktown was revealed to be a rural black site, its hidden nature working towards the interests of its exploiters, *and* a site of acceptance. This contradicts this community's assigned role in the treadmill of crime, which currently refers to them solely as citizens who fight for justice against this harm (Malin 2015) or as complacent followers. This also illustrates rural black sites as sites of environmental justice.

Rural black sites, or areas that are invisible to the outside world due to their exploitation by both state and corporate actors, develop in sites of acceptance. The manufactured invisibility of the environmental harm also hides this harm from the *victims themselves* (McClanahan and Linneman 2018). The only way to appropriately investigate the role of environmental victims in the treadmill of crime is to shed light on these black sites by integrating *the victims'* meaning of place. The social construction of space, as defined by Bell, relates to this interpretation (1999) in that social construction enhances the stability of social hierarchies, such as that between producers and laborers. Those at the top of this social hierarchy, in this case the state and capitalist actors, shape the conditions for environmental victimization to take place. This leads to the five themes uncovered through this research: historical context, waste shaping place and space, denial, frustration, and acceptance. Thus, there is a gap in the green criminology literature accounting for a bottom-up examination of these essential aspects of environmental harm research.

The five themes this research uncovered through interviews, content analysis and mapping evidence the need to bridge this gap. First, historical context shapes the meaning of environmental har, through the generational presence of the lead industry in this *space*. The integration of the mining industry into Fredericktown's sense of place is evidenced through interview responses, such as the reference to relationship with mining being a "fond relationship" and "good memories with family and ancestors" (Interview #3, 2/11/2020).

This respondent referred to the *physical* presence of mining in the area residents' environment, as well as its cultural relevance. They directly relate this persistence to a positive community relationship with the industry. This demonstrates how studying space and place can aid in the understanding of environmental victims' response to environmental harm, understudied sites of acceptance in particular. These sites of acceptance are not a mindless following of producers. In building on the sense of place and space that producers have manufactured, community members exhibit agency in their support of further extraction. In the treadmill of crime as it exists today, individuals react to environmental harm by fighting for justice. However, the case in Fredericktown demonstrates a manufactured consent to this harm through the shaping of spatial meaning by state and corporate actors. The corporate actors that perpetuated years of harm became, "…excellent people here who ran the mines and they just became townspeople" (Interview #1, 1/8/2020). Again, this relationship to perpetrators of environmental harm contradicts the current understanding of environmental victimization in the existing treadmill of law, which does not account for such meanings and loyalty to extractive industries. This leads to questions surrounding the acceptance of physical environmental waste in Fredericktown today, further explained through the following themes.

When examining hazardous waste and its use in Fredericktown, one is directly faced with the monumental physical presence of environmental harm in the day-to-day lives of residents. Through an in-depth investigation of the lives of these rural community members, the connection between environmental hazards and the community becomes fully visible. Living with hazardous waste has shaped place and space in the Fredericktown area through its dominating presence and the inconsequential solutions offered by the state**.** The chat piles and slime pond were integrated into the community as physical playgrounds and cultural landmarks, as demonstrated by respondents, who stated that chat piles were "playgrounds for all the kids" (Interview #8, 10/26/2020), and that Slime Pond was a "great place to go play." These physical landmarks have morphed into cultural signifiers through emplacement. Understanding rural black sites, or places that have been rendered invisible by corporations and the state (McClanahan and Linneman 2018), aids in the study of the acceptance of environmental victimization in Fredericktown. The collusion of the state and corporate actors manufactures and encourages this acceptance because this maintains a site's invisibility. In this case, this collusion takes the form of the EPA working with Missouri Cobalt in order to repurpose the unfinished Madison County Mines Superfund site into a cobalt mine. As an EPA administrator stated in a news article about the repurposing of the Superfund site as a "tremendous economic opportunity" (Environmental Protection Agency 2019). The community has embraced the extensive local pollution and environmental waste as mundane due to these efforts and therefore unknowingly continues this pattern of exploitation. The treadmill of crime as it currently exists within green criminology does not account for this embrace caused by this added meaning to space and environmental hazards. It also leads to further inquiries, such as how the juxtaposition of a town accepting environmental harm in the form of critical environmental health problems comes to be.

The denial of environmental health problems is a consequential theme. The current understanding in the treadmill of law states that environmental victims will fight for justice in response to environmental health problems caused by extraction (Lynch et al. 2018), while this research provides evidence that this is not always the case. Labor often colludes with capitalist interests in the treadmill of production because residents want and need to maintain work and their livelihoods. Interviews and content analysis revealed that much of the narrative around lead poisoning here has changed because of the community's strong connection to mining, or the added meaning of place to the industry existing in this space. Accounts reveal that this meaning even leads to the attribution of high levels of lead poisoning to factors such as lead paint, despite the centuries of lead mining that took place in this locality. This was demonstrated through Figures 10 and 11 of the placards in a state-run mining museum warning about the dangers of poisoning by lead paint in a location that was formerly one of the greatest lead producers in the world. This narrative was also seen in the framing of the local newspaper's stories and respondents attributed the high rates of lead poisoning to sources such as lead paint, even claiming that the EPA's testing program has no right to blame mining because they do not speciate lead samples and that the whole project should be "flushed down the tube" (Interview #8 10/26/2020). This denial has shaped the community's interpretation of environmental harm through the maintenance of capitalist interest, not only through the treatment of the community by the corporations, but through their handholding by state actors. This perception also aids in the social processes that contradict the current top-down, macro-level understanding of environmental victims in the treadmill of crime, as it has aided in the community acceptance of exploitation rather than pushing back against it. This denial serves the interest of extractive industries due to their ability to continue to exploit the community after years of perpetrating

environmental harm and victimization. The state acting in collusion with producers allows the continued reinforcement of state-corporate interests within a neoliberal society. According to my findings, some Fredericktown area residents are in denial that there is even a connection between mining and health. In fact, they are offended when this connection is inferred, as demonstrated by the respondent who repeatedly mentioned that community members felt this way and the public health official who mentioned that the public health campaign was changed because of this sentiment. Again, this applies to black sites and the invisibility to real environmental harm that is manufactured by state and corporate actors. This demonstrates the power of sense of place, or the meaning added to space, in sites experiencing environmental harm. The visibility of and bottom-up approach to studying this "black site" illuminates community members' denial of health problems and embrace of extractive processes. This provides scholars and legislators a more nuanced understanding of environmental victimization than what the political-economy green criminology literature now covers.

The penultimate theme identified in this study was a general frustration with the presence of the EPA. Residents expressed skepticism towards the necessity for the remediation process in Fredericktown. This is, again, a shaping of meaning by the extractive industry and is closely related to the denial of health problems. Residents called the remediation process a "waste of money" and repeatedly vocalized that they did not understand why the EPA was in Fredericktown or the usefulness of the remediation. Respondents communicated their belief that there is no need for the EPA's presence, and that their work is a waste of money and time, as a result of the manufactured meaning of environmental health victimization. This was evidenced through interviews that questioned if the remediation process was actually completing any useful work, or if this was just a waste of money. For example, the respondent that expressed concern

about where the EPA was taking waste and how they could guarantee that this would contain contamination (Interview #6, 10/13/2020).

The shaping of meaning and sense of place extended to the questioning of the remediation process itself. Another respondent claimed that truck drivers mentioned taking the contaminated dirt to be added to someone's private lake, demonstrating the pervasive nature of these frustrated and suspicious sentiments. This further complicates the role of individuals in the treadmill of crime. Individuals centered in the majority of environmental harm research fight for government intervention in their communities and push for better responses from the government. Currently, the treadmill of law only includes affected residents as those fighting for justice. In this case, the meaning shaped in this space does not require a fight for justice. Instead, there is skepticism of the Superfund remediation process and its motives. These findings also implicate the current understanding of the role of the state in the treadmill of crime. Again, the collusion of the state and corporate actors serves the larger neoliberal narrative that requires the exploitation of workers in the United States. In this way, the EPA's role in maintaining a black site works in their favor. The locality maintains a function for the state actors but keeps it outside of public scrutiny and accountability. This research demonstrates the necessity of studying these processes from a bottom-up approach, questioning the acceptance and the perceived consent of this collusion by individuals in this site.

The final theme identified through this research was a positive outlook for cobalt mining in this Superfund site. Malin (2015) explains that sites of acceptance are places in which residents have embraced potential economic benefits over the environmental harms are a result of extractive processes. Through studying Fredericktown residents' sense of place and space using a bottom-up approach, this research demonstrates that area residents do not perceive any

environmental harm here, as well as residents' desperation for economic security. The harm inflicted by centuries of economic domination perpetuated by the mining industry extends past environmental harm and intertwines with socio-economic harm. Area residents accept environmental exploitation as part of their identities and senses of place, including exploitation in the form of further cobalt mining here. As a respondent stated, "I think everybody… is excited about them, uh, opening that thing back up mainly just because… it was good jobs." This acceptance of exploitation fits into the framework as discussed by Malin (2015), while also emphasizing that the manufactured invisibility of environmental harm by state-corporate extends to the community members. In this case, residents do not consent to environmental harm because they do not perceive it as harmful. This leads to a positive connection and strong loyalty to mining as an industry. Therefore, as another respondent mentioned, area residents are glad to have a cobalt mine open and begin sifting through mine waste for cobalt before physically beginning extraction again: "it kind of got the morale, the people built up and everybody was excited about it. So… we hope that it keeps going" (Interview #6, 10/13/2020). Additionally, O'Connor Shelley and Opsal (2016) argue that quality of life concerns such as stress, anxiety, depression, and economic loss, should be considered environmental victimization. This study affirms this, while adding that environmental victims may also be in denial that this harm is a result of environmental processes. This black site was generated by the negligence of the state, the abuse from producers, and the collective denial of the laborers. All these forces shaped the community's identity and collective imageries. In the environmental justice field, and within the treadmill of law, residents are expected to *resist* environmental harm (Malin 2015). The bottom-up investigation into Fredericktown and the surrounding area displays a different reality by recording respondents' welcoming of further extraction in their community. Respondents did not

perceive their victimization as legitimate and therefore view remediation efforts by the state as a form of intrusion and injustice. This is the greatest contradiction to the role of residents in the current dominant treadmill of crime literature. The acceptance of further extraction in a Superfund site directly contradicts the current role of citizens in the treadmill, demonstrating that this is a significant gap in green criminology research and theory. Cobalt mining is now shaped into something that is positive for the community through emplacement.

Place, space, consent, theft, culture, meaning, exploitation - these concepts are all connected through the spatial understanding of rural black sites and they all hold immense significance. Macro-level understandings such as the treadmill of crime can easily erase this importance, but the findings from this study contribute to a deeper understanding of the response to ecological and social disorganization as proposed by the treadmill of crime. An understanding of black sites from a spatial perspective in Fredericktown demonstrates a rural black site as a site of acceptance, which necessitates a bottom-up understanding of environmental victimization. The significance of sense of place and its shaping by social forces is *immensely* understated in existing green criminology literature. The integration of these concepts will help to recalibrate the rigid, top-down portrayal of the treadmill of crime. The incorporation of spatial analysis, such as an investigation into place and space in a site of environmental victimization can guide green criminologists and environmental sociologists to a more nuanced and personal understanding of individuals' responses to harm. Gazing into rural black sites in this way will help green criminologists better combat the massive, powerful forces at play in political-economic social-environmental problems. These are the social problems at the forefront of combatting environmental injustice and sense of place must play a role.

CHAPTER 7: CONCLUSION

This thesis delved into a gap in the green criminology literature surrounding environmental victims' perceptions to environmental harm. The treadmill of crime theoretical framework includes the interconnection of producers, state actors, laborers, and victims as parts of political-economic processes that attempt to explain the current and seemingly infinite cycle of economic and ecological exploitation. In order to investigate the missing aspect of environmental victimization in the treadmill of crime, I ask: How have extractive processes shaped Fredericktown residents' experiences of environmental victimization? What are some of the crucial factors that contribute to the legitimization of ecological disorganization? How has that conceptualization shaped their community identity and personal history?

The answers to these questions emerged through five themes, uncovered through qualitative interviews, content analysis of primary documents, and geospatial mapping. The five themes - a legacy of mining in the area constructed by extractive industries, the presence of environmental waste within the lived experiences of environmental victims, denial of environmental health problems stemming from the persistence of the mining industries in the area, frustration with EPA presence by community members, and a positive outlook for the cobalt mining industry by community members - demonstrated the necessity to study green criminology and the treadmill of crime processes through the lens of place and space as experienced by the affected community. Kim et al. found that geography influences crime (2012). Therefore, geography influences green victimization and environmental victims' perceptions of the exploitation, resulting in a unique relationship between the social construction of environmental harm and each influenced locality. Therefore, a knowledge of place and space

is crucial to understand the complex reactions and needs of environmental victims and their roles in the generation and perpetuation of the treadmill of crime.

Environmental victims as they currently stand in the treadmill of crime theory are either passive subjects or environmental activists disciplined by the treadmill of law. This project has demonstrated that is the dichotomous understanding does not tell the whole story of environmental victimization. Victims' added meaning to their space, or their sense of place, are shaped by state and corporate agents in ways that do not fit the current treadmill of crime narrative. This research illustrates the complex processes that add to the shaping of meaning by producers. For example, laborers' interactions with the industries that exploit them, and the cultural and community effects resulting from extraction. People, industries, and their environments shape one another continuously, forming a consequential perception of their environment. In the treadmill of production, laborers are important pro-growth forces, but have limited influence. This research investigates the deeper cultural reasons, or the community's constructed meanings of place, as to why this is the case. The themes uncovered through this research -- history, physical environment, denial, frustration, and acceptance – illustrate the intricate influences environmental harm inflict upon life experiences. Environmental victimization *and the meanings assigned to it* affect the responses necessary to combatting the forces environmental harm. Environmental victimization is a complex social process shaped by geographical and cultural background as well as how the environmental victims "*give meaning to*" their perceptions of space and place. This research demonstrates the importance of examining rural black sites to reveal the complex social processes that contribute to an extensive variety of possible realities that can exist in these sites. Fredericktown is a rural black site but complies with the manufactured invisibility of this space because of its' community's particular sense of

place. If one is to understand environmental victimization in a given community, they must first understand this locality's relationship to and history of the ways environmental and social harm were generated in a given locality. This further validates a need for the utilization of the space and place concepts in the examination of environmental victimization when studying the experiences of environmental victims.

The broader impacts of this research extend from the expansion of academic understanding of environmental victimization to the material, real-world implications of this interdisciplinary approach. Academics, state agents, and activists must closely examine rural black sites, such as Fredericktown, and residents' sense of place and space in order to effectively assess appropriate responses to environmental harm and victimization. As Kim et al. states, geography influences environmental victims' perceptions of environmental harm (2012). An in-depth examination of a community's sense of place may lead to adequate policy response that protects rural black sites from further environmental harm. For example, a stronger grasp of a community's sense of place may lead to environmental harm reduction such as safer jobs or reinvestment in the community while respecting the culture and heritage of the people who live here. On a surface level, sites of acceptance can elicit confusion due to the narrative that communities are reacting to environmental harm in ways that contradict their well-being. Studying victims' relationship to place and space, as well as how historical extractive processes shape local history may lead to a deeper understanding of their connection with the environment. A macro-level, top-down approach to studying environmental victims, such as that of the treadmill of crime, can erase their sentiments and this relationship. This could lead to solutions that do not serve the community's best interest or respect their culture and connection with their environment, potentially causing further alienation and exploitation. Within the green

criminology and environmental justice fields, the framing of research questions and their relative effects carry real-world implications. It is necessary to approach these topics understanding the severity of the potential action that can stem from the framing of research. This underlines the importance of a bottom-up and constructionist approach in studying environmental victimization.

The primary limitations of this study are related to the COVID-19 pandemic that exploded during my field work Missouri. Face-to-face interviews for this project began in January 2020. However, I had to halt in-person interviews in March 2020 because of the university's COVID-19 research guidelines, which led to a significant shrinking of the sample size. The COVID-19 pandemic also led to inconsistency in interview methods. The latter half of the interviews were conducted over the phone. As such, there could be inconsistencies in the manner of responses, due to a lack of trust and rapport between the interviewees and the interviewer stemmed from the lack of personal contact. In order to overcome this limitation, I attempted to maintain the same rapport with respondents over the phone and in person and maintained consistency by asking the same questions on the interview scripts that were used for all respondents.

Another potential limitation of this research were the sampling methods used. Snowball sampling was used to recruit participants in this study. Initially, public phone numbers for local organizations, such as the historical society, and city employees were used to find respondents. These numbers were also used to ask about connections to other community members who were interested in participating. The data gathered may reflect only the majority of the community's sentiments and perceptions towards environmental harm; given that the current population of Fredericktown has a median age of 33 (Census Bureau 2018) and the median age of my sample population was 55, it is possible that the data collection may lean more towards the perspectives

of senior citizens than the average resident. However, this is why I triangulated data gathered from in-depth interviews with critical content analysis and geospatial mapping. Through employing multiple research methods, one can verify their findings. For example, while only ten interviews were recorded, years of primary documents, such as news stories, can confirm the narratives collected from respondents. This was achieved by using the same thematic parameters to code across interviews and archival content. This maintained consistency in the analysis approach used to draw conclusions from these sources.

I was drawn to this project by my sense of place and connection to the Ozarks. When I learned of its suffering, I grew curious about the social hierarchy at play in its suffering and how it is that many of my fellow Ozarkians could react to this in a much different manner than I. It reminded me that many of us have a connection to a place - an area where we played growing up, our hometown, or a spot where we spent our summers. It's difficult to imagine a life in which we are not connected to our surroundings, or places where we spend much of our time. To discount these location-based experiences in social-environmental research is to disregard a fundamental aspect of the human experience.

The broad and interdisciplinary nature of green criminology leaves a door open for the addition of new perspectives in the field. The inherent inclusion of physical environment in green criminology necessitates the presence of theoretical spatial concepts in the field. Green criminology and environmental sociology can greatly benefit from this integration, as evidenced by this research. The academic collection of knowledge, as well as the very real environmental harm lived by people the world over, require the attention of scholars to the significance of place and space in social-environmental research.

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APPENDICES

Appendix A – Table 1. Participant Demographics

Demographics Information	Number of Respondents
Gender	
Male	6
Female	4
Professional Status	
Government Employee – State/Local	3
Government Employee - Federal	2
Working Professional	3
Retired	2
Age	
30-49	4
50-64	3

65+	3

Appendix B – Interview Guide

1. Tell me about yourself.
    a. What do you do?
    b. How does your job affect your life/your relationship with your family?
    c. What's your family like? What do they do?
2. Do you live in Fredericktown or nearby?
    a. How long have you lived here?
    b. What do you like about living here? Can you tell me a story about a fond memory you have of Fredericktown?
3. What do you enjoy doing in your in free time? Do you often fish/hunt/float/hike in the surrounding area/Ozarks? Can you tell me a story about a fond memory you have participating in these activities?
    a. How often do you partake in outdoor recreation? Is this something you do with your family?
    b. How long have you been doing this?
    c. What do these activities mean to you?
    d. What do Ozarks' rivers and waterways mean to you?
    e. What is the state of the water in the surrounding area?
    f. What is the quality of the drinking water in Fredericktown?
    g. What is your impression of the surrounding environment? Is this an environmentally healthy area?
    h. Does the area surrounding Fredericktown need environmental protection? Why or why not?
4. What is your relationship to nearby mining sites?
    a. Do any of your family or friends have a relationship to these sites?
    b. What role have they played in Fredericktown?
5. What is your relationship to cobalt mining?
    a. Do any of your family or friends have a relationship to this kind of mining?
    b. What does cobalt mining mean for Fredericktown/the town's future?
6. Have you met anyone overseeing the cleanup of the nearby mining sites?
    a. What is your relationship with them, if any?
    b. How have the EPA, or other state-level environmental agencies, worked with Fredericktown? Are you pleased with the relationship?
    c. What has been the town's response to the cleanup? What is your response to the cleanup?
7. What is land primarily used for in Fredericktown and the surrounding area?
    a. What is water primarily used for?
    b. Has farming had an impact on the surrounding land? Water?
    c. Has tourism had an impact on the surrounding land? Water?
8. Is there anyone who you think I should speak to who be a good source on these topics

Appendix C – Respondent Recruitment Script

Hi (name),

My name is Julia Kovacs. I'm a sociology master's student at Colorado State University and I'm conducting research for my thesis project, "Cultural Relationships to Mining in Rural Missouri" on the history and culture of lead mining in the Ozarks. I was wondering if you have any time between January … and February …. to answer a few questions related to residents' perceptions of the surrounding mine sites. I am conducting interviews with residents of Fredericktown and the surrounding area, as well as reviewing some historic documents related to the practice and mapping sites in the area. I expect that your participation will take one to two hours of your time. The location of this interview can be any location of your choosing, including your home. Your answers will remain confidential. You will not experience any harm by participating in this study.

If you have any further questions or need more information, please reach out to me at julia.kovacs@colostate.edu or my advisor, Dr. KuoRay Mao at KuoRay.Mao@colostate.edu.

Thank you,
Julia Kovacs

Appendix D – Participant Consent Form

ADULT PARTICIPANT INFORMED CONSENT

Department of Sociology

Participant Study Title:
Cultural Relationships to Mining in Rural Missouri

Formal Study Title:
Extraction on Extraction: Cultural Understandings of Cobalt Mining in an Active Superfund Site in Rural Missouri

PRINCIPAL INVESTIGATOR: Kuoray Mao, PhD, Associate Professor.

CO-INVESTIGATOR(S): Julia Kovacs, Master's Degree Candidate. Tara Opsal, Associate Professor. Elizabeth Tulanowski, Instructor.

WHAT IF I HAVE QUESTIONS?
For questions or concerns about the study, you may contact **KuoRay Mao** at 785-218-6888**.** For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the CSU Institutional Review Board at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this research study is to better understand the cultural relationship between those who live in the Ozarks to mining and its effects on the region.

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are being asked to participate in the study because you fit these criteria: you live in the Southeast mining region of Missouri and have a strong relationship to this area.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?
The interviews will take place in your home or a location of your choosing. The interview will take one to two hours. Only one interview will be conducted but we may contact you to follow up and clarify information.

WHAT WILL I BE ASKED TO DO?

If you volunteer to participate in this study, you will be asked to do the following: You will be asked to answer questions about your experience and relationship to Fredericktown and the surrounding area.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?

There will be no direct benefit to you as a participant in this study.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

There are no known risks included with this study. While the level of risk is minimal, you may become uncomfortable with some questions related to your employer or your health.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY? You will not be compensated for participating in this research.

WHO WILL SEE THE INFORMATION THAT I GIVE?

All information gathered in this study will be kept as confidential as possible. Your privacy is very important to us and the researchers will take every measure to protect it. Your information may be given out if required by law; however, the researchers will do their best to make sure that any information that is released will not identify you. No reference will be made in written or oral materials that could link you to this study. For this study, we will assign a code to your data so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your code. Only the research team will have access to the link between you, your code, and your data. All records will be stored in a restricted access folder at CSU for three years after completion of the study. After the storage time, the information gathered will be destroyed. We may be asked to share the research files with the sponsor or the CSU Institutional Review Board ethics committee for auditing purposes.

DO I HAVE TO TAKE PART IN THE STUDY?

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with CSU. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:

Your signature acknowledges that you have read the information stated and voluntarily wish to participate in this research. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing __ pages.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

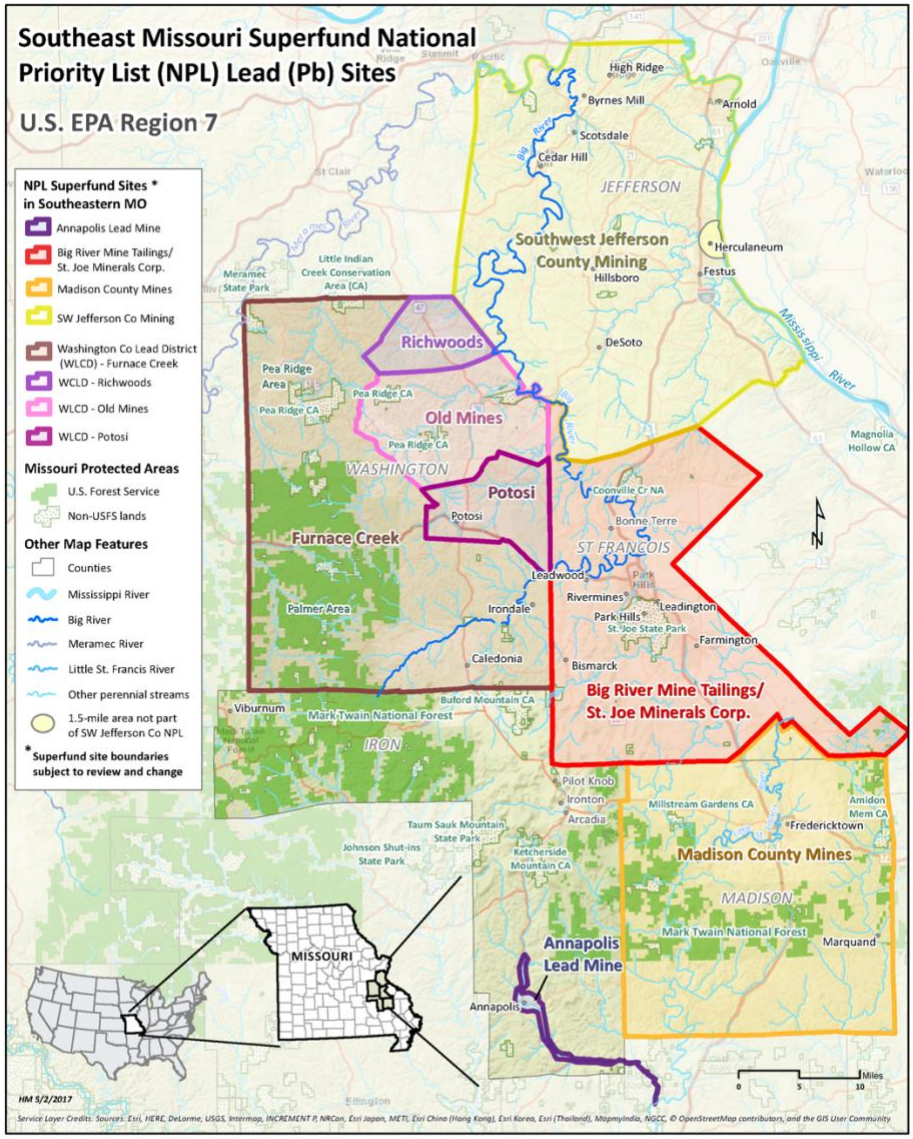
Name of person providing information to participant Date

_____

Signature of Research Staff

Appendix E – Maps (Figures 1-7)

Figure 1. Fredericktown and Local Environmental Harm



The Agency is providing this geospatial information as a public service and does not vouch for the accuracy, completeness, or currency of data. Data provided by external parties is not independently verified by EPA. This data is made available to the public strictly for informational purposes. Data does not represent EPA's official position, viewpoint, or opinion, express or implied. This information is not intended for use in establishing liability or calculating Cost Recovery Statutes of Limitations and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with the United States or third parties. EPA reserves the right to change these data at any time without public notice.

Figure 2. Southeast Missouri Superfund Nation Priority List Lead Sites US EPA Region 7 (Environmental Protection Agency 2017)

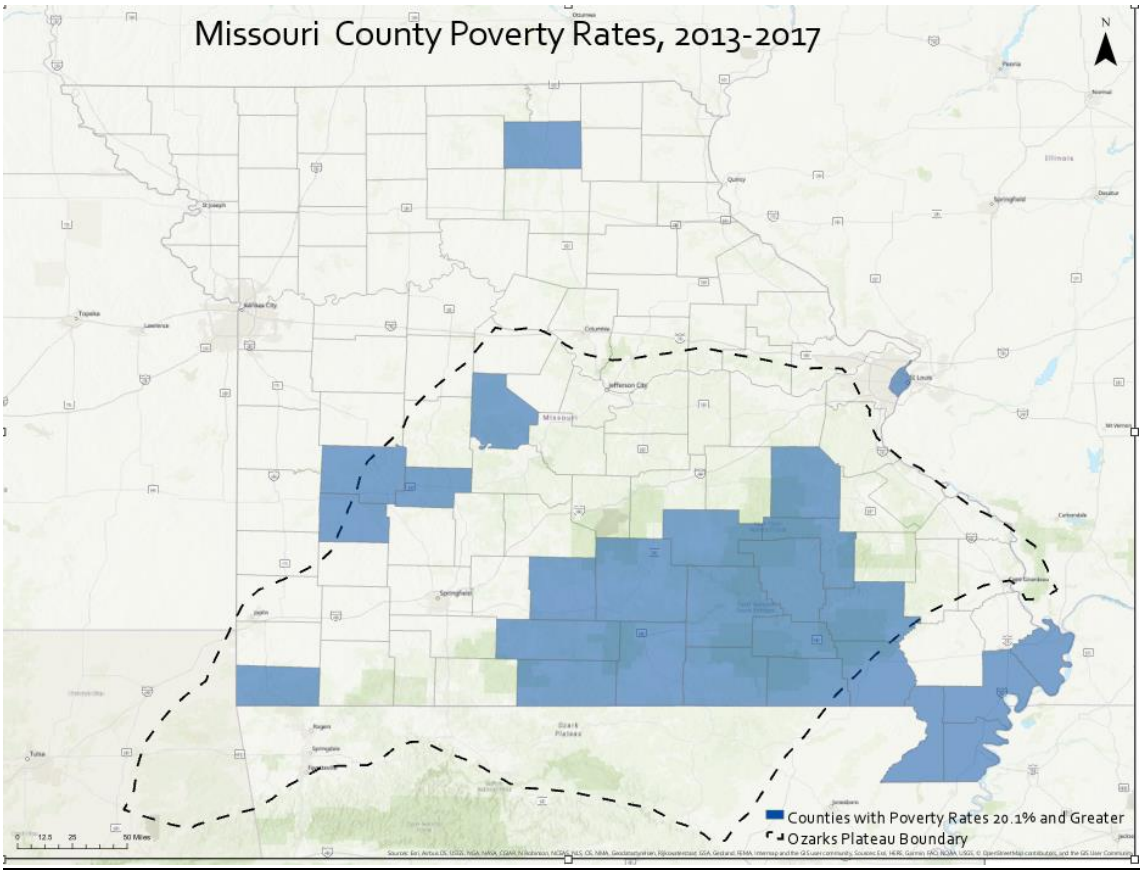


Figure 3. Missouri Counties with Poverty Rates 20.1% and Greater (Missouri Department of Health and Senior Services 2019)

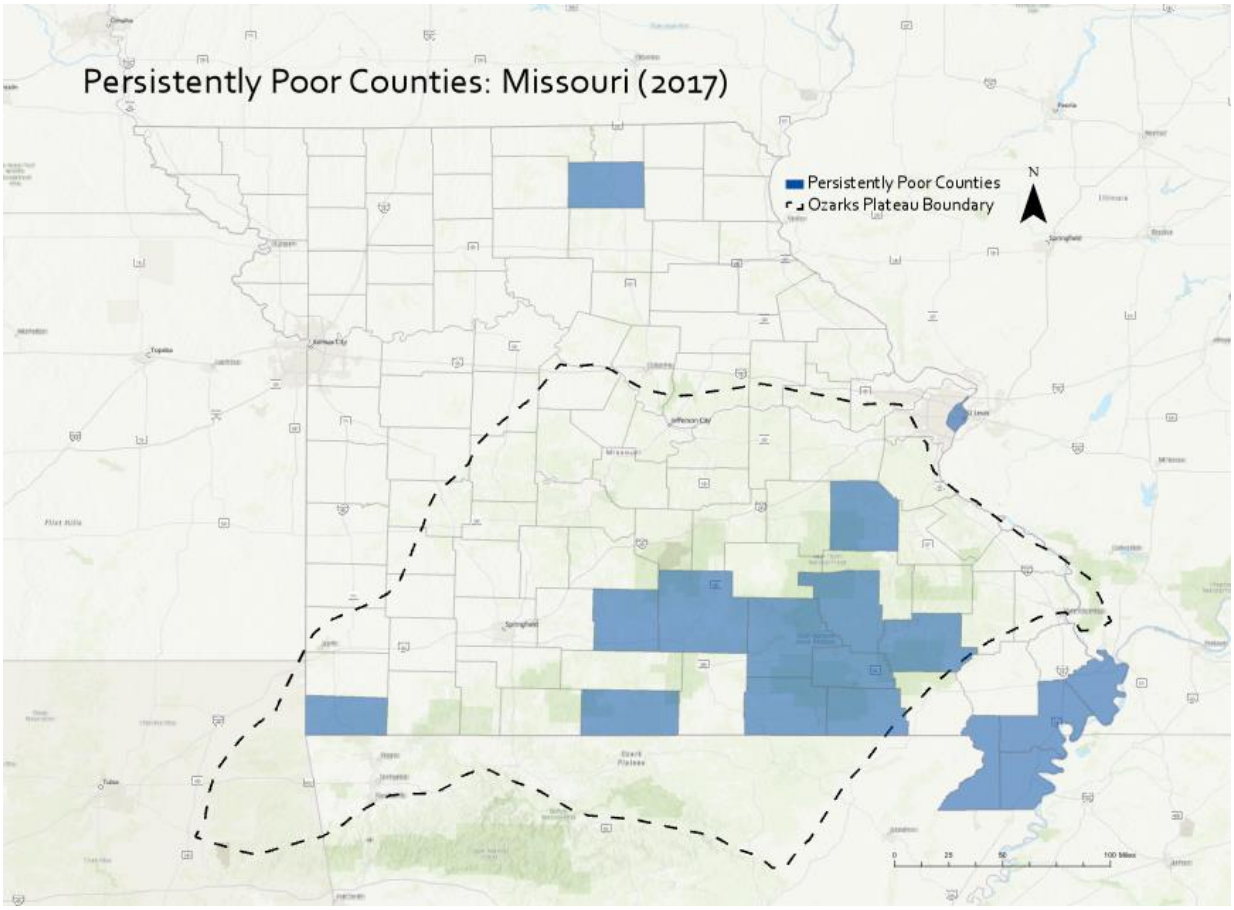


Figure 4. Greater and Persistently Poor Counties in Missouri (Missouri Department of Health and Senior Services 2019)

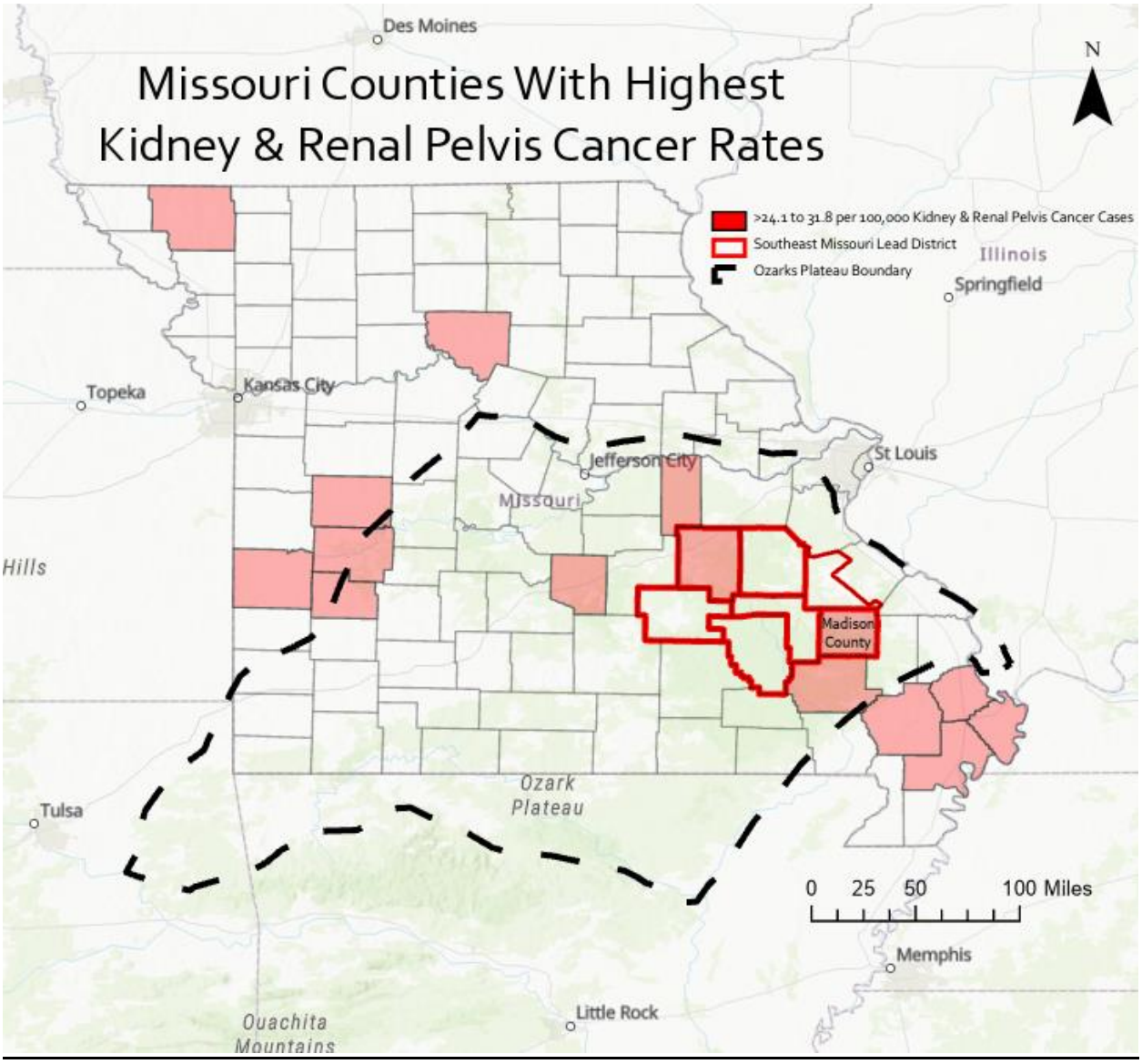


Figure 5. Missouri Counties with Highest Kidney & Renal Pelvis Cancer Rates

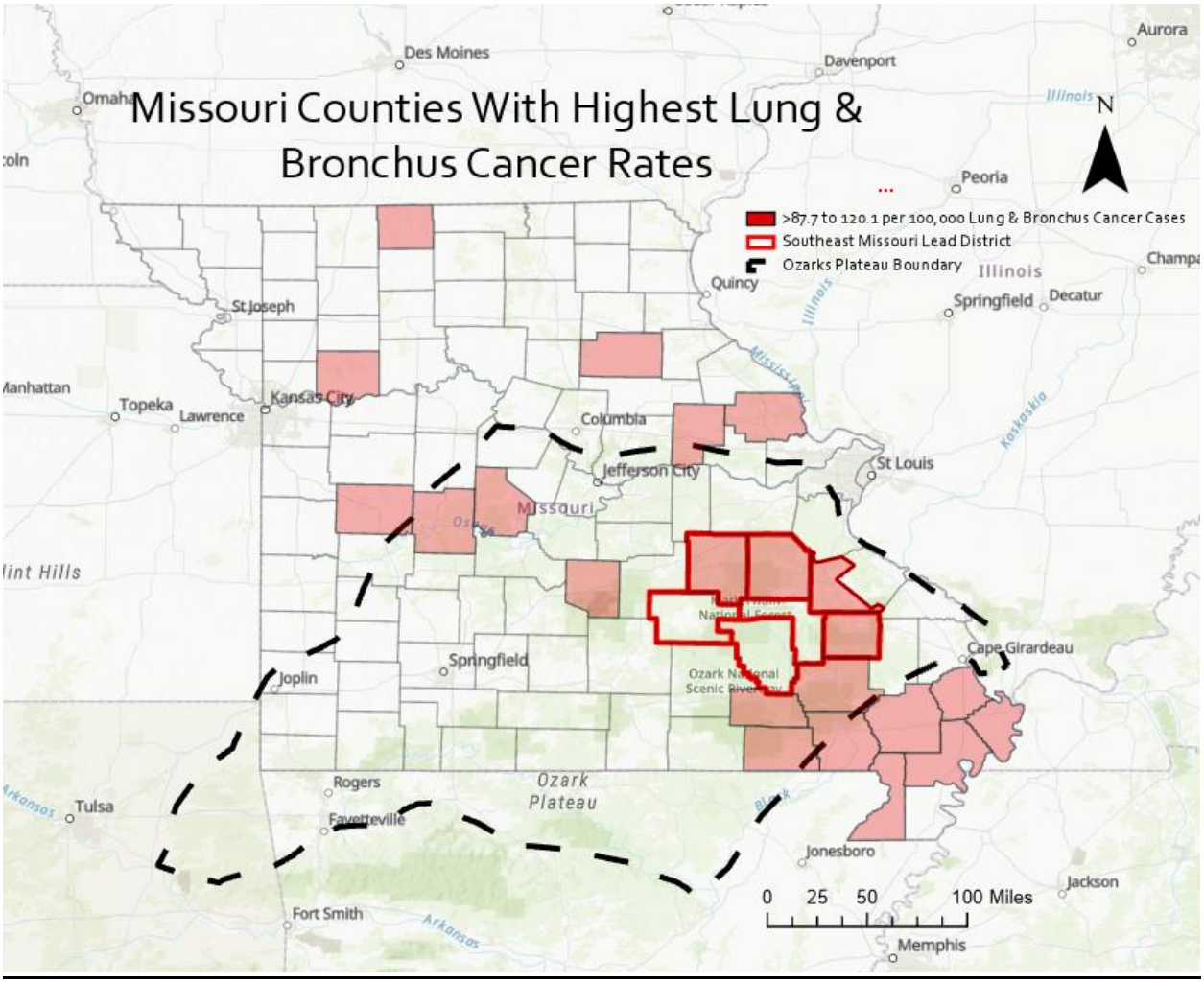


Figure 6. Missouri Counties with Highest Lung & Bronchus Cancer Rates

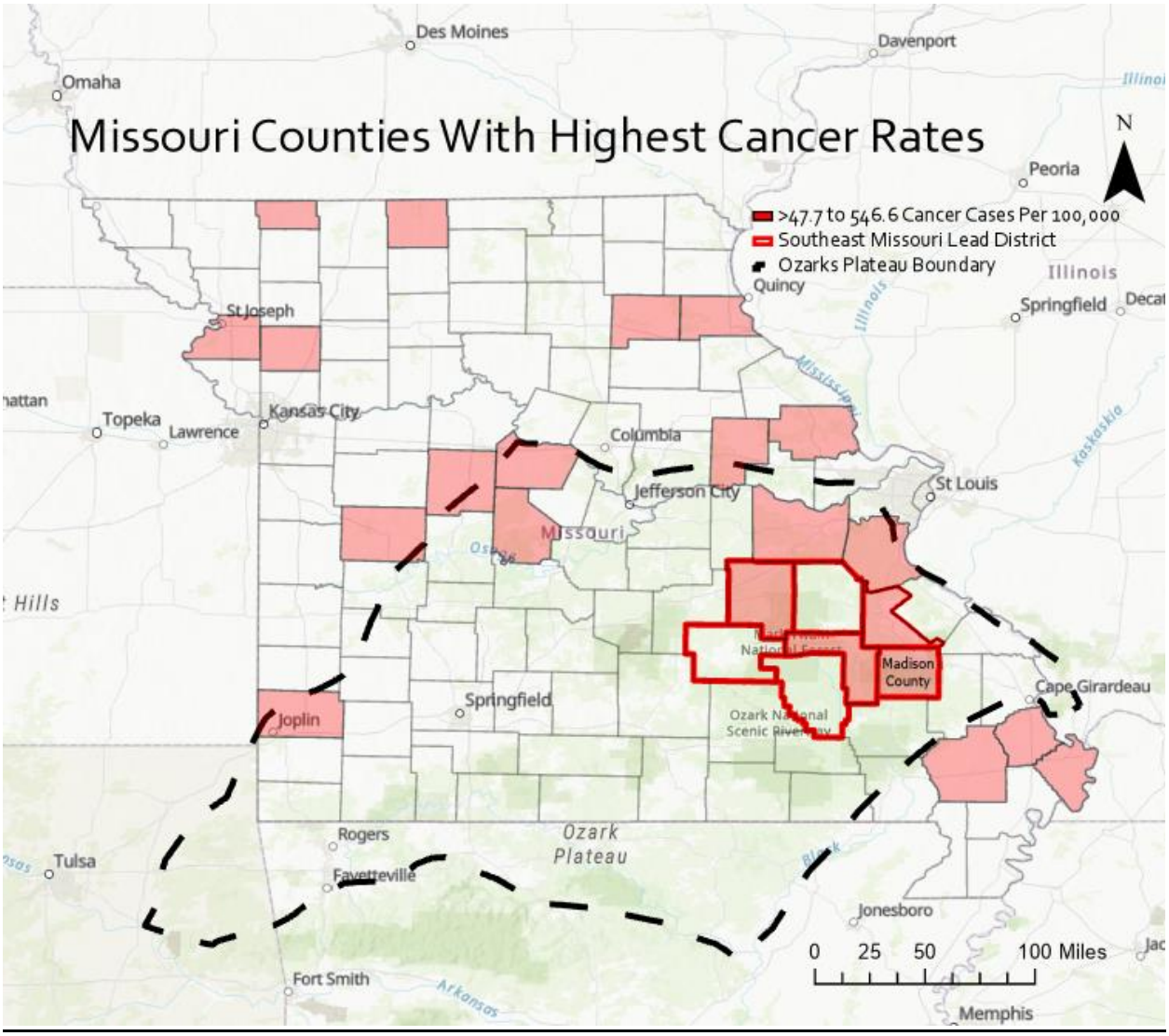


Figure 7. Missouri Counties with Highest Cancer Rates

Appendix F – Photographs (Figures 8-11)

Figure 8. Fredericktown Superfund Cleanup Site and Local Playground

Figure 9. Fredericktown Superfund Cleanup Site and Local Playground

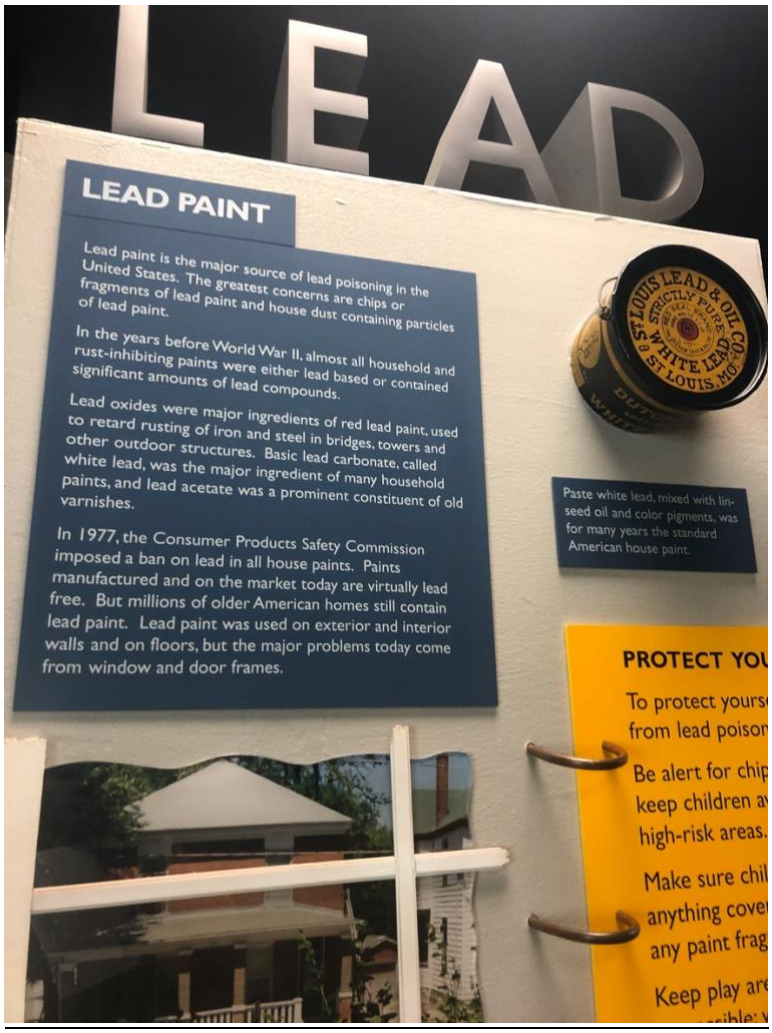


Figure 10. Placards in Missouri Mines State Historic Site Museum

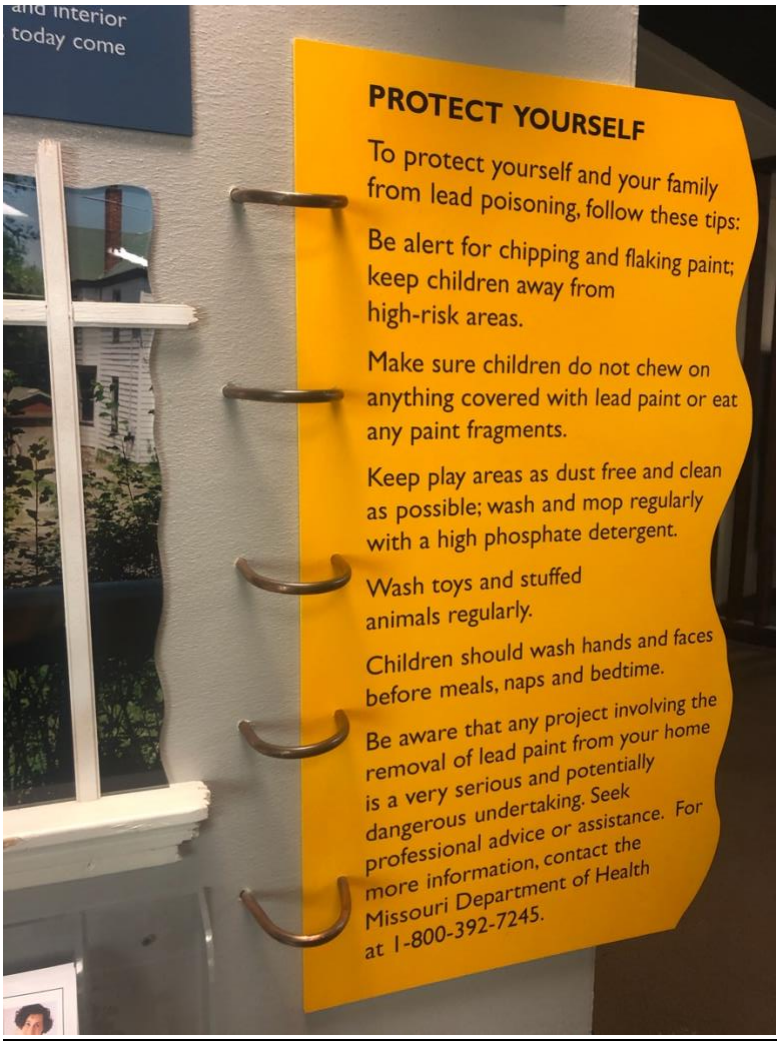


Figure 11. Placards in Missouri Mines State Historic Site Museum