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Bakken Bombs: A Criminological Inquiry into the Lynchburg Train Derailment

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BAKKEN BOMBS: A CRIMINOLOGICAL INQUIRY INTO
THE LYNCHBURG TRAIN DERAILMENT

by

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ABSTRACT

BAKKEN BOMBS: A CRIMINOLOGICAL INQUIRY INTO THE LYNCHBURG TRAIN DERAILMENT

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In recent years, several significant train derailments involving the transportation of crude oil have dotted the North American landscape. Each resulted in environmental and social harm to some degree which was extensive in many instances. Oil train derailments have occurred in places such as Lac-Mégantic, Canada (July 2013), Casselton, North Dakota (December 2013 and November 2014), and Mount Carbon, West Virginia (February 2015). Following derailments, communities have faced substantial environmental damage, human death and injury, and overall disruption from the explosions and subsequent oil spills that characterize these events. This project specifically examined the April 30, 2014 derailment in Lynchburg, Virginia. A CSX-operated train containing 104 oil tank cars derailed which caused 17 cars to leave the tracks; 3 of these cars plunged over the bank of the James River and became submerged. The derailment resulted in a large explosion and subsequent fire that burned for over an hour after one tank car ruptured and lost its contents. It was estimated that nearly 30,000 gallons of crude oil were spilled (NTSB 2016). Serious environmental and human health concerns resulted, particularly fears that downstream cities, including the state capitol of Richmond, would have contaminated water.

Through a lens of green criminology, victimology, and securitization, this dissertation examines perceptions of criminality, victimization, and ecological harm as a result of the oil train derailment among members of the Lynchburg community. The environmental and social

consequences of the Lynchburg train derailment are considered through a case study approach that is situated within the politics surrounding oil extraction and transportation within the US and Canada where dramatically expanded rail transport of oil has resulted in an influx in derailments in recent years. Interviews with 22 individuals—officials, environmentalists, witnesses, and members of the Lynchburg community—were used to examine the extent and nature of harm to the environment, community, and individuals as a result of the oil train derailment including the aftermath of the event. Official documents and media representations supplement the in-depth interviews. This case study reveals an array of victimizations and differing ideas about responsibility and criminality in the wake of the event. Security has been inserted into the realities of oil train shipment by the railroad industry which has problematized the dissemination of information about these volatile shipments to communities who experience them. Significant identities with both the James River and the railroad within the community have served to help make sense of the derailment, framed ideas about responsibility and culpability, and determined the conceptualization of the environment as a victim.

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This dissertation is dedicated to my parents, Lynn and Larry Milburn.
Thank you for all of your devotion and sacrifices throughout the years.

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ABBREVIATIONS

AAR	Association of American Railroads
AETA	Animal Enterprise Terrorism Act of 2006
AFPM	American Fuel & Petrochemical Manufacturers
ASLRRA	American Short Line and Regional Railroad Association
ATF	US Bureau of Alcohol, Tobacco, Firearms and Explosives
CARS	Citizens Acting for Rail Safety
CSR	Corporate Social Responsibility
DHS	US Department of Homeland Security
DOT	US Department of Transportation
EIA	US Energy Information Center
ELF	Earth Liberation Front
EO	Emergency Order
EPA	US Environmental Protection Agency
EPRCA	Emergency Planning and Community Right-to-Know Act of 1986
ERG	Emergency Response Guide
FAST	Fixing America's Surface Transportation Act
FBI	US Federal Bureau of Investigation
FDA	US Food and Drug Administration
FRA	US Federal Railroad Administration
HHFT	High-Hazard Flammable Train
JRA	James River Association
LU	Liberty University

MMA	Montreal, Maine & Atlantic
MSDS	Material Safety Data Sheet
NOV	Notice of Violation
NTSB	US National Transportation Safety Board
PD	Police Department
PHMSA	US Pipeline and Hazardous Materials Safety Administration
PTC	Positive Train Control
SSI	Sensitive Security Information
TSA	US Transportation Security Administration
TSBC	Transportation Safety Board of Canada
VDEQ	Virginia Department of Environmental Quality
VPSTF	Virginia Petroleum Storage Tank Fund

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CHAPTER I

AN INTRODUCTION TO THE PROBLEM OF OIL TRAIN DERAILMENTS

Several particularly significant train derailments involving the transportation of crude oil have been spotlighted in national and local news outlets in the recent years in a variety of locations across North America. Collectively, such incidences have caused human death, injury, displacement and disruption alongside ecological degradation. One noteworthy derailment which serves as the primary site for the following analysis occurred in Lynchburg, Virginia in April, 2014 where the derailed train resulted in an intense explosion and fire as well as a release of several thousands of gallons of oil into a local river (Petska 2013 August 20). Before that, in Western Pennsylvania in February, 2014 more than 3,000 gallons of crude oil spilled into the environment as a result of a Norfolk Southern operated train derailment (Gibbons and Dilts 2014 February 13). Just a month earlier in Philadelphia, Pennsylvania a crude oil train derailed over the Schuylkill River (Mathis 2014 October 20). Though this event did not result in a spill, it raised concern from local politicians and the community-at-large about how railroad companies were ensuring the safe transport of resources, particularly in heavily populated areas.

Just a month before the Philadelphia incident another significant event occurred, in December, 2013 in Casselton, North Dakota when a 106-car oil tanker train collided with a derailed car spilling upwards of an astounding 400,000 gallons of crude oil (Riverkeeper 2014). Perhaps the most significant of all recent train derailments involving the shipment of natural resources occurred in Lac-Mégantic, Canada on July 6, 2013. In the early morning hours, an unmanned crude oil tanker derailed in the downtown area of the Canadian city resulting in a massive explosion and fire that claimed the lives of 47 people. This tragic event has resulted in a

plea by many for substantial overhauls of Canadian rail safety that have resulted in some significant changes in shipment protocol in Canada. (Mackrae 2014 August 19). The full range of consequences from these events may not be known for years, but the immediate environmental and human impact is often extensive. These events provide some context of the importance and prevalence of oil train derailments that have come to the attention of the public in recent months.

Though the Lac-Mégantic travesty occurred in Canada and this project is primarily concerned with US rail safety and its concomitant environmental detriments, the Lac-Mégantic event is firmly within the scope of this dissertation. The conditions that resulted in the Lac-Mégantic derailment and the substantial damage that ensued are complex, though not unique to Canada. One specific factor that quite literally fueled the fire in this derailment has to do with the volatile type of oil being transported. The oil originated in the Bakken shale formation, an area that is in both the US and Canada which includes North Dakota and Montana within the US and Saskatchewan and Manitoba on the Canadian side of the border. This specific oil has been declared “highly volatile” partially due to its low viscosity which when combined with the large amount of it being transported resulted in a quick and powerful ignition (Mackrae 2014 August 19). Oil from this area has also been involved in some of the aforementioned US derailments including the Lynchburg, Virginia derailment that will be detailed in this project.

The derailment in Lynchburg, Virginia occurred on Wednesday, April 30, 2014 at 1:54 p.m. and involved a train operated by railroad giant CSX. The train was comprised of two locomotives, 104 crude oil tankers, and one buffer car (NTSB 2016). Lynchburg is a small city with an estimated 78,000 residents as of 2013 (US Census Bureau 2014) sitting on the Eastern edge of the Appalachian Mountains along the James River in central Virginia (City of Lynchburg

2013). Of the 104 oil tank cars, 17 derailed from the track that is nestled close to the James River and 3 of these derailed cars plunged over the bank of the river and became submerged. These cars were of the CPC-1232 variety (NTSB 2016) which became the industry standard in 2011 to mitigate the effects of incidents such as the Lynchburg derailment (The DOT-111 Reader 2015). However, this allegedly safer tank car did not protect Lynchburg and the James River.

The derailment resulted in a large explosion and subsequent fire that burned for over an hour after one tanker car ruptured and lost its contents. It was estimated that nearly 30,000 gallons of crude oil were spilled (NTSB 2016). First responders, residents, and city officials were incapable of extinguishing the fire due to the nature of the blaze, so they simply watched on and waited for the flames on the James River and its bank to die out. The derailment occurred in the downtown area of Lynchburg, mere yards from operating businesses, and, ironically, a satellite office for a Virginia environmental organization that advocates for and protects the James River. At the time of the derailment, the river happened to be at flood stage that rendered booms used to trap the escaped oil ineffective (JRA 2014). While fortunately no people were injured or killed because of the explosion or fire, serious environmental and human health concerns resulted, particularly fears that downstream cities, including the state capitol of Richmond, would have contaminated water.

Crude oil trains that derailed and exploded have received emotionally-charged names such as “bomb trains” (DeMelle 2015 September 17). Given the common source of so many derailments, these “Bakken bombs” are in need of closer inspection. The full extent of the implications of these derailments, particularly according to communities who have experienced them, is relatively unknown. Further, perceptions of the official response and handling of these events from those impacted most has been largely omitted from dialogue about solutions and

reactions to oil train derailments. With these problems in mind, a few important research questions guide this research. How have recent oil train derailments, and particularly the Lynchburg derailment, affected the environments and communities in which they occur? How have residents of these communities made sense of these disasters? What are community perceptions about the event, how it was officially handled, and resulting changes from the derailment? To what extent can a criminological framework further our understanding of these events?

This project examines the events surrounding the 2014 oil train derailment that occurred in Lynchburg, Virginia specifically as a way to understand the larger context of these events. This research explores factors that led to the derailment, the extent of the damages and harms to the environment, response to the disaster, cleanup efforts, impacts on the community, treatment of victims by involved agencies, important regulations, involvement of the criminal justice system, and the responsibility accepted and avoided by the company and other relevant entities for the derailment. This is an important area of consideration since transporting crude oil via railroad has increased dramatically over the last decade (AAR 2014), particularly from the Bakken shale area of North Dakota. Between March 2013 and July 2015, there have been 29 oil train derailments in the US and Canada, the majority of which (20) have been in the United States (see Dobuzinskis 2015 July 17; EarthJustice May 2015; Gabler 2015 November 8). Stated another way, there were 29 crude oil derailments over a 28-month span and that does not include ethanol or petroleum distillates or derailments. This figure also does not include empty crude oil trains derailments such as the October 2015 derailment of an empty oil train just yards from the site of the 2014 derailment (Walls 2015 October 5). Most of these derailments involved a fire and spill and about half originated in the Bakken oil fields. These derailments have occurred in

places stretching across North America including Quebec, Alabama, North Dakota, New York, as well as New Brunswick and have resulted in deaths, injury, and the displacement of people as well as often significant environmental damage (Riverkeeper 2014). These derailments have also been a significant source of pollution. In 2013, trains in the US spilled more oil than in the previous 34 years *combined* (Gerken 2014 January 22).

This work draws upon in-depth interviews, government documents, and media accounts as part of a case study to explore community perceptions of the derailment and how it was officially handled. In-depth interviews were conducted with individuals involved with the derailment including first responders, witnesses, and environmentalists. Government documents also facilitated the nature and extent of the damages and response, including the official investigation, final ruling and agreement of a regulatory fine. Media accounts also served as important components to help inform this research. These forms of data will be used to examine nature of train derailments to situate the current case and to examine how this case fits into the broader national (and international) context of these disasters.

Numerous authors across a plethora of academic disciplines have commented on the wide range of issues pertaining to the environment. Criminology has begun to consider such matters, though as a discipline, grappling with ecological issues has not traditionally been an emphasis. However, recently there has been an interest in environmental concerns ranging from lack of regulation of corporations that created environmental and human harm to avoidance of responsibility and animal cruelty to large-scale environmental catastrophes (Lynch and Stretesky 2003). The breadth of research regarding the environment and human involvement which has developed over the last two decades within criminology has constituted a substantial body of work in a subfield that, though it has been referred to as many labels, has come to be known as

“green criminology.” According to Brisman and South (2013:2) this term is most often used in the field of criminology to “describe the exploration and examination of causes of and responses to ‘ecological,’ ‘environmental,’ or ‘green’ crimes, harms and hazards,” though many other terms have been used including environmental criminology, eco-crime, and eco-global crime (South, Brisman, and Beirne 2013).

The current research utilizes a criminological framework to explore the environmental harms generated through manmade ecological disasters because of industrial transportation using a case study approach of the 2014 train derailment in Lynchburg, Virginia. More specifically, this project is a discursive analysis of accidents and spills involving crude oil train derailments. One major advantage of approaching this topic from environmental harm and green criminological frameworks is the “invitational” nature of such a framework, meaning that it has the ability to be linked with other areas within criminology and with other disciplines as a result of its fluidity. As such, the current endeavor will also draw from cultural criminology due to the usefulness of considering meaning and representation in the instance of train derailments. Both green and cultural criminology are amenable to examining a variety of social harms and consequences that may be identified as “criminal” and others that may fall outside of a strict trope of law and criminality (Ferrell 2013). These perspectives are useful for this project due to their blatant concern with structures of power through historical situation of subject matter within capitalism and late modernity (Brisman and South 2013). Following the lead of Ferrell (2013), this project seeks to locate train derailments involving industrial transportation within the exploitation resulting from current economic arrangements.

This project addresses a gap in the criminological literature that has only recently begun to consider human-made environmental events as part of the scope of criminology (Burns and

Lynch 2004; Lynch and Stretesky 2003; South et al. 2013). The overemphasis of street crime as compared to crimes committed by corporations, and the difficulties related to the operational and legal premises of these actions, has been discussed at length (See Frank and Lynch 1992; Reiman 1979, 2001; Tappan 1947). However, issues regarding the environment were not widely included into the dialogue of corporate wrongdoings until the late 1980s and early 1990s, which especially emphasized violent environmental crimes (Burns and Lynch 2004). Since then, there has been a flourishing subfield, green criminology, which has placed a variety of actions that are detrimental in some capacity to the environment in its scope. This project furthers green criminology and addresses a substantial issue with concrete implications, namely the extensive environmental and human costs created by the current landscape of resource extraction and shipment in the United States. This is achieved through a recent case study that places the particular event in the context of the nature of extraction and especially shipment. By placing this issue in a criminological framework, while also drawing from other disciplines, a more complete understanding of the realities of railway shipment of resources in the US may be reached, to include prevalence, implications, extent, victims, and costs.

Following this chapter, Chapter II reviews the literature on green criminology, tracing its development as a subfield through criminology. It then outlines the proliferation of the railroad and its role in resource shipment, before discussing the changing nature of US resource shipment and a few prominent resultant oil train derailments. Chapter III provides an account of the research methods utilized for this analysis including details about the sample, data collection, and ethical issues.

Presentation of the results of research begin in Chapter IV. This chapter describes interview responses about the evacuation of the downtown area and an array of victimizations

that were experienced by the community. Responses concerning responsibility, accountability, and a regulatory fine that was assessed as a result of the discharge of oil are also discussed.

Chapter V examines important identities that emerged from interviews that helped respondents make sense of the derailment. A brief history of the influence of the James River and the railroad help situate responses about environmental victimization and infrastructure concerns. A brief sense of community that blanketed Lynchburg is also examined, largely around the realization of many people that the derailment could have been catastrophic. Chapter VI discusses how issues of transparency and terrorism played a role in the unawareness of important information about the presence and nature of crude oil trains in the city. Finally, Chapter VII discusses the implications of the results, provides limitations and areas of future research, and gives concluding remarks.

CHAPTER II

SITUATING THE INFLUX OF OIL TRAIN DERAILMENTS

Issues and conversations pertaining to the environment have are common in US culture to include their inclusion in media coverage as well as in daily practices of residents of the United States. Families, companies, and so on have adapted regular functions in the pursuit of becoming eco-friendly and conscientious about the ways in which their activities affect the various facets of the environment (White 2008). One needs to look no further than the idea of “going green” which has been prominent in the US, where individuals adopt lifestyles that are more ecologically responsible and preserve natural resources. The US government has advocated that consumers become green by choosing to buy more efficient products from compact fluorescent light bulbs and low-flow faucets to making more major purchases that have been certified as greener such as appliances with better EnergyStar ratings and automobiles that are cleaner as certified by SmartWay. Further, recycling, purchasing produce from local production sources, and consumption of organic clothes, soaps, and solvents are common practices (United States Government 2015). Outside of individual-level changes being made, issues regarding climate change are prominent on the world stage. Though the US has lagged behind in making necessary (and drastic) economic and political changes to contain the atmospheric destruction upon which scientists unanimously agree, concern for environmental issues is a global phenomenon (Klein 2014).

These, among numerous other practices, show that issues pertaining to the environment are important to many in the US. Though this social fact seems obvious, US society relies upon environmentally harmful practices such as resource extraction to power many aspects of modern life. Additionally, potentially harmful materials are produced daily in the United States. These

materials—both extracted and created—are widely used, but are not equally available due to locations of factories and extraction sites. Transportation, which occurs in many ways, is necessary so that these goods may reach consumers. The most common modes of transportation for these materials are shipment via barges on waterways, trucks, railways, and pipelines (Business & Economics Research Advisor 2013). An immense endeavor such as widely distributing a number of natural and produced materials is not immune to accidents during transportation; ships sometimes wreck, trucks occasionally crash, trains periodically derail, and pipelines leak. These events result in environmentally harmful materials being released into natural settings and have the propensity to devastate animals, plant life, waterways, and broader ecosystems, and human life.

Two notable examples include the BP oil spill in the Gulf of Mexico in 2010 that is considered “the worst ecological disaster in US history,” (Ruggiero and South, 2010: 245) and the 1984 Dow Chemical disaster in Bhopal, India (Katz 2010). There exist countless other events that have created substantial negative environmental and human consequences. This study considers a specific type of environmental disaster, train derailments during the transportation of oil, through a specific case, the Lynchburg, Virginia train derailment. This case study sheds light on human-created environmental harm as a result of political and economic changes and answers the call of Katz (2010) for more in-depth case-study research that delves into the operation of the “corporate state.”

This literature review will first consider how criminology has (or historically has not) considered issues relating to the environment and how the field has recently begun to think about the environment within its scope. The literature about the convergence of state and corporate entities in the commission of crimes and harmful actions will also be reviewed. A brief

account of the development railroads in the United States including their establishment and the background of corruption and wrongdoings that are inseparable from the story of railroad proliferation will follow. Also, the benefits of using railroads for freight shipment to bring us to modern times where crude oil is being shipped by rail with an increasing frequency is established after discussing a brief history of the oil industry and methods of transporting oil, specifically within the United States. This review includes an account of how the modern oil boom in the United States that has increasingly relied on rail transport to move oil throughout the country. Next, prominent crude oil train derailments that have occurred since this dramatic increase in shipment are detailed.

CRIMINOLOGY AND CONSIDERATIONS OF THE ENVIRONMENT

Environmental issues, to include detrimental human activity, are by no means a new area of study within academe. Numerous disciplines have used environmental settings and components within the scope of their fields and as units of analysis (South 2014). Criminology as a discipline was quite late to the table regarding ecological issues and much of the history of the tradition entirely ignored the natural environment. However, over the last 25 years great interest in diverse environmental concerns has created a blossoming subfield within criminology (Lynch and Stretesky 2003). The term most often employed to this area of study is “green criminology” (Burns and Lynch 2004; South, 2014; South et al. 2013). This term is used to describe research within criminology that concentrates on issues related to environmental harm (South and Beirne 2006; White 2008). It is important to visit the emergence of the environment in criminological research including how it developed, varying perspectives within the subfield regarding definitional and legal considerations, typologies of the various harms and crimes this perspective

considers, its merging with other subfields, and future considerations and existing limitations in the ability to conduct this sort of research.

White-Collar Crime and Corporate Crime

According to Burns and Lynch (2004), the appropriate starting place for environmental research is with Edwin Sutherland's conceptualization of white-collar crime in the 1930s. The definition of white-collar crime given by Sutherland was "a crime committed by a person of respectability and high social status in the course of his occupation" (Sutherland 1983: 7). This influential work brought attention to crimes committed by those higher in the socio-economic pecking order. Sutherland examined criminal violations of 70 of the largest corporations in the United States and executives at these firms. He also considered actions that are not written into legal code. Violations against administrative, regulatory, and civil law were important for Sutherland's conceptualization. The operationalization of white-collar crime, as set forth by Sutherland, has been heavily debated and adapted numerous times. His use of and failure to define the term "high social status" has been particularly contentious. Since his initial framework, distinctions have been made to clarify white-collar crimes, from other types of crime, such as corporate crime (Burns and Lynch 2004).

Frank and Lynch (1992) differentiated between corporate crimes from white-collar crimes. Whereas white-collar crimes are carried out for the purpose of personal gain, corporate crimes are carried out for the purpose of corporate benefit, though the individual may also profit in an indirect manner. When discussing corporate crimes, typically only the corporation is mentioned as often times many individuals are involved in the crime, which refers to the act easier. This distinction is important because it paved the way for researchers to more systematically research environmental harms and green crimes (Burns and Lynch 2004).

Jeffrey Reiman's (1979) *The Rich Get Richer and the Poor Get Prison* is among literature that instigated a shift in the study of financial side of corporate crime to violence. Reiman's work helped bring corporate actions that pollute and otherwise damage the environment into the discussion in criminology (though some scholars within and outside of criminology were already considering these issues). Reiman (1979) demonstrated that ordinary corporate offenses typically lack the features and conditions that most people associate with crime, especially street crime. Crimes against the environment do not mesh with this image of crime (Burns and Lynch 2004). The scope of corporate violence broadened during the 1980s and 1990s to include crimes against the environment among other more specific types of inquiry (Frank and Lynch 1992). Thus, contemporary environmental research has its roots with the scholarly work of white-collar crime researchers, which developed into corporate crime, followed by the study environmental crime and environmental justice (Burns and Lynch, 2004).

South (2014) describes the important influences that converged to create the atmosphere amenable to the emergence of the subfield. The influence of critical criminology and Marxist orientations in numerous ways illuminated crimes committed by the powerful and the inherent biases that exist in hegemonic legal frameworks. This period coincides with the development of the study of corporate crime which spurred state-corporate crime research.

State-Corporate Crime

"State-corporate crime" first appeared in 1990 and is the result of two decades of work delving into crimes of the powerful. The intersection between politics and economics in the creation of social harms and corporate crimes became a crucial space for inspection. This term found its way into Kramer's (1990) case study of the *Challenger* explosion. Two forms of criminality and harm that were previously not amalgamated were joined to formulate state-

corporate crime: state crime and corporate crime (Michalowski and Kramer 2006). “State crime,” can be attributed to the direct call of Chambliss (1990) who instigated the inquiry into actions of the state from other criminologists. Previously, political crime was the primary way in which crimes of the state were conceptualized (Rothe 2009). The term state-corporate crime sought to breach the divide between political crimes and economic crimes of the powerful to elucidate how social harms and crimes may materialize from the merging of political and economic power (Michalowski and Kramer 2006). This tradition has had several rich and significant case studies including a study of the *Challenger* explosion (Kramer 1990), the industrial fire at the Imperial Foods chicken processing plant in North Carolina (Aulette and Michalowski 1993), and the Exxon Valdez Oil Spill (Cruciotti and Matthews 2006).

An important conceptual advancement of the subfield is the distinction between “state-initiated corporate crime” and “state-facilitated corporate crime.” State-initiated corporate crime “occurs when corporations employed by a government engage in organizational deviance at the direction of, or with the tacit approval of, that government” (Kramer and Michalowski 2006: 21). In contrast, state-facilitated corporate crime “occurs when government institutions of social control are guilty of clear failure to create regulatory institutions capable of restraining deviant business activities, either because of direct collusion between business and government or because they adhere to shared goals whose attainment would be hampered by aggressive regulation” (Kramer and Michalowski 2006: 21). Though issues pertaining to the environment are within the scope of state-corporate crime (see Cruciotti and Matthews 2006), it was not until the emergence of another subfield, green criminology, that the environment was injected as a central focus to a range of criminologists.

Green Criminology

As described by Frank and Lynch (1992), the challenges and influences of feminist criminology and peacemaking criminology, particularly, created a space for considerations of the environment within criminology (South 2014). Further, there were considerations about criminality as it relates to the environment in the field before Lynch's (1990) plea. According to Eman, Meško, and Fields (2009), publications from as early as 1981 by Pecar examined new criminal behavior in Slovenia that damaged the environment. However, lack of an English translation of the work stifled its influence internationally. Thus, boundaries of discipline and language contributed to the lagging emergence of an environmentally conscious criminology.

As mentioned, Lynch (1990) first called for deployment of the term "green criminology" to describe research within criminology with a focus on issues related to environmental harm which has now been generally accepted (South and Beirne 2006; White 2008). Widespread consensus about a name by which this perspective or subfield should be referred does not exist (South, 2014). Another term used includes "conservation criminology" which advocates the use of evidence-based practice while confronting risks and criminal actions against the environment while incorporating the areas of criminal justice and criminology (Gibbs, Gore, McGarrell, and Rivers III 2010; South 2014).

Green criminology is not a specific theory, but rather it is a perspective that is capable of incorporating differing theoretical positions or schools of thought (South 2014). One characteristic of green criminology that is that it is invitational and thus able to be merged with other fields and it may include diverse theoretical traditions. This flexibility to diverse positions should be considered a strength of the perspective (South et al. 2013).

Many works that discuss the history of green criminology typically begin around 1990 when the subfield was emerging within criminology. Lynch (1990) advocated that a “greening” occur in criminology and established a preliminary scope and purpose for such a criminology. This, and many subsequent works in the subfield served as impetuses for research into harms of the environment; these works were crucial to the introduction of ecological concerns into the scope of criminology. However, the reality is that a diverse set of disciplines within the natural sciences, humanities, and the social sciences were already considering threats to the environment within their respective fields. Further, this area of study did not simply materialize as there are many antecedents to the subfield that existed before it became an identifiable subfield (South 2014). Environmental issues were being considered in academe, including developments within criminology, long before Lynch’s (1990) call to green criminology.

This framework developed largely in response to heavy criticism of attempts to demarcate a unique subfield (Gibbs et al. 2010). Another term, “eco-crime” has been used. According to Walters (2010), eco-crime denotes an inclusion of sociological examinations into harms to the environment that are not necessarily prohibited by existing legal statutes with the current existing legal framework. The terms “eco-global criminology” (South 2014) and ‘environmental crime’ have also been used (Clifford and Edwards 1998).

An “environmental crime” refers to “any act that violates an environmental protection statute” according to Clifford and Edwards (1998: 26). This term has been used by politicians and in news reporting and many have heard this term, but an understanding of this term is difficult to establish due to its previous use in criminology. Environmental crime is a behavior that is in violation of some law, but oftentimes the concept is deployed to refer to incidents where criminal charges are not pursued (Clifford and Edwards 1998). A major issue with this

term is that acts that most would consider immoral and in need of inquiry are not necessarily addressed by the law (Burns and Lynch 2004). This definitional issue will be further examined later. Given this problem, Clifford and Edwards (1998: 26) offered another definition for environmental crime: “an act committed with the intent to harm or with a potential to cause harm to ecological and/or biological systems and for the purpose of securing business or personal advantage.”

Another related complication is that laws surrounding environmentally harmful human activity are continuously changing. Behaviors are criminalized due to scientific evidence that emerges (Burns and Lynch 2004) and often this evidence may have existed for many years, but was repressed by corporations (Fagin and Lavelle 1996). The term environmental crime has further been criticized as a label for this subfield because it originally described an area of study dedicated to urban areas and the mapping of crime. This area has synonyms as well, to include place-based crime prevention, situational crime prevention, and others. Some have called for a reclaiming of the term environmental criminology to align with everyday usage of ‘environment’ (White, 2008), but others suggest this could cause confusion with the area of study that has been previously established (South 2014).

Despite the varied terms for the field, the most commonly used term is ‘green criminology’ (Brisman and South 2013; McClanahan 2014; South 2014). This term is identified by Brisman and South (2013: 2) as the term most frequently used within criminology to “describe the exploration and examination of causes of and responses to ‘ecological,’ ‘environmental,’ or ‘green’ crimes, harms and hazards.” This endeavor includes injustices and harms against nonhuman species and the environment. During the 1990s, socio-legal scholars and like-minded criminologists shared results from research, concerns, and theoretical positions

which have become more present in various forms of publications and at conferences within the field of criminology (South 2014). While this certainly answered Lynch's (1990) call, an agenda involving the environment within criminology was belated in comparison to the work within other disciplines and organizations in the US (South 2014). This perspective is diverse and includes a wide range of acts (South 2014; South et al. 2013; White 2008). Examples of topics being studied include pollution, corporate and state actions that are damaging to the environment, water supply, air supply (Brisman and South 2012) climate change, (Klein 2014), toxic waste disposal, injury to wildlife, policing of environmental offenses (South 2014), food crimes, illegal trading of endangered species, deforestation (South et al. 2013) among many others. The issues mentioned here and the numerous others that scholars have examined fit within the concerns of criminology and, in some cases, they have already been given attention (South 2014).

Further, a subfield such as the one in question here is certainly justified, whatever its label. The arguments that may be necessary for such a justification have previously been reviewed (see Potter 2013). However, according to South (2014), the justification for this area of study is rather simple: the area of study is not only necessary, but was inevitable. The political climate of the time and scientific interests of the moment made the time ripe for such an endeavor. This also helps to explain how, though many specific works by criminologists (and academics outside of the discipline) have been integral in the development of the subfield, no singular work was a catalyst for the subfield because related research was being conducted in a vast array of places from researchers with diverse backgrounds and expertise. Environmental concerns, specifically problems created by current economic arrangements, are issues essential to the 21st century. Many view harms to facets of the environment as intrinsically problematic,

given the inherent value many place on the environment. Yet beyond this, environmental harms also contribute to a collection of social problems in that these harms many times cause, contribute to, or even exacerbate social harm generally (Potter 2014).

Given the intrinsic invitational character of green criminology, the subfield may be merged with other fields. (South et al. 2013). One merging of perspectives is particularly useful for this project: connecting green criminology and cultural criminology (Brisman and South 2012; Brisman, McClanahan, and South, 2014; Ferrell 2013). While both of these perspectives are nascent, their subject matters are both against the conventional criminological grain and open to inquiries that are “criminal” from a legal framework and/or a framework of social harm. A few spaces where these perspectives have intersected are through envisioning consumer culture as environmentally harmful (Ferrell 2013), and examining the criminalization of both environmental activism (Brisman 2010) and ecological resistance, such as dumpster diving (Ferrell 2006).

A Legal or Harm Perspective?

One major consideration concerning criminological endeavors into threats and damages to the environment, like white-collar and corporate crime generally, is the framework that should be deployed. In other words, criminologists have considered what the standard should be for an inspection of issues into the environment. Broadly, two differing perspectives exist: a legal perspective and a harms perspective. This distinction has been debated widely within criminology and concerns the scope of the field. Should criminology be concerned with only crimes, those actions defined as illegal in the criminal law, or if should it be expanded to include harmful behaviors that are not criminal? Though these other behaviors are technically legal in

practice, or are against administrative, regulatory, and criminal law, they have a harmful result based on some measure which would constitute it worthy of legal prohibition (South 2014).

Some criminologists prefer a definition that is rooted exclusively in legal bases, where a green crime would include actions or omissions that are a violation of law and thus are subject to criminal sanctions and punishments (Situ and Emmons 2000). Those that subscribe to this conceptualization see this definition as precise and value free. Though this perspective is important and acts prohibited by law should certainly be included in a perspective pertaining to issues that damage the environment and nonhuman species, it is limiting by its nature and replete with problems, including the notion of being value-free (Lynch and Stretesky 2003). Often times, “crime” and “harm” frameworks do not coexist, or acts that are worthy of inquiry do not fit into both perspectives (South et al. 2013). The problem of using a strictly legal framework within criminology has been acknowledged for several decades. Using definitions of crime that are strictly legal has been challenged in the social sciences since the late 1800s (Potter 2013). Sellin (1938) contended that legal definitions restrict the types of research projects in which criminologists could engage.

One significant flaw to operating within a strictly legal perspective is that powerful entities often exert their will on legislation which has ramifications for the environment and the development of environmental law (Burns and Lynch 2004; Lynch and Stretesky 2013; South et al. 2013). Environmental law is a relatively new area and “definitions of environmental crime are in a constant state of flux” (Burns and Lynch 2004: 9). Environmental law is often changed and reevaluated based on new proceedings and sometimes due to science identifying new kinds of harms. Perhaps more challenging than the changing nature of law, and the related to power dynamics within law, is that corporations lobby legislators to not criminalize environmentally

harmful acts (Burns and Lynch, 2004). Thus, the very organizations, individuals, and groups who are responsible for many, if not most, harms against the environment have constructed definitions of crimes. This persuasion to legislators and courts claim that profit, economic development, and stability would be impaired by new standards introduced into industry (South et al. 2013).

The reality that corporations, who often influence legislation, are often responsible for environmentally harmful activities is particularly concerning given that environmental harm (or even illegality) occurs regularly, to a startling extent. This state of affairs has been described as “corporate institutionalization” (Simon 2000). The entities that have the ability to influence criminal law may be prone to casting off any definitions of crime that would consider their actions criminal. Similarly, these entities may be inclined to skirt safety standards and regulatory oversights pertaining to employees or the goods they provide. (South et al. 2013). This is not to disregard the state’s role in environmental harm and degradation. Governments are often involved, and are sometimes complicit, in environmentally harmful activities (Caldicott 1992). The United States government is involved in pollution of the environment as well, sometimes in conjunction with business and citizens (Simon 2000).

The complicated situation regarding definitions of crimes generally, and defining environmentally harmful actions as criminal specifically have caused some to question if criminal law is capable of protecting the environment (Du Réés 2001). As such, green criminology generally considers both harms against the environment that are criminalized by law and harms that are a result of various legal actions (Brisman et al. 2014). This conceptualization of how to define environmental or green crimes represents one way in which authors have categorized these types of offenses. There also exist typologies within this subfield that are

important to consider when examining specific harms against the environment. These typologies help drive the research and enhance understanding of the motivations and the diverse range of actions applicable to the subfield. The following section details typologies set forth by Adler (1996), Lynch and Stretesky (2007), White (2008), Carrabine and colleagues (2004), and Potter (2014).

Typologies of Green Criminology

Since a subfield began to emerge in criminology concerning harms against the environment, authors have made connections to mainstream criminological theories and incorporated critical perspectives to further knowledge about environmental crimes and why they may occur (see Edwards, Edwards, and Fields 1996). One early conceptualization examined the distinction between using theories of criminality which are offender-specific and theories of crime which are offense-specific as they relate to environmental crime research and policy implementation (Adler 1996). As the environmental/green perspective within criminology developed, typologies specific to this perspective have also emerged.

Lynch and Stretesky (2007) acknowledged four different harms that should be in the scope of this perspective. These four are: (1) a critical investigation into policies pertaining to the environment and devising useful changes if possible; (2) environmental justice concerns and how hazards to the environment are unequally distributed; (3) how health is affected by one being exposed to toxins in the environment; and (4) how exposure to environmental toxins are related to criminality (i.e. how exposure to specific toxins like mercury may be associated with changes in behavior which may lead to aggression and/or violence).

White (2008) devised a ternary typology of issues pertaining to the environmental/green perspective. He proposed that there exist brown, green, and white issues. Brown issues are

conceived of as issues prevalent in urban life, waste, and pollution. One example of a brown issue is an oil spill. Green issues are issues that affect environmental conservation and areas with wildlife. Examples of this include a loss of biodiversity and acid rain. Finally, white issues pertain to the affect that laboratory practices and new technologies have on the environment.

Carrabine and colleagues (2004) conceptualized green crimes as being either primary or secondary. A “primary” green crime is one that is the direct result from degradation or destruction of the resources on Earth. Four examples of primary green harms and crimes would be (1) harms and crimes related to air pollution, (2) harms and crimes related to deforestation, (3) harms and crimes related to non-human species, and (4) harms and crimes related to ground and water pollution (South 2014). A “secondary” green crime is one that is committed in conjunction with, or depends upon, the aforementioned destruction as well as attempts to prevent or regulate destruction. These secondary crimes and harms may come to be by exploiting conditions created by an environmental harm. Potter (2014) expanded this framework by adding “tertiary” green harms and crimes to the conceptualization. A tertiary green harm or crime includes actions carried out by victims of environmental crime or actions that occur due to environmental victimization. An example may be an individual engaging in a crime in order to secure money or food because of being a victim of a green harm.

A final typology was introduced by South (2014) and is made up of four dimensions: (1) “environmental health and victimization”; (2) “the socio-economics of everyday ecocide”; (3) “global connections”; and (4) “intergenerational and future challenges” which include dimensions of time (now and future implications) and space. A unifying theme of these typologies and frameworks is that they allow researchers to identify particular harms and crimes

and to place them in a meaningful group within such a broad range of offenses. These typologies have been an important development within this subfield.

THE HISTORY AND PROLIFERATION OF RAILROADS

In many ways railroads created the United States as they transported the goods necessary to sustain life, establish towns, and build profit. Railroads influenced the development of federal and state governments, corporations, and labor unions, and served to spark the ideology of American exceptionalism that was spread through cultural symbols including newspapers, books, and music. As Zoellner (2014: xii) put it, “Under the skin of modernity lies a skeleton of railroad tracks.” American culture has very much been fascinated with the train and there exist numerous examples of trains in film, television, music, and art. Though railroads have proliferated worldwide, the US is perhaps unique in the role of the railway infrastructure in the US rise to prominence (Zoellner 2014). According to the Association of American Railroads (AAR 2015), America’s freight rail system is currently the most cost-effective and the most efficient worldwide. This section details the development of the rail infrastructure and a few crucial changes to bring us up to the current day where the issue of transporting oil via rail and its negative consequences are a significant modern day concern.

The Beginnings of Rail Travel and Transport: The Transcontinental Railroad

The transcontinental railroad is the backbone of the current rail infrastructure; it was constructed because traveling and transporting by rail prior to the transcontinental railroad was incoherent and irritating, despite the impressive nature of train technology itself at the time. Before 1860, there was no standard of track gauge (the spacing between the parallel rails that bear the load of the train). The standard 4 feet and 8.5 inch style (which was one of twenty

gauges) did not become dominant until 1860 and even then, it was only used on about half of track mileage. Where one gauge of track ended, so did a train's ability to continue which resulted in freight being off-loaded or the wheels adjusted and passengers were required to move to a new train line before the train could advance. This diffuse situation existed until the Civil War. Although the war likely destroyed more railroads than it created, it instigated a substantial change in the organization of railroads and created governmental and financial entities that would soon begin constructing railroads at a vigorous pace (White 2011). While the US was divided geographically North and South during the Civil War, President Lincoln signed the Pacific Railroad Act in 1862 that chartered a transcontinental railroad that would construct a new line that connected Iowa and California (AAR 2015). The passage of this bill was for military purposes; it secured California and the rest of the West for the Union. However, only a tiny portion of these tracks was actually built before the war ended (White 2011).

Such a massive endeavor as connecting the eastern and western US via railroad required a great deal of money and it was desired that this construction be completed without drawing funds from taxpayers. Though Congress attempted to receive capital from the wealthiest of players in the US, the 1862 act did not sufficiently offer the loan structures and land grants necessary to attract such wealth holders, but other less-known funders were drawn in. Two companies, the Central Pacific and the Union Pacific were given the right to construct the railroad with aid from the government. These two companies started in the West and East, respectively, and built toward one another, an undertaking that was a hard sell for local investors and state legislatures. The immense project and the difficulty in funding can be understood through the fact that by the winter of 1863-64 the two companies collectively had about eleven miles of rail and were financially stymied. The major concerns during negotiating (and after the

passing of the Pacific Railroad Act) were bonds for construction and land grants. Given the stalling of the construction, a new act, The Pacific Railway Act of 1864 was passed. According to White (2011: 22), “For the country as a whole, the Pacific Railway Act of 1864 was the worst act money could buy.” The act provided another \$50 million worth of government bonds over 30 years to the companies that was drawn shoddily into the law to the extent that a later court decision ruled that the companies would only to have to pay simple interest (instead of paying an additional \$43 million to the US government) (White 2011).

The second concern, land grants, was handled similarly to the lackluster way in which the 1864 act handled bonds. The new act doubled land subsidy per mile of railroad constructed—companies were given 12,800 acres for *each* mile and all coal or iron contained on them. This land was later sold to settlers who also became customers for the railroad. Railroads received land grants that totaled more than 44 million acres, which is about the size of the state of Missouri. Thirty-three million acres came from Texas alone and none of these acres were even federal lands. In fact, the government did not own much of the land given in the grants because it belonged to Native Americans (White 2011).

The ownership of these lands was never a real obstacle to congressional action and it may have actually been beneficial because those that wrote land grants could stipulate land passed from Native Americans to the railroads directly rather than having competitive offers from settlers. The infamous Kansas Senator Samuel Pomeroy set the precedent for how these land grants would be solidified in his dealings with the Kickapoo Treaty. This treaty gave the land to a railroad company for which Senator Pomeroy was president despite the Kickapoo tribe protesting the treaty. The grievances of the Kickapoo were the involvement of bribes, poor interpretation of the treaty to tribe members, and the removal of dissenting tribal leaders from

meetings. Just one recognized leader of the tribe actually signed the treaty and, despite an investigation that revealed the nature of the treaty, no action was taken (White 2011). Though the transcontinental railroad was not the beginning nor the end of conflict between Native Americans and white settlers, it was important because it relegated Natives onto reservations during the following decades. As new treaties were written and signed, Natives were scattered to reservations with inhospitable lands, separated from the areas to which they were emotionally and physically invested (Public Broadcasting Service N.D.).

The 1864 act also generated uncertainty about where the westward and eastward rails would meet which transformed construction of the transcontinental railroad into a competition between Central Pacific and Union Pacific for subsidies because more miles constructed meant more bonds for the companies. Though this did facilitate a quick construction, it was at the expense of efficiency and cost-effectiveness that could have been ensured with construction that is more methodical. Much of the railroad would have to be redone as a result (White 2011).

The legacy of the transcontinental railroad is mixed; there are not many accomplishments in the history of the US that have been as celebrated as the completion of the first transcontinental railroad (Zoellner 2014). The completed project benefited the US economy and secured rails' place in transporting goods internationally. It also opened markets to individuals all over the United States that previously did not have access to certain goods. The railroad allowed for resources in the western and central US to be mined and transported for use. An improvement of public discourse in the US and intellectual life was experienced as the nation became more interconnected as people could travel the entire continent in just a few days. The rails allowed intellectual ideas between the coasts to be shared in a way that was previously impossible. This initial connection from coast to coast also established interconnectivity in the

US through a web of rail lines (Public Broadcasting Service N.D.). It is this network through which individuals have and continue to frequently travel across the US, but more importantly for the purposes of this project this network of railways became a major transporter of various goods including natural resources such as oil.

On the other hand, the transcontinental railroad was wrought with problems and was disastrous for some. Extreme corruption occurred in the railroad industry before, during, and after the transcontinental railroad (Zoellner 2014). Historian Richard White (2011), among others, argued the undertaking of a transcontinental railroad as harmful to the US. The specific harms cited were the imprudent colonization as settlers moved westward which included the overkilling of buffalo for trade (Public Broadcasting Service N.D.), the emergence of brothels all along the railways, overgrazing and cattle “die-offs,” and the slaughtering and displacement of Native Americans (Zoellner 2014). For Native Americans, the building of the transcontinental railroad caused further oppression and marginalization because the railroad became a symbol of the forced removal from the treasured lands upon which they once thrived (Public Broadcasting Service N.D.). Railroad workers that built the transcontinental railroad were also subjected to backbreaking labor for low pay, particularly Chinese immigrants who were extremely exploited (Shelden 2008). “Overbuilt, prone to bankruptcy and receivership, wretchedly managed, politically corrupt, environmentally harmful, and financially wasteful, these corporations nonetheless helped create a world where private success often came from luck, fortunate timing, and state intervention” (White 2011: 509).

Railroad Changes of the 1900s

Once rail lines were built across the US in the mid- to late-1800s, rail travel and freight transport increased in the following decades. Railways played a critical role in the Civil War,

World War I, and World War II. By 1944, freight traffic had reached an all-time high and passenger service remained high. However, the 1950s proved to be a trying decade for the railroads (Stover 2008). Freight rail, much like passenger train travel, was on rapid decline after World War II as trucking companies with World War II veterans at their helm were increasingly transporting goods across the country (Zoellner 2014). The problem of “less than carload” freight, where only small items often occupied rail cars, became common as the transportation of military goods declined until the production and transportation of consumer products was established. Once consumer goods became more widely available, public roads improved, and suburbs were introduced, suburban shopping required a faster turnover of a smaller inventory due to market demands in diffuse shopping locations; this is exactly opposite the strength of railway transport.

In addition to these changes in public organization and infrastructure, the extreme corruption for which the railroads were (and still are) notorious had created a strict regulatory landscape that further hampered the ability of railroads to adapt to the changing characteristics of goods. Abuses by railroad tycoons such as Vanderbilt and Gould instigated the formation of the regulatory Interstate Commerce Commission which required intensive documentation of earnings, expenditures, and price changes unique to railroads while other sectors of transportation received public funding not awarded to the rail infrastructure. This lack of public assistance along with reactionary red tape to curtail corruption caused many railways to go out of business and this period of decline was the basis for the euphemism “standing derailment” where unkempt and underused tracks collapse under trains (Zoellner 2014). In the 1960s, the decreased use of trains for personal travel was accompanied by increased federal regulation of freight transport and caused a further decline in the railroads. Then, the 1980 Staggers Rail Act greatly

decreased regulation of the railroad industry and brought a renewed prosperity to freight rail carriers. The legislation helped instigate increased freight traffic so that by 1995 it was twice the previous freight rail peak in 1944 (Stover 2008).

Current Landscape of Railroads and Their Role in Freight Transport

US railroads have a lower profile in modern times compared to their supremacy in the early 1900s, but are still very much alive. Commuter rails connect larger cities to their suburbs and to other cities, and freight rail continues to transport goods. The US economy depends on rail transport now more than ever in its history. Around 40% of cargo (when measured by weight and distance) in the US is moved by trains operated by the six major carriers that make up this large portion of US goods transport: (1) Union Pacific, (2) Norfolk Southern, (3) CSX, (4) Canadian National, (5) Canadian Pacific, and (6) BNSF. During the late 20th century, many smaller lines went bankrupt due to reorganizations and larger companies acquired their lines (Zoellner 2014) and the average freight train has a capacity of about 280 trucks while using much less oil to move such a load.

Intermodal freight transport provided a new opportunity for the railroad industry. Intermodal containers are standardized, reusable steel boxes that may be stacked on one other and easily moved between rail, ship, and truck for the transportation of goods across the country or the world. Indeed, “the box” shipping containers “made the world smaller and the world economy bigger” (Levinson 2010) precisely because of their standardization. Interestingly for our story, the beginning of this revolution in shipping began with a repurposed oil tanker (Levinson 2010). As ocean ports began utilizing the box, railroads adapted the gondola car so that these containers could be interlocked making inland shipments to distribution centers cheap and effective (Zoellner 2014). Although the transport of oil requires a different car, this

distribution model established the method for distributing oil that has been utilized heavily in the last decade alone. This change, I would argue, places the railroad inextricably with the oil industry, much in the way that Zoellner (2014) discussed the railroad's ties to the coal industry that have existed since the beginnings of the railroad industry. Railroads have historically been a staple for transporting coal; without the railroad industry moving coal all over the country, the coal industry would likely not have developed so strongly (Zoellner 2014). As will be outlined, the current oil boom in the US is reliant upon the flexibility and efficiency of railroads to carry product to markets on both the East and West Coast of the US.

Generally, there are significant benefits to shipping goods by freight. Railroads have average fuel efficiency four times that of trucks. In 2013, railroads moved one freight ton about 473 miles for each gallon of fuel on average. This also helps to reduce greenhouse gas emissions, on average by about 75 percent compared to trucks. Railroad fuel efficiency will only increase since the EPA passed more stringent emissions standards for trains in 2008 which will continue to cut emissions by up to 90 percent. Transporting goods by rail also helps decrease highway congestion that saves automobile fuel use, time, and maintenance on the highway infrastructure (AAR 2014). Though these are important benefits and railroads are more environmentally sustainable transportation method than are trucks, rail transport contributes substantially to the annual two billion metric ton carbon dioxide emission into the atmosphere that ultimately releases lead, methane, uranium, and mercury (Zoellner 2014). Further, given rail infrastructure limitations, cargo shipped by rail (oil or otherwise) must be shipped from a central terminal to consumers.

The rise, dominance, fall, and reinvigoration of railroads are important for this project. However, the specifics of railroad involvement in the oil industry should also be analyzed to help

gain an understanding of the current issue in oil transport that this research considers. The following section will discuss the changing nature of oil drilling and transport over the last decade that has resulted a drastic increase for oil being shipped in the United States. This fact has intertwined the railroad industry with increased domestic oil production that sets the stage for derailments such as the one that occurred in Lynchburg, Virginia.

CHANGES IN THE OIL INDUSTRY AND OIL TRANSPORT

Oil has been an important issue in US politics and continues to be. Though crude oil is a highly desired commodity in the US, only a minute amount of it is consumed directly. The majority of all crude oil, whether imported to or produced in the US goes through a refining process so that it can be consumed as a petroleum product like diesel fuel, gasoline, jet fuel, or heating oil. The US is consistently the world's leading consumer of oil, consuming almost 7 billion barrels of petroleum products in 2014. (EIA 2015c). The amount at which the US consumes oil is staggering given that it was about 19 million barrels per day in 2013 and 2014, almost double the amount of the world's next leading consumer, China, at just over 10 million barrels per day. The rate of US oil consumption is more than four times the amount consumed by any country other than China (EIA 2015b).

In 2013, the US led the world in oil production, just edging out Saudi Arabia. Despite being the world's leading producer, the US did not produce enough oil to meet its consumption needs, falling about 6 million barrels short per day (EIA 2015b). This rise to world prominence is recent since the US experienced a steady decline in oil production from the mid-1980s until 2008 (EIA 2015d). Given the extremely high rate of consumption and the inability to meet its needs,

the US must import oil for consumption. The issue of relying on foreign oil has been a point of contention in US politics and many have called for decreasing US reliance on foreign oil.

Oil imports in the US have declined beginning in 2005 due to an increased domestic supply from oil fracking, better fuel efficiency from products such as vehicles, and a fuel demand that has depressed because of the 2008 economic crisis. The U.S. Department of Energy reported that domestic oil is experiencing a growing surplus (Dimick 2014 December 19). 2010 marked the first time in 13 years that the United States imported less than half of the oil it consumed (Slack 2012 March 1). Overall, production of crude oil in the US has increased annually since 2008 (EIA, 2015d) and is currently at a level that almost matches the record mark set in the 1970s (Dimick 2014 December 19). By the end of 2014, crude oil production in the US was more than double that of its lowest point in 2008. Production increased in 2015 (EIA 2015d). This boom in US oil is due to an influx in hydraulic fracturing or “fracking” in North Dakota and Texas. This type of extraction requires drilling that is very deep as well as both vertical and horizontal drilling. Further, high-pressured water, sand, and chemicals must be injected in order to retrieve the oil or gas. Currently more than one million fracked gas or oil wells have been drilled in the US and new wells must frequently be drilled in order to sustain high production. Though US production is competing with and even topping Saudi Arabia, few underground reserves in the Middle Eastern require the more expensive and risky process of fracking (Dimick 2014 December 19).

The comparatively unique reliance on fracking is cause for concern when projecting oil production in the future, but the immediate future is in no way bleak (Dimick 2014 December 19). The United States Energy Information Center (EIA 2015a) projected that, due to growth in US energy production (mainly natural gas and crude oil) and modest demand growth, energy

imports to the US will decline until about 2028. However, the US will see a decline in domestic oil production in the 2020s given the method by which the oil is extracted; thus, oil production is expected to plateau in the next 5-10 years (EIA 2015a). Though the US Energy Information Center (EIA) predicts that Middle East will again become the major source for supply growth in the future after the oil boom has subsided, oil will continue to be produced in the US (Dimick 2014 December 10).

The Bakken Oil Boom

Oil production has occurred (and will continue to occur) in a few important shale formations in the US: Texas Eagle Ford, Texas Barnett, Nebraska and Colorado Niobrara, and North Dakota Bakken (Dimick 2014 December 19). This last shale formation, the Bakken region, is of utmost concern for this project though the other shale formations are also important. The Bakken formation is a 200,000 square mile shale rock area mainly in North Dakota, though it is also partially in Montana and parts of Saskatchewan and Manitoba in Canada. This area accounts for about 10% of all oil production in the US which is several hundred thousands of barrels every day (each barrel has 42 gallons of crude oil). Though there is a pipeline that is used in this area, the amount produced from the Bakken surpasses the capacity of the current pipeline. Producers also are inclined to sell this oil on the coasts of the US since oil brings a higher price on the coasts. These two factors converge to create a landscape where oil is shipped by rail at a much higher rate; in 2008, railroads transported less than 10,000 carloads of crude compared to over 230,000 carloads in 2012 (Gerken 2014 January 22). The increase in shipment is problematic for railway safety and it has led to an increase in derailments. A particular concern when considering Bakken crude oil is that this oil is considered more volatile since it is lighter than traditional heavy crude oil and has a lower ignition point (The DOT-111 Reader 2015). This

point has been contested by other entities, including ExxonMobil and American Fuel & Petrochemical Manufacturers (AFPM) (PHMSA 2015a).

Though US oil production and imports of oil to the US have changed dramatically over the past decade, this process of moving crude oil from oil fields to markets has not changed (Business & Economic Research Advisory 2013); oil must still be transported from its extraction point to refineries and then to storage or markets. A major contemporary concern includes these changes in modes and methods of transportation alongside other significant changes in the US oil industry.

Transporting Crude Oil

The transportation of oil entails moving crude oil from the point of its extraction in oil fields to refineries for processing, then to storage facilities where oil products are held as reserves. Pipelines and tankers transport crude oil through water routes. Tankers are the primary mode of moving oil imported into the United States while pipelines typically move crude oil to refineries once the crude oil has been separated from natural gas. Pipelines are crucial for moving landlocked crude oil. After the refining process, tankers, trucks, pipelines, and railroads may move products to the market (Business & Economics Research Advisor 2013).

When railways are used to move oil, they are carried in one of two types of tank car: the DOT-111 and the CPC-1232. The DOT-111 model (or Department of Transportation-111), known as CTC-111A in Canada, is non-pressurized with a capacity of about 30,000 gallons and is used to transport both hazardous and non-hazardous materials. (DOT-111 Reader 2015). It is a general service car and as of September 2014, about 228,000 of these cars were in service with almost half of those being used for the transportation of crude oil or another flammable

substance. These particular tankers have been heavily criticized as crude oil train derailments became more common, especially after 2013.

In October 2011, this model became outdated when the industry standard changed to the CPC-1232 (or Casualty Prevention Circular-1232) model. As of September 2014, just 24,000 tank cars were at the updated standard (AAR 2014). This update addressed the propensity of the older cars to rupture and spill the contents of the car. Due to thinner outer shells, limited protection at the ends of the cars, the lack of pressure relief devices, and inadequate protection for valves, DOT-111 cars are prone to puncture causing explosions and substantial spills (DOT-111 Reader 2015).

Regardless of the tanker car model, the vast majority of cars are owned by leasing companies or customers; only about one-percent of these cars are owned by the railroads themselves. Per federal regulation, the entity that is supplying the oil to the specific railroad to be transported must properly classify said oil based on the amount of risk. In early 2015, the Federal Railroad Administration (FRA) mandated that crude oil extracted from the Bakken shale formation be tested to ensure the correct classification before it is transported, particularly for safety concerns of first responders if an incident were to occur (AAR 2014). To the date of the writing, no such classification has occurred. Another commonality between the DOT-111 tankers and the CPC-1232 tankers is that they have both been involved in oil train derailments in the United States. Though the CPC-1232 cars were developed in the name of safety, some significant derailments, including the incident in Lynchburg, Virginia, involved these updated cars.

As the tremendous growth in oil production has been experienced in the US, much of the burden of transportation of this oil has increasingly been on rail transport. In 2015, more than 10

times as much crude oil is transported by rail when compared to a decade ago (AAR 2014). Transportation of crude oil by rail has risen to the extent that the EIA is now recording the amount of oil that is transported via rail on a monthly basis. The dramatic increase in rail shipment has brought with it extraordinary consequences. In the US in 2013, trains spilled more oil than in the previous 34 years (1978-2012) combined. There were about 1.15 million gallons of crude oil spilled in 2013, yet only about 800,000 gallons involved in spills in the previous time frame (Gerken 2014 January 22).

2013 was a tumultuous year for rail oil transportation, but that is not to say that the problem subsided in 2013. 2014 (and 2015) saw their share of incidents when oil was transported by rail, including the Lynchburg, Virginia derailment. The Lynchburg train derailment serves as a springboard to investigate the current landscape of oil transportation methods, but the Lynchburg derailment is not the only incident that could serve as a site for research. Similar derailments have dotted North America—and continue to do so.

Typically, when an oil train derails, part of the train exits the tracks as cars buckle and jackknife on one another which often leads to a rupturing of one (or more) of the tankers causing an explosion, fire, and spilling of the contents in ruptured cars. If first responders have access to the site of the derailment, they are dispatched to the scene. Though firefighters are present due to the fire, there is rarely an attempt to put out such a massive and dangerous fire, though smaller fires may be combatted, such as house fires ignited by the derailment. Responders generally evacuate the area and aid anyone injured as the fire may produce heavy smoke or additional explosions and shrapnel from other tankers. The oil that spills from damaged cars contaminates the area surrounding the derailment which often includes rivers and other water sources which may spur the closure of water treatment plants and intake facilities that service homes and

businesses near or downstream from the site. Local wildlife and plants may be killed, injured, or damaged from the explosion, fire, and/or spill. The spilled oil may create a sheen that stretches for miles down the river that interferes with other communities and nearby ecosystems. Oil also often interferes with recreational activities and other daily activities in the community plagued by the event. Though oil booms are typically deployed after the event, they may be set up too late to catch much of the oil. Remnants of the event may linger until officials make repairs and even after. Several derailments have occurred in previous years as oil extraction has seen a reinvigoration. Many of those derailments involve trains that originated in the Bakken oil fields. The next section details some of the most prominent of those derailment.

RECENT PROMINENT DERAILMENTS

It is an unfortunate reality that the Lynchburg Train Derailment is not an anomaly; that is, it is not the exception to otherwise safe transport of crude oil, fossil fuels, or hazardous materials more broadly. Rather, the Lynchburg event is just one among several major incidents that occurred on US rail lines over a few years. In sum, there have been 20 crude oil train derailments in the US, and another 9 in Canada, between March 2013 and July 2015 (EarthJustice 2015). A review of just a few cases places the Lynchburg case in a broader history temporally, spatially, and contextually.

Lac-Mégantic, July 2013

Possibly the most significant and well-known recent oil train derailment occurred in Canada, in a small city called Lac-Mégantic in the province of Quebec. According to the Transportation Safety Board of Canada (TSBC) (2014), on July 6, 2013, a Montreal, Maine & Atlantic (MMA) train with 72 oil tanker cars carrying 7.7 million liters (over 2 million gallons)

of crude oil that originated from the Bakken area of North Dakota was headed to Saint John, New Brunswick on the East Coast of Canada. The train, composed of DOT-111 tankers, was parked on a descending grade portion of the main track just a few miles west of Lac-Mégantic. The lead locomotive of the train had experienced mechanical difficulties on the trek through much of the US and Canada including through cities including Milwaukee, Chicago, Detroit, and Toronto. Upon arriving at the station outside Lac-Mégantic, the train engineer secured the train and exited the locomotive for the next crew to continue the journey the following day after the mechanical problems were resolved. The engineer moved the electrical breakers in the train's cab to the off position per railway instruction and with consent of an MMA employee dispatched to the site who was not familiar with locomotive operations. While the train was unoccupied, a fire broke out due to these mechanical problems. Because the locomotive's brakes were off, the air brake system no longer received the compressed air necessary to keep the brakes engaged. Though hand brakes were also deployed, leaking air pressure resulted in the engaged hand brakes failing to keep the train stopped. The train began moving downhill toward Lac-Mégantic, picking up speed and eventually reaching 65 miles per hour (TSBC 2014).

Around 1:15am, the train derailed in the town's center. In total, 63 cars derailed, nearly all were damaged, and around 6 million liters (almost 1.6 million gallons) of crude oil was rapidly released. The resulting intense fire and explosions killed 47 people, destroyed a large portion of Lac-Mégantic's downtown area, and forced the evacuation of about 2,000 people from their homes. The comparatively small railroad company's insurance (which covered up to \$25 million) was not sufficient to pay for the 2 billion-dollar price tag of the derailment and the company quickly went bankrupt, leaving the bill for taxpayers (Nearing 2015 May 2). The subsequent investigation revealed 18 contributing factors to the disaster, including a weak

culture of safety at MMA, highly volatile crude, inadequate oversight by regulatory officials, faulty brakes, and unaddressed mechanical problems with the train. Thus, the incident was complex and required several related causes to converge simultaneously (TSBC 2014).

Aliceville, Alabama, November, 2013

On Friday, November 8, 2013, 20 cars of a 90-car oil train operated by Genesee & Wyoming and originating in the Bakken area of North Dakota on its way to Florida, derailed in Pickens County located in western Alabama (McAllister 2013 November 8). The train was composed of older style DOT-111 cars (Sussman November 11). The derailment resulted in a large explosion and fire; responders opted to allow the fire that involved 11 of the derailed cars to burn out. The derailment occurred in a wetlands area that leads into the Tombigbee River (McAllister 2013 November 8). The EPA and Alabama Department of Environmental Management claimed that almost 11,000 gallons of oil were removed from the water and over 200,000 gallons were removed from the damaged tankers. However, months after the incident, officials were still unsure about the total amount of oil spilled since oil was found moving downstream toward the Tombigbee River, and the wetlands area still smelled like oil. Despite promises of an aggressive cleanup, overseeing environmental groups observed bare minimum efforts by Genesee & Wyoming who then abandoned the cleanup once tracks were rebuilt.

Casselton, North Dakota, December 2013 (and November 2014)

Casselton is a small town located about 20 miles west of Fargo, North Dakota. On December 30, 2013, Casselton was victim of a train collision and ensuing derailment, explosion, fire, and spill. A railcar from grain train derailed and rested on the eastbound track in use by a 106-car train oil train. The oil train was carrying Bakken crude oil from the productive western part of North Dakota and struck the derailed car at 42 miles per hour causing both of the oil

train's locomotives as well as another 21 cars (20 of which were oil tankers) to derail. Ruptures occurred in 18 of the tanker cars, some of which exploded. Though no injuries were reported, about 1,400 Casselton residents were evacuated. The derailment also resulted in a staggering 400,000 gallons of oil being spilled into the environment (Shaffer and Ramstad 2014 January 13).

It is worth noting when considering this derailment and spill in Casselton, ND that Casselton experienced a second oil train derailment less than a year later on November 13, 2014 again as the result of the train colliding with a derailed car from another train—this time near an ethanol plant. Fortunately, for Casselton, this train happened to be empty, but it outraged the community given that it was the second oil train derailment in the small town in less than one year. The site of this derailment was about a mile from the derailment in December 2013 (Tate 2014 November 14).

Vandergrift, Pennsylvania, February 2014

In another incident involving crude oil shipped from the Bakken fields, on the morning of February 13, a 118-car train operated by Norfolk Southern was moving eastbound through Western Pennsylvania (Prine and Biedka 2014 February 13). In total, 21 cars derailed, 19 of them carried crude oil while the remaining two carried liquid propane. One of the crude tankers ruptured spilling up to 7,500 gallons of crude. A nearby metals factory was struck by two of the cars that caused an evacuation of the factory (Cusick 2014 February 13). This derailment occurred on tracks that follow the Kiskiminetas River, though no oil was spilled into the river. Further, there were no human injuries (Prine and Biedka 2014 February 13). This incident did revitalize conversations that were being held statewide about the potential impacts of crude oil shipment. Just a month earlier in January 2014, a train derailed on elevated tracks over the

Schuylkill River in Philadelphia though the train remained on the bridge, but no oil was spilled (Cusick, 2014 February 13).

Dubuque, Iowa, February 2015

Another important recent event was the derailment of 15 cars that occurred in northern Dubuque, Iowa on February 5, 2015. This derailment caused an explosion, fire, and three cars tumbled into the Mississippi River. The location of the spill and fire made it difficult for responders to access the scene and required snowmobiles to reach the derailment. Due to accessibility issues, fire crews allowed the fire to burn out. No injuries were reported in the derailment. The derailed cars were carrying mostly ethanol that leaked into the Mississippi, while other cars on the train held other hazardous materials (KCRG-TV9 2015 February 5). Though this derailment did not involve crude oil, it did involve DOT-111 cars, which is a type of car that is commonly used in crude oil shipments (as well as ethanol and other hazardous material shipment). The intricacies of this method of shipment will be discussed later, but this incident served as a reminder of the dangers of shipping crude oil by rail generally and with this type of tanker specifically (Woodbury and Kieffer 2015 February 13).

Gogama, Ontario, CA, February 2015

Gogama, a rural area of Ontario, Canada, experienced a crude oil derailment on February 14, 2015 near the town of Timmons. The CN operated 100-car train had 29 cars derail and the area in which the derailment occurred is not accessible by road. The derailment caused an explosion and fire that disrupted travel on a major rail line between Winnipeg and Toronto. No injuries were reported (Mangione 2015 February 15). Days after the event, the fire still burned. Investigators were still in process of assessing the amount of oil that was spilled in the frozen, snow-covered rural area. This derailment involved CPC-1232 tanker cars, as opposed to the

older DOT-111 cars that have been heavily questioned in response to other derailments. Despite the different cars used, oil was spilled into the environment, though the amount has not been estimated (CBC News 2015 February 18).

Mount Carbon, West Virginia, February 2015

A major US derailment transpired on February 16, 2015 in Mount Carbon, West Virginia, a town southeast of Charleston, WV. The 109-car CSX train in this major derailment originated in the Bakken fields in North Dakota and was in route to Plains All American Pipelines LP's terminal in Yorktown, Virginia (McAllister 2015 February 17). A total 107 of the cars were oil tankers and 26 of those derailed, 19 of which caught fire (Maher 2015 February 19). Many of the tankers involved in the blaze exploded sending flames over 300 feet into the sky; fires from the derailment burned for days. At the time of the derailment, West Virginia was under a winter storm warning and experiencing heavy snowfalls that hampered responders' efforts. At least one tanker went into the Kanawha River. Due to the oil spill, a nearby water plant downstream from the derailment that services about 2,000 people was shut down. A second plant that services a nearby town was later shut down as well (ABC News 2015 February 16).

The fire caused a home near the scene to burn down and one individual was hospitalized with respiratory-related problems. Fires at the scene prevented investigators from thoroughly examining the derailment in the days immediately following. The train was determined to be traveling at 33 miles per hour that is under the speed limit of the area where the train derailed of 50 miles per hour (Maher 2015 February 19). Further, this train used exclusively CPC 1232 tanker cars, which are supposedly stronger updates of the DOT-111 car that has been involved in most of the aforementioned derailments (McAllister 2015 February 17).

The string of derailments that have involved crude oil trains has instigated a conversation about the safety of transporting crude oil by rail. There are five policy recommendations typically put forth: (1) institute speed restrictions for certain trains that are transporting crude oil; (2) increase the number of inspections on railways traveled by crude oil trains; (3) improve the braking systems on crude oil trains; (4) change protocols to inhibit trains from moving unintentionally; (5) install enhanced safety technology that will inform railroads of problems with cars in real time; and (6) use safer tank cars. The proposed regulations are thought to improve safety when shipping crude oil and other dangerous liquid shipments on trains. In 2011, new regulations were adopted by railroads concerning the type of tanker car used. The new cars, CPC-1232 models, are alleged to be safer for transporting crude. However, many of the incidents detailed above involved this type of tanker car (AAR 2014). The Department of Transportation is expected to announce new regulations regarding crude oil trains, likely introducing a new type of tanker car to become the new standard (The DOT-111 Reader 2015). Since the inception of the CPC-1232 tanker in 2011, there are only about 24,000 in use (as of September 2014) (AAR 2014). Thus, implementation of a newer car will likely be expensive and time-consuming.

Safety regulations, while important, will not solve the problem in the short-term. The Department of Transportation recently projected the outlook of oil train derailments in the years to come and the prediction is grim. The projection was based on trends in oil train derailments and the frequency of crude oil and ethanol shipments. It is expected that 2015 will experience about 15 derailments that would decline over the next two decades to about five derailments in 2034. In total, 207 derailments are anticipated at an average of 10 per year. The costs could near \$6 billion and, based on the location of the derailment, one derailment could kill as many as 200 people. Human health and financial costs are part of the equation, but environmental concerns

are also paramount. Railways used by oil trains are within one-quarter of a mile to over 3,600 streams and rivers and they run through 34 national wildlife refuges (Lazare 2015 February 23).

SUMMARY

Inquiries into issues pertaining to the environment have more recently become a focus of criminological endeavors though the green criminological perspective is still considered against traditional boundaries of criminology. Beginning with Sutherland's formulation of white-collar crime, subfields that have been interested in crimes of the powerful have flourished including corporate crime, state crime, state-corporate crime, green criminology, and cultural criminology. The current endeavor is particularly informed by nexus of green and cultural criminology, as well as state-corporate crime.

An examination of the proliferation of railroads in the United States reveals a history fraught with corruption since its onset. Developments during the 1900s created a unification of rail transportation which set the stage for the expansion of oil-by-rail transportation which rapidly expanded in the 2000s. As many in the US called for an end to the dependence on foreign oil, domestic extraction reached record levels and catapulted the United States to the forefront of oil production by 2013. This production exceeded pipeline infrastructure, particularly in the Bakken region where risky extraction processes created a substantial oil boom which needed transport to refineries, particularly on both US coasts hundreds upon hundreds of miles away.

The increase in oil transportation via rail has brought an increase in railroad disasters which have been experienced all over North America. In total, 28 derailment over the 29-month period between March 2013 and July 2015 occurred. Of these derailments, 20 occurred in the US

including in areas such as Casselton, ND, Aliceville, Alabama, Mt. Carbon, WV, Galena, Illinois, and Lynchburg, Virginia. The derailment in Lynchburg is the subject of this case study.

CHAPTER III

METHODS OF RESEARCH

This chapter details the research methods used in this project. The current endeavor is aimed at understanding: how recent oil train derailments have affected the environments and communities in which they occur, how residents of these communities made sense of these disasters, what are community perceptions about how the event was officially handled including any relevant changes after the derailment, and the extent to which a criminological framework can further our understanding of these events. This research uses a case study approach drawing heavily on several in-depth interviews of the witnesses, victims, responders, officials and organizations closely connected with and knowledgeable about the Lynchburg, Virginia train derailment in April 2014 including the response and aftermath of the event. The chapter opens with a description and justification of the specific methods utilized including a detail of the method, sampling procedures, the subjects, and ethical issues.

CASE STUDY RESEARCH

This research used a case study approach, relying primarily on in-depth interviews. In a case study, the researcher examines a single case that is bounded by time and place via an in-depth, detailed collection of data that includes many information sources (Creswell 2013). This case is studied in a contemporary, current setting (Yin 2009) and aims to create an extensive understanding of a specific case or to examine some issue by the case as a specific example. Case study research may be conducted within one site or it may occur in multiple sites. A case may be a small group, an organization, or an individual. The researcher gives a detailed

description of the case and collects data from many different sources similar to narratives and ethnographies. As part of a detailed description, the researcher should identify important themes and issues that pertain to the case (Creswell 2013)

An important component in this approach includes the researcher identifying the intent of the case study (Creswell 2013). Based on the intent, one of three variations of case studies may be conducted. An instrumental case has the goal of understanding some issue or problem through the selection of one case while an intrinsic case is a unique case that is described due to its unusual nature (Stake 1995). A collective case study uses more than one case to shed light on an issue; typically, no more than five cases are used in one project and sometimes multiple cases are compared to one another. A chronology may be a component used as part of the case study to present themes or issues or it may serve as a theoretical model (Creswell 2013).

For case studies, the process of case selection may be difficult. The researcher has many decisions to make in terms of which case(s) should be used and how many cases are appropriate. Multiple cases may be chosen in order to generalize the findings, but the researcher must make this decision. It may be difficult to set boundaries of the case which are often not clearly defined. For instance, the researcher needs to establish the time frame of the case—when to begin and end the case—for the purposes of data collection.

The procedure by which case studies are conducted begins with the researcher determining if the use of a case study approach is an appropriate means to study the problem. According to Creswell (2013: 100), “A case study is a good approach when the inquirer has clearly identifiable cases with boundaries and seeks to provide an in-depth understanding of the cases.” The next step for the researcher is the identification of a case or cases which may be done through considering which type of case study may have the greatest utility. Data collection

comes next. This step is usually extensive where several information sources are used (Creswell 2013). Yin (2009) proposed six different types of information for the research to collect: archival records, interviews, physical artifacts, documents, direct observations, and participant observation. The final phase is the interpretive phase where the researcher discusses the meaning of the chosen case (Creswell 2013).

The case study approach details a specific phenomenon or case. It also compares cases that allows for themes and patterns to be explained in a more complex way. The use of many sources allows for a complete account of the case. Case study researchers also face some challenges. Perhaps the greatest is the identification of the case as many factors may be in play in the selection to include broad/narrow scope, which bounded system, which specific case or cases should be studied and how many cases (Creswell 2013).

IN-DEPTH INTERVIEWS

In-depth interviewing is a research method where the researcher interacts with individuals who have experience of knowledge about some problem or issue in which the researcher is interested. Through this interaction, the researcher explores the opinions, motivations and experiences of other people in detail in order to realize a perspective of the world that is different from their own. This method aids in reconstructing events that the researcher did not experience; by combining descriptions gathered from separate interviewees, the researcher may be able to capture a complicated situation or process. Sometimes interviewees may help challenge assumptions and renegotiate ineffective policies surrounding an issue (Rubin and Rubin 2012). In-depth interviews, though comparatively time-consuming, provide extensive

detail compared to other methods of data collection (Berg 2007; Creswell 2013; Rubin and Rubin 2012).

One may consider the interview as several stages in a process (Creswell 2013; Kraska and Neuman 2008; Rubin and Rubin 2012). According to Creswell (2013), the process of data collection for interviewing consists of: decision on research questions to be answered by interviewees; identification of interviewees who are able to best answer the questions based on the sampling procedure; determination of what type of interview is most useful and practical; use of adequate recording procedures; design of a protocol for the interview; refining of interview questions; determination of the place to hold the interview; obtaining consent; and using good interview procedures to carry out and complete the interviews. In-depth interviews typically follow a format where the interviewer first asks the interviewee a question followed by the interviewer closely listening to the interviewee's response and recording of the response. Next, the interviewer may ask follow-ups depending upon the response of the interviewee (Berg 2007).

A particular style of interview called the responsive interview model (Rubin and Rubin 2012) views the structure of the interview as more fluid which allows the researcher to change some of the questions asked, sites, and the situations for study (Creswell 2013). This model has three types of questions: (1) main questions which are prepared in advance and structure the interview in order to answer the research question; (2) follow-up questions which are aimed at obtaining richness and depth in order to explore important concepts and themes as well as to assure a thorough and credible interview; and (3) probes which serve to help manage conversation, keep the interview on track, and request elaboration and clarification (Rubin and Rubin 2012).

JUSTIFICATION OF METHODS

This project followed the responsive interview model due to the flexibility this model offers. Due to the differing roles that respondents have in connection to the event, this model allowed the researcher to adjust follow-ups that are appropriate for some respondents and not others. For instance, witnesses of the event may have far less knowledge about the evacuation procedures following the event when compared to first responders. This model also allowed for enhanced richness of the data and allowed themes to emerge that a strictly structured interview procedure may not have illuminated.

For this research, the case study approach and in-depth interviews were appropriate methods since the research sought to understand the intricacies involved around oil train derailments in the United States including the socio-political background of the rise in these events, causes, and the aftermath. The case study approach is one frequently deployed in studies involving environmental harms in the field of criminology (See South and Brisman 2013; Westerhuis, Walters, and Wyatt 2013). This endeavor included creating an understanding of how these events have affected individuals within the communities and the overall surrounding environment in which these events occur. The use of a specific case to demonstrate this issue qualifies this study as an instrumental case study. Geographically, the research was conducted in the city of Lynchburg, Virginia and, temporally, the case was bound within the time frame of April, 2014 to October, 2015. Lynchburg was selected given that it was the site of a significant oil train derailment that resulted in an explosion, fire, and oil discharge of close to 30,000 gallons of Bakken crude, and endangered many individuals in the city as well as the environment at-large (see Chapter II for a detailed account of the event). Further, this site was proximate to the researcher (compared to others such as Lac-Mégantic, Canada or Casselton, North Dakota).

According to Creswell (2013), accessibility is a may also contribute to case selection. The time frame allowed for events prior to the derailment which occurred on the afternoon of April 30, 2014 to be considered and it covered the time of the gathering of research in the summer of 2015. In addition, this extended time frame allowed for environmental considerations that were unknown immediately following the derailment to be included and it allows for the inclusion of more official documents resulting from the investigation.

In-depth interviews were the primary mechanism to gather data for the project. However, understanding of the Lynchburg train derailment was be enhanced through official documents, governmental data, and media reporting of the event in order to situate the instrumental case study in the larger issue of oil train derailments in the US. As such, the case study approach was most appropriate.

SAMPLE DEMOGRAPHICS

Data for this research was collected during the summer of 2015. Data primarily came interviews of individuals knowledgeable about and close to the 2014 Lynchburg train derailment. This project relied on purposive sampling and, due to the use of referrals, snowball sampling. Purposive sampling is a nonrandom sampling method where the investigator uses many methods in order to locate possible cases or subjects (Kraska and Neuman 2008). Through purposive sampling, this research is able to recruit participants that represent diverse positions related to the subject in order to illuminate important differences in the experiences of the participants (King and Horrocks 2010). This method is particularly useful when the researcher wishes to contact a population that is difficult to reach or if the researcher seeks to locate a very specific population

(Kraska and Neuman 2008). Given the desire to interview first responders and environmentalists, purposive sampling was the most effective way to ensure those populations were reached.

Snowball sampling involves using subjects of the study to recruit future subjects for the study from their acquaintances (Kraska and Neuman 2008). This strategy is a nonprobability method and individuals were selected based on referral and due to their experience or knowledge about the derailment. Snowball sampling is a variation of purposive sampling where the researcher chooses participants based on a purpose or need for the study (Edmonds and Kennedy 2012).

Respondents were recruited so that a few important groups were represented in the sample. These groups are: eye witnesses of the event; officials and first responders; and environmentalists. It should be noted that these groups are not necessarily mutually exclusive. For instance, many several respondents were eye witnesses and either first responders or environmentalists. Each of these groups were important to the research. Eyewitnesses served as primary sources of information about the transpiration of the derailment in order to give details about the event, the response, evacuation, and its immediate impacts. First responders were important because they served as the official account of the evacuation and response to the disaster. Further, they helped disseminate information to the public and attempted to mitigate the damages. Environmentalists assessed the event and the environmental impact of the derailment including affects to the river, wildlife, and recreation immediately after the event and in the months that followed. Their input was invaluable for a study with environmental considerations as want of its central foci.

This project drew on 22 in-depth interviews as part of the larger case study that also relied on government documents and organizational reports. The interviews lasted between 15

minutes and 1 hour and 30 minutes. The respondents varied in age from 20s to 60s, 9 respondents were female and 13 were male. Regarding race, the vast majority of the sample (n=21) was White; One respondent was African American. The majority of respondents fit into the witness category. These 16 respondents are: Zoey, a female in her 20s who was employed at a children's museum that was evacuated after the derailment. Blake, a male in his 40s or 50s who owns a nearby business involved in the evacuation. Judy is a female in her 50s that has been a long-time resident of Lynchburg including when the derailment occurred. Zach is a male in his 20s who witnessed the derailment. Amber is a female in her 20s who was working at an evacuated business on the waterfront during the derailment. Tracy is a female in her 50s who was a resident in a nearby housing complex that was evacuated, but has since moved out of the area. Hank, a male who operates a business in the adjacent municipality, is in his 40s or 50s. Andrea is a female in her 40s who works at a business close to the waterfront. Vince is a male downtown business owner in his 40s. Eric is a male in his 50s that was in Lynchburg when the derailment happened. Shae is a female in her 60s who resides in a building that was evacuated after the derailment. Abby, a female in her 20s, was at a nearby recreational area when the derailment occurred. Tom is a male Virginia resident in his 30s who closely followed the derailment. Lori is a female in her 40s who was dining at a restaurant just yards from the derailment that was evacuated. Tony, a male in his 30s, works at a downtown business and was in the area during the derailment. Rounding out the witness category, Denise is a female in her 30s who was working at the children's museum during the event.

Three officials were interviewed, two of which were first responders, Ralph and Wade who are both males in their 40s. The other individual is David, a city official in his 50s. Three environmentalists served as respondents. Gary, a male in his 40s, and Josh, a male in his 30s,

work for an environmental organization with an office in Lynchburg. Michael, a male in his 50s, works for a Virginia environmental agency.

Most of the interviews were conducted face-to-face in Lynchburg; three were conducted over the telephone. Interviews were recorded via an audio recording device and then transcribed later. These transcripts were analyzed for persistent themes among respondents. These findings are presented in Chapter IV, V, and VI.

Protecting Respondents

Old Dominion University (ODU), specifically the ODU Arts & Letters Human Subjects Review committee, approved this project which is of exempt status (project number 7711761-1). The research conforms to the University Institutional Review Board guidelines as well as Virginia and United States policy concerning the protection of human subjects.

The respondents in the study were familiarized about the purpose of the study and were informed of their rights as respondents to include voluntary participation and the ability to end their involvement in the study at any time. Each respondent was offered confidentiality. Though the interviews were recorded, during transcription and the write-up, individual's identities remained anonymous.

CHAPTER IV

VICTIMIZATION, ACCOUNTABILITY, AND PERCEPTIONS OF THE EVENT

The fact that they had seen it, knew it was there, and had it scheduled for repair, but hadn't done it. The replacement rail was in the wreckage. So I think when you talk about a sense of responsibility, there was no sense of urgency in making the repair. –Vince

This chapter focuses on various forms of victimization and how respondents discussed responsibility and crime in regards to the derailment. To begin, this discussion will concentrate on how respondents and others close to the derailment were affected by the event. The chapter will then describe a regulatory fine that was assessed as a result of the derailment, especially through insights from interviewees. Finally, this discussion will conclude by considering perceptions of respondents about the event concerning culpability, responsibility, and crime.

AN ARRAY OF VICTIMIZATIONS

Many interviews revealed a sense of loss in some aspect as a result of the derailment. Individuals, businesses, the environment, and the collective community experienced a range of victimization both in the immediate and for weeks or even months after the derailment. Though not all interviewees detailed victimizations, many considered the event at least a significant interruption. Witness Hank said of the event, “I’d call it a ten-day disruption,” which was echoed by witness Blake who stated “it was a little disruptive.” Others gave accounts of much more pronounced pains in dealing with the man-made disaster.

This section details responses from interviewees that discussed the ways in which individuals, the city of Lynchburg and the environment were victimized by the derailment. First,

the evacuation will be discussed from the perspective of those that experienced it which includes an examination of the evacuation of the downtown area immediately after the derailment. Next, economic costs are considered, particularly losses of businesses and problems with compensation, but also economic costs at the expense of nonbusiness entities. Following the economic costs, psychological and emotional harms are considered, both in the immediate and long term. Environmental costs will also be detailed.

Inconveniences and Disruptions as a Result of the Evacuation

Once the derailment had occurred, emergency calls went out and it was determined that an evacuation of the immediate area was necessary. First responders described the evacuation in terms of who conducted the evacuation and the boundaries of the actual evacuation zone. In general, evacuations happened expeditiously, though somewhat chaotically according to respondents. The evacuation extended over six blocks and lasted three hours with the exception of a small portion of the evacuation area closest to the derailed train. In total, there were 350 people and 20 businesses evacuated (NTSB 2016). In some cases, first responders initiated evacuations while in others people self-evacuated. First responder Ralph informed,

The initial evacuations were done by [a former fire department official] who is retired now. The initial evacuations were The Depot Grille and then the architectural firm upstairs and Amazement Square. So he was assisting with the evacuations as well as people were self-evacuation. Most reports I've heard, people weren't standing around waiting to see what happened. They were self-evacuating and then he was assisting with the evacuations.

First responder Wade explained the significant streets that were evacuated as well as the important entities involved in actually executing the evacuation:

Amazement square, that's Jefferson Street, then you have Commerce Street, then you have Main Street. So we evacuated everybody at least three blocks up and we took care of all the buildings between us and the [Lynchburg] PD because our resources were relegated to the scene itself. We had a hazmat team respond, we had basically a second alarm response down there and we was determining what we was gonna do. So, basically

the PD and they had help from the State Police and the Sheriff's Office. They used their resources to evacuate the people from the businesses.

Ralph reiterated that local law enforcement initiated and supervised the evacuation process:

The evacuations were actually conducted by the police department. They are the ones who, we just told them to get everyone out of here. Law enforcement was down there relatively quick and assisting with the evacuations and we set the evacuation as up to Main Street. So law enforcement took care of that piece.

First responders determined the length of time that the evacuation remained in effect, generally three hours depending on the location. According to first responder Ralph,

We set a time of five P.M. to let folks back in. Some of these times that we set were, for a lack of a better term, arbitrary, because we could have let a few folks back in early, but we just picked round times and said "Look, okay five o'clock works. Let's just make it five o'clock." We did this at five, this at six, this at seven. We had allowed everyone back into the residences and into the surrounding businesses by 5 pm. We did not let anyone back into The Depot Grille, or the architectural office, or Amazement Square. And we didn't let anyone into the buildings on Jefferson Street like the residential buildings... [The evacuation] went all the way to Washington Street (perpendicular to Jefferson Street, Commerce Street and Main Street)... Everything from Jefferson to the river, we maintained isolation on that long term.

The southernmost point of the evacuation was Washington Street and according to witness Hank, officials had "closed the [Fifth Street] bridge" to the North. Interviewees who were in the buildings within the evacuation zone described chaotic and frightening experiences with the exodus. One witness, Lori, was dining in The Depot Grille with coworkers at the time of the derailment. She claimed,

It was like pandemonium. That's when my boss said "Get out of here! Run as far as you can as fast as you can!" I remember running out the front door. He was literally pushing us and pushing people out of the restaurant and there was a person in a wheelchair and he helped the person in the wheelchair out and helped them get up the hill [toward Main Street]. I stopped and I turned around and looked and there was a huge explosion; it wasn't really an explosion, it was just a fire in the trees and a fuel fire because it was so black and you could see the people just running up the hill to get away and it was a mass exodus at one time. It was crazy.

A nearby children's museum, Amazement Square, was also involved in the evacuation. One witness of the derailment, Zoey, stated "police came down the hill and told us to evacuate the area. About twenty kids with their families. Most were with moms and babysitters." Another interviewee who was at the museum during the event, Denise, mirrored that "there was probably 5 or 6 families in the museum at that time. I would say 20 to 30 people besides staff. And staff-wise there would have been probably another 10 of us."

Though first responders emphasized the restaurant and museum as important locations to be evacuated, there were several other buildings in the evacuation zone that were cleared.

Andrea, a witness in a commercial building on Jefferson Street, said

I couldn't see anything. The heat [temporarily] blinded me so I just immediately closed the door because it scared me so bad and I proceeded to run for my life... Oh my God, I was literally running for my life because I'd never had, I've never been exposed to anything so dramatic or serious. I didn't know. All I knew was that this was really serious. It can get worse and the consequences, you're not likely to bounce back... So I'm running and I'm trying to catch my breath and I'm trying to get as far away as I can.

At the time of the derailment, witness Vince was just on the other side of the evacuation zone which eventually was Main Street. On the day of the derailment, his business saw an influx in daily transactions during and after the derailment due to its location. He recounted,

They blocked off Ninth Street, the corner of Ninth and Commerce. Then they moved it up to the corner of Ninth and Main. All the businesses along Commerce Street and of course Jefferson Street were evacuated. The bank of course was evacuated. I'm not sure about Genworth and some of the larger businesses down the street were evacuated. But they left us open... It was good [for business].

Some individuals not immediately affected by the derailment but in nearby areas were intrigued by the commotion near the river and moved to increase their visibility of the disaster.

According to witness Andrea,

People were coming out of the buildings and coming down the hill to see it. And people were driving in their cars down to see it. That coupled with the fact that some people are

trying to leave and get away from it just made for mass confusion. Then the fire trucks had to come. The fire trucks are huge. A fire truck cannot fit on the street comfortably

The derailment occurred within the city of Lynchburg, but given that the river was on fire, the municipality adjacent to Lynchburg, Madison Heights, also experienced an evacuation, albeit on a much smaller scale. Witness Hank spoke about his experience with the more relaxed evacuation on the other side of the river:

The flames were as high as the building, people were standing around, and women had their kids out and I just went around to people real quick, and was like “those cars are all full of oil and they might go boom!” and told people to “get the hell out of here.” Then I came back up here and milled around. Phone was going off, going crazy. And finally, the sheriff came by and he was like “Okay, if ya’ll don’t mind we will set the barricade here and stay on the other side.” There was a ton of people down there just standing there watching it. This is a spot where people turn around, so they said “let’s just make this the barricade.”

The road that was evacuated where Hank was located at the time of the derailment is the road closest to the river in Madison Heights which shadows the river immediately across from the downtown Lynchburg area.

Interviewees described a chaotic scene and people rushing out of the area, while first responders and onlookers approached the scene. Hundreds of people leaving an area is certain to be a haphazard undertaking, and interviews revealed discontent with the evacuation, expressing concern that lack of knowledge of the substance on fire endangered everyone including first responders. Environmentalist Gary exposed that “the emergency responders came down and didn’t know what this substance was. We would like for them to know at least what the heck is going on. They didn’t know how to respond so we were placing our first responders at undo risk.” Environmentalist Josh stated that “our response teams did the best that they knew how to do. They just didn’t know what to deal with.” When considering the evacuation process, Gary said “my understanding was they first stopped everybody kind of closely and then they started

pushing the line back after they became more aware of the issue. So, they weren't provided with the information they needed to help the public. So, the line kept moving back." Gary then shared a conversation he had with a reporter who covers another city about being at the site of the derailment:

...Three hours maybe after the derailment. He said, "They're letting the public in right now?" [I said] "Yeah." Well, there were people walking all over. I said, "Yes." There was smoldering going on and I said, "Yes. Is it good for me to be here right now?" and he said, "I'm really surprised that they're allowing people down there right now. So that made me go, "now, this is a guy who follows these issues. I think I'm going to go back up the hill." And it's bad when I have to listen to a reporter whose not even here for guidance on safety when there's safety officials all over. You can't throw a rock without hitting three of them...Nobody knows what to do here and that's because there's no transparency.

Some respondents described the challenges that the evacuation presented, particularly access to their vehicles, homes, or pets. Witness Denise stated, "Most of our parking is down closer to the railroad and they wouldn't let us down there to get our cars." Witness Blake, who lives in another city, asserted, "See, I had to leave my car down here so I had to find another way home. I found a ride with a house painter." Witness Zoey also did not have access to her vehicle and other personal items which brought other consequences:

I couldn't get my car, I couldn't get in my apartment. It's just a weird feeling to feel like all my stuff is gone. It felt weird to feel so disconnected. I didn't have my purse, I didn't have my keys. It's weird to have your car taken away really quick. I had to rely on my mom and I stayed with her... because my keys were in [the evacuated building]... I know a couple people had to stay with their friends unless they had roommates and they could get in.

Witness Tracy, who lived in a building that was part of the evacuation proclaimed that she had a neighbor who contacted her because "[my neighbor] knew a bunch of people that were unhappy about where they could park their cars. And that wasn't an issue for me, but there are people who weren't helped. There wasn't anybody there to help." Witness Abby reiterated the sentiments of Denise, Blake, Zoey, and Tracy, but also declared

I know for people in this area that apartments felt like it was a hundred-fifty degrees in their apartment. There were people who had to evacuate their buildings and they couldn't get inside to get to their pets. [A friend] couldn't go back in her work and get her car keys, her home keys, she was locked out of her apartment. It was jarring and memorable in that sense.

Not all respondents who experience the evacuation had grievances with the process. Shae, for instance, said, "Nobody seemed to be particularly mad about the inconvenience that they couldn't get back into the building, that they had to move the cars."

First responder Wade reflected on the evacuation process during the interview. He described how responders use assessments to improve safety and become more proficient in their capacity as responders and rescuers. He recalled that, given the extreme nature of this event, a few lessons were learned. Wade said

We did some critiques, if you will, and we talked about things we did right and things we could improve because any instant in the fire/rescue world, there is no such thing as a perfect scene, a perfect incident, so you can always learn from and make improvement. So one of our things is our cautious response to something like this. You know, the whole idea of rushing in. We didn't really do that, but then again there were things we could have done better in accomplishing our goals of being more safe. Some of our first responding units, they went in a little too soon, a little too close. But we're used to, on an average fire or EMS call, we go rushing in and take care of it, but when you start dealing with hazmat, that's kind of a slowdown approach. Even for technical rescue, it's not always rushing in, you got to—so we talked about our response should be more, I shouldn't say slow, but our response should be more tempered, I guess is the correct word, for something like this until we know.

The evacuation was an obvious inconvenience for many of the interviewees and, upon further inspection, it placed many individuals around the derailment at-risk had the volatile substance in the other train cars ignited. Individuals being at-risk and inconvenienced for an afternoon (or even up to a couple days or weeks in some cases) was not the only cost of the event. Economic costs were also common for individuals in the community.

Economic Costs

Several respondents spoke about how the derailment was a financial burden for them or people in the community. These encumbrances included loss of income or time at work, frustration with the process of compensation or reopening of facilities, and it presented a hardship on subsistent fishing.

According to the official investigation, property damage was estimated at \$1,224,000 not including environmental remediation (NTSB, 2016). Interviewees experienced loss of business, income, or time away from work as a direct result of the derailment and recovery. Witness Lori described leaving the scene in a rush, meaning that she and her coworkers “left our debit and credit cards on the table. We were paying our bill. And our umbrellas and sunglasses, and coats.” Once access to the scene was permitted a few hours later, items were retrieved, but this served as an inconvenience for the remainder of the day and even for getting back to the scene since personal belongings, including identification, were left behind. Witness Blake, who owns a small firm that was affected by the evacuation, claimed, “We were out of the building that afternoon and the following day we came in about 12 or 1.” Witness Zoey, who also lost time at work due to the derailment said this of people in the downtown area: “they are victims, especially business owners. They didn’t do anything to bring about the losses...I’d like to know how many people were negatively affected by the evacuation.” Andrea, another witness, also spoke about the plight of several people that work in the downtown area:

We had 7 days of solid, and it was just a protected, delicate, highly off limits area, just the mood down here. Some people couldn't come back to work. We were fortunate that we could come back to work but Depot Grille, they couldn't come to work. Depot Grille was set up as a headquarters for the crews.

Many businesses involved in the evacuation were only temporarily closed, as described by Blake and Ralph, but a few were impacted for a longer duration. According to several

respondents, the business that was most affected was Depot Grille, a train-themed restaurant converted from a former rail station situated along the river. Witness Denise stated

The most affected business would have been the Depot Grille. They were definitely the most affected because it happened right in front of their doors. And also CSX and first responders took over their business. They were closed for an entire week as well as we were but they were open 24/7 feeding the CSX people. Most business were able to open within a day or two.

Other interviewees including Vince, Lori and Shae echoed the claims of Andrea and Denise about the effect on the Depot Grille which was closed to the public for a lengthy period of time.

Lori, when revisiting the scene to recover personal effects of her and her colleagues said

I asked one of the managers, [of The Depot Grille] who I knew, what was going on there and he said they were feeding the rescue people and they were opened 24 hours for the rescue people. And the staff was being paid. And they were working in shifts. If they wanted to work, they had the option to work and get paid. And that's what The Depot Grille did for the rescue workers that week, or two weeks, or however long it took. However long The Depot Grille was closed and those people were working, they were open only for the rescue workers. They made meals for them and they would come in in shifts.

Another business that experienced a significant closure as a result of the derailment was the children's museum, Amazement Square. Denise said of the closure

We actually had a few fieldtrips that needed to be canceled or moved. We had a sleepover that was supposed to happen that got canceled because they didn't want to come down. And we had an event that we had to cancel. It was going to be a Star Wars Day. It was May 4th so we were doing a big May 4th event. We had storm troopers planning to come and all sorts of crafts and various Star Wars activities that we had to cancel that year. Being closed on a Saturday and Sunday is the worst thing for us, being our busiest times. Being closed that weekend was exceptionally difficult given the event. Events typically bring in about one thousand people, an event like that.

Despite the significant inconvenience and loss of revenue over the weekend at the museum, officials allowed the museum to open for part of one day to accommodate a field trip previously schedule. Denise described being open for that short period of time after the derailment.

We were actually closed for an entire week. We were able to open the following day, they let us have a school come in that was already booked. And they didn't let us know in

time to cancel the school. So we did get permission [the following day] to have the school come. They let us ... actually I think that was Friday [two days after the derailment]. It was very much if you hear this horn noise, leave very quickly. We were like thank you for that very, very, scary, scary thought as I let a hundred children into the museum... So we were open for a half day. It was a little tense mostly because they give you this nice warning, okay if you hear this, and it was like a certain sound it would make like a horn, it meant run as fast as you can. That's not comforting.

Another company and its employees were impacted in a significant way, as explained by Gary:

Some of the trains were left in place blocking access to a business down here, Griffin Pipe...the train stopped all ins and outs of any pipe being delivered from there, truckers stuck in there and couldn't even get home...NTSB would not let them move the train and I understand where they are coming from...but it wasn't the smoothest process.

Environmentalist Josh, when considering the situation with the train remaining in place, thus disallowing access to the company said, "that was on into the next day because they made that train sit there."

The effect on business was not only short-term. One witness who was familiar with businesses relying on recreational activity on the river discussed its impact not only in the immediate area, but on the James River in general. Hank said,

If I had still run the float company, it would have crushed me. Definitely hurt my business, my competitors. My guys down river that do the same thing I do, just because a percent of the James River was tarnished... Yeah it definitely hurts any outfit on the James River, that's for sure. Whether they're a hundred miles upstream or a hundred miles downstream. It's just the James River.

Thus an event that pollutes a waterway, which brings a host of environmental and human health concerns, may also negatively affect businesses.

Several respondents explained that a representative from CSX visited in the day or two following the derailment. Witnesses Vince, Denise, Blake, Zoey, Lori, and public official David each mentioned having an interaction with a CSX representative or knowing that an interaction took place between CSX and owners or management of business in the downtown area. Vince

explained his interaction with people from CSX and the effect the derailment had on his business generally:

Some of them came in and brought a form and we could fill out if we had been affected negatively by it and we could apply for reimbursement. The reality was that because Depot Grille was closed for almost 2 weeks—they [CSX and clean-up contractors] essentially took over that restaurant—we were busier than normal the entire time. There were all the DEQ, all the official coming from Richmond who came in and ate, the people from the railroad who came in and ate, the news media. So we were very much busier.

The derailment did, however, impact Blake's business and he described his communication with CSX:

They had a guy in here the following day, or day after, I forget... we were evacuated the following day. He came in late that afternoon the following day and he said "did you have any costs, downtime associate with this?" and I said "Yeah, we did" so I kinda went back and added up our daily annual billing and put that down and faxed it to him. And, uh, he sent me an email or whatever, but the next following day we had a check. So they were very anxious, to whatever damage is done, we want to take care of you. Some of my neighbors were like "we don't want to fill out the paperwork and stuff" but a big company with maybe 10 people, it's worth doing that.

Some respondents expressed a positive interaction with CSX representatives and ease in getting compensation for losses sustained as a result of the derailment. In other cases, respondents conveyed frustration with the process or length of time to receive compensation and delays with the reopening of facilities. A specific place where difficulties in the process were experienced was at Amazement Square. Denise described the process, stating "They did the next day try and come out and introduce themselves to try and show good will towards us." She continued, "I had to create a report ticket about what it cost us, what revenue was lost, what expenses we incurred and things like that." The museum did receive funds from CSX to cover expenses of their closure which Denise explained, along with what the purpose of the compensation was. She stated,

I do know that they gave us some money but don't remember how much. I know it was supposed to cover what would have been loss but don't remember the exact amount... You had to show a report of everything. I know they were surprised by how much staff we had, they didn't think we had as much staff as we do. We had more in salary than what they thought we would have. We had events that required extra staff and things like that. They wanted to make sure we were compensated for our loss. We had to go back and forth for a little bit because they didn't quite think we were going to have as many expense as we did.

An employee of the museum at the time of the derailment, Zoey, described her familiarity with the reimbursement process which came

from hearing about it trickle down. The frustrations the office had with them trying to get... it's just age-old story. They said this would be done by this time and this is how much money you'll get. And it's not what the reality was at all. I would mostly overhear, you know, the higher-ups being really frustrated...I think they still talk about it, honestly. It was a long process to get, I guess, the money that was owed or whatever. Because we are a nonprofit, it was like, well this is what we can't do without. I think they are still frustrated with CSX. It took them FOREVER to get the parking lot situation figured out.

One interview revealed CSX giving funds to the effected museum in a different way. According to Denise, "Another department from CSX gave us a scholarship for our programs. They said that was not in relation to the train derailment at all...but we thought it was very convenient that [it was at the] same time they contacted us. They've never done it before."

A final economic cost is the hardship that the derailment created for subsistent fishing. Environmentalists Gary and Josh described a common fear they had which was even shared by city officials relating to individuals who rely on the James River for food security. Gary explained that

Directly below the train there is a popular hangout for fisherman, cat fisherman, usually African-American, low-income subsistence fishing. And immediately when this happened even the deputy mayor told me that she feared that probably there was a casualty...The fact that nobody died I think sort of surprised me because it was just sort of "wow! That's right there." It's so highly utilized, but when I heard nobody perished, I was like "wow!"

Josh, based on the popularity of the fishing spot just feet from the derailment, expressed “yeah, [we thought] that somebody was down there.” Fortunately, there was nobody utilizing the location when the derailment occurred, but based on the environmental implications and pollution, the derailment posed a hindrance to fishing in that area at least in the short-term, if not for a longer period of time.

Economic costs included losses of income or a period of time at work, dissatisfaction and difficulties associated with the compensation process or reopening of facilities, and hardship on subsistence fishing. Another common experience with the derailment was psychological or emotional distress.

Psychological and Emotional Costs

The psychological and emotional toll of the derailment varied among respondents and, presumably some did not experience significant psychological or emotional damage given as it was absent in some interviews. However, many interviewees did share a variety of psychological or emotional afflictions which included fear and anxiety during and after event, avoidance of the downtown area, and relocation as a result of the mental stress of the event.

As the event unfolded, people were quite fearful for their wellbeing. According to witness Zach, “people were scared.” Witness Lori described the feeling differently: “We were all kind of nervous, like weirded out. It was really bizarre... I was concerned for the restaurant, I was concerned for the people that worked there because I know a lot of people that work there. I was concerned for people’s safety.” Andrea previously described that she “was literally running for my life because I’d never had, I’ve never been exposed to anything so dramatic or serious. I didn’t know all I knew was that this was really serious. It can get worse and the consequences, you’re not likely to bounce back.” Considering the emotions she felt during the event, she said “I was

scared. It was the scariest I've ever been. I don't know if I've ever been that scared before. I've never had an experience to be that scary before.”

Shortly after the event, those that experienced the derailment continued to endure extreme emotions. Shae explained that

There was a lot of shivering and shaking that was going on after people realized that more cars could have blown up and it would have been the end of the block, it would have been the end of the town if more of the cars had caught on fire instead of the one that went into the river and caught on fire and dissipated that way.

One witness, Zoey, articulated the emotional impact of the event for some:

I knew a couple of people that were really emotionally involved in it. It was really, really sad because you realize how much oil was going in the river, or I'll just say pollution, was going in the river. I mean, my friend's dad came into the bar crying, like, it just really hurt him to think about that. A lot of people are emotionally invested in the James River.

Witness Abby also described her emotions after the event:

Hours after it happened, I was still, the adrenaline was still kind of pumping through me. It was just kinda like ‘what just happened?!’ I can't believe I was down there!’ I don't know. It was just a weird sensation. You experience something that was, not special or unique, but kind of the antithesis of that.

In a similar sort of disbelief told by Abby, witness Tracy told of her emotional experience shortly after the derailment to even months after:

I decided to just kind of lay low and wait it out. I had no reason to be hysterical. I got fearful and anxious after the fact... I guess we all know that when something happens that's a shock or an accident or is a trauma, that adrenaline must be the thing that triggers your response initially. I know I did that, I got out of there very quickly. I went to a place that was safe for me. I got back as quickly as I could and tried to maintain normalcy as soon as I could. And then all of a sudden, after you start talking about it and getting phone calls and emails and seeing what happens on the news, is what triggers this kind of—it's similar to post-traumatic stress I guess—just like ‘holy cow!’... I think it lasted longer than I was wanting to admit it. I think a couple of months.

Witness Zach recounted a story from sometime after the derailment that displays how the experience was conjured by a later experience:

A friend took me to Balcony Falls, this really popular place [out of the city] to go kayaking. So I'm on the kayak on a flat part of the water, its going slow. And those

[black oil] tankers go by and I just looked and I didn't have a panic attack or anything like that, or freak out, it put it in a different perspective and I just imagined them falling over and I'm dead, there's nothing I can do about that... to me, it was a lasting impression. When I see those tankers, I remember, I mean, I didn't even see the fire personally, but I remember what happened.

One person, Amber, who was just feet away from the derailment as she watched it unfold, described her reluctance in sharing her familiarity with the derailment, and even over a year after the event, she had not talked with anyone about what transpired that day.

Other psychological and emotional consequences resulted from the derailment.

Avoidance of the downtown area was common among many people in the community including respondents. Tracy described how she avoided particular areas close to the derailment:

I don't know what's normal for people when they're subjected to something like that, I don't think it was post-traumatic stress exactly, but I was edgy. I didn't want to go down and walk the dogs. There's a park down the street where I would almost any given day walk the dogs and it's probably less than a hundred feet from the train, well the one that fell over. I was just, you know, hesitant to go down there and apprehensive, much more aware of the trains and concerned about paying attention to the news and understanding why the crude was more likely to be explosive. I didn't feel reassured by that at all and knowing how many other incidences there were of accidents. It just raised a red flag in some ways. Again, I wasn't traumatized, I wasn't undone by it, but I was aware enough. It was a scary experience, I'll say that.

Witness Denise described the effect on members of the community in a broader sense. She stated, "There was definitely a good chunk of time where people were afraid to come downtown. There are trains that pass through all day every day, there are three tracks outside the doors. A lot of people don't realize that the track closest to us is an active track."

In one instance, a respondent explained how the role of being involved in the derailment and evacuation was consequential to her leaving the Lynchburg area. Tracy recollected, "Now that I reflect on my departure, it seems to me that there is a piece of the fact that there was a train derailment—there were other factors too—but possibly the straw that broke the camel's back...It certainly was a factor. I was frightened by that experienced."

On a final note about emotional and psychological detriments that accompanied the derailment for interviewees, Denise expressed the uneasiness with not being informed of the cause of the derailment:

I've gone to meetings since then with them [CSX representatives]. They haven't told us what happened and the reason for it. They had a meeting with a bunch of businesses that were affected. Meeting was a little before the year mark so probably March [2015]. They had a meeting that really didn't tell us anything because they won't tell us what happened yet.

The cause of the derailment was not finalized until March 3, 2016, a year after this proposed meeting, and almost two years after the derailment. Emotional and psychological costs were part of the derailment experience. These included fright, nervousness, and sorrow during and after event, avoidance of areas near the derailment, and even permanent departure from Lynchburg. For at least some, perceived harm to the James River was part of the equation regarding emotional or psychological distress due to the event. The river and surrounding ecosystem were also victimized on account of the derailment.

Environmental Concerns

This section briefly considers environmental victimizations and perceptions of the environment as a victim in the April 30, 2014 Lynchburg train derailment. To accompany responses of interviewees, official documents are used to describe consequences to the surrounding environment as a result of the derailment and subsequent oil spill and fire.

Environmentalist Josh painted the picture of the immediate impact on the environment. He described what those surveying the damage saw once the initial fire had died out, a fire that first respondents were not able to combat so they “were just standing back, waiting for it to finish its aftermath.” He explained:

We had noticed that the riverbank for about 300 yards downriver had caught fire as well. We assumed it had just run down the bank, but it hadn't. That was all oil that was on fire

on top of the water, floating down the river, catching the trees on fire as it floated on there. So it was pretty impressive, but in a bad way. But that stuff is just so volatile. It just burned immense flames even, you know, trickling down as it was floating down the river it was still fifteen-foot tall...Specifically this Bakken oil especially. Yeah, it burns more like natural gas or gasoline and it's got a lot of natural gas in it, from what I understand, and it's very, very, very volatile, more so than average crude would be. Within that though I think it presented some environmental benefits as far as what it was since it burned off so much, like 97% of that stuff—not a benefit. It could have been worse. A lucky break I guess you would say that it was the stuff that it was for this particular situation. Another lucky streak was that the water was so high. The water was incredibly high...a lot of that stuff got flushed out...washed downstream. Now there was about a fifteen-mile long sheen that they saw.

An official document gave an account that described specifically the amount of oil involved in the derailment, damage to the surrounding area, and what cleanup procedures commenced. Almost 30,000 gallons of oil were discharged and booms to collect oil were ineffective due to the exceptionally high waters of the river. Water intakes downstream were shut down as precautionary measure. Oiled vegetation and over 500 feet of shoreline were removed. In sum, 260 tons of soil and ballast were removed from the banks of the river. According to the Virginia State Water Control Board (2015: 22-23):

Three of the derailed railcars went into the James River. One of those ruptured and discharged approximately 29,730 gallons of oil into the James River. Approximately 98% of the discharge was consumed in a fire that occurred immediately after the derailment. At the time of the incident, the James River was at flood stage, causing strong currents and difficult river conditions for response and capture of the oil. CSX contractors placed booms and oil snare on ropes at downstream locations. However, there was little evidence of recoverable crude oil found during the initial response efforts. Later containment efforts were more successful at or near the incident site, as river conditions returned to normal. An assessment of vegetation and wildlife in the vicinity and downstream of the spill did not provide evidence of significant impacts. There was no documented fish kill or other documented injury to animal life. Shoreline vegetative assessments were performed on right and left descending banks, and on midstream islands for approximately three miles downstream. Approximately ten cubic yards of oiled vegetation and surface soils was located and subsequently removed from the right descending bank approximately 300 yards downstream. No impacts were observed on the left descending bank. In-stream water sampling was performed on four transects with three sample locations each (left, center and right) located 0.2 miles upstream of the incident, 0.2 miles downstream, 28 miles downstream, and 130 miles downstream. Through May 2014, over 250 in-stream water samples were collected and analyzed. In-

stream water sampling did not document any significant impacts. Water intakes, including the intakes for the City of Richmond, the County of Henrico, and the James River Correction Center were closed downstream in response to the discharge, as a precautionary measure. Confirmatory samples taken at each of the above intakes during the incident documented that no impacts on water supplies occurred. An estimated 245 gallons of oil entered the embankment soils at the site of the derailment. Approximately 509 feet of shoreline was impacted by the spill and fire. Clean-up of the embankment involved removal of approximately 260 tons of soil and ballast.

Several respondents mentioned the environment and the James River specifically when contemplating the effects of the derailment on the city of Lynchburg. Witness Vince stated, “[The James River] was the main concern for most people, I think. What the damage to the river was.”

Witness Tracy reiterated the sentiment that there was deep concern about the impacts on the river: “I was concerned about life, about animal life and fish life, knowing what oil spills do.”

Witness Abby voiced her perception of the consequences for the James River:

I think as far as the river is concerned it was an atrocity... People were saying it was fucked up what happened to the river, you know. We were thinking about all the wildlife and the foliage and it was just—it was really sad to know that amount of crude oil.

Witness Zoey even described the James River and nearby ecosystems in her consideration of victimization. She stated, “I absolutely consider the environment as a victim.” Zoey continued, “I’d love to know the overall environmental effects. In Richmond they were concerned with the drinking water. People were scared and frustrated about the water situation. I’d say we are really connected to Richmond, so I feel like that was an actual concern, I really do.”

As described in the State Water Control Board (2015) meeting agenda, due to the discharge of oil, water intakes in Richmond and Henrico County, Virginia, as well as the intake at James River Correction Center, were closed since they are downstream from the derailment.

Similarly to Zoey, Vince spoke about the drinking water concerns downstream:

Initially, they were talking about having to cut off the water supply to Richmond. That first day there was significant concern. Not so much for Lynchburg because our water comes from the mountain. But what was the potential impact to all communities

downstream whose water supply could be affected. That was the initial concern after the fire was out.

Many respondents did not specifically mention the river or surrounding environment in their reflection on impacts to Lynchburg as a result of the derailment. A small number of respondents specifically dismissed concern for the river after reflection on the event. Witness Tracy, for instance, said “I think the James River, you know, is ok. People still don’t eat the fish out of the James River, but I think its ok.” Witness Eric explained that, amongst his group of associates, the river is often the subject of quips and gibes since it is perceived as disgusting and polluted. The river, thus, has already been adulterated to an extent that this event is rather insignificant from this perspective. Both of these accounts may suggest that previous victimizations experienced by the James River are, in some cases, informing opinions about the possibility of the river actually being a victim.

Summary

This section examined responses from interviewees who described the various victimizations experienced by individuals, the city of Lynchburg and the environment resulting from the derailment in April 2014. The evacuation of about 350 people and twenty businesses was described from the perspective of those that experienced it. The derailment brought economic costs, specifically loss of income, problems with compensation for losses, and a hardship on subsistent fishing. Psychological and emotional harms were experienced both in the immediate and long term. There were also environmental costs in Lynchburg and concerns in communities downstream from the derailment due to the oil discharge. Regardless of perceptions of individuals close to the derailment about victimization, CSX and the Virginia Department of Environmental Quality or, ultimately, the State Water Control Board, agreed on a civil penalty as

a result of the discharge of oil into the James River. The following inspects the regulatory fine and how respondents perceived that fine.

REGULATION AND A CIVIL PENALTY

This section examines the regulatory fine that was assessed to CSX as a result of the Lynchburg train derailment on April 30, 2014 and respondents' perceptions of that fine. First, the details of the fine are discussed to include important entities involved in the assessment of the fine and the amount. Some specifics of the fine criticized by respondents which will be considered through perceptions of interviewees.

As a result of the derailment, several thousands of gallons of oil were released into both the James River and the embankment of the river. As a result, CSX received a Notice of Violation (NOV) on May 22, 2014 from the (Virginia) State Water Control Board (VDEQ 2015). This seven-member citizen regulatory board is appointed by the governor and responsible for the administration of Virginia Water Control Law (see Code of Virginia, Title 62.1, Chapter 3.1). The State Water Control Board also updates its governing regulations and considers special orders which resolve any violation of its regulation (VDEQ 2016). The Notice of Violation initiated this special order which was later voluntarily *agreed* upon by CSX and the State Water Control Board, as described in a "consent order" dated February 3, 2015 (VDEQ 2015). Based on Virginia Code § 62.1-44.34:20, which deals with enforcement and penalties for violations against Water Control Law (in this case § 62.1-44.34:18 concerning discharge of oil), CSX agreed to pay a civil penalty of \$361,000 and to reimburse VDEQ \$18,574.85 for the cost of investigation. The payment, as stipulated by Virginia Water Control Law, was deposited into the Virginia Petroleum Storage Tank Fund (VPSTF) which is used for clean-up of underground oil

containers (such as closed gas stations) or above ground heating oil containers in any location in the state of Virginia.

According to environmentalist Michael, decisions about regulatory fines are often negotiated between the relevant parties. He described how a typical regulatory fine would be agreed upon by the relevant part of VDEQ:

That's the enforcement group. The enforcement manager and, [with] something like this, it's pretty much up to the letters at DEQ. And then you have the Water Board too. It all goes to the Water Board and they have ultimate say-so over the penalty. It's usually negotiated between the parties. They'll come up with a, there's an enforcement matrix...when they go to do enforcement, it's like okay, our enforcement matrix, this is our max, this is our minimum. You look at this, maybe we'll go for--we don't go for the minimum, we don't go for the max. We will go somewhere in the middle...I think a lot of it is where it's not too low, but it's within the guidelines and it seems reasonable to all parties so that, you know, with everything so that you don't have to go to court over it. Okay, they'll accept it, they'll sign the paper. That's how a lot of enforcement goes...Just like any court thing, a lot of times, any civil suits, they go through mediation first. Try to figure it out ahead of time before we go to court, if you can figure it out ahead of time where all parties agree to it, but the ultimate approval is the State Water Control Board. They have to approve it in the end. If they were to think the fine is too low, they could say, "No, we don't approve that." If they think it's too high they could actually lower it.

The amount of the fine is established by the Code of Virginia (§ 62.1-44.34:20) which stipulates that "up to \$100 per gallon of oil discharged" and considers culpability in determining the amount of any penalty, consideration shall be given to the willfulness of the violation, any history of noncompliance, the actions of the person in reporting, containing and cleaning up any discharge or threat of discharge, the damage or injury to state waters or the impairment of their beneficial use, the cost of containment and cleanup, the nature and degree of injury to or interference with general health, welfare and property, and the available technology for preventing, containing, reducing or eliminating the discharge. Based on this formula, CSX may have been forced to pay \$100 for each of the 29,730 gallons discharged into the James River, or just under \$3 million plus any additional amount that may have been determined by the other

considerations listed above. While NTSB was still carrying out its investigation, the Virginia State Water Control Board approved the \$361,000 fine, just 12% of what the fine could have been.

Perceptions of the Fine

Some respondents voiced concern with the fine assessed to CSX, while others were entirely unaware of the fine. Witness Blake, when probed if he was familiar with the assessment of the fine said, “No, I didn’t really pay that much attention really.” Another respondent, witness Zoey, when similarly probed said, “That’s interesting,” though she was unaware a fine had been assessed for the discharge of oil. In one case, a respondent felt a fine was not justified unless the train was above the speed limit or if better tank cars were not utilized. Witness Shae agreed and expounded on this saying,

I don’t think that it was really warranted for CSX to have to pay such a fine. The reading that I did suggested that there were constant surveillance of the track, they had noticed that there was a weakness under the gravel under portion of the tracks. It was scheduled to be maintained, it was on schedule, and it was a sloppy, gummy, wet, time and it gave way. If the train was going faster than it should have, or they didn’t avail themselves at the possibility of having reinforced ends on the train cars, then if they had been found at fault for that where they could have used more protective gear and they didn’t, then yeah, I think the fine was warranted...But in terms of the environmental impact, I think they need to be cut some slack. It’s live and learn.

In contrast, witness Denise, who was speaking broadly about fining CSX as a result of the derailment, expressed that she felt that a fine was reasonable. She stated

I think it makes sense because especially since it’s happened more than just here. It seems to be happening more and more. The fine is great. I understand that a lot. There will be repercussions for businesses and things like that long after than what they expected it to, but I think more importantly they need to figure out a way to not have trains derail all the time. I think the money should be spent there as well, but I understand the fine. I know there was a lot of damage to the way the riverbed looked and the wildlife in the area.

For respondents who felt the fine was justifiable, grievances with the nature of the fine were commonly mentioned. Overall, when interviewees did perceive the fine as merited, the

major grievances were that the amount was not satisfactory, the timing of the assessment of the fine was unsatisfactory, or the usage of the collected money was inappropriate. The first dissatisfactory element among multiple interviewees was the amount of the fine. According to witness Vince, “It wasn’t a whole lot. They spent millions and millions of dollars cleaning it up, getting things, putting in temporary tracks to keep trains running, you know. So, CSX didn’t miss the \$360,000. I don’t know what sort of fine it would take.” Similarly, witness Abby said of the fine, “That’s probably nothing compared to what was actually—you know that seems like pennies for a big money [corporation].” Considering the amount levied, witness Tracy also suggested “It doesn’t seem anywhere near enough. It seems like it should be in the millions. My calculation is based strictly on emotion. I can’t imagine with what things cost today. It just seems like 360,000 dollars is a drop in the bucket for a fine.” Witness Zach proposed, “[It] didn’t mean a thing to them. To CSX, it’s nothing. They are a giant organization.” He then pointed to the limitations of the regulatory agencies in his consideration of the fine: “But, then again DEQ doesn’t have the ability to punish them according to their board. According to the statute, I think the Water Board...I see where they’re coming from. That’s not necessarily their job.” He also suggested that a fine should be experienced by the company as punishment:

Enough to where it affects their bottom line. A punishment. But on the other hand, it was a mistake. But, they just keep happening. I don’t know enough about their budget to know what would be fair. But I do think their ability to pay should be factored into the restitution that they owe to the state of Virginia. Frankly, the state of Virginia could use some extra money, particularly DEQ.

Though the amount of the fine was of significant concern for some respondents, other issues were taken with the specifics of the fine. The timing of the fine was contested by one respondent, Environmentalist Gary, who explained one major objection he had with the fine was that it seemed hurried:

I actually spoke to the State Water Control Board during the hearing over—to approve that consent order. I asked that, for a couple reasons, I asked that a decision be delayed, postponed, because one, culpability is part of the formula to determine how much they are basically fined... I asked that since no culpability could be established that this decision on that consent order should be delayed. I was denied that. I don't really understand why, but they believed that CSX deserved a speedy response. I just wanted an adequate response.

According to Gary, establishment of culpability required completion of the investigation being conducted by NTSB.

Interviewer: So by delay were you wanting NTSB to come out with their full report before a [fine was agreed upon]?

Gary: Yes. How can you establish culpability if [it hasn't been completed]?

The civil agreement was signed in February 2015 even though the NTSB did not complete their investigation until over a year later, on March 3, 2016.

Along with seemingly rushed timing of the assessment of the fine, Gary voiced concern about usage of the money once collected in terms of who would benefit. He explained

The other point that I contested was that the funds were to go to—not to DEQ directly—but into the state fund that is intended for underground storage of petroleum and above ground storage of heating oil which is inappropriate and unrelated to the nature of petroleum transport. So, I said this was an inappropriate location for this to go into a big fund that was probably going to be raided if there is any money left in it by legislators at the end of the fiscal year. And when you actually have a legislator tell you, or a former legislator say, “you guys should be getting some of that money to do local projects” and the city of Lynchburg telling us “it'd be great if we could spend some of that money here locally on projects.” And I asked for that and I was also denied that. They denied my plea... So I actually spoke against that, I was the only one that spoke against it...It will go to clean underground storage, so basically gas stations that have leaky tanks or above ground oil tanks.

According to Virginia Water Control Law, funds collected for petroleum discharge are to be deposited into the Virginia Petroleum Storage Tank Fund (VPSTF) which Gary just described.

Environmentalist Michael also described VPSTF when explaining VDEQ's role in the clean-up

process which is to “oversee the cleanup.” Describing the uncommon instance when VDEQ may actually initiate a clean-up, he described how VPSTF is used:

There are things if other people don't [clean up], you know. And very rarely do we have to do that and, but sometimes we do. Or some people can't afford it. ...There's people that don't have the money to clean up petroleum releases, you know...It could be from an old gas station that closed years ago, you don't have a responsible party. Ground water is contaminated. You've got people's drinking water wells that are contaminated. We go in we've got our program and we take care of it...that's handled through our funds, the Virginia Petroleum Storage Tank Fund and sometimes we would invoke that to clean up. Like, if CSX didn't do anything, and we had to, that's what we would invoke probably is the Virginia Petroleum Storage Tank Fund and get our contractors out there to start digging it out, but they want to get it done so they can their train going, you know.

Environmentalist Gary and other respondents felt that other local projects would be a more useful place for the money to go, or at least other projects should be supported as a supplement to the fine.

[I] suggested to CSX to do what are considered supplemental environmental projects which, when a consent order is in the negotiation phase between basically the Attorney General's Office, well DEQ in this matter, but when it is being negotiated with the violator, then in lieu of paying X amount of whatever is determined, they can, a portion of that, can be used for supplemental environmental projects that are approved by the Department of Environmental Quality. I presented three various projects for better public access to the river, restoration including return of shad (a native fish with a struggling population), and removal of a dam downstream that's considered a net detriment to public access to the river because people can't float through it...It had to meet CSX's agreement and they chose the easiest, cheapest one to do, which was to put shad in there once a year basically and monitor it. DEQ denied that saying that could be a long term project and they refused to support it. And I found that to be a really big problem. I'm really disappointed that the Department of Environmental Quality was ill-equipped to effectively negotiate a supplemental environmental project. The more work I did on that I found that DEQ has almost, in Virginia, has nearly a non-existent record of taking consent orders like this from polluters and turning them into good projects, real, on-the-ground projects that benefit the people and resources of localities. Instead, it tends to sucked away in a government fund that gets raided by lawmakers...There are other states that have really good programs and positive things come from them at the local level. Virginia just doesn't. I don't know.

Other interviewees specifically voiced using the funds to initiate projects to support the river or to support safety near the tracks revolving around access to the river. Witness Andrea, for instance, said,

I think that Lynchburg should get a significant portion of the money because it was our city that was affected. Our river was affected, our river bed was affected, and our fish were affected... I think something should be done with the money relative to the actual accident. I think that it should go towards the river some kind of way to protect the river so if this were to happen again, if there was any way to prevent it from happening again or reduce the effects of it happening again, I think the money should be used towards that.

Another witness, Abby, said, "If CSX gives any kind of reparations for what happened, they should pay it to like the James River Association" which is a non-profit organization that promotes conservation and protects the James River. Regarding safety around the river due to it being contiguous to active railroad tracks, witness Tracy suggested

There are other parts of the rail system down there that are dangerous. Concerns about the crossings and kids that go out, there's a place where there's a bridge and several times a year college students will go out on that bridge and either kill themselves or wait on a train and, you know, a train will come along and they'll die as a result of doing something stupid. I think upgrading the system that protects the speed and the safety of that set of tracks that goes through the populated part of the city. It would be a good place to drop some money that would intensely improve the safety. There are people that fish down there by the river. They are pretty casual about the tracks. The parking lot by the Depot Grill there is a sign that says live tracks, but there is no barrier. In a general way, there is probably at least a mile of track and there are huge usage down there that's growing. There are more and more people riding their bikes and more and more people moving into the apartment buildings and more and more people with dogs, which is part of the reason I'm not there anymore, but the safety of those people could be protected a little bit more.

Witness Shae also spoke of track safety being a major concern, though she did not propose funds from a fine go toward improving safety. She said,

It's just astonishing to me that you can get right down there by the Depot restaurant and be standing within inches of a train going by. It's unbelievable! We've seen cars that have gotten stuck on those tracks. At night they can't see and they go in there and their transmissions are ripped out from under their cars and it's another story to tell about another transmission gone.

Witness Denise suggested funds should go specifically to the city of Lynchburg as well. She said,

I think some of it should go into the city. Even business that weren't downtown or as close were probably more effected than people think. People were afraid to come downtown. Downtown is in a weird spot in general where we are now. It's growing a lot. When Amazement Square opened up there was nothing else downtown... We have lots coming in, lots of smaller business so I think that even if some of the money went into the city kind of helps. I'm sure there were repercussions for ones that may not have had to close, but their business slowed down because people don't want to come downtown. There were probably some outlying things like that.

Regarding the regulatory fine assessed to CSX as a result of the discharge of oil after the derailment, respondents ranged from feeling the fine was unwarranted to feeling the fine was insufficient, though some respondents were not aware that a fine was levied. In responses about the fine, the issue of accountability for the derailment came up through terms like "culpability" and "responsible party." The following section considers perceptions of responsibility for the event, including the consideration of the derailment as a "crime."

PERCEPTIONS OF THE EVENT: RESPONSIBILITY, ACCOUNTABILITY, NEGLIGENCE, AND CRIME

Respondents articulated ideas about the adequacy or insufficiency of the regulatory fine and, in many cases, these articulations accompanied more general ideas about how responsibility and accountability was taken (or not) by the involved parties. As part of these responses, claims of negligence and even criminality were made. One respondent, witness Eric, described the event as an "accident" and even expressed bewilderment that a researcher with a background in criminal justice would be visiting Lynchburg to examine the derailment. To summarize, he explained that since there was no intent on behalf of CSX for the derailment to occur, and because, from his perspective the environment was not victimized, an inquiry from a

criminologist was not necessary. Recall that Eric described how the river is perceived as adulterated by his friends in the “environmental victimization” section. Similarly to the accident rhetoric described by Eric, though less directly, witness Blake perceived that “I think a lot of people wanted to say, it’s somebody’s fault. At the same time, things happen.”

Responsibility and Accountability

A few respondents, such as witnesses Lori and Shae, felt that CSX took responsibility for the derailment and handled the aftermath of the derailment well. Several others echoed that they felt CSX handled the cleanup well, such as city official David, first responder Ralph, and witnesses Hank and Andrea. Lori said,

I don’t think anyone was really angry or anyone was really pointing fingers. I think CSX did a really good job of taking responsibility and cleaning up and making sure it was safe. And I think they’ve done a really good job since then. I think the city did a really good job of making sure things were taken care of and people were taken care of. I think the James River, you know, is ok. People still don’t eat the fish out of the James River, but I think its ok.

When considering the CSX response, witness Shae stated, “I think they handled it impeccably. I think the consensus is that they handled it very, very responsibly. It was astonishing how fast they got it cleaned up and they were quite serious about it.” Witness Zach also commented on CSX’s reaction to the derailment. He said “They are dangerously good at it. They’re too good at it.” Zach continued, “Everyone knew their job, I think they wrote big checks...From what I could tell it was incredibly efficient...It’s something [we] talked about. Wow, they are really good at this.”

Zach also grappled with his idea of responsibility for the event. He claimed “It was a mistake. But, they just keep happening.” Other respondents spoke more specifically about their ideas of responsibility for the event. Vince said,

The fact that they had seen it, knew it was there, and had it scheduled for repair, but hadn't done it. The replacement rail was in the wreckage. So I think when you talk about a sense of *responsibility* (emphasis added), there was no sense of urgency in making the repair. Obviously it cost the company a fortune to do it after that as opposed to before.

Environmentalists also considered the issue of responsibility. Gary, for instance, talked about the complex nature of responsibility, accountability, regulation, and enforcement when he described the nature of oil shipment and the important entities that have a hand in it:

One other thing that you should consider and you probably are aware of is who's responsible for it. So CSX gets a bad rap because they own the rails and since there's a derailment it's their fault. But who owns the tanks and what's inside of them? That's [not] the rail industry. Even the Department of Transportation has expressed their concern about the apparent lack of accountability or owning up to this problem from the oil and gas industry...you're a part of this as well. Instead, "Regulations?! No regulations! No Regulations!" It's unsafe. We need regulations and enforcement...The industry is over self-regulated, in my opinion.

Gary emphasized the reality that CSX was hired to transport the product and the railroad industry is not the only industry involved in the shipment and subsequent risk. Gary also highlighted the importance of the railroads to American commerce and development, though he ultimately claimed "at some point they have to be held accountable [for these derailments]." Far from the industry and specific companies holding themselves accountable, Gary asserted, "I think there is a great deal of energy being placed into minimizing the concern about it." Also critiquing the effort to abate anxiety about rail shipment of oil, environmentalist Josh suggested "Probably if that effort was put toward solving the problem, we'd have it solved already."

First responder Wade reiterated the multiple entities intimately involved in oil-by-rail shipment:

It's not the railroads and see the other thing that people don't understand is those cars don't belong to CSX. CSX is contracted to haul those cars. Those cars belong to a carrier. They might belong to the oil company, they might belong to another contractor. CSX is responsible for the track, obviously, and they're responsible for transporting it from point A to point B. CSX, to my knowledge, does not go all the way up to the oil fields up in

North Dakota, South Dakota, wherever they're at. They don't go all the way so they change over rail lines and then CSX has got this leg that comes through Virginia.

Witness Hank also spoke to the involvement of more than just one specific company or industry in the shipment of oil. Pointing to the nature of energy usage in society at a macro level, he articulated becoming aware of an increase in oil trains through Lynchburg after a friend mentioned it and then Hank proclaimed: "We are running a lot of oil and I say we, because, as a community, you know... we are all involved." Witness Zach spoke about the involvement of governmental agencies and described how he perceives that accountability may be undermined by the nature of regulation:

I'll tell you what bothers me... They're (CSX) policing themselves. They have a contractor who turns into them, turns the results in to them and DEQ. DEQ is not sending people out to do the testing themselves. And I get that this is small and that maybe this wouldn't, even if they had that funding, that this may not be a case, because it was small, it may not be a case where they need to do it. But it bothers me that the industry standard is for their contractor to attest for them. That someone they pay for directly and from what I understand... is DEQ's budget has been slashed...I don't trust the integrity of a system where the person paying the person doing the—I don't think the system is keeping them honest

Despite multiple entities having a role in the extraction and shipment of crude oil, the reality exists that Lynchburg and other communities that are on oil train routes—rather, that have oil train routes run through them—experience a much greater comparative risk because of their locations. Witness Vince claimed "We get no benefit from having the trains roll through" and environmentalist Gary pleaded, "We are gonna inherit all these risks and none of the benefits."

Negligence and Crime

When considering the issue of accountability, the term "negligence" also surfaced. Witness Andrea believed that there should be a situation of "Holding people accountable for their negligence when it affects my life." Also considering the idea of neglect, witness Zoey likened shortcomings prior to the derailment to those of the Deepwater Horizon Oil Spill:

I guess if you label neglect crime, then absolutely I'd say it's a crime. From my understanding, it just sounded like there were things—there were things like with the oil spill in the gulf where it was like oh it's someone's job to check that this pump worked or this thing worked. So I felt like it was kinda like that. Well this should have been checked, and this should have been checked, and that should have been checked. It sounded like the idea of business got in the way of really making sure that everything was okay.

Zoey alluded to the inspection that found a defective track, which was previously described by witness Vince who highlighted that the replacement track was found in the wreckage. Witness Tracy also spoke about the inspection and lack of maintenance. She said, "I know afterward I learned that there were certain inspections done and maintenance issues that were maybe not really being addressed as accurately as they should have been."

Negligence has a history with oil train derailments. In May 2014 three employees with Maine and Atlantic Railway were charged with criminal negligence as a result of the Lac-Mégantic, Quebec derailment that killed 47 people in July 2013 (Austen 2014 May 12). Though criminal negligence was only specifically mentioned by Zoey, other respondents did consider the idea of crime more generally. Witness Abby, for instance, said "As far as the actual CSX itself, I don't think there was anything kind of like 'they're criminals!' It was just kind of, like I said, Oh shocker, big money corporations being sketchy as fuck. Imagine that, you know." Abby explained that it was consensus among her and her friends that something "sketchy" happened and the "situation was poorly handled." As such, she questioned rhetorically, "How much up in arms should I be in something I have no control over." Witness Zach also considered the deployment of the label of "crime" in his reflection on the event:

Would it be nice if such things were considered criminal acts, especially since corporations are people? Yes, it would be. I don't think that's the case. I think if someone had a charge you'd end up blaming probably some low level dude who had a bad day and missed something. People make mistakes.

Though Zach was referring to the hypothetical pursuit of criminal charges in the Lynchburg derailment, his assumption about placement of blame and the results of pursuing a derailment criminally described the reality of the criminal pursuit of the Lac-Mégantic disaster.

Environmentalist Gary, when describing the arrival of the investigative entity the National Transportation Safety Board (NTSB), said that they referred to the site as “a potential crime scene.” As a result, NTSB, at the irritation of other agencies, took control of the scene and prohibited removal of the train, including uninvolved cars, the day of the derailment. To date, however, there have been no criminal charges brought forth as part of the Lynchburg derailment.

To summarize, crime was deployed to describe the event in a few instances and even from the investigative agency. In the majority of interviews though, respondents spoke more broadly about culpability, responsibility, or accountability when considering the roles of CSX, the railroad and gas industries, and society in general given its capacity as consumers of petroleum products.

CONCLUSION

This chapter presented perceptions of victimization, the regulatory fine agreed to by CSX and ideas of responsibility, accountability, negligence, and crime through interview data with individuals close to the derailment. Interviewees revealed an array of victimization experienced by individuals, businesses, and the environment in Lynchburg due to the April 2014 derailment, fire, oil spill and evacuation. The six-block evacuation involved about 350 people and 20 businesses; the evacuation order was lifted for most of the evacuation zone three hours after the derailment. However, the logistics of the evacuation did raise significant safety concerns. Victimizations experienced were economic, psychological, emotional, and environmental.

Businesses lost profit due to forced closure, some people lost time at work, others expressed frustration with the process of receiving compensation from CSX and the reopening of facilities, and the derailment caused a hardship for subsistence fishing. Individuals described feelings of anxiety and fear in the aftermath of the derailment which in some cases lasted for months. Due to the derailment, communities downstream, including Henrico County (VA), Richmond, VA and James River Correction Center closed water intakes due to the discharge of oil. In total, just under 30,000 gallons of oil were discharged into the James River where, after the derailment, oil sheen could be seen for 15 miles. Oiled vegetation and soil were removed from the effected shoreline, totaling over 500 feet; 260 tons of soil and ballast were removed from the bank of the James River.

As a result of the discharge of oil, the Virginia State Water Control Board approved a civil penalty based on Virginia Code § 62.1-44.34:20, dealing with enforcement and penalties for violations against Water Control Law. Under this policy, polluters are accountable for up to \$100 per gallon spilled, in this case, 29,730 gallons, which could have resulted in a fine of \$3 million. However, CSX agreed to pay a fine of \$361,000 and to reimburse VDEQ \$18,574.85 for the cost of their investigation. The money from the fine was deposited into the Virginia Petroleum Storage Tank Fund (VPSTF), as mandated by Water Control Law. Regarding the regulatory fine, respondents described an assortment of perceptions. These perceptions varied from viewing the fine as unwarranted to viewing the fine was insufficient, even exceedingly so, while other interviewees were unaware that the fine was levied to CSX. Major grievances with the fine were the amount of the fine, the timing of the agreement which was before the formal investigation of NTSB, and the funds being deposited into the VPSTF (which is for cleanup in any area of the state), rather than given to Lynchburg for local projects. In responses about the fine, the issue of

accountability for the derailment arose through words such as “culpability” and “responsible party.” In many cases, ideas about how responsibility and accountability was taken (or not) by the involved parties were expressed in conjunction with ideas about the regulatory fine. Claims of negligence and criminality were made in a few instances by those who considered the issue of accountability. Respondents also mentioned that, though CSX is a major player in this event, regulatory agencies, the oil industry, the railroad industry, other corporations, and consumers are part of the equation of responsibility.

CHAPTER V

THE RIVER AND THE RAILS: IDENTITIES AND THE DERAILMENT

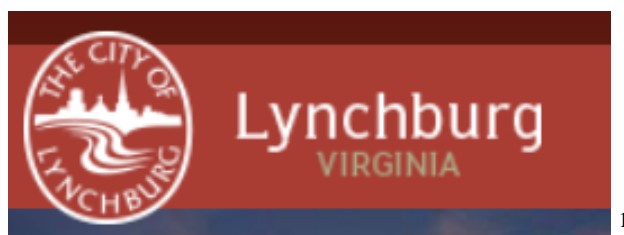
The river and the trains are important to Lynchburg. –Shae

Throughout interviews concerning the 2014 Lynchburg train derailment, several respondents voiced significant identities of themselves and/or the Lynchburg community. Two identities that were frequently expressed were the James River and the railroad. These identities seem to have helped individuals make sense of the derailment and its impact on Lynchburg and surrounding communities. Respondents described Lynchburg's intimate connections to both the James River and the railroad which is the subject of this chapter. First, the importance of the James to Lynchburg, and Virginia more broadly will be considered through interview data and brief historical accounts. The significance of the railroad, as demonstrated by respondents, will be considered next, including an account of how the railroad industry came to prominence at the expense of the river. Finally, this chapter will examine a sense of community produced in the aftermath of the derailment, largely centered on ideas about the potential catastrophe that was narrowly avoided.

THE RIVER

The James River is a prominent feature of Lynchburg and in the state of Virginia generally. The river has a watershed that covers 10,000 square miles making up about one-quarter of Virginia and it plays a role in the livelihood of more people, some 2.6 million, in the state than any other landscape feature. The River begins in the Allegheny Mountains in the western edge of the state and stretches to the Chesapeake Bay in the Hampton Roads area on the

east coast, totaling 340 miles (JRA, 2016a). The river is prominently displayed as part of the city logo:



Further, the James River is the namesake of a plethora of businesses and organizations in Lynchburg and surrounding areas. A witness of the derailment, Zoey, highlighted, “We have James River Bank. We have the James River everything. James River Day School.” Some of the businesses closed briefly or were otherwise involved in the derailment response. James River Bank (Bank of the James) was a business included in the evacuation following the derailment. James River Correctional Center, for instance, is situated downstream from Lynchburg and had its water intake shut off as a precaution due to the oil discharge as a result of the derailment (State Water Control Board, 2015). James River Company, another example, was responsible for the development of the canal on the river and George Washington served as its honorary President (Hill and Trout, 1971). Other examples include James River Association, which had an office involved in the evacuation, James River Dental Clinic, James River Furnishings, James River Conference Center, James River Float Company, James River Yoga, James River Heritage Trail, James River Counseling Center, James River Kennel Club, James River Tattoo, James

¹ <http://www.lynchburgva.gov/about-lynchburg>

River Framing and Art, James River Catering Company, and James River Financial in the Lynchburg area alone; countless others exist throughout the state of Virginia.

Respondents specifically voiced the significance with which members of the community view the river, including concern for its wellbeing as a result of the derailment and subsequent oil discharge. According to witness Denise:

The river is very important to a lot of people in town. The James River is a huge part of the Virginia history. It travels through Richmond and goes all the way down towards the Chesapeake Bay... [The oil] wouldn't have gone into our water plant I don't believe, if I have it right, but there was more concern that it was going to go into Richmond's because of the way the river channels.

Witness Vince similarly voiced concern for the river and the impact of the derailment could potentially have on it:

That was the main concern for most people, I think. What the damage to the river was. Initially, they were talking about having to cut off the water supply to Richmond. That first day there was significant concern. Not so much for Lynchburg because our water comes from the mountain. But what was the potential impact to all communities downstream whose water supply could be effected. That was the initial concern after the fire was out and we knew nobody was injured.

Another witness, Shae, described her post-derailment thoughts by saying, "I was concerned about life, about animal life and fish life, knowing what oil spills do." Witness

Abby was just yards away from the derailment on Percival's Island, a recreational area on the James River that has a hiking and biking trail converted from old railroad tracks. She was also fretful over the environmental impacts for the James River. She said,

I think as far as the river is concerned it was an atrocity... People were saying it was fucked up what happened to the river, you know. We were thinking about all the wildlife and the foliage and it was just—it was really sad to know that amount of crude oil.

Witness Zoey spoke about her personal experience after the derailment and interactions with others in the Lynchburg area:

I knew a couple of people that were really emotionally involved in it. It was really, really sad because you realize how much oil was going in the river, or I'll just say pollution, was going in the river. I mean, my friend's dad came into the bar crying, like, it just really hurt him to think about that. A lot of people are emotionally invested in the James River.

When probed about the importance of the James River to the members of the Lynchburg community, Zoey claimed:

I'd say people I know—I can't say as a general consensus—people I know that are from Lynchburg or at least really definitely call Lynchburg home it's like an *identity* (emphasis added). We have James River Bank, we have the James River everything, James River Day School. It was just kind of really affecting people emotionally, more than I really thought there really would be. And so when I saw people doing that, I was like “Oh, it is a big deal”.

Zoey is suggesting that for many in the Lynchburg community, the river is integral to the identity of the city and its residents, an identity threatened by this derailment and the continued transportation of oil and other hazardous materials more generally. In a similar way, the pragmatic use of the river by low-income residents is also threatened. Environmentalist Gary explained how the river was relied upon by several fisherman who use a location extremely close to the derailment as a supplemental food source. He said, “Directly below the train there is a popular hangout for fisherman, cat fisherman, usually African-American, low-income subsistence fishing... It's so highly utilized.” This reality was also shared by environmentalist Josh and city official David. Thus, the river is an important source of identity to people in the Lynchburg area and is also vital to the day-to-day livelihood of those that rely on its water and wildlife for food security or economic stability.

Witness Shae illuminated the importance of the river, as well as another significant symbol of Lynchburg: the railroad. According to her, “The River and the trains are important to Lynchburg.” Before considering responses about the impact of the railroad on the city, we will

briefly visit how the river, once the sole economic lifeblood of the area, was supplanted by the railroad.

From Reliance on the River to Reliance on the Railroad

It is perhaps unsurprising that the James River serves as an identity for the city of Lynchburg based on the history of the river's influence. This influence is visible not only symbolically, when considering the array of appellations around the city—as witness Zoey asserted, “We have James River *everything*”—but also in the development of commerce. Interestingly, this development ushers in another prominent identity as acknowledged by respondents: the railroad.

The James River was utilized for transportation of goods from Lynchburg to Richmond, Virginia prior to the presence of the railroads. Canoes were commonly used for the purpose of transport on the James River until the early 1700s when bateaus—long, narrow boats capable of navigating rapids—took over as the more common vessel, particularly for hauling tobacco. The bateaus facilitated in getting tobacco to the coast for shipment to England and this type of boat was prominent for several decades. In Lynchburg there is an annual festival celebrating the era (JRA 2016b). During the 1800s, the bateaus fell out of favor due to the development of the Kanawha Canal which opened traffic from Richmond to Lynchburg via the James River in 1840. Historians have documented the importance of the canal in the development of Lynchburg and cite it as central to the rise of Lynchburg as a port. The James River was the primary means for both communication and transportation in Virginia until the emergence of the railroad (Hill and Trout 1971).

The development of the railroads caused the downfall of the Kanawha Canal in the late 1800s. The canal system was sold in the year 1880 to the Alleghany Railroad Company which set the stage for the location of railroad tracks in Virginia including the tracks through Lynchburg. The tracks were laid on the former canal towpaths (Hill and Trout 1971), something respondents mentioned in interviews. Witness Zach briefly described the development of transportation and why railroad tracks shadow the James River for hundreds of miles in Virginia. Zach said,

The path of least resistance. You know how they got those, the prime real estate? Those were—and I've gone to the James River Tow Fest. These big wooden boats float down the James River from Lynchburg to Richmond each year. They used to haul, like, you know, it was like the post revolution, pre-Civil War era before the trains were [prominent]. So the bateau were put out of business by the canals, they could get bigger boats. Those are, in some areas at least, the path that the train goes over, was built up as the path for the donkey, or horse teams or whatever, to pull the canal boats down. And then basically, the train put the canals out of business, but when the canals went out of business, the trains scooped up all that property all along the river.

Witness Zoey and environmentalists Josh and Gary also mentioned the bateau during interviews, describing why it is that the trains hauling massive quantities of oil (and other hazardous materials) parallel the river, crossing it from time to time, for several miles. This was the most economically sensible way to construct the railroads tracks for the companies that built them, but from an environmental health standpoint when considering oil trains, it is far from ideal.

Much like the historic development of transportation in the Lynchburg area, at this juncture, the theme of the river as an identity in the community has given way to the rails as an identity. The following section considers the prevalence of the railroad in the community and how interviewees discussed the railroad and its significance in their responses.

THE RAILS

The railroads have been crucial to the development of Lynchburg and replaced the James River as the primary method of transportation and communication in Virginia (Hill and Trout 1971). One embodiment of the influence of rail in Lynchburg can be readily seen in The Depot Grille, the restaurant that was evacuated and later served as home base for first responders. The restaurant stayed open 24 hours a day for over a week to accommodate the needs of officials and contracted clean-up crews. The Depot Grille operates in an old rail station, sitting just feet from the tracks. Inside, the kitchen was converted from old railroad freight cars, there is a private dining room with antique railroad prints, and there is a hand-built model train in the restaurant. Through large dining room windows, patrons can also watch trains travel by from their table (The Depot Grille 2013) and, as witness Lori previously described, patrons and workers watched through those same windows as an oil train derailed. Another example of the influence of the railroad in modern Lynchburg is the annual Lynchburg Rail Day which brings together railroad modelers and enthusiasts to celebrate railroad heritage of the area (Blue Ridge Chapter National Railway Historical Society 2016).

During interviews, some respondents discussed the importance of the railroad both in the development of Lynchburg and to the city currently. In one instance, the derailment put a concrete identity to the railroad itself. Witness Zoey stated, “The derailment made me aware that CSX existed.” Despite working at the children’s museum, Amazement Square just yards from the tracks for several months (including during the derailment), she was unaware of the entity that operated on the tracks. Witness Denise reflected that the sound of the derailment was out of the ordinary based on her daily experiences “because we hear trains all day.” These responses by

Denise and Zoey, who were both at the museum during the derailment, and the visual meal-time entertainment provided by passing trains at The Depot Grille, suggest the integration of the rail into the fabric of daily life in the downtown area. The active proximal tracks are heavily utilized by the two railroad corporations that operate in the city, Norfolk Southern and CSX, though due to lower oil prices (Sider 2015 April 6), oil shipments have become less frequent since the year of the derailment (see AAR 2016).

Denise described the importance of the railroad to daily life and business, also mentioning the river in her response:

This community was built off around those train tracks. Our building (Amazement Square) was built specifically in this place to serve off of the river and then conveniently off the railroad so that as you traveled you could unload. The building itself was just a warehouse for many years. The Depot Grill is where the train station was so you could unload and store here.

Witness Hank revealed his idea about the reciprocal relationship between the community and the railroads. He said, "I support the railroad because the railroad supports us... You can't survive without the railroad. It's like cutting off the power." Though Hank used a simile about energy to relay the significance of the railroad, first responder Wade talked about how, in reality, railroads have adapted the energy materials they ship due to broader changes in politics and the energy consumption. He said,

See, the coal, because of the EPA restrictions, and as they call it, "President Obama's War on Coal" and with the shift from where we get our energy from, the coal is dying down. The coal doesn't really serve that much of a hazard if it rolls over unless it rolls over onto a building or a car or whatever. Obviously this is more [of a hazard], but they're picking up because the energy has got to come from somewhere so the Bakken [crude oil] is taking the place of the coal. We're getting it by controversial means. We're getting it out of the ground here, in this country, because the country got tired of depending on foreign oil so now we're going with domestic. Well that's creating, obviously, there is going to be more and more of it going up and down the rails. I don't quite understand why, from a weight perspective, they're having more problems with this than they did say with the coal trains, but maybe this is drawing more attention because of its source and the potential for catastrophe.

Environmentalists Josh and Gary also mentioned the reality of the surge in oil-by-rail as a means for the rail industry to compensate for the decline in coal shipments. Gary said, “They’re looking to beef up, make up for that loss in any way they can so they’re carrying crude oil, anything they can to keep the dream.”

For another witness, Shae, the railroad has two distinct realities: “It’s the romance of the trains versus the terror of the trains and that’s always a balance. And something like this raises the terror awareness, the fright. But I think, overall, the charm and the romance of the trains is still larger.” Thus, despite the potential for trepidation (i.e. a derailment—see Chapter 4 about emotional and psychological victimization), for Shae, the romantic element of the railroad and its intimate ties to Lynchburg trump the potential for disaster.

While discussing the significance of the railroad in Lynchburg, one respondent, environmentalist Gary, also talked about the prominence of the railroad industry in Lynchburg, also mentioning their importance more broadly, but he also spoke to the exceptional and preferential treatment of railroads as commercial entities. Gary said,

It would be worth it to talk to a lawyer about all of the special conditions that exist for the railroad industry... The rail industry, just because how long they’ve been around and how important they are to the history of the commerce of the country—there’s no denying that—but at some point they need to be held accountable.

Further, Gary described how the company that insured the railroad company responsible for the horrific disaster in Lac-Mégantic was ultimately incapable of covering the cost of the disaster. He stated that they “went bankrupt overnight. So who’s footing the bill for that? The taxpayers of Quebec.” Gary also pointed to differential treatment of railroads:

If you or I were to seek insurance for our homes, we would probably provide some of this information (possession of hazardous materials), but for these substances being carried through our communities, the rail industry is not being held to the same [standard].

Specifically, Gary was referring to the railroad industry's exclusion from the Emergency Planning & Community Right-to-Know Act of 1986, which serves to give communities information about the presence of dangerous materials (more about this in Chapter 6). This exclusion is at least partially responsible for Lynchburg being unaware of Bakken crude oil being shipped regularly through the city. According to Gary, the exceptional treatment contributes to complacency about oil-by-rail shipments and railroad business. He claimed, "I believe it's (safety concern) been dismissed. I think that there's emotion at work to make certain [that] people do not think of this when they think of rail. They think that the rail industry is doing nothing but providing safety." Also insinuating that the railroad industry receives special treatment, both environmentalist Gary and witness Zach stated their beliefs that the railroad industry is "overly self-regulated" and implied that tighter legislative constraints or regulatory control should be put in place. Due to the power and significance of railroads in the United States, the industry enjoys exceptional and beneficial treatment in some regards (see Friedman 1973).

When speaking about the importance of the railroad in Lynchburg, and the US more generally, some respondents invoked broader issues about methods of crude oil shipment and the state of US infrastructure, including railroads. The following section relays responses about these two issues.

Pipelines and Infrastructure

Multiple respondents spoke about oil pipelines in their consideration of the rail industry both as a potential solution to preventing explosive derailments and with skepticism. Witness Hank expressed the contradiction in his support for the railroad for its development opportunities but pipelines for safety as he said,

I support the railroad because the railroad supports us. That being said, I'd much rather see a pipeline, its much safer. Much safer idea. But uh, you know, a lot of people, you known, the outrage. I think some people, they had their pitchforks out and were ready to get 'em. You can't survive without the railroad. It's like cutting of the power. So it was real interesting conversations.

Witness Blake also talked about an oil pipeline in his response. He said,

Later when we found out it was Bakken crude, everyone had the debate: "Why? Why are we bringing Bakken crude?" Somebody said, "They shouldn't even be hauling that stuff." But at the same time, how do you expect it to get here? You're against the pipeline and you're against them hauling it... I don't think we will have an answer to what's the best way to haul crude and that type of crude. To me, it makes more sense to haul it in a pipeline. It's got to be safer. Unless somebody shoots a hole in the pipeline or whatever, but still there's a way to see something is going on there.

Environmentalist Gary did not view a pipeline as the ideal alternative and expressed how rail derailments may be used to push a pipeline agenda. Gary pondered,

Is this the best mode to be carrying this? I'm not telling you a pipeline is the answer. A lot of pipeline proponents are using this as "Oh, we just need more pipelines." And, but, check that out too. Show me a pipeline that carries this safely. You tend to have fewer spills out of a pipeline, but you tend to have greater volumes, far greater volumes.

Witness Hank expressed significant concerns that revealed the complexity of the issue; he talked about rhetoric around the use of pipelines and also spoke about infrastructure concerns as a result of frequent oil train derailments:

Everybody that was pissed off about the trains is now pissed off about the pipeline. So, you known, lasting effects, I don't think so. If you had lasting effects, I think people would say "let's put this pipeline in so we don't blow up our community." I think hauling Bakken crude or any crude oil, any crude oil... It's all flammable. All it needs is an ignition source. So, we can't haul this stuff around on rail cars and not expect to have this happen again. So lasting effects... I don't want a damn pipeline running through my backyard as much as the next guy. But from a safety standpoint, from a father of four standpoint, from a community standpoint. Sometimes you have to look at a situation and go, you know, "What's good for us here?" And like the many pipelines that traverse our countryside now, it's good. "What if a pipeline breaks?" Well, the pipeline is broken off into sections so they can sit down and manage that section remotely from anywhere, from anyone of their control panels. Rail cars, you know, if this thing had gotten hot enough, it would have just kept popping cars. They have a blow-off valve on them... People don't realize if the temperatures would have gotten a little hotter down here those cars would have started popping off. And they're designed to pop off. But like West Virginia (The

Mt. Carbon, WV derailment), it's a huge mess. It burn houses down, it destroys habitat. I mean, you got to put the stuff in a damn pipe. That's just my opinion... Like I said, I don't want a pipeline, but at some point in time you have to realize, if you've got however many thousand fuel cars coming through here every year. Let's do the math on this. We've had two major derailments within 500 miles of each other, not to mention North Carolina, I think Georgia, and of course the awful one up in Canada. Statistically speaking, yeah it may be the same odds as winning the lottery, but you know what? Last time I checked, someone won the lottery. So it will—it's a statistical anomaly. We will have this continue to happen. There's no way of retrofitting the rail industry in any effective window. By the time you do retrofit it, those new cars will be obsolete. By the time you replace the whole fleet, you'll have problems with the new ones. So you just got to get the shit of the rails. The rails are very valuable to us, but I don't think hauling fuel is their strong suit. And I don't even know that the railroad wants to haul fuel. I really don't.

Other respondents voiced concern about the state of infrastructure as part of the equation for not only the Lynchburg derailment, but others in the US. Witness Zach talked broadly about US infrastructure as old and in disrepair, using examples from central Virginia. He said,

I don't think people in this country, in general, understand—and I'm still learning—is our infrastructure is ancient. I mean, a guy told me the other day that he sells transmitters, basically things that transmit electricity... and they pulled one out that was 98 years old, still running. But, when I was in the Shenandoah Valley, I remember there were water pipes, they're digging them up and they're 100 years old. This is not just about train tracks. I don't think that is understood. Our infrastructure is falling—I mean, read what Anthony Foxx has to say about our infrastructure. Like, he said it's embarrass—he's embarrassed. He's the highest transportation official and he's embarrassed of the infrastructure in this country.

Environmentalist Josh spoke about the rails more specifically when considering infrastructure.

He said, “The lines, you know, the train lines were laid right on top of the old towpath. Now, that's a train line that hasn't changed in 200 years. I mean, come on!” Similarly,

Environmentalist Gary described a specific aspect relevant to railroads when he explained the poor quality of the rails, saying that it is

Infrastructure that's really, really old and uninspected. If you look at their bridges, there's no federal inspection requirements for that. Waterkeeper Alliance is inspecting the river now from afar as best we can to look for just obvious messes and in some parts of the country there's some bad ones. There was a really good video piece in Canada where actual inspectors that were contracted out by a Canadian rail company were on scene and

sent in a film crew, who had gotten wind of it, and showed up to watch them and they were actually scraping off, just, putting their hand through solid steel because they were scraping away at it, it was in such awful shape. And then the rail industry got out there and said “Get out of here!” They were on public property, they were on the public right-of-way so they couldn’t, but you know. I can’t say that’s the state of most rail bridges in Virginia, but neither can the federal government or even the state government because it’s all self-reported and the degree to which they have to report can be as simple as Federal Railroad Administration saying “Did you perform your inspections this year, Norfolk Southern, CSX, BNSF?” and they say, “Yes we did.” Send. Inspection is done! And so that’s a problem, I believe. There needs to be some sort of inspection and recordation and documentation to insure that we don’t have—because this is crossing, it’s paralleling the James, but it’s crossing, God knows, dozens of tributaries typically built on bridges that were built in the 1830s. They were served as bridges for the old canal system.

A few respondents indirectly mentioned infrastructure in responses about the derailment.

Witness Blake spoke about his perception of the infrastructure as unstable and yet still being used to ship massive quantities of crude oil. He said,

But when you have a base of a train track that follows a river for, I don’t know, pre-Civil War times, and the river doesn’t stay straight. We had had a lot of moisture and I think that helped make it give way, but when you slowed that train down, it gets heavier and heavier... I think the media was going after them, and I’m kind of a realist. Its metal bars going across pieces of wood next to a body of water. So how stable is that in any fantasy. I think a lot of people wanted to say, it’s somebody’s fault. At the same time, things happen. As much as you try to estimate when a bank on the side of the river is going to give way to a certain amount of weight going a certain speed. I don’t think that’s realistic.

In his response, he spoke about moisture which, in his estimation, contributed to the track failure.

Other respondents spoke about heavy rains and wet conditions contributing to the derailment.

Witness Vince, for instance, stated, “I think it had rained a lot. I think that certainly contributed to that wash out.” Similarly, Lori said of the derailment:

From what I had read and understood, the tracks were loose. The ground had washed away and the tracks were loose. Once you could actually see when you went on the other side of the river when you looked back toward The Depot Grille. It looked like the train tracks literally slid, like lost ground, and the train fell off track.

Witness Shae, who was considering the regulatory fine assessed, insisted her belief that it was not “really warranted for CSX to have to pay such a fine,” partially because “it was a sloppy,

gummy, wet time and it (the track) gave way.” Media reports also speculated that rain may have been the culprit for the derailment (Springston and Martz 2014 May 1). Despite media reports, upon completion of the National Transportation Safety Board’s (NTSB 2016) investigation of the Lynchburg derailment, neither inclement weather nor heavy precipitation were cited as the cause of the disaster.

For a few respondents, the derailment provided a sense of community and togetherness in the time immediately following the event. As part of this sense of cohesiveness, several respondents described their beliefs that Lynchburg “dodged a bullet” by just narrowly avoiding catastrophe.

A Sense of Community: “We Dodged a Bullet”

A few respondents spoke to how the derailment, if only for a short time, served to galvanize the community and many respondents commended the response by local officials.

Witness Lori said of the event:

It was cleaned up quickly and people came from far and wide to help clean it up. So, I just think Lynchburg is a really good example of how things can go well. When things go wrong, things can go really well. You never want these kinds of things to happen, but we did set a precedent for—an example for—other communities

Witness Shae also described the vibe of the community as positive and strong post-derailment.

She said,

I think overall it was like the first part of a disaster where they bonded and told their stories and supported each other and just had a tremendous sense of relief that it wasn’t worse. There was a lot of shivering and shaking that was going on after people realized that more cars could have blown up and it would have been the end of the block, it would have been the end of the town if more of the cars had caught on fire instead of the one went into the river and caught on fire and dissipated that way. So there was just a tremendous amount of relief.

Speaking to her personal experience after the event, witness Zoey said, “I feel like it’s something that changes you, but only temporarily. I felt an overwhelming Lynchburg thing was we were all

really invested in bringing everything back and making sure everything was okay.” According to witness Shae, this feeling of community lasted “a week or more. In a less traumatic way it went on for months. Anywhere you went in town, it was: ‘where were you when the train derailed?’ It was a serious event.” Shae even stated at the time of the interview, some sixteen months after the derailment, that this sense was still present.

As suggested by Shae, much of the community sentimentality revolved around the realization that the community could have had a much more disastrous experience with the derailment. Several respondents indicated their feeling that Lynchburg “dodged a bullet” or was otherwise lucky due to how the derailment transpired when considering the ways in which it could have been worse. Environmentalist Gary, city official David, and witnesses Andrea and Vince all suggested that the city “dodged a bullet” when reflecting on the event. For instance, Witness Andrea said,

I heard it said that we *dodged a bullet* with this one and we did because [if] the same wreck would have happened at the same time of day in [summer] 2015 a lot of people and a lot of cars would have been down there. Because we got more people down here, we’ve got more business down here, it’s a different time of the year, and people are out. Oh my gosh, It would have been catastrophic!

Witness Vince described relief in the community based on potential casualties near the site. He said, “I would say there was more of a sense of relief that we *dodged a bullet*. The fact that it was so close to the children’s museum, amazement square, and the potential of a disaster there.” Though he did not claim the community “dodged a bullet,” witness Hank said, “You know, it could be a lot worse. I heard more of that than I heard people like ‘burn the railroad!’” Other respondents spoke more generally about being “lucky” about how event unfolded. First Responder Ralph said, “All I heard was ‘Wow that’s pretty bad, we’re lucky it wasn’t worse!’” Speaking more specifically about the perceived luck surrounding the derailment, witness Blake

said, “The lucky part of it is that it was on a day with a slight drizzle and the wind was at zero and along any river, you’ll find there’s always a breeze. This day it was nothing. So the smoke and everything went straight up.”

Three interviewees discussed the idea of a ‘worst-case scenario.’ Witness Zach claimed that the ‘worst-case scenario’ would be what happened in Lac-Mégantic. First responder Ralph spoke about the potential ‘worst-case scenario’ for Lynchburg: “I tell people all the time, everywhere I go I get asked the same question, ‘Well what would have happened if the train had rolled the other way?’ and my answer to that is ‘We’d be having a different conversation.’ I can only speculate what would have happened if it had rolled the other way. It would have been catastrophic.” Environmentalist Gary also talked about ‘worst-case scenarios.’ He said that first responders, specifically, “Washington State officials, fire chiefs basically, made statements of ‘We need worst-case scenarios. You (the railroad industry) need to provide those. We need to know worst-case scenarios so we can make response plans.’ The rail industries have continuously refused to provide those.” Other localities have expressed concern for the rail industry’s silence about its emergency response protocol. In early 2016, emergency responders in Minnesota requested that policymakers require railroad companies to share their disaster planning records on the grounds that more detail is needed in case of a derailment. The railroad industry has resisted this request for additional information (Rao 2016 April 7).

As a final statement to close the consideration of ‘luck’ and the sense of ‘dodging a bullet’, environmentalist Gary said, “We dodged a bullet. There is no doubt about that. It’s just how—do we need to keep playing Russian roulette every day? Is this smart?”

CONCLUSION

Interviews revealed two identities significant to individuals in Lynchburg: the James River and the railroad. These identities served to help the community make sense of the 2014 Lynchburg train derailment. The James River was vital to the development of Lynchburg as a port and was the primary source of transportation and communication in the city before the advent of the railroad. Today, the River is a symbol of the city to which many feel a strong tie and continue to depend upon. The significance of the river is omnipresent in the community from the city logo to a slew of businesses that use the James River as part of their titles. Further, for some in the city, the river was of utmost concern in the wake of the derailment.

The railroad is also of pronounced significance to many in the city. Ironically, a restaurant, The Depot Grille—a railroad-themed restaurant in an repurposed train station—was evacuated and eventually served as home base for CSX and clean-up crews after the derailment. The railroad is interwoven into downtown life in Lynchburg and many in the community view the railroad as quintessential to the development of commercial success in the city. Historically, railroad tracks replaced canal towpaths due to the convenience and cheap nature of the plots of lands owned by a dying canal industry. As a result, train tracks shadow the James River through Lynchburg and hundreds of miles in Virginia. Respondents also discussed the changing nature of railroad transportation and the influx of oil shipments which have helped fill the void for railroads due to the declining coal industry. Respondents revealed that railroads have a history of exceptional preferential treatment and some used the derailment as an argument for the use of oil pipelines in lieu of train transportation, though others recognized the complexity of the issue of trains versus pipelines. Broadly, the issue of insufficient and crumbling infrastructure was described by interviewees including how this relates specifically to the railroad industry in the

shipment of crude oil. Some respondents viewed substantial precipitation to have caused the derailment, though the federal investigation did not cite weather in its final report released almost two years after the derailment. Media reports echoed the suggestion of weather as the culprit responsible for the derailment. A few respondents felt the media was actively attempting to denigrate CSX.

Finally, a sense of community was garnered as part of post-derailment realizations for some in the city of Lynchburg. Many respondents acknowledged that the event had the potential to be catastrophic, a realization which some interviewees referred to as the community having “dodged a bullet.” Others described the community as “lucky” for the way the derailment played out. For a couple of respondents, the idea of a “worst-case scenario” was an important consideration, particularly for preparedness of first responders.

CHAPTER VI

TRANSPORTATION TRANSPARENCY AND THE THREAT OF TERRORISM

I think we, as community members, deserve better. We are gonna inherit all these risks and none of the benefits. –Gary

Throughout interviews with individuals familiar with the Lynchburg derailment, respondents revealed the issue of awareness in the city of Bakken crude (and other hazardous materials) being transported through the downtown area. This transparency, or lack thereof, was mentioned during conversations with witnesses, first responders, environmentalists and journalists. The following discussion details how transparency played a role in first response after the derailment and community reaction to the event once the smoke, quite literally, cleared. This chapter begins by presenting individuals' responses that raised the issue of transparency followed by an examination of the implications of the level of knowledge on the ground. Next, the chapter examines how terrorism emerged as part of the theme of transparency by situating it within a green criminological framework and contextualizing it within powerful societal narratives. Finally, this discussion considers one significant safety concern which resulted from resistance of transparent practices of train oil transportation.

TRANSPARENCY OF TRAIN TRANSPORTATION

Witnesses to the event, as detailed in Chapter IV, described a chaotic and hurried evacuation from the site of the derailment. First-responder Ralph described the exodus as a “self-evacuation” to explain how, once the derailment, explosion and fire occurred, folks in the area did not wait around for first responders or city officials to ask them to vacate. Though most, if not all people were exiting the immediate area around the derailment, it became apparent through interviews that there was a great deal of uncertainty about exactly from *what* they were fleeing. Since the landscape of the city is such that one descends down a substantial hill to the river and tracks from the central downtown area, the vantage point allowed some of the witnesses to identify the disturbance as a train derailment; some could clearly see the massive plumes of black smoke that billowed out of the train and James River. A few witnesses, such as Blake, Hank, Andrea and Vince, observed the train as the source of the fire and smoke due to their specific vantage points. Others were not aware of the source of the stories-high sheet of smoke arising from the waterfront area. Zoey, a witness working nearby, was confident that it was a vehicle fire creating “this amazing amount of fire.” In fact, the first call to responders was for a vehicle fire (NTSB 2015). Others not in the immediate vicinity at the moment of the derailment, such as first responders, became aware of the train as the source of the smoke and fire through the emergency call or observation once at the scene. Still others relied on local and/or national news accounts to determine the cause of the disruption.

Questions of the source, though significant in the minutes immediately following the derailment, quickly became replaced by questions of the contents of the train; it was the contents that remained a mystery to most respondents including first responders. Witness Blake, for

instance, said he “no idea” when asked if he knew what was being shipped by the derailed train.

He continued “obviously it was a tanker. So it was a question of what was in there burning.”

Though witnesses and those proximal to the event may not have known the exact contents, some speculated and made inferences. Blake continued:

You knew it was some petroleum product, but you had no idea. But I could tell from the heat. You feel the heat... by the time you see it, you can feel it. You’re not smelling it, but the heat is that far. I was standing on this opposite side of street here [Jefferson Street].

Witness Hank similarly stated “I knew more than likely it was a fuel because it was a black plume, but, you know, you couldn’t smell it and you didn’t know for sure.” Hank also inferred that it was oil based on a previous conversation with an acquaintance who pointed out what they believed to be oil trains traveling through with greater frequency. This awareness was unique among respondents because the vast majority were oblivious to increased oil train traffic through Lynchburg, to include first responders.

Knowledge of the contents is of significant concern to those responsible for responding to and mitigating the effects of the derailment, namely first responders. Official documents from NTSB as well as interviews with first responders highlighted issues pertaining to the difficulty of discovering the particulars about the contents of the train. First responder Ralph explained that responders were able to identify the contents as petroleum crude oil:

the placard that was on the tank cars that we visualized is a 1267 placard number. We were able to identify it was petroleum crude...there’s all different kinds of type of petroleum crude that would fall under 1267. So we weren’t able to determine that it was actually 1267 until we had received the MSDS (Material Safety Data Sheet) sheets.

A major issue during the initial phase of response was determining to whom the train belonged. According to a report from the National Transportation Safety Board (2015), two railroad companies operate along the James River in downtown Lynchburg: Norfolk Southern and CSX. However, first responders did not know to which corporation the train belonged.

Within 45 minutes of the derailment, a Norfolk Southern representative was on scene and determined the train did not belong to Norfolk Southern. First responders then “made multiple, multiple notifications to the railroad to get someone from CSX to come to the command post... So there was a little bit of delay and a little bit of confusion on getting the information from CSX to us” (NTSB 2015: 10-11).

About the delay, the incident commander said “I felt, from an incident commander’s perspective, that that two hours was a little bit long.” (NTSB 2015: 30). The representative arrived around 4pm, but the incident commander determined that a highly ranked public safety official would be contacted if a representative was not on scene by 4:05pm (over two hours after the train derailed) (NTSB 2015).

Determination of train ownership was important so that first responders could get details about the train including information about the length of the train, the number of cars, and how much of the train consisted of the petroleum product. This information is provided in what is known as a “Consist.” The initial information was forwarded to the police department instead of fire personnel. When information was provided, it was a three-page document simply listing the cars making up the train as opposed to the Consist which contains specific information on all of the individual cars. The Consist was forwarded some time later. The initial information revealed that the 104-car train was comprised of two locomotives, one car of industrial sands, and the rest of the cars were carrying crude oil (NTSB 2015).

The lack of immediate, or event-specific, transparency of the details of the oil shipment specific to the Lynchburg derailment is one way that the community was kept ignorant of the threat of oil trains. A second way that Lynchburg officials and citizens lacked information about the oil train threat was that there was no general transparency about the presence or details of oil

trains in the city. The lack of general transparency will be discussed in a broader context later.

However, to understand this idea, a quote from environmentalist Gary is instructive:

The issue here is that there is no transparency about it. They won't share it [details about rail shipments], the rail industry consistently claims two reasons why they won't though there is conflicting information out there saying that those aren't real points. One is domestic terrorism, or terrorism... The other one being that these are trade secrets and that if CSX, for example on the East Coast, if CSX finds out what Norfolk Southern is carrying where and when that they may have some leg up and be able to outcompete them.

The first of these two reasons, terrorism, is the subject of the next section. The second reason points to railroads considering the information of the contents of their trains as proprietary. First responder Ralph described the situation regarding proprietary information:

But you have to remember too that a lot of this is proprietary. BNSF does not want CSX to know what they're carrying or their business practice nor does Santa Fe want Union Pacific want Norfolk Southern what they're doing. So there's a reluctance to just put it out there to the public. Its business information. I jokingly told someone the analogy I used was kind of like asking KFC to give up their secret recipe to Bojangles' or McDonald's to give up the Big Mac sauce to Burger King. They're not going to do that. They'll tell ya what's in a Big Mac, but they're not going to tell you how to make it. Those seven Class 1 railroads are in business to make money; the other six are competitors to the one. They're reluctant just to share it with everybody but we are getting more information.

Individuals concerned with human health in the community voiced consternation concerning the lack of information from railroad companies about the hazards of their shipments.

Environmentalist Gary stated of the issue:

From my perspective, is that really, I guess from a human health perspective, is that information really so valuable that you can't inform people what's good and bad? That's where I'm coming from. I'm not asking for a detailed schedule, but I do think people should be—communities deserve to know what's coming through and how much... I think a large part of the reason that people are not responding, in my mind, appropriately to this, is the railroad industry and the oil and gas industry are doing a fantastic job of keeping it hidden from the public view... I think we as community members deserve better. We are gonna inherit all these risks and none of the benefits.

Similarly expressing the relative risk compared to the benefits the city gets specifically from having massive shipments of Bakken crude oil traveling through Lynchburg, Vince echoed, “We get no benefit from having the trains roll through.”

Considering contents, locations, quantities, frequency, and times of oil train shipments as proprietary has been a contentious issue. The US federal government intervened about transparency and notification. By Emergency Order (EO), the US Department of Transportation mandated that all railroad carriers that transport 1,000,000 gallons or more of Bakken petroleum crude oil in a single train must notify the states that the train will be traveling through. This notification mandate came on May 7, 2014, just one week after the Lynchburg derailment and applies *only* to Bakken crude oil. There are 4 major requirements of the notifications: (1) give a reasonable estimate about how many trains are expected to travel through jurisdictions on a weekly basis (and which counties); (2) identifications and description of the crude oil expected to be involved; (3) afford all emergency response information; and (4) identify oil train routes (USDOT 2014).

This notification requirement has its roots in the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (USDOT 2014). This legislation, instigated by the 1984 Bhopal, India disaster, requires reporting of hazardous and toxic chemicals to increase community and environmental health and safety. Part of this act was making MSDS available (EPA 2015) which was previously mentioned by Ralph, a first responder. Section 322 of this legislation allows facilities to withhold detailed information provided the facility submit a claim to the EPA substantiating its claim that revealing such information would amount to sharing a trade secret (EPA 2015). Railroads are not included in the federal EPCRA law or the Oil Pollution Act of 1990 which was enacted after the 11 million gallon Exxon Valdez spill in

Alaska. This means that accountability is not being imposed at the federal level to the railroad industry as it is to other industries (Nussbaum, 2015 May 24). Until the May 7, 2014 Emergency Order from DOT which was after the Lynchburg disaster, the claim of railroad shipment information being proprietary was preventing Lynchburg (and other communities in the US) from being aware that a dangerous material was being shipped regularly in massive quantities through the city. This imposition of notification was resisted by the railroad industry. Two different railroad trade groups asked DOT to suspend the requirement to notify state officials of rail shipments of oil though the requirement was not lifted in Virginia (Tate 2014 October 6).

Respondents addressed the issue of notification. Andrea described disbelief that the city was not aware of the oil shipments:

One of the things that I didn't know that I think we should know is how much oil is coming through our city—when and by who and everything about it. I think we should know that. I don't think that we knew before now. I think that at minimum that should be available information and it shouldn't take a tragedy to realize the importance of that disclosure... just the importance of everything around this procedure from notifying the city as to how much oil is coming through, when its coming through, what's the maximum amount of cars that should be on the train. Everything. All of that information should be readily available for every city always and forever... we ought to know that kind of stuff.

Though notification was mentioned by many respondents, some described the limited nature of notification as it relates to community health in Lynchburg. Witness Vince, when probed about any recognizable changes in the city since the derailment, said “the notification. I know they started requiring the railroads to give notification to the city when they come through. But at the same time, there have been times we've had nuclear materials come through town on trains and nobody knows it's on there.”

First responders, arguably those in the community most impacted by notifications in terms of the need to be prepared in case of emergency, discussed the change as well. About the

change, Ralph said, “Since that time, there has been a change in the paging system. We are still getting, I think—Chief even made a comment today, he’s getting commodity flow reports from the railroads now. We used to not get a lot of things, now we’re getting a lot that we used to not get.” Wade discussed his personal experience with the notification system and also similarly applied it to broader concerns for the city:

I don’t know how far down the chain the notification happens. I don’t know if the city, as an entity, is notified and I don’t know how far that comes. In other words, how saturated does it get in the fire department? I don’t know. I don’t see it. And as I pointed out a minute ago—and I don’t mean to sound callous about it—but that’s just one of many things that travels the rails, travels the roads. It’s every day. So, yes, does it help notifying us? Yes, does it help if they are going to increase their track inspections and also decrease the speed through the city through urban areas? Yes, all that is a great asset.

Regarding the Emergency Order, the American Short Line and Regional Railroad Association (ASLRRA) along with the Association of American Railroads (AAR) commented to the FRA that information about crude oil routes is security-sensitive and commercially-sensitive so should be confidential rather than publically accessible (FRA 2014). The EO set forth by DOT established the notification precedent as a new temporary standard, but this EO was to be phased out when a final rule regarding rail transportation of flammable liquids was set forth by DOT on May 1, 2015 (Donnelly 2015 June 5; USDOT 2015). The Pipeline and Hazardous Materials Administration (PHMSA) announced later that month that the 2014 Emergency Order would remain in effect while a permanent solution is considered (PHMSA 2015b). Despite the imposition of a notification requirement by DOT, on July 23, 2014, Norfolk Southern, the owner of the other tracks in downtown Lynchburg, filed a complaint to receive injunctive relief of giving notification in Maryland. CSX did the same the next day. Thus, two major railroads are suing a state to prevent their requirement to disclose their crude oil shipments on the grounds that it would compromise their proprietary information and it presents a security threat. This legal

action is a result of media attempts to release documents to the public about oil train shipments under the Public Information Act (Rector 2014 July 28).

Maryland is not the only state that has grappled with this issue. Maine, one of the largest oil exporting states in the US, has formally addressed transparency. Despite the state's Freedom of Access Act, intended to prioritize the right of the public to know about the presence of dangerous materials in their communities, legislators in the state passed "An Act Regarding the Confidentiality of Railroad Carrier Cargo" which made information of rail shipments containing hazardous materials confidential and gives railroad companies the right to volunteer to share the information (Sherwood 2016 February 10). Railroads, of course, previously had this right, but the requirement of states to keep shipment information confidential was now enshrined in law. This bill, which was made a law following no debate and a gubernatorial veto override, does not require railroads to share information with first responders. The current state of the situation in Maine is that first responders and residents are kept in the dark about the presence of oil trains or any details of shipments (Sherwood 2016 February 10).

Just weeks after the DOT final rule and PHMSA briefing about continuance of the notification, in July, 2015, the Federal Railroad Administration (FRA) sent a letter again instructing railroad companies of their obligation to continually notify appropriate state agencies of their Bakken shipments. According to U.S. Transportation Secretary Anthony Foxx, "Transparency is a critical piece of the federal government's comprehensive approach to safety." This sentiment was echoed by Sara Feinberg, the acting Administrator of the FRA: "We strongly support transparency and public notification to the fullest extent possible." (FRA 2015b). Despite the DOT mandate and the formal reminder from FRA, railroads, including CSX, have resisted complying with the notification standard. DOT simultaneously requested that states, through

confidentiality agreements, not share any of the information that state emergency response commissions acquire from railroad companies. This information is for people who have a “need-to-know” according to DOT and, in many cases, railroad companies require a signed confidentiality agreement before relinquishing information to states. Some states, including Delaware and Oklahoma, have signed such documents, while several others, including California, New Jersey, and Louisiana agreed to not release information to the public. A slew of other states have denied the request to sign agreements on the grounds of interference with freedom of information laws. Contrary to the urging of DOT and NTSB, who is charged with investigating derailments including the Lynchburg event and promoting transportation safety, highlighted the benefits this information being publicly available (Donnelly 2015 June 5).

The claim of proprietary information as a rationale for not releasing information on oil shipments is just part of the equation. Another integral part to fully understanding the lack of transparency about the nature and extent of oil shipments by rail—and why community awareness about these shipments has been and continues to be curtailed—is safety. By safety, what is really meant is the threat of terrorism, or at least the perceived threat of it.

THE “THREAT” OF TERRORISM

As conferred in the previous section, interviewees discussed the lack of transparency of train transportation. This consideration of the extent to which first responders, public officials, and communities-at-large are knowledgeable of the contents of rail shipments through their communities (and the frequency, amount, and times of these shipments) brings this project to an intersection with terrorism. This surprising node is significant for both theoretical and practical reasons which result in real consequences for the city of Lynchburg and other communities that

now have oil trains passing through. This section explores this connection. First, a broader framework of terrorism is briefly presented followed by a more nuanced deliberation of the inclusion of terrorism in green criminology. Next, responses from interviewees pertaining to this issue and the nature of this intersection are considered. Finally, the implications of such a narrative of terrorism permeating the issue of oil trains and public health/safety are discussed.

Eco-terrorism and Environmental Terrorism

To begin this conversation about how terrorism and its logics have infiltrated the public understandings of the realities of rail transportation of oil, some terms of reference must be established. The most obvious of these is ‘terrorism’ of course, but its specific application to considerations of the environment is also important. Unlike many definitions within criminology, such as burglary, the classification of terrorism is more difficult since the motivations which underlie the action are significant (Jenkins 2003). It has been noted that establishing a definition for terrorism is quite difficult and inherently complex (see Chomsky 2001). Differing definitions are used by interested parties to include research communities as well as federal and international governing bodies. Finding an agreed upon definition has been a challenge for these entities. However, the following definition from the US Federal Bureau of Investigation (FBI) is generally utilized by law enforcement affiliates: “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives” (NIJ 2011: 1). This definition represents the official narrative on terrorism within the United States, but designating the label of ‘terrorist’ may also be seen as a subjective or moral endeavor. Further, a state may even be involved in terrorism which complicates the deployment of official definitions. Many actions and

motivations undergird activities denoted as terrorism against a wide range of targets by a variety of actors (Mythen and Walklate 2006) which makes pinning down a single definition quite difficult. This official designation and the power of the official narrative will be considered later in this section.

Pertinent to this consideration, the environment may also have a role in terrorism. Two terms relating to the environment and terrorism reflect this role: *environmental terrorism* and *eco-terrorism*. Mancuso-Smith (2006) writes that environmental terrorism occurs when a natural resource is the target of an attack based on the premise that the attack will negatively affect humans or create fear. On the other hand, eco-terrorism targets some structure, manmade or physical (like a house, equipment, a dam, etc.) as opposed to a natural resource. With eco-terrorism, the destruction has the aim of causing economic harm against an entity that the perpetrator perceives as an enemy of the environment. The term “eco-terrorism” is one used most often by those opposed to the means of such activities. Other terms, particularly “ecodefense”, are used by those who support or engage in these actions. Environmental terrorism and eco-terrorism are frequently deployed interchangeably since the natural environment is central to both types of terrorism and the groups that typically engage in these actions tend to be organizationally similar (Mancuso-Smith 2006).

Green criminology has considered the application of the label of (eco-)terrorist to various activist groups who use “extreme” measures to advocate against some environmental harm. These groups tend to be grass-roots organizations that engage in direct activity to push their agendas. Since these groups are often considered radical, they are also often subject to intense responses by the state including through a terrorist designation (Nurse 2016). One example of the consideration of terrorism by the subfield is with the Earth Liberation Front (ELF) which has

been subjected to legal action via US terrorism laws, thus earning an official label as a terrorist organization. However according to Loadenthal (2013), this label is inaccurate particularly due to their nonviolent commitment. Green criminology has highlighted the propensity for activist groups to be criminalized, often through the verbiage of terrorism. Rob White (2007) noted that organizations with goals of preserving the environment and animal rights threaten the overarching ideology of 'political economy' which is inherent to environmental exploitation that characterizes a capitalist system. As such, organizations that directly act against this hegemonic ideology are often subject to criminalization. Eco-terrorism has also been addressed legally and actions that are officially characterized as such are now subject to strict criminal sanctions under the Animal Enterprise Terrorism Act of 2006 (AETA) (White 2008). Critics say this legislation has been broadly interpreted to include anyone that interferes with a private entity's business operations involving animal exploitation. As opposed to combatting terrorism, opponents claim that the legislation has been used to secure profits (Del Gandio and Nocella II 2014).

Though there is a distinct difference between environmental terrorism and eco-terrorism, officials have cited both as concerns in relation to oil-by-rail shipments. The major consideration voiced within green criminology with eco-terrorism was mentioned above with AETA where profits are of utmost concern rather than legitimately combatting the threat of terrorism. Meanwhile, the concern for environmental terrorism has been raised by the United States Food and Drug Administration (FDA) by expressing great concern for the possibility of an attack against food supplies (White 2008). Both of these types of terrorism are relevant to this research. The following section considers the role of terrorism in oil transportation via railroads.

Uncovering the Role of Terrorism in the Oil Train Threat

In one interview, an environmentalist described the difficulty of fulfilling his obligation to residents of Virginia due to the lack of knowledge of potential threats to the local environment, particularly the James River. More specifically, the concern is that the community and advocacy groups are in the dark about what is being transported through their community to include how often, when, and the amount of the substance:

They won't share it [details about rail shipments]. The rail industry consistently claims two reasons why they won't though there is conflicting information out there saying that those aren't real points. One is domestic terrorism, or terrorism, you know, of any form, could occur if they let people know that these dangerous substances, not just Bakken crude, but ethanol, which is of even more concern to many emergency response officials, anhydrous ammonium, chlorine gas, other things that are highly toxic and could be disastrous (Gary).

This hypothetical attack purported by the rail industry, where some direct action could cause a train to derail, would be classified as environmental terrorism. Gary pointed to the reluctance of the railroad industry to make details of their shipments publically available. The idea of a terrorist threat to railroad shipments, particularly oil trains, is one that was echoed by law enforcement less than three months after the Lynchburg train derailment. The FBI, in a July 2015 private sector advisory, stated that "increased use of railways to transport crude oil may lead to acts of environmental extremism." However, the FBI cited no specific threats to oil trains in its advisory (Horn 2015 July 18).

This FBI advisory speaks to eco-terrorism as a potential threat where extremists would be more likely to disrupt oil-by-rail traffic to decrease profit from the oil and rail industries or for publicity, rather than attempting to cause a derailment or spill which would be contrary to their environmental protection cause. It was also specifically cited that these extremists could potentially use publically available information to make plans (Horn 2015 July 18). The advisory was released just weeks after the Emergency Order mandating notification was put into effect.

The advisory characterized “environmental extremists” as people that “believe the use of fossil fuels contributes to the destruction of our environment and may believe the transport of crude oil creates the potential for environmental hazardous train derailments and oil spills” (Horn 2015 July 18). Further, the advisory addresses criminal activity that such extremists may engage, which include using social media to share information concerning crude oil trains and graffiti that opposes the general use of trains for transporting oil (Tate 2014 October 16).

A noteworthy case regarding “eco-terrorism” transpired on September 2, 2014 in Everett, Washington, where five activists blocked BNSF tracks by tethering themselves to a metal tripod. The protest took place at the Delta Yard on the grounds that it was necessary to act since all legal means of protesting had been insufficient and their civil disobedience was needed to address the threats of climate change and oil trains. The “Delta 5” went on trial in early 2016. Ultimately, the group was found guilty of misdemeanor trespassing though many environmentalists view the case as a success. Presiding Judge Anthony Howard even commented of the defendants, “Quite frankly they are tireless advocates whom we need in this society to prevent the kind of catastrophic effects that we see coming and our politicians are ineffectively addressing.” (Bernton, 2016 January 15). This judicial commentary is in stark contrast of the portrayal of such dissenters by the FBI, exemplifying both the problem of characterizing non-violent groups in the verbiage of terrorism (Loadenthal 2013) and the propensity for these activists to be criminalized (White 2007; Brisman 2010).

In both of the state cases mentioned previously where railroads intervened to prevent information from becoming available on the grounds that such information is proprietary, safety concerns were cited. The injunction filed just days after the FBI advisory by Norfolk Southern and then CSX claimed that security was at stake if their information became public (Rector 2014

July 28). Similarly, the legislation in Maine pertaining to oil shipment by rail information claimed security concerns (Sherwood 2016 February 10). Both of these legal measures echo the opinions of the Association of American Railroads (AAR) and the American Short Line and Regional Railroad Association (ASLRRA) that making information public is a threat to security (FRA 2014). The legal filings in Maryland specifically cited Islamic extremism as a security threat as part of its justification (Horn 2015 July 18)—what would amount to environmental terrorism. Thus, both relevant types of terrorism, eco- and environmental, have been conjured by resistant entities as justification for concealing information about oil train traffic.

Outside of journalists and environmentalists who critiqued such rhetoric, respondents, with one exception, did not mention terrorism relating to oil trains. In this instance, security and terrorism did emerge in an interview regarding the train derailment, though in a less direct way than how railroad companies, trade groups, or the FBI discussed terrorism. According to first responder Wade:

Don't get in the lull that nothing ever happens in little ol' Lynchburg. Lynchburg was put on the national map there for a couple days, so it can happen here. It's just like your association with [Liberty University (LU)]. LU brings in, when it comes to terrorist stuff and all, LU brings in because of their conservative Christian beliefs, they bring in a certain element that we have to be aware of all the time too that anything could happen there. Some radical could take it, you know, out on, because it's the largest Christian university in the country.

Wade did not express direct threats to oil trains in Lynchburg, but did not rule out the possibility that it is a conceivable threat.

In consideration of the confidentiality of notification and the claim that making rail shipment information publically accessibly presents a security risk, the FRA and DOT, in conjunction with the Department of Homeland Security, found *no basis* that this information being available to the public would be a threat to transportation safety (or that the information is

commercially-sensitive). DOT and Transportation Security Administration (TSA) regulations map out fifteen categories of Sensitive Security Information (SSI). However, the information that is mandated to be released under the Emergency Order does not fit into any one of the categories (FRA 2014). DOT still encouraged states to sign confidentiality agreements (Donnelly 2015 June 5). When considering the causes of oil train derailments, which skyrocketed sixteen-fold between 2010 and 2014 (Nunez and Tomanio 2015), there is no evidence that any of these were caused by terrorist activity.

CONCLUSION

Through conversations with individuals close to the 2014 Lynchburg train derailment, several respondents voiced concern about the amount of information available to members of the community, to include first responders and city officials, regarding the nature of oil train shipments through the city. The presence of such a hazard was unbeknownst to many of the respondents, several of whom felt that this information should be readily available to the city. Upon probing interviewees about community awareness, it was revealed that railroad corporations and trade groups commonly claim safety (from the threat of terrorism) and that the information is proprietary in their withholding of the relevant details of their shipments. Through governmental documents, media reports, and interview data, it was uncovered that such claims are suspect. DOT has made a requirement for railroad corporations to disclose information concerning oil-by-rail shipments which has been heavily resisted by railroad groups.

Organizations and corporations representing the rail industry—CSX, Norfolk Southern, AAR and ASLRRA—and FBI have made claims that oil trains pose credible threats as potential targets of terrorism, but DOT, DHS, FRA, and TSA disagree. Though the intentions of rail

industry groups invoking security as a reasoning for concealing their information may be questionable—is such beseeching due to honest concern for “safety” (especially from “terrorists”) or is it to protect profits of the industry?—these groups have “accepted and peddled the security fetish” in a similar fashion to other entities preoccupied with security as described by Neocleous (2008: 5). The language of the FBI advisory also serves the purpose of protecting the railroad and oil industries from activist groups who may resist oil trains due to their threats to communities as well as the furthering of environmental destruction and climate change.

As a result of transparency issues relating to oil train shipments, communities all across the US are unaware of the presence of hazardous shipments in the communities and any details about these shipments such as the amount of oil and the frequency with which it travels through. Ultimately, official entities have undermined the terrorism and trade secret argument made by railroad groups though there is still persistent resistance from the railroad industry to withhold information. Though terrorism may broadly be a threat to communities, from a community safety standpoint, it is contradictory to suppress oil train information given its proven threat to communities around the US.

CHAPTER VII

DISCUSSION AND CONCLUSIONS

When an oil train traveling from the Bakken Oil Fields to Canada's East Coast derailed in the middle of a July 2013 night in the city of Lac-Mégantic, Quebec, oil-by-rail shipment was catapulted into public conversation in North America. The event resulted in massive destruction of the downtown area and the loss of 47 lives, some of whom were never recovered given the intense nature of the explosion and fire which literally incinerated them, or as some media outlets claimed, "vaporized" them (Hills 2013 July 8). Though the resulting human destruction of the derailment is unique, this tragic event is not an isolated incident nor was it even the first of its kind in North America in recent history. The United States has experienced a number of derailments across the country beginning in 2013 including in Aliceville, Alabama; Casselton, North Dakota (on two occasions); Vandergrift, Pennsylvania; Dubuque, Iowa; Lynchburg, Virginia; Mount Carbon, West Virginia; Watertown, Wisconsin and others. An increase in oil extraction in the US led to heightened transportation of oil relying primarily on railroad shipment due to its efficiency. Between 2008 and 2012, oil-by-rail rose 23-fold. As a result, oil spills from trains dramatically increased and 2013 saw over one million gallons of spilled crude oil, more than the previous three decades combined. This increased shipment has also ushered in the previously mentioned derailments which are characterized by explosions and fires along with

discharges of oil. These derailments have been responsible for human death and injury, displacement, economic hardship, pollution and ecological degradation.

Despite the sensationalization of some of these events, the full extent of the ramifications of these derailments, particularly according to the communities who experienced them, is relatively unknown. Further, perceptions of the official response and handling of these events from those impacted most has been largely omitted from dialogue about solutions and reactions to them. This project sought to understand how recent oil train derailments have affected the environments and communities in which they occur, how residents of these communities made sense of these disasters, the range of community perceptions about how the event was officially handled including any relevant changes after the derailment, and the extent to which a criminological framework might further understanding of these events. This project specifically examined the April 2014 derailment in Lynchburg, Virginia through a case study approach which relied primarily on in-depth interviews, but also used official documents and media accounts. During this event, 17 cars from a CSX-operated crude oil train derailed, 3 of which eventually rested in the James River. Almost 30,000 gallons of oil were discharged and set the river and the river bank on fire. A total of 22 individuals close to the derailment were interviewed, mostly in person, but a few interviews were conducted over the telephone. First responders, officials, environmentalists, and witnesses served as respondents; most were interviewed in August 2015, although some interviews occurred later in 2015.

The interviews revealed important perceptions about the nature of victimization of the Lynchburg community and environment, about the fine that was paid by CSX, the railroad company responsible for the oil discharge, and about ideas concerning responsibility and accountability for the event. Respondents talked about a six-block evacuation of 20 businesses

and 350 people, the logistics of which raised significant safety concerns. The people of Lynchburg experienced economic, psychological, emotional, and environmental victimizations including lost time at work, frustration in CSX's compensation process, a hardship for subsistence fishing, sometimes intense feelings of anxiety and fear during the evacuation for up to months after and prohibition of recreational activities. Communities downstream experienced closure of water in-take facilities. The derailment caused an explosion, fire, and discharge of almost 29,730 gallons of oil into the James River which lit the river on fire, burned vegetation, and produced an oil sheen for 15 miles downriver. Over 500 feet of shoreline and 260 tons of soil and ballast were subsequently removed from the bank due to the contamination.

According to Virginia Water Control Law, discharge of oil is a fineable offense for which polluters maybe penalized as much as \$100 per gallon spilled. CSX agreed to a \$361,000 fine and compensation of \$18,574.85 to the Virginia Department of Environmental Quality's investigation, though almost \$3 million could have been pursued based on Virginia Code (Code § 62.1-44.34:20). This fine went to the Virginia Petroleum Storage Tank Fund (VPSTF), as stipulated by Water Control Law. This fund is dedicated to clean up leaky containers which are for either underground storage of petroleum l or above ground storage of heating oil anywhere in Virginia. A few respondents felt the fine was unnecessary and others were completely unaware of the fine. Many voiced objections with the fine including the amount of the fine being too low, that the fine was agreed to before completion of the national investigation which considers culpability, and that the fined money would likely not be used in the Lynchburg area. Many felt that money for local projects such as river restoration and pedestrian and vehicle safety near the site of the derailment was more appropriate.

The issue of responsibility and accountability for the event emerged through respondents' deployment of terms including "responsible party" and "culpability," often in concurrence with perceptions about the fine. Respondents made assertions of negligence and even criminality on the part of CSX. The investigative entity, the National Transportation Safety Board, considered the event a possible "crime scene." Many respondents referred to CSX as responsible for the derailment, in some cases because of the corporation's acknowledgement of a track defect that was not repaired before the derailment, the replacement track for which was found in the wreckage. Other respondents pointed to entities who they believe also played a role including the railroad industry more broadly, the oil industry, and consumers.

Two important identities of the city of Lynchburg emerged from interviews: the river and the railroad. Prior to the development of the railroad, the James River was the primary means of travel and communication for individuals in Lynchburg. The significance of the James River is reflected in the names of a multitude of business entities and even the logo of the city. Several interviewees voiced significant concern for the health of the river once the fire and smoke dissipated. Responses also illuminated the importance of the James River to the development of the city and modern Lynchburg. Historically, the railroad replaced the canal system (which replaced bateau boats) as the principal method for commerce in the city. The railroad purchased the riverside property for reduced prices from the drowning canal companies and repurposed the towpaths as track beds which explains why hundreds of miles of the James River is shadowed by railroad tracks. The influence of the railroad is evident in the city and a railroad-themed restaurant along the river, The Depot Grille, which was evacuated and served as headquarters for the cleanup effort for two weeks after the event. Several respondents spoke about the railroad industry using oil in an attempt to compensate for the void of the coal industry.

Insufficient and collapsing infrastructure was also mentioned during interviews and, in some instances, the Lynchburg derailment (and others around the US) was repackaged as an argument for the use of pipelines. When talking about railroad infrastructure, a few respondents expressed their belief that inclement weather contributed to the failure of the track which was also present in some media reporting of the event. The official investigation, however, made no mention of weather contributing to the derailment. Some respondents explained that a sense of community cohesiveness could be felt after the derailment which was often centered around the mutual feeling that the city was “lucky” that the derailment did not cause more destruction or, put another way, the city “dodged a bullet”. First responders and environmentalists talked about a “worst-case scenario” which they viewed as important to consider for training and preparedness purposes.

A common concern among respondents was that critical information regarding oil train shipments frequently traveling through Lynchburg was not available to officials or the public, particularly first responders. Respondents desired information about the origin, prevalence, times, locations, and/or volumes of shipments. Interviews exposed that railroad corporations and trade groups regularly claim that the information is proprietary or maintains public safety, especially through the guise of terrorism. Interviews, media accounts, and official documents explored the resistance of releasing this information to the public by the railroad industry. The sharing of this information with officials was mandated by the US Department of Transportation after the Lynchburg derailment, though the railroad industry has continued to resist doing so. Railroad industry entities and the FBI have brought attempted to securitize oil-by-rail transportation by claiming that they could be targets of terrorism though this claim has been refuted by many governmental entities, including the Department of Homeland Security and the

Transportation Safety Administration. Further, there is no evidence that any of the multiple oil train derailments were caused by terrorist groups and the FBI admitted no current threat to suggest such an attack is imminent. The FBI's advisory that suggested a security threat seemed to serve as protection of industry from activist groups resisting oil trains on the grounds of community safety and the furtherance of climate change. Respondents talked about the lack of transparency surrounding oil shipment which placed Lynchburg's residents and environment at risk, a reality faced by many other communities in the United States. Due to the recent history of oil train derailments, the suppression of oil train information has proven a greater threat to community safety than has terrorism.

DISCUSSION

This study addresses important gaps in the academic literature. To the author's knowledge, there exists no academic literature that examines an oil train derailment or the changing space of oil transportation and its implications. Hall (2013) claimed there has been minimal attention to environmental victimization in the broader field of victimology. Similarly, Skinnider (2011) suggested a need to measure the full extent of victimization to enrich our understanding of the numerous ways in which environmental crimes and harms effect victims. This research serves as a detailed case study about environmental victimization and contextualizes this victimization in the broader landscapes of corporate regulation and community identities. According to Williams (1996: 36) it is crucial "to develop better and broader understandings of environmental victimization" in order to "develop a consensus on the relationship between justice norms and the sometimes conflicting demands of human security." South (2014) suggested that Williams' (1996) call persists as a significant project for both

victimology and green criminology. This project provides useful commentary of the relationship between security and justice.

This case study describes a human-created environmental harm as a result of political and economic changes and serves as an in-depth case-study that delves into the operation of the ‘corporate state’ which the literature is lacking (Katz, 2010). This project considered the varied roles of state entities, which one respondent referred to as “alphabet soup,” and also corporate entities including specific corporations and trade groups. The complex interactions amongst these groups, both within and between them, has explored some ways in which these entities may both be at odds and in concert with one another. In this case, the inner workings of those that play a role in extractive economies was explored.

Neocleous (2008: 3) critiqued security research, saying that “for all its talk about discourse, processes and the need for a critical edge, it still offers a relatively impoverished account of the different ways in which security and insecurity are imagined.” This research displays a unique way in which security and insecurity has emerged in a space where one would not necessarily expect. Further, the current endeavor considers the grave ramifications that this insertion had and continues to have on communities all across the US, answering another appeal made by Neocleous (2008) to counter the security literature which largely argues for the necessity of security. In this case, it is clear that the official rhetoric of enhancing security has actually had just the opposite effect.

There has also recently been a call for the merging of green criminology and cultural criminology (Brisman and South 2012; Brisman et al. 2014; Ferrell 2013). Some work in this area is being conducted and this project serves as an example of research at the nexus of these two complementary subfields though much more work is needed. A more specific discussion of

the implications of the results of this research will begin with a contextualization of findings within green criminology and cultural criminology.

Situating the Research within Criminology

Typologies within green criminology allow researchers to identify specific crimes and harms and place them in a meaningful group since the subfield considers a broad array of offenses. The Lynchburg train derailment can be described through these typologies. Carrabine and colleagues (2004) contended that green crimes could be either primary or secondary. A 'primary' green crime is one that is the direct result from degradation or destruction of the resources on Earth. A 'secondary' green crime is one that is committed in conjunction with, or depends upon, the previously mentioned destruction or attempts to prevent or regulate destruction. The Lynchburg derailment is a primary green crime, especially because harms and crimes related to ground and water pollution are considered primary (South 2014). There is also an element of the secondary classification given the undermining of policy and regulation. The failure of the oil industry to use the process of stabilization before transport of crude oil is an example of a secondary green crime since it would prevent destruction.

White (2008) developed a typology that categorizes acts as brown, green, or white. Brown issues are pertain to urban life, waste, and pollution; green issues affect environmental conservation and wildlife areas; white issues pertain to the affect that laboratory practices and new technologies have on the environment. The Lynchburg derailment is primarily a brown issue since it pertains to oil pollution though it could as easily be considered a green issue or white issue. The overall issue of oil train derailments could be considered a green issue because oil trains pass within one quarter-mil of protected habitat for over 50 species that are endangered or threatened and oil trains travel through more than 30 wildlife refuges. Oil trains pose a threat to

many waterways including the Mississippi River, the Hudson River, Lake Michigan, and Puget Sound (Margolis 2015). For the Lynchburg case specifically, the damage to the James River qualifies it as a green issue. This case could be labeled a white issue because at its core it involves a newer, risky procedure of oil extraction that relies on another technology for transportation. Interestingly, the state response to the problem of oil train derailments have largely been technocratic solutions. Due to the detriment and threat to wildlife and conservation this case could be considered a green issues, but it also displays an indirect effect of technology on the environment, particularly fracking which yields a product that must be shipped to market.

South (2014) developed a typology of green criminology comprised of four dimensions: (1) “environmental health and victimization”; (2) “the socio-economics of everyday ecocide”; (3) “global connections”; and (4) “intergenerational and future challenges” which include dimensions of time (current and future implications) and space. This project has addressed these dimensions, especially dimension one, two, and three, to give an applied case study that can serve to better understand the ways in which these dimensions may be manifested. The “Environmental health and victimization dimension” is the subject of Chapter IV and describes the ecological, psychological/emotional, financial, and public health impacts of this derailment on Lynchburg. “Everyday ecocide” refers to the daily actions of people that contribute to the destruction or contamination of the natural world which decreases its ability to sustain life (Agnew 2013). Since consumption is included in this dimension of the typology (South 2014), this project may be considered as part of it. The “global connections” dimension materializes in this case study, particularly because of the role of global politics in the emergence of oil train disasters and the continuance of climate change readily visible in expanded extraction, transportation, and refining of crude oil. The difficulty of placing this case study, and the issue of

crude oil-by-rail transportation more generally, firmly into previous typologies make this case more unique as it is not easily classified. This case study shows some of the ways in which complex examples of green crimes and harms may break conceptual boundaries.

Further, this analysis is at the nexus of green criminology and cultural criminology which Ferrell (2013) has rightly suggested is ripe for convergence. Cultural criminology is focused the various connections of crime, crime control, and cultural dynamics, particularly through a consideration of the interplay of these connections (Ferrell 2013). Through a green lens, this project highlights these connections via the perspectives of a community that has experienced, and continues to endure, a significant green criminological crisis. The Lynchburg train derailment illuminates how identities in communities may shape the understanding of environmental and public health victimization and perceptions of appropriate responses to that victimization.

Placing the case in the context of state-corporate crime literature, this is an example of state-facilitated corporate crime. State-facilitated corporate crime “occurs when government institutions of social control are guilty of clear failure to create regulatory institutions capable of restraining deviant business activities, either because of direct collusion between business and government or because they adhere to shared goals whose attainment would be hampered by aggressive regulation” (Kramer and Michalowski 2006: 21). The discharge of oil into a Virginia waterway, for which CSX paid a regulatory fine, was a direct result of the CSX derailment in Lynchburg on April 30, 2014. Regulatory institutions governing the railroad industry, namely the Federal Railroad Administration and US Department of Transportation did clearly failed to effectively regulate the shipment of crude oil which resulted in the Lynchburg derailment.

Further, the Office of the Inspector General (2015) audit specifically cited the FRA's lack of referring violations to for criminal violation which indicates ineffective regulation.

Victimization, Responsibility, Fine

Interviews with individuals involved in the evacuation of the downtown Lynchburg area on April 30, 2014 following the derailment of an oil train paint the picture of a chaotic scene. People fled the area on their own volition and first responders went building-to-building evacuating anyone inside the 6-block evacuation zone. Upon arriving at the scene, first responders identified the substance in the derailed train as petroleum crude based on the placard showing ID Number 1267. The uniform placard system and accompanying Emergency Response Guidebook (ERG) was developed by international governmental transportation entities for the purposes of assisting first responders with identification of hazards when an incident occurs and for the protection of first responders and the public during the initial response phase. This ERG gives recommendations for action in the event of a petroleum crude (ID Number 1267) fire and spill in Guide 128. It recommends that responders 'isolate' for one-half mile in all directions when a rail car is involved (PHMSA 2012). The Initial Isolation Distance in the ERG "identifies the radius of a zone around the release from which all people not directly involved in emergency response are to be kept away" (Policastro et al. 2005: 1). One-half mile from the site of the derailment extends beyond the end of the evacuation zones in all directions including three blocks past Main Street to the southeast of the derailment and more than one-quarter mile to the northwest of the derailment in Madison Heights, the adjacent municipality.

By many accounts, it is quite remarkable that there were no deaths or injuries due the event, but it was acknowledged that the response was problematic. First responder Wade

reflected on the event and claimed that a more ‘tempered’ response should have been conducted given the nature of the event and the lack of knowledge about the contents.

One significant hindrance to safety, as asserted by interviewees, was an extreme lack of crucial details. Lynchburg officials and the public were unaware of the regular transportation of Bakken crude oil through the city or any details of such shipments including frequency and amount. This absence of information prevented adequate preparedness and also obstructed response during the event as it took CSX officials *over 2 hours* to arrive on scene and provide appropriate documents to inform responders with the Consist containing information about the train. Ultimately, a lack of transparency about shipment resulted in first responders being left in the dark and ill-prepared to comfortably deal with the extreme nature of an oil train derailment, explosion, fire, and discharge of oil.

First responder described improved communication with the railroad industry since the derailment, but inquiry into the legal battles in other locations, specifically for the prevention of shipment information being released, suggests continued difficulty with transparency. Further, the railroad industry was excluded from the Emergency Planning and Community Right-to-Know Act of 1986 aimed at informing communities of the presence of hazardous materials which set the stage for communities like Lynchburg being unaware of the presence of crude oil and other dangers on their rails. This exceptional treatment of the railroad industry is also reflected in their exclusion from the Oil Pollution Act of 1990 enacted in the wake of the Exxon Valdez spill. The exclusion of the railroad industry from legislation aimed at protecting people and the environment suggests a general lack of accountability being imposed upon the railroads.

Corporate Social Responsibility

As described by Griffiths (2005), the response by corporations to critique for their role in environmental and human injustice is increasingly corporate social responsibility (CSR). Governments have largely buttressed this voluntary agreement by corporations. Griffiths critiques this approach, specifically given its inability to (1) address companies who are unwilling to participate or hypocritical and (2) prevent governments for prioritizing business over environmental or social justice. Further, Griffiths argues that those communities effected by business should have some control over business practices. Despite claims of transparency and touting a CSR model (see CSX 2014), resistance of transparency and unaddressed public concerns has instigated formal warnings from governmental entities, especially with regards to freight railroad bridge inspections which is the epitome of the CSR approach. This suggests that the CSR approach is not effective for transportation of crude oil or, when considering the industry's exclusion of railroads from the Emergency Planning and Community Right-to-Know Act of 1986 and Oil Pollution Act of 1990 (Nussbaum 2015 May 24), possibly hazardous materials broadly. These instances show CSR as the modus operandi of the railroad industry.

An audit was initiated by the Office of the Inspector General for the US Department of Transportation due to risks to public safety from transportation of hazardous materials and crude oil. This audit cited the Lynchburg derailment and revealed three areas of concern for the FRA's handling of enforcement of hazardous materials regulations. The report claimed FRA has not evaluated the risks of the transportations of hazardous materials, issues with inspection data access, and a lack of referral of cases to the Office of the Inspector General for criminal investigation. This report suggests ineffective regulation given that FRA processes hundreds of violations annually, yet it seems that no even one case has ever seen a referral for criminal investigation. The audit, using a random sample of violations over a five-year period identified

17 cases that should have been referred. Further, the review exposed a “focus on processing penalties in a timely manner and avoiding litigation. As a result, penalties have little deterrent effect, and criminal penalties are not being pursued” (Office of Inspector General 2016: 2-3).

Insurance surfaced as another issue of accountability mentioned by respondents, and gives credibility to respondents who claimed a need for ‘worst-case scenarios’. After the horrific Lac-Mégantic derailment, the insurance was not sufficient to cover the cost of the derailment which caused the company to go bankrupt leaving the bill for taxpayers. The \$25 million in insurance was far from the estimated cost of about \$2 billion. Railroads generally have up to \$1 billion in insurance coverage, but there is no minimum requirement in the US (Nearing 2015 May 2).

Identities and the Lynchburg Derailment

Some respondents discussed previous derailments and other pollution activities that have contributed to the degradation of the James River. Though many respondents voiced the James as a significant identity of Lynchburg which was crucial in the commercial and cultural development of the city, others consider the river tarnished and thus avoid contact with it. Respondents, in some cases, situated the victimization of the river around these ideas. It may be the case, then, that prior pollution and victimization of the waterway has contributed to the likelihood of the river to be considered a victim for some in the community. Though this study illuminates this reality for the James River around the Lynchburg area, its broader application could have significant consequences for conservation efforts on a larger scale.

When discussing the railroad, another identity of Lynchburg, respondents spoke about infrastructure as it relates to oil trains. It was suggested that the current antiquated infrastructure is insufficient for the transportation of oil by rail. Though the site of the derailment did not occur

on a railroad bridge, bridges are an important part of the infrastructure equation. Freight railroad tracks carrying oil trains cross the James River multiple times as the tracks snake their way to the East coast for refinery. Freight railroad bridges present a unique problem since they are inspected only by the railroads and that information is not publically available. This is in sharp contrast to other bridges like highway bridges and passenger train bridges which are inspected by public entities (Nussbaum 2015 May 24). Infrastructure, and particularly freight railroad bridges, are a glaring example of the lack of transparency that characterizes the realities of oil shipment by rail which was recognized by at least some in the Lynchburg community. It also speaks volumes to the Corporate Social Responsibility model previously described which, when considering infrastructure specifically, appears to be quite ineffective since public concerns are not being addressed.

Director Sarah Feinberg with the Federal Railroad Administration (FRA) made remarks before the Railroad Safety Advisory Committee in November 2015. Her remarks capture the issue of freight railroad bridges and the impacts of the secrecy of crude-by-rail shipment in its current form:

When FRA is asked about bridge safety, it's frequently because, again, the public or a member of Congress become concerned and has tried to get answers from a railroad, and *they have been ignored or put off* (emphasis added). They are frustrated, and frequently they are scared – because the absence of information in this case leaves them imagining the worst. The bridge looks terrible. The bridge looks old. That means the bridge is going to collapse. It's going to collapse on that road I drive on, that my kid drives on, that my husband drives on. It is a legitimate concern. Not because it is going to happen, at all, but because the public has no information to assure them that it will not happen. And so again, they are aware that infrastructure is aging. The news each night talks about the fact that the Congress is unable to come up with a long term deal that will pay for infrastructure. They see regular bridges and highways crumbling. They assume the same must be the case for the railroad bridge that they are worried about...But if railroads continue to respond with silence when it comes to bridge safety and blocked crossings, my sense is that Congress will ask us to step in more aggressively. *We've talked to you at various levels and asked you to be more open with information. I've sent you a letter,*

asking you to be more transparent in communicating bridge maintenance efforts
(emphasis added)(FRA 2015b: 8-9).

The FRA also recently launched a website to serve as a mechanism for states and municipalities to request bridge inspection reports as part of the Fixing America's Surface Transportation (FAST) Act (FRA 2016a).

In some instances, infrastructure was described in conjunction with a claim of inclement weather. Respondents at times described poor weather conditions which they believed caused the track to give way. This assertion was also seen in reporting of the event and contributed to public ignorance about the cause of the event which was not officially determined until almost two years after the derailment. NTSB determined that the cause of the derailment was a defective rail which was identified prior to the derailment, but had not yet been addressed. Thus, media reporting not only contributed to how the community understood the cause of the derailment, but may have influenced how the community perceived issues of responsibility and accountability given that some media accounts acquitted industry in its claim of weather as the sole culprit.

The railroad historically had dual roles, development and destruction, as pointed out by Lawrence Friedman (2005: 468).

It was the key to economic development. It cleared a path through the wilderness. It bound cities together, and tied the farms to cities and the seaports. Yet, trains were also wild beasts; they roared through the countryside, killing livestock, setting fires to houses and crops, smashing wagons a grade crossings, mangling passengers and freight. Boilers exploded, trains hurtled off tracks; bridges collapsed; locomotives collided in grinding screams of steel.

Gilbert Geis (2016: 59) summarized Lawrence's account as describing the "virtues and dangers of the railroad in the development of America." Similarly to how scholars have described this dual role, witness Shae explained how "It's the romance of the trains versus the terror of the trains and that's always a balance. And something like this raises the terror awareness, the fright.

But I think, overall, the charm and the romance of the trains is still larger.” Other respondents also recognized how the binary role that the railroads historically had is still present and identifiable in Lynchburg.

Despite the recognition of the voracity of the railroad Robber Barons which ushered in a call to reign in the railroad industry in the early 1900s (Geis 2016), an examination of the preferential treatment of the railroad industry would suggest that the industry has not been reigned in and has even been afforded greater autonomy in recent decades. Though Friedman (2005) was describing the railroad industry in its infancy, his description could seamlessly be applied to oil train derailments in the 21st Century, particularly the description of setting fires, exploding, and hurtling off tracks. The audit of FRA in 2016 also suggests that the railroads have not been reigned in and a CSR model has flourished as devastating effects of the lack of oversight have persisted. The significant role and credence given to the CSR model may contribute to perceptions of responsibility for the derailment. Respondents may be less likely to exculpate such an influential entity which members of community value.

Interviews also revealed that the railroad industry has also adopted a security approach to the shipment of crude oil. This summoning of security had serious implications for this derailment and community, but also for other communities that carry the burden of crude oil shipment which, as admitted by a few respondents, brings risk with no real reward.

The Power and Implications of the Terrorism Narrative

When considering how security has emerged in the conversation of oil train safety specifically, two frameworks are particularly instructive. It is instructive to draw on Beck’s (1992) *Risk Society* and Neocleous’s (2008) *Critique of Security* to make sense of the realities of oil transportation which perpetuates risk and security logics.

Beck's (1992) risk society thesis examines how large-scale changes in society, namely from industrial modernity to 'new modernity', have produced novel types of risk to which people must adapt. With the previous industrialization, society experienced a significant shift from largely natural risks to risks that have been manufactured by society's own developments, both socially and technologically. Two major problems have been created with the shift to new modernity. First, the emergence of produced risks generates negative consequences in many areas of society including politics, the economy, the environment, and security. Second, this change in the nature of risk has caused an everyday culture of risk to thrive. Whereas in the previous era individuals sought to achieve solidarity in order to ensure quality, in this new modernity, solidarity is pursued due to the desire of being secured from risk and danger. Importantly, the sources of wealth are creating this danger and risk; hazardous consequences are manufactured by industry and its side-effects and this change also affects the natural world.

The social spaces explained by Beck (1992) wherein adverse consequences have been manufactured (politics, the economy, the environment, and security) are each integral to the proliferation of oil trains and the societal response to this change. It is certainly the case that the threat of oil trains and the victimizations experienced by the city of Lynchburg and its people was created by industry—namely the oil industry which has created a new space to secure profits within the US while simultaneously allowing US society to decrease its dependency on foreign oil. Interestingly, a staple of industrialization—the railroad—is the most efficient way to move oil produced through risky means from the Bakken region. Though Beck (1992) explains that the new modernity is dissolving the previous industrial society, the reliance on railroads to transport this newly accessible oil presents a space where that industrial society is not necessarily easily shed.

The manufactured risk to the environment has been described previously. Bulk amounts of oil transported regularly throughout the US is an identifiable risk to the environment and the Lynchburg case demonstrates that threat, even if it was immediate and, fortunately in this case, not long term. Given that in the US more crude oil was spilled in 2013 (1.15 million gallons) than the previous 34 years (1978-2012) combined (800,000 gallons) (Gerken 2014 January 22), it is quite obvious that the environment is certainly at risk in a new and profound way.

Krahmann (2011), who builds on Beck (1992), argues that the insertion of risk into considerations of security has created an opportunity for private entities to recognize an increasing array of perceived dangers that are not able to be entirely extinguished, so require continual risk management; such a call for security assures constant profits. In consideration of the insertion of risk management from the railroad industry in the case of oil-by-rail shipment, this call for security has taken the shape of protect profits for the oil and railroad industries which may be threatened through full transparency and any resultant public outcry which may bring additional regulation or pricey technology upgrades. As Neocleous (2008: 5) described the risk industry which has “accepted and peddled the security fetish,” it would appear that the railroad industry has similarly accepted and touted security with similar results: the pursuit of profit.

Neocleous (2008) described the incoherent nature of security rhetoric which is pervasive in modern discourse. This rhetoric is unintelligible and dictates both formal politics and the social and political imagination:

So if, as it seems, talk about security is often unintelligible, then perhaps we need to ask after the conditions of this unintelligibility. That is not an easy task, since our whole political language and culture has become saturated by ‘security’. Nearly all political disputes and disagreements now appear to center on the conception of security, and nothing seems to advance a policy claim more than to be offered in the discourse of security. But it is not just formal politics at issue here. The contemporary social and

political imagination is similarly dominated by the lexicon of security and the related idea that we are living in an increasingly insecure world. Everywhere we look a ‘need’ for security is being articulated... the paradigm of (in)security has come to shape our imaginations and social being. ‘Security consciousness’ is the new dominant ideology (p. 2).

The industries under inspection as part of this inquiry into the Lynchburg train derailment clearly are engaging in just what Neocleous (2008) described. This claim of security is grotesquely unintelligible when digested with the unfortunate realities faced by the communities and environments of Lynchburg, Lac-Mégantic, and several others which are being consistently plagued with *actual* threats. Meanwhile industry has attempted to suppress communities from a full realization of the extent of the problem.

The state, which is key in security, has a unique role in the security equation as it relates to oil trains. In the case of the Lynchburg derailment, security is being called into question by the private sector, and uniquely, refuted by the state (with the exception of the FBI advisory). Many governmental entities including the Transportation Security Administration and the Department of Homeland Security have rejected the claim of oil trains as security threats due to terrorism. As such, it may very well be the case that an industry is aiming to secure profits and reduce public backlash that may come with full transparency of what is being transported through so many communities with regularity. Similarly, the state cannot be acquitted due to its role in allowing the continued terrorism rhetoric in the oil-by-rail shipment.

According to Neocleous (2008: 42), rendering an issue a ‘security issue’ – that is, ‘securitizing’ it – relies on the declaration of an existential threat such that emergency action and exceptional measures are said to be necessary (Buzan, Weaver, and de Wilde 1998). The FBI’s July 2015 private sector advisory, which claimed “increased use of railways to transport crude oil may lead to acts of environmental extremism” though no specific threat exists (Horn 2015

July 18), displays this sort of declaration of an existential threat. Thus, the case of oil transportation and the justification of withholding information is a glaring example of what securitization may look like. In this case, securitization has paradoxically resulted in communities experiencing decreased safety due to the stifled nature of preparedness and first response. Even if terrorism is a legitimate, credible threat against oil trains, as unlikely as it may be, it seems that squelching information exasperates the already potentially disastrous risks that such trains present to communities throughout the US.

Despite calls for safety, railcars are seeing not only an expanded role in oil shipment in previous years, but also in storage of oil in an attempt to hold out for higher oil prices which fell dramatically from mid-year 2014 to early 2016. As such, railroad tanker cars are being used as “rolling storage” given the high inventory of oil (Friedman and Tita 2016 February 28). The usage of stationary oil trains for storage may suggest that the call for securitization in oil-by-rail has been exaggerated by those that are bolstering it.

The questionable nature of this call for security is visible in the PHMSA (2015a) final ruling. As part of the justification for not releasing information about oil trains to the public, the report cited a joint FBI and Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) investigation in Vivian, South Dakota in December 2014. A two-foot portion of Dakota Southern Railway track was removed with an explosive, tannerite, available in sporting goods stores. However, this track is not used for the purpose of oil transportation and it has not been operational for several years as was visibly evident given its rusty and grass-covered appearance. It took several weeks for authorities to discover the missing track (Tate 2015 May 10).

The rhetoric of terrorism has also been applied to activism as is displays in the Delta 5 case in Washington State where activists tethered themselves to a tripod on railroad tracks to

prevent an oil train from moving. Activists contended that the train would contribute to climate change and presented a danger to communities through which it would travel (Bernton 2016 January 15). This sort of activity was also specifically mentioned in the FBI private sector advisory (Horn 2015 July 18). These are just a few examples of how security is being evoked by the railroad industry in multiple ways, through both environmental terrorism and eco-terrorism. Further, this reaffirms that environmental activists have a propensity to be criminalized (White 2007; Brisman 2010).

Security issues have been officially commented on by relevant agencies. Some agencies have also made an attempt to adopt policy changes as a result of the risks of transportation of crude oil. The following section considers some of the policy implications that have been put forth.

Policy Implications

Some respondents described how Bakken crude oil may be substantively different from other types of crude oil, making it potentially more destructive in the case of a derailment. A process in oilfields known as stabilization can enhance the safety of crude oil shipment. This process “refers to lowering the vapor pressure to a value that will allow safe handling and transport” (Manning and Thompson 1995: 64). In March 2015, H.R. 1679, Bakken Crude Stabilization Act of 2015 was introduced by Representative John Garamendi (D-CA) to the United States House of Representatives. This bill would require Bakken crude oil to have a reduced vapor pressure before rail transportations and is being considered by the Subcommittee on Railroads, Pipelines, and Hazardous Materials (US Congress 2016). Pipeline and Hazardous Materials Safety Administration (PHMSA) (PHMSA 2015a) also mandated that additional

testing be conducted on oil shipments so that it may be appropriately classified which determines the logistics of shipment such as railcar type to be used.

The problems of transparency and the persistence of derailments is exasperated by one particular piece of information that is not being provided to communities: amount of oil. It is common for an oil train to be a “unit train” which is “a train in which all railcars carry the same commodity and have the same origin and destination.” (NTSB 2016: 1). Crude oil is generally shipped via unit trains (PHMSA 2015a) and the Lynchburg derailment involved one of these trains which originated in the Bakken oil fields destined for the All-Plains American Pipeline, LLC (Rucker 2014 May 1). In a May 2015 ruling on crude oil trains, PHMSA (2015a) ruled that a “high-hazard flammable train” (HHFT) is a train with 20 or more tank consecutive cars loaded with Class 3 flammable liquids or a train with 35 of these cars in total. This threshold was established based on the Lac-Mégantic disaster and concern of a “pool fire involving multiple cars” (PHMSA 2015a: 98). According to Citizens Acting For Rail Safety (CARS) (2014), this addresses the problem of unit trains, but not smaller shipments of hazardous materials based on their review of major incidences. The Lynchburg train derailment narrowly avoided human catastrophe and there was just one car ruptured (NTSB 2016).

The PHMSA (2015a) ruling updated other policies as well. The new rules governing oil-by-rail transportation include enhanced braking, upgrading or discontinuing older model tank cars, speed reduction, improved classification of petroleum products, and required notification to State and/or regional fusion centers for routing considerations. Many of these were reflective of respondents descriptions of problems with brakes, tank cars, speed, the nature of Bakken crude (its classification), and a lack of information about these trains (notification). Though each of these measures was mentioned, with the exception of notification they were mentioned relatively

sparingly and occasionally in hypothetical scenarios. For instance, witness Shae suggested that a fine was only warranted if the “the train was going faster than it should have, or they didn’t avail themselves at the possibility of having reinforced ends on the train cars.” This highlights some of the shortcomings of policy. Given the curvature of the track in Lynchburg, the maximum speed was 25 mph and the train was traveling at a speed lower than that—24 mph. The new requirement is that all HHFTs operated at no more than 50 mph and at a maximum of 40 mph in “high-threat urban areas,” 15 to 25 miles per hour faster than the CSX train in Lynchburg (See Transportation Security Administration’s regulations at 49 CFR 1580.3) (PHMSA 2015a). These new speed regulations, had they previously been implemented, would not have prevented the Lynchburg derailment.

Further, a major safety concern has been the usage of DOT-111 cars which was the industry standard prior to October 2011 (NTSB 2016). These cars will be phased out first according to the PHMSA (2015a) rules. The Lynchburg derailment involved non-jacketed CPC-1232 tank cars which are stronger than the DOT-111 and became the industry standard in October 2011 (AAR 2014). In their report about the 2014 Lynchburg derailment, NTSB (2015a: 10) concluded, “This accident demonstrates the thicker shell material used in tank cars designed to the requirements of AAR Casualty Prevention Circular CPC-1232 (non-jacketed option) remain vulnerable to breaches even in low-speed accidents.” The model that resulted in the explosion, fire, and discharge of oil in Lynchburg (and Mount Carbon, WV) will not be phased out for the shipment of most crude oil until April 2020. The new standard beginning in May 2025 is the DOT-117 which is intended to increase safety in the case of a derailment (PHMSA 2015a). Time will tell if this newest iteration of tank car will prove safer.

Infrastructure concerns were voiced by respondents, including track and bridge integrity. According to PHMSA (2015a), PHMSA and FRA have multiple initiatives currently in progress to improve freight rail safety. Track safety standards is among these initiatives and it has the goal of improving rail integrity through enhanced inspection requirements. The final ruling of this initiative was effective in March 2014, just one month before the Lynchburg derailment. According to NTSB (2016), on April 14, 2014 a Rail Safety Advisory Committee, established by the FRA, adopted the recommendations of the Rail Failure Working Group that sought to address rail wear issues like the one that caused the Lynchburg derailment. According to NTSB (2016: 11), “Before the guidelines were implemented by CSX, the Lynchburg accident occurred; if they had been implemented, this accident would likely have been prevented.” It is noteworthy that since the inspection changes, derailments in Gogama Canada, Dubuque IA, Mount Carbon, WV, Heimdahl, ND and Watertown, WI have also occurred. The Heimdahl and Watertown events happened after the final ruling by PHMSA (2015a).

One final space concerning policy is instructive when considering changes in oil-by-rail transportation, particularly for the future. It was initially proposed that a new braking system be implemented by Class I main rail lines by the end of the 2015 (PHMSA 2015a). Known as Positive Train Control (PTC), this technology can prevent over-speed derailments and train-to-train collisions (FRA 2016b). PTC has the ability to override operator errors and automatically stop or slow down trains and is intended to be implemented in commuter and freight trains. Negotiations between Congress and the railroad industry were completed in 2008 which established the 2015 deadline. Due to a powerful lobbying effort and despite FRA head Sara Feinberg’s plea that accidents will occur without the implementation by January 1, 2016, Congress agreed to extend the enhanced brake deadline to the end of 2018. Investigators have

identified many derailments that this technology would have prevented. Still, dissenters of PTC like Representative John H. Duncan Junior from Tennessee (who has received over \$300,000 in campaign support from the railroad industry) have criticized spending billions on safety for something that is “one of the safest things in the entire world” (Halsey III and Laris 2015 October 25). Given the incremental nature of the PHMSA (2015a) final ruling at the tune of almost \$2.5 billion, it remains to be seen if the requirements will be met by the railroad industry which would be a departure from the handling of enhanced brake implementation.

LIMITATIONS AND FUTURE RESEARCH

Like all research, this project has limitations and has also generated many other questions that warrant examination. This project considers only the city of Lynchburg and the derailment it experienced. Other communities may have had significant differences with derailments including the range and details of victimization, particularly if lives or buildings were lost or if there was greater environmental impacts. The struggles with transparency appear to vary across municipalities and states and a single case study does not fully capture this variation. Yet these struggles over transparency also serve as potential future research areas. Given the exploratory nature of this case study, this case may possess limited generalizability. However, it may be possible that this case has thematic generalizability (Merriam 1988). Another limitation involves self-selection bias. The decision of respondents to participate in this study could be a result of some characteristic of them. For instance, individuals who felt a greater sense of loss from the derailment may have been more likely to participate. The possibility of researcher interaction bias is a limitation as well. There is a possibility that characteristics of the researcher may have influenced responses or the interpretation/evaluation of the data (Miyazaki and Taylor 2008).

This research has enhanced the literature of both environmental victimization and the convergence of green-cultural criminology, but both of these areas are in need of expansion. Though the role of the media was considered as part of this study, a more nuanced inspection of the nature of the media's role in environmental victimization is needed. Another important space for future research is examining inequality that may exist with oil trains and hazardous materials shipment in the US.

Studies of environmental justice have found both poverty and racial composition to be variables best able to explain if commercial hazardous waste facilities were present in a particular community (Bullard 1990; Lee 1992). A study conducted by ACTION United, ForestEthics, and the PennEnvironment Research & Policy Center concluded that oil trains routes in Pennsylvania present a greater threat to minority communities (PennEnvironment Research & Policy Center 2016). Is it this also the case in other communities that have oil train routes through them in Virginia or the United States? Further, since oil train lines cut across Native American lands, an analysis that situates the oil-by-rail influx and proliferation of oil boom towns in the lives of Native Americans is an important space of future research.

As suggested by Skinnider (2011), comparative studies of enforcement and effects on victims is a necessary endeavor for environmental studies and this is true for hazardous materials research. Canada implemented broad changes following Lac-Mégantic but has continued to experience oil train derailments. A comparison exploring the most suitable ways to promote compliance with regulations and continue to improve safety when transporting hazardous materials.

Many municipalities have resisted oil trains in their communities in a variety of ways. The small city of Benicia, California heard a proposal to have its local refinery receive crude oil

which was unanimously rejected by planning commissioners in February 2016 (Benson 2016 February 19). Other communities have actively protested and pushed back against oil-by-rail in their communities. The extent, strategies, and successes of these lines of resistance are important spaces for consideration that needs attention.

This project specifically considered the shipment of Bakken crude oil, but crude from other formations in the US and Canada play a significant role in the broader landscape of crude-by-rail in North America. In addition, substances such as ethanol and many other hazardous materials similarly present a threat to communities in the United States and, as mentioned by some respondents, to the Lynchburg area. An analysis that considers these other materials is needed.

Though it is certainly important consider the harms of expanded transportation of oil presents to a particular community, transportation is just one aspect of oil in our society. A more complete understanding of the harms and crimes from extraction to consumption and beyond would paint a more holistic picture of the harms surrounding oil. Witness Shae described a conversation with a North Dakota oil field worker who described the interactions that occurred to keep the industry humming even as a boom community created a number of social ills:

I talked to an oil field worker from North Dakota a couple months ago and he was talking about how the rules are relaxed around drunk driving among all those people, the pipefitters and everyone that's working up in those oil fields all winter long. They relax the rules, the judges relax the rules, the DUIs and all the sociological things, the divorces, everything that goes with the industry up there. All the slack that's cut just to keep the bottom line going, just to keep the operation going. That's why they pay so much to people. And there's all those men that are away from their homes, away from their families and working for months on end at very high wages, but sociologically they are going stir crazy, they are drinking too much, they are lonely, they don't know how to handle being away from their families.

The oil boom in North Dakota has ushered in more people and an explosion in crime including violence, drug trafficking, and human trafficking which has brought jurisdictional

issues for state, federal, and tribal entities (Horwitz 2014 September 28). The full scope of the social changes in oil boom towns is in need of inquiry. Even after transportation, other issues should be examined. One respondent suggested that retrofitted refineries that accept the oil transported via train often violate air emission standards and even operate on expired permits. If this is the case, an examination of crude oil refineries is necessary. Furthermore, once oil is refined and consumed, the potential danger does not end. Consumption of course contributes to climate change, but some municipalities are haunted by extraction that occurs elsewhere. The Estill County, Kentucky landfill received over 1,600 tons of radioactive waste generated from gas and oil drilling in Pennsylvania, Ohio, and West Virginia that was dumped illegally (Kocher 2016 February 25). Thus, consumption is not the end of the story because drilling can have impacts in places far from the extraction site.

CONCLUSION

The shipment of crude oil via rail ushered in by a domestic oil boom has had consequences for communities the US. Examining one case where this increased shipment resulted in a derailment, explosion, fire, and discharge of oil instructs on the array of victimizations such events may produce. Upon closer inspection, a complex situation involving numerous players emerged. This is a story of society—social interactions, safety, security, profits, power, and conflict. Though this study provides the rich description of one oil train derailment, it provides insight into what other communities may face. Despite the fall of oil prices, and thus production and shipment from late 2014 to early 2016 (Friedman and Tita 2016 February 28), North Dakota Director of Mineral Resources Lynn Helms said oil “is going to come back pretty hard and pretty rapidly (Dalrymple 2016 April 15). Though there has been a

lull in derailments in early 2016 due to the oil market, this situation will likely change quickly. With the resurgence of oil prices comes a resurgence of oil-by-rail. Given the persistence of oil train derailments since policy changes, it would be suspect to suggest that these events will not continue especially considering backlash and claims of serious flaws in the new standards (Nearing, 2015 May 18). As Fred Millar, a rail consultant put it, “For now, our logic is that you inform the public and the media, and they put pressure on the industry to do things safer. At the very least, making it difficult for them to ship crude oil like peanut butter is something we all ought to do” (Atkin 2013 December 5). Though Lynchburg “dodged a bullet,” there were still many undesirable consequences experienced by many. One respondent reflected on how oil-by-rail shipment has been addressed since the Lynchburg disaster. After insisting “This hasn’t changed. It’s exactly as it was,” he rhetorically asked, “How long ‘til we get our own Lac-Mégantic?” Is it going to take a Bakken bomb catastrophe at the scale of Lac-Mégantic in the United States to begin a more serious conversation about, and substantively change, the norms of crude oil and hazardous materials transportation?

REFERENCES

- ABC News. 2015. "Train Derailment Sends Flaming Tanker into River." ABC News. February 16. Retrieved February 19, 2015 (<http://abcnews.go.com/US/wireStory/west-virginia-train-derailment-sends-oil-tanker-river-29004040>).
- Adler, Freda. 1996. "Offender-Specific vs. Offense-Specific Approaches to the Study of Environmental Crime." Pp. 35-54 in *Environmental Crime and Criminality: Theoretical and Practical Issues*, edited by S. M. Edwards, T. D. Edwards and C. B. Fields. New York, NY: Garland Publishing.
- Association of American Railroads. 2014a. "Moving Crude Oil by Rail." Retrieved April 4, 2015 (<https://www.aar.org/todays-railroads/what-we-haul/crude-oil-by-rail>)
- Association of American Railroads. 2015b. "Railroad 101." Retrieved March 13, 2015 (<https://www.aar.org/railroad-101>).
- Association of American Railroads. 2016. "Freight Rail Traffic Data." Retrieved April 4, 2015 (<https://www.aar.org/pages/freight-rail-traffic-data.aspx>).
- Atkin, Emily. 2013, December 3. "The Inside Story of the Plan to Send Hazardous Materials Straight through the Heart of D.C." ThinkProgress. Retrieved April 18, 2016 (<http://thinkprogress.org/climate/2013/12/05/3010941/secret-chemicals-rail/>).
- Aulette, Judy R and Raymond J Michalowski. 1993. *Fire in Hamlet: A Case Study of a State-Corporate Crime*: Garland Pub.

- Beck, Ulrich. 1992. *Risk Society: Towards a New Modernity*: Sage.
- Benson, Elly. 2016, February 19. "Benicia Planning Commissioners Unanimously Reject Valero's Oil Train Proposal." Sierra Club. Retrieved April 10, 2016 (<http://www.sierraclub.org/planet/2016/02/benicia-planning-commissioners-unanimously-reject-valero-s-oil-train-proposal>).
- Berg, Bruce L. 2007. *Qualitative Research Methods for the Social Sciences*. Boston, MA: Pearson.
- Bernton, Hal. 2016. "5 Activists Convicted of Trespass on Everett Tracks in Protest of Oil, Coal Trains." *The Seattle Times*. January 15 <http://www.seattletimes.com/seattle-news/environment/5-activists-convicted-of-trespass-on-everett-tracks-in-protest-over-oil-coal-trains/>
- Blue Ridge Chapter National Railway Historical Society. 2016. "History of Lynchburg Rail Day." Retrieved April 4, 2016 (<http://www.blueridgenrhs.org/rail-day/82-rail-day/103-rail-day-history>).
- Brisman, Avi. 2010. "The Indiscriminate Criminalisation of Environmentally Beneficial Activities." *Global environmental harm: Criminological perspectives*:161-92.
- Brisman, Avi, Bill McClanahan and Nigel South. 2014. "Toward a Green-Cultural Criminology of "the Rural." *Critical Criminology* 22(4):479-94.
- Brisman, Avi and Nigel South. 2012. "A Green-Cultural Criminology: An Exploratory Outline." *Crime, Media, Culture* 9(2):115-35.
- Brown, David F, AJ Policastro, WE Dunn, RA Carhart, MA Lazaro, WA Freeman and M Krumpolc. 2005. *Development of the Table of Initial Isolation and Protective Action Distances for the 2004 Emergency Response Guidebook*: Decision and Information Sciences Division, Argonne National Laboratory.
- Bullard, Robert. 1990. *Dumping in Dixie: Race, Class and Environmental Quality*. Boulder, CO: Westview.
- Burns, Ronald G. and Michael Lynch. 2004. *Environmental Crime: A Sourcebook*. New York, NY: LFB Scholarly Publishing.
- Business & Economics Research Advisor. 2013. "Transportation & Storage" *The Oil & Gas Industry*, Issue 5/6. The Library of Congress. Retrieved March 13, 2015 (<http://www.loc.gov/rr/business/BERA/issue5/transportation.html>).
- Buzan, Barry, Ole Waever and Jaap de Wilde. 1998. *Security: A New Framework for Analysis*. Boulder, CO: Lynne Rienner.
- Caldicott, Helen. 1992. *If You Love This Planet: A Plan to Heal the Earth*. New York, NY:

Norton & Company.

- Carrabine, Eammon, Paul Iganski, Maggy Lee, Ken Plummer and Nigel South. 2004. "The Greening of Criminology." Pp. 313-30 in *Criminology: A Sociological Introduction*, edited by E. Carrabine, P. Iganski, M. Lee, K. Plummer and N. South. New York, NY: Routledge.
- CBC News. 2015 "CN Rail Reopens Tracks after Gogama, Ont. Train Derailment." CBC/Radio-Canada. . February 18. Retrieved February 19, 2015 (<http://www.cbc.ca/news/canada/sudbury/cn-rail-reopens-tracks-after-gogama-ont-train-derailment-1.2961838>).
- Chambliss, William. 1990. "State Organized Crime." *Criminology* 27(2):183-208.
- Chomsky, Noam. 2001. *9-11*. New York: Seven Stories Press.
- The City of Lynchburg, Virginia. 2013, "About Lynchburg". Retrieved January, 22 2015, 2015 (<http://www.lyncburgva.gov/about-lynchburg>).
- Clifford, Mary; Edwards, Terry. 1998. "Defining 'Environmental Crime'." Pp. 5-30 in *Environmental Crime: Enforcement, Policy, and Social Responsibility*, edited by M. Clifford. Gaithersburg, MD: Aspen.
- Creswell, John W. 2013. *Qualitative Inquiry & Research Design: Choosing among Five Approaches*. Thousand Oaks, CA: Sage.
- Cruciotti, Tricia and Rick Matthews. 2006. "The Exxon Valdez Oil Spill." Pp. 149-71 in *State-Corporate Crime: Wrongdoing at the Intersection of Business & Government*, edited by R. Michalowski and R. Kramer. New Brunswick, NJ: Rutgers University Press.
- CSX. 2014. "Moving Forward: CSX Corporate Social Responsibility Report 2014." Vol.
- Cusick, Marie. 2014, "Train Carrying Crude Oil Derails in Wester Pa." StateImpact Pennsylvania. Retrieved February 17, 2015 (<https://stateimpact.npr.org/pennsylvania/2014/02/13/train-carrying-crude-oil-derails-in-western-pa/>).
- Dalrymple, Amy. 2016, April 12. "Helms Predicts Oil Will Come Back 'with a Rush'." in *The Bismark Tribune*.
- Del Gandio, Jason and Anthony J. Nocella II, eds. 2014. *The Terrorization of Dissent: Corporate Repression, Legal Corruption, and the Animal Enterprise Terrorism Act*: Lantern Books.
- DeMelle, Brendan. 2015, September 17. "There's an Easy Fix to Stop Oil "Bomb Trains," So Why Isn't Government Requiring It?" in *Huffington Post*.
- Dimick, Dennis. 2014. "How Long Can the U.S. Oil Boom Last?" *National Geographic*.

- Dobuzinskis, Alex. 2015, July 17. "Montana Train Derailment Spilled 35,000 Gallons of Crude Oil." in *Reuters*.
- Donnelly, Jacob. 2015, "Department of Transportation to Continue Mandating Oil Train Disclosures, but States Vary Widely on Requirements": Reporters Committee for Freedom of the Press. Retrieved February 6, 2016 (www.rcfp.org/browse-media-law-resources/news/department-transportation-continue-mandating-oil-train-disclosures-s).
- The DOT-111 Reader. 2015, "FAQ's". Retrieved April 20, 2015, 2015 (<http://dot111.info/faqs/>).
- Du Rées, Helena. 2001. "Can Criminal Law Protect the Environment?" *Journal of Scandinavian Studies in Criminology and Crime Prevention* 2(2):109-26.
- Edmonds, W. Alex and Thomas D. Kennedy. 2012. *An Applied Reference Guide to Research Designs: Quantitative, Qualitative, and Mixed Methods*. Thousand Oaks, CA: Sage.
- Edwards, Sally M., Terry D. Edwards and Charles B. Fields. 1996. *Environmental Crime and Criminality: Theoretical and Practical Issues*. New York, NY: Garland Publishing.
- Eman, Katja; Meško, Gorazd; Fields, Charles B. 2009. "Crimes against the Environment: Green Criminology and Research Challenges in Slovenia." *Varstvoslovje: Journal of Criminal Justice and Security* 11(4):574-92.
- Envision the James. 2016, "James River and Kanawha Canal." Retrieved April 4, 2016 (<http://www.envisionthejames.org/detail/james-river-and-kanawha-canal/evj6e320620cd3a8cf84>).
- Fagin, Daniel; Lavelle, Marianne. 1996. *Toxic Deception*. Ontario, Canada: Birch Lane Press.
- Federal Railroad Administration. 2014. *Proposed Agency Information Collection Activities; Comment Request*. Washington, DC: Department of Transportation. (<http://www.federalregister.gov/a/2014-23511>).
- Federal Railroad Administration. 2015a. *Federal Railroad Administration to Railroads: Notification of Crude Oil Trains to States Must Continue*. Washington, DC: Department of Transportation. (<https://www.fra.dot.gov/eLib/details/L16747>).
- Federal Railroad Administration. 2015b. *Remarks as Delivered for Federal Railroad Administration Administrator Sarah Feinberg*. Washington, DC: Department of Transportation. (https://www.fra.dot.gov/eLib/details/L17202#p1_z5_gD_IPS).
- Federal Railroad Administration. 2016a. *FRA Launches Website for State and Municipalities to Request Bridge Inspection Reports*. FRA 08-16. Washington, DC: Department of Transportation. (<http://www.fra.dot.gov/eLib/details/L17353>).

- Federal Railroad Administration. 2016b. *Positive Train Control (PTC) Overview (Railroad Safety)*. Washington, DC: Department of Transportation. (<http://www.fra.dot.gov/Page/P0621>).
- Ferguson, Ashley. 2011. "We're Victims, Too: The Need for Greater Protection of Environmental Crime Victims under the Crime Victims Rights Act." *Penn State Environmental Law Review* 19:287.
- Ferrell, Jeff. 2006. *Empire of Scrounge: Inside the Urban Underground of Dumpster Diving, Trash Picking, and Street Scavenging*: NYU press.
- Ferrell, Jeff. 2013. "Tangled up in Green: Cultural Criminology and Green Criminology." Pp. 349-64 in *Routledge International Handbook of Green Criminology*, edited by N. South and A. Brisman. New York, NY: Routledge.
- Frank, Nancy; Lynch, Micheal. 1992. *Corporate Crime, Corporate Violence: A Primer*. New York, NY: Harrow & Heston.
- Friedman, Lawrence M. 2005. *A History of American Law*: Simon and Schuster.
- Friedman, Nicole and Bob Tita. 2016. February 28. "The New Oil-Storage Space: Railcars." in *The Wall Street Journal*.
- Gabler, Ellen. 2015. November 8. "Wisconsin's 2nd Derilment of Weekend Involves Train Carrying Crude Oil." in *Journal Sentinel*. Milwaukee, Wisconsin.
- Geis, Gilbert. 2016. *White-Collar and Corporate Crime*, Edited by H. N. Pontell. New York: Oxford Universtiy Press.
- Gerken, James. 2014. January 22. "Oil Trains Spilled More Crude Last Year Than in the Previous 38 Years Combined": The Huffington Post. Retrieved April 20, 2015, 2015 (http://www.huffingtonpost.com/2014/01/22/oil-train-spills_n_4645339.html).
- Gibbons, Robert and Elizabeth Dilts. 2014, February 13, "Train Carrying Canadian Oil Derails, Leaks in Pennsylvania" *Reuters*. Retrieved October 27, 2014 (<http://www.reuters.com/article/2014/02/13/us-energy-crude-derailment-idUSBREA1C13120140213>).
- Gibbs, Carole, Meredith L. Gore, Edmund F. McGarrell and Louie Rivers III. 2010. "Introducing Conservation Criminology: Towards Interdisciplinary Scholarship on Environmental Crimes and Risks." *British Journal of Criminology* 50(1):124-44.
- Griffiths, Hannah. 2005. "Human and Environmental Rights: The Need for Corporate Accountability." *Human and environmental security: An agenda for change*:221-34.
- Hall, Matthew. 2013. *Victims of Environmental Harm: Rights, Recognition and Redress under National and International Law*. New York: Routledge.

- Halsey III, Ashley and Michael Laris. 2015. October 25. "Deadline for Train Safety Technology Undercut by Industry Lobbying." in *The Washington Post*.
- Hills, Suzannah. 2013. July 8. "Victims in Canadian Oil Tanker Crash May Have Been Vaporized: Fears for 40 Missing Grows after Runaway Train Caused Huge Explosion 'Like an Atom Bomb'." in *Daily Mail*.
- Horn, Steve. 2015. July 18. "FBI Advisory: Oil Trains at Risk of "Extremist" Attack, but Lack "Specific Information" to Verify": Desmog. Retrieved February 6, 2016 (<http://www.desmogblog.com/2015/07/18/fbi-advisory-oil-trains-extremist-terrorism-attack-lacks-specific-verification-information>).
- Horwitz, Sari. 2014. September 28. "Dark Side of the Boom." in *The Washington Post*.
- James River Association. 2014. "Lynchburg Train Derailment Updates." Retrieved January 21, 2015, (<http://jrava.org/news/lynchburg-train-derailment>).
- James River Association. 2016a. "About the James." Retrieved April 4, 2016, 2016 (<http://www.jamesriverassociation.org/the-james-river/about-the-james>).
- James River Association. 2016b. "The James River Batteau." Retrieved April 4, 2016 (<http://www.jamesriverassociation.org/enjoy-the-james/secrets-of-the-james-batteau>).
- Jarrell, Meliisa and Joshua Ozymy. 2012. "Real Crime, Real Victims: Environmental Crime Victims and the Crime Victim's Rights Act (Cvra)." *Crime, law and social change* 58(4):373-89.
- Jenkins, Philip. 2003. *Images of Terror: What We Can and Can't Know About Terrorism*. New York: Oxford University Press.
- Katz, Rebecca S. 2010. "The Corporate Crimes of Dow Chemical and the Failure to Regulate Environmental Pollution." *Critical Criminology* 18(4):295-306.
- KCRG-TV9. 2015. "Train Derailment North of Dubuque": KCRG-TV9. February 5. Retrieved February 17, 2015 (<http://thegazette.com/subject/news/train-derailment-north-of-dubuque-20150204>).
- King, Nigel and Christine Horrocks. 2010. *Interviews in Qualitative Research*. Thousand Oaks, CA: Sage.
- Klein, Naomi. 2014. *This Changes Everything: Capitalism Vs. The Climate*. New York, NY: Simon & Schuster.
- Kocher, Greg. 2016, February 25. "Low-Level Radioactive Waste Illegally Dumped in Estill Landfill, State Official Says." in *The Lexington Herald-Leader*.

- Krahmann, Elke. 2011. "Beck and Beyond: Selling Security in the World Risk Society." *Review of international studies* 37(01):349-72.
- Kramer, Ronald C. 1990. "State-Corporate Crime: A Case Study of the Space Shuttle Challenger Explosion." in *Edwin Sutherland conference on white collar crime*, Vol. 50.
- Kramer, Ronald C and Raymond J Michalowski. 2006. "The Original Formulation." Pp. 18-26 in *State-Corporate Crime: Wrongdoing at the Intersection of Business and Government*, edited by R. J. Michalowski and R. C. Kramer. New Brunswick, NJ: Rutgers University Press.
- Kraska, Peter B. and W. Lawrence Neuman. 2008. *Criminal Justice and Criminology Research Methods*. Boston, MA: Allyn and Bacon.
- Lazare, Sarah. 2015. February 23, "Get Used to It: Dot Predicts Oil Train Derailments Will Be Commonplace over Next Two Decades": CommonDreams. Retrieved April 20, 2015 (<http://www.commondreams.org/news/2015/02/23/get-used-it-dot-predicts-oil-train-derailments-will-be-commonplace-over-next-two>).
- Lee, Charles. 1992. "Toxic Waste and Race in the United States." Pp. 10-27 in *Race and the Incidence of Environmental Hazards: A Time for Discourse*, edited by B. Byrant and P. Mohai. Boulder, CO: Westview.
- Levinson, Marc. 2010. *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*. Princeton, NJ: Princeton University Press.
- Loadenthal, Michael. 2013. "The Earth Liberation Front: A Movement Analysis." *Radical Criminology* (2):15-46.
- Lowe, Philip, Neil Ward, Susanne Seymour, and Judy Clark. 1996. "Farm Pollution as Environmental Crime." *Science as Culture* 25(4):588-612.
- Lucas, Rachel. 2015. August 21. "NTSB Report Reveals Images of Track Condition, Testimony on CSX Response Time after Lynchburg Derailment." WSL10. Retrieved September 3, 2015 (<http://wsls.com/2015/08/21/details-about-lynchburg-train-derailment-released-by-ntsb/>).
- Lynch, Michael. 1990. "The Greening of Criminology: A Perspective on the 1990s." *The Critical Criminologist* 2(3):1-4, 11-12.
- Lynch, Michael and Paul Stretesky. 2003. "The Meaning of Green: Contrasting Criminological Perspectives." *Theoretical Criminology* 7(2):217-38.
- Lynch, Michael and Paul Stretesky. 2007. "Green Criminology in the United States." Pp. 248-69 in *Issues in Green Criminology*, edited by P. Beirne and N. South. Cullompton: Willan.

- Mackrael, Kim. 2014. "Lac-Mégantic Derailment: Anatomy of a Disaster " in *The Globe and Mail*. Toronto, Canada.
- Maher, Kris. 2015. February 19, "West Virginia Oil Train That Derailed Was Traveling under Speed Limit": *The Wall Street Journal*. Retrieved February 19, 2015.
- Mangione, Kendra. 2015, February 15, "Cn Train Derails South of Timmins, Ont.": Bell Media. Retrieved February 17, 2015 (<http://www.ctvnews.ca/canada/cn-train-derails-south-of-timmins-ont-1.2237139>).
- Manning, Francis S and Richard E Thompson. 1995. *Oilfield Processing of Petroleum: Crude Oil*, Vol. 2: Pennwell books.
- Mares, Dennis. 2010. "Criminalizing Ecological Harm: Crimes against Carrying Capacity and Criminalization of Eco-Sinners." *Critical Criminology* 18:279-93.
- Margolis, Jared. 2015. "Runaway Risks: Oil Trains and the Government's Failure to Protect People, Wildlife and the Environment." Vol.: Center for Biological Diversity.
- Mathis, Joel. 2014. "Officials Prepare for Oil Train Fire." *Philadelphia Magazine*, October 20, 2014.
- McAllister, Edward. 2013, "Train Carrying Crude Oil Derails, Cars Ablaze in Alabama": Reuters. Retrieved February 17, 2015 (<http://www.reuters.com/article/2013/11/08/us-crude-train-explosion-idUSBRE9A70Q920131108>).
- McAllister, Edward. 2015, February 17, "Derailed Csx Train in West Virginia Haled Newer-Model Tank Cars": Reuters. Retrieved February 19, 2015 (<http://www.reuters.com/article/2015/02/17/us-usa-train-derailment-csx-idUSKBN0LK1ST20150217>).
- Merriam, Sharan B. 1988. *Case Study Research in Education: A Qualitative Approach*: Jossey-Bass.
- Michalowski, Raymond J and Ronald C Kramer. 2006. "The Critique of Power." Pp. 1-17 in *State-Corporate Crime: Wrongdoing at the Intersection of Business and Government*, edited by R. J. Michalowski and R. C. Kramer. New Brunswick, NJ: Rutgers University Press.
- Miyazaki, Anthony D and Kimberly A Taylor. 2008. "Researcher Interaction Biases and Business Ethics Research: Respondent Reactions to Researcher Characteristics." *Journal of Business Ethics* 81(4):779-95.
- Mythen, Gabe and Sandra Walklate. 2006. "Criminology and Terrorism: Which Thesis? Risk Society or Governmentality?" *British Journal of Criminology* 46(3):379-98.
- National Institute of Justice. 2011. "Terrorism". Washington, DC: U.S. Department of Justice.

Retrieved January 3, 2016

(<http://www.nij.gov/topics/crime/terrorism/pages/welcome.aspx>).

National Transportation Safety Board. 2015. *Interview Of: Robert E. Lipscomb*. Washington, DC: U.S. Department of Transportation. Docket No. DCA-14-FR-008.

National Transportation Safety Board. 2016. *Railroad Accident Brief: Csxt Pretroleum Crude Oil Train Derailment and Hazardous Materials Release*. Washington, DC: U.S. Department of Transportation. NTSB/RAB-16/01.
(<http://www.nts.gov/investigations/AccidentReports/Reports/RAB1601.pdf>).

Nearing, Brian. 2015, May 2. "Who Pays If a Crude Oil Train Crashes? No Mandates for Rail Insurance." in *timesunion*.

Nearing, Brian. 2015, May 18. "Riverkeeper Sues U.S. Dot over Oil Train Safety Rules." in *timesunion*.

Neocleous, Mark. 2008. *Critique of Security*: Edinburgh University Press.

Nunez, Christina and John Tomanio. 2015. "This Map Shows How U.S. Oil Train Accidents Skyrocketed." *National Geographic*.

Nurse, Angus. 2016. *An Introduction to Green Criminology and Environmental Justice*. Thousand Oaks, California: Sage.

Nussbaum, Paul. 2015. "Oil Trains: Scary Secrecy." in *The Philadelphia Inquirer*, Vol. 2016.

PennEnvironmental Research & Policy Center. 2016. "Environmental Justice and Oil Trains in Pennsylvania." PennEnvironment Research and Policy Center, ACTION United, and ForestEthics. (<http://www.pennenvironment.org/reports/pae/environmental-justice-and-oil-trains-pennsylvania>)

Persinger, Ryanne. 2016, April 1. "Tracking the Oil Train Menace." in *The Philadelphia Tribune*.

Petska, Alicia. 2014. "Regulators Are Negotiating Terms of Order Following Csx Derailment." in *News and Advance*.

Pipeline and Hazardous Materials Safety Administration. 2012. U.S. Department of Transportation. *2012 Emergency Response Guidebook*.
(http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_7410989F4294AE44A2EBF6A80ADB640BCA8E4200/filename/ERG2012.pdf).

Pipeline and Hazardous Materials Safety Administration. 2015a. U.S. Department of Transportation. *Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains*. PHMSA-2012-0082 (HM-251)
(http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_C93438A3750672CC19C2186582)

53009CC0511900/filename/HHFT_Final_Rule.pdf).

- Pipeline and Hazardous Materials Safety Administration. 2015b. U.S. Department of Transportation. "PHMSA Notice Regarding Emergency Response Notifications for Shipments of Petroleum Crude Oil by Rail." edited by U. S. D. o. Transportation.
- Potter, Gary. 2013. "Justifying 'Green' Criminology: Values and 'Taking Sides' in an Ecologically Informed Social Science." Pp. 125-41 in *Values in Criminology and Community Justice*, edited by M. Cowburn, M. Duggan, P. Senior and A. Robinson. Bristol: Policy Press.
- Potter, Gary. 2014. "The Criminogenic Effects of Environmental Harm: Bringing a 'Green' Perspective to Mainstream Criminology." Pp. 7-24 in *Environmental Crime and Its Victims: Perspectives within Green Criminology*, edited by T. Spapens, R. White and M. Kluin. Burlington, VT: Ashgate.
- Prine, Carl and Chuck Biedka. 2014, "Vandergrift Derailment Fans Fears over Oil Shipments": Trib Total Media. Retrieved February 17, 2015 (<http://triblive.com/neighborhoods/yourallekiskivalley/yourallekiskivalleymore/5589555-74/building-derailed-hit#ixzz2tDck9pER>).
- Public Broadcasting Service. "The Impact of the Transcontinental Railroad". Retrieved March 13, 2015 (<http://www.pbs.org/wgbh/americanexperience/features/general-article/tcrr-impact/>).
- Rebovich, Donald. 1998. "Environmental Crime Research: Where We Have Been, Where We Should Go." Pp. 341-54 in *Environmental Crime: Enforcement, Policy, and Social Responsibility*, edited by M. Clifford. Gaithersburg, MD: Aspen.
- Rebovich, Donald. 2002. "Prosecuting Environmental Crime in the Twenty-First Century." Pp. 331-50 in *Visions for Change: Crime and Justice in the Twenty-First Century*, edited by R. R. Muraskin, Albert. Upper Saddle River, NJ: Prentice Hall.
- Rector, Kevin. 2014. "2 Railroads Sue Md. To Prevent Disclosure of Crude Oil Shipments." in *The Baltimore Sun*.
- Reeves, Jay. 2015. "Months after Oil Train Spill, Alabama Swamp Still Polluted": Huffington Post. May 15. Retrieved February 17, 2015 (http://www.huffingtonpost.com/2014/03/15/oil-train-spill-alabama_n_4969523.html).
- Reiman, Jeffrey. 1979. *The Rich Get Richer and the Poor Get Prison*. Needham Heights, MA: Allyn & Bacon.
- Riverkeeper. 2014. "Crude Oil Transport." Retrieved October 27, 2014 (<http://www.riverkeeper.org/campaigns/river-ecology/crude-oil-transport/#rail>).

- Rohr, Alex. 2015. "Documents Detail Facts of Lynchburg Oil Train Derailment." *The Roanoke Times*. August, 21. Retrieved September 18, 2015 (http://www.roanoke.com/news/virginia/documents-detail-facts-of-lynchburg-oil-train-derailment/article_2fb6f16f-b7a3-5641-a0fc-4d403b1837fc.html)
- Rothe, Dawn L. 2009. *State Criminality: The Crime of All Crimes*: Lexington Books.
- Rubin, Herbert J. and Irene S. Rubin. 2012. *Qualitative Interviewing*. Los Angeles, CA: Sage.
- Rucker, Patrick. 2014, May 1. "Derailed CSX Train Carried Bakken Oil for Plains All American." *Reuters*. Retrieved April 10, 2016 (<http://www.reuters.com/article/us-railways-accident-csx-idUSBREA400KO20140501>)
- Ruggiero, Vincenzo and Nigel South. 2010. "Critical Criminology and Crimes against the Environment." *Critical Criminology* 18(4):245-50.
- Sellin, Thorston. 1938. *Culture, Crime and Conflict*. New York, NY: Social Science Research Council.
- Shaffer, David and Evan Ramstad. 2014, "NTSB: 400,000 Gallons of Crude Spilled in N.D. Wreck", Minneapolis, MN: Star Tribune. Retrieved December 8, 2014 (<http://www.startribune.com/business/239948631.html>).
- Shelden, Randall. 2008. *Controlling the Dangerous Classes: A History of Criminal Justice in America*: Allyn & Bacon.
- Sherwood, Dave. 2016. "Legislature Sidestepped Records Law in Shutting Down Public Access to Oil Train Data." in *Sun Journal*.
- Sider, Alison. 2015, April 6. "Fewer Oil Trains Ply America's Rails." in *The Wall Street Journal*.
- Simon, David. 2000. "Corporate Environmental Crimes and Social Inequity: New Directions for Environmental Justice." *American Behavioral Scientist* 43(4):633-345.
- Situ, Yingyi and David Emmons. 2000. *Criminal Law and the Environment*. Thousand Oaks, CA: Sage.
- Skinneider, Eileen. 2011. "Victims of Environmental Crime: Mapping the Issues." Vol. March 2011. Vancouver: The International Center for Criminal Law Reform and Criminal Justice Policy.
- Slack, Megan. 2012. "Our Dependence on Foreign Oil Is Declining." *The White House Blog*. Retrieved 2015 (<https://www.whitehouse.gov/blog/2012/02/29/our-dependence-foreign-oil-declining>).
- South, Nigel and Piers Beirne. 2006. *Green Criminology*. Aldershot: Ashgate.

- South, Nigel, Avi Bisman and Piers Beirne, eds. 2013. *A Guide to Green Criminology*, Edited by N. South and A. Brisman. New York, NY: Routledge.
- South, Nigel and Avi Brisman. 2013. *Routledge International Handbook of Green Criminology*. New York, NY: Routledge.
- South, Nigel. 2014. "Green Criminology: Reflections, Connections, Horizons." *International Journal for Crime, Justice and Social Democracy* 3(2):5-20.
- Springston, Rex and Michael Martz. 2014, May 1. "Spill's Effect on James River Seen as Minimal: Fears Ease over Threat to Drinking Water, Ecology." in *Richmond Times-Dispatch*.
- Stake, Robert E. 1995. *The Art of Case Study Research*. Thousand Oaks, CA: Sage.
- Stover, John F. 2008. *American Railroads*: University of Chicago Press.
- Sussman, Anna Louie. 2013, November 11, "Alabama Oil-Train Derailment Raises Questions About Crude Shipment Safety": The Huffington Post. Retrieved April 20, 2015, 2015 (http://www.huffingtonpost.com/2013/11/11/alabama-oil-train-derailment_n_4252887.html).
- Sutherland, Edwin. 1983. *White-Collar Crime: The Uncut Version*. New Haven, CT: Yale University Press.
- Tate, Curtis. 2014 October 6. "Rail Industry Pushes Feds to Drop Crude-Oil Reporting Rule": McClatchy DC. Retrieved February 6, 2016 (www.mcclatchydc.com/news/nation-world/national/economy/article24774292.html).
- Tate, Curtis. 2014 October 16. "Crude Oil Train Disclosures Raise Risk of Attack, Regulators Told." in *McClatchy DC*.
- Tate, Curtis. 2014 November 14. "Train Derailment, and a Bit of Luck, Strikes Again in Casselton, N.D.". Washington, DC: McClatchy Washington Bureau. Retrieved February 17, 2015 (<http://www.mcclatchydc.com/2014/11/14/246982/train-derailment-and-a-bit-of.html>).
- Transportation Safety Board of Canada. 2014. *Lac-Mégantic Runaway Train and Derailment Investigation Summary*. (<http://www.tsb.gc.ca/eng/rapports-reports/rail/2013/r13d0054/r13d0054-r-es.asp>).
- Transportation, U.S. Department of. 2014. *Petroleum Crude Oil Railroad Carriers Docket No. Dot-Ost-2014-0067*Congress, (<https://www.transportation.gov/briefing-room/emergency-order>).
- Transportation, U.S. Department of. 2015. "Dot Announces Final Rule to Strengthen Safe

- Transportation of Flammable Liquids by Rail." Vol. DOT 42-15. Washington, DC.
- United States Congress. 2016, "H.R. 1679- Bakken Crude Stabilization Act of 2015". Retrieved April 10, 2016 (<https://www.congress.gov/bill/114th-congress/house-bill/1679/all-actions-without-amendments>).
- U.S. Census Bureau. 2014. *State & County Quickfacts*. Lynchburg city, Virginia (<http://quickfacts.census.gov/qfd/states/51/51680.html>).
- U.S Energy Information Administration. 2015a. *Annual Energy Outlook 2015*. Washington, DC: U.S. Department of Energy. (<http://www.eia.gov/forecasts/AEO/>).
- U.S Energy Information Administration. 2015b. *Countries*. Washington, DC: U.S. Department of Energy. (<http://www.eia.gov/countries/>).
- U.S Energy Information Administration. 2015c. *How Much Oil Is Consumed in the United States*. Washington, DC: U.S. Department of Energy. (<http://www.eia.gov/tools/faqs/faq.cfm?id=33&t=6>).
- U.S Energy Information Administration. 2015d. *U.S. Field Production of Crude Oil (Thousands of Barrels)*. Washington, DC: U.S. Department of Energy. (<http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPUS1&f=M>).
- U. S. Environmental Protection Agency. 2015. *What Is EPCRA?*. Retrieved January 26, 2016 (<http://www.epa.gov/epcra/what-epcra>).
- U.S. Government. 2015, "Tips for Going Green". Retrieved February 3, 2015 (<http://www.usa.gov/topics/environment-agriculture/going-green-tips.shtml>).
- U.S. Office of Inspector General. 2016. *FRA's Oversight of Hazardous Materials Shipments Lacks Comprehensive Risk Evaluation and Focus on Deterrence*. ST-2016-020Congress, (https://www.oig.dot.gov/sites/default/files/FRA%20Oversight%20of%20Hazmat%20by%20Rail_Final%20Report%5E2-24-16.pdf).
- Virginia Department of Environmental Quality. 2015. *State Water Control Board Enforcement Action-Order by Consent Issued to CSX Transportation, Inc.* BR14-0513; IR No. 2014-L-2591; PC No. 2014-2359. Richmond, VA: Virginia Department of Environmental Quality. (<http://www.deq.virginia.gov/Portals/0/DEQ/Enforcement/Public%20Notice%20RP%20Signed%20Orders/CSX%20order%20signed%203Feb2015.pdf>).
- Virginia Department of Environmental Quality. 2016. *State Water Control Board Overview*. Richmond, VA: Department of Environmental Quality. (<http://www.deq.virginia.gov/Portals/0/DEQ/LawsAndRegulations/CitizenBoards/WaterBoard/StateWaterControlBoardOverview.pdf>).

- Virginia State Water Control Board. 2015. *Tentative Agenda, State Water Control Board Meeting, Monday, March 30, 2015*. Richmond, VA: Virginia Department of Environmental Quality.
(http://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\Meeting\103\22620\Agenda_DEQ_22620_v1.pdf).
- Walls, Dave. 2015, October 5. "CSX: Train Derailed in Lynchburg Carrying Empty Oil Cars." in *WSET*.
- Walters, Reece. 2010. "Eco Crime." Pp. 173-208 in *Crime: Local and Global*, edited by J. Muncie, D. Talbot and R. Walters. Cullompton: Willan.
- Westerhuis, Diane, Reece Walters and Tanya Wyatt. 2013. *Emerging Issues in Green Criminology: Exploring Power, Justice and Harm*. London: Palgrave Macmillan.
- White, Rob. 2007. "Green Criminology and the Pursuit of Ecological Justice." Pp. 32-54 in *Issues in Green Criminology*, edited by P. Beirne and N. South. Cullompton: Willan Publishing.
- White, Rob. 2008. *Crimes against Nature: Environmental Criminology and Ecological Justice*. Portland, OR: Willan Publishing.
- White, Richard. 2011. *Railroaded: The Transcontinentals and the Making of Modern America*. New York: NY: W.W. Norton & Company.
- Woodbury, Emily and Ben Kieffer. 2015, "Derailment in Dubuque--a Reminder of the Hazards of Transporting Oil by Rail": Iowa Public Radio. Retrieved February 17, 2015
(<http://iowapublicradio.org/post/derailment-dubuque-reminder-hazards-transporting-oil-rail>).
- Yin, Robert K. 2009. "Case Study Research: Design and Method." Thousand Oaks, CA: Sage.
- Zoellner, Tom. 2014. *Train*. New York, NY: Penguin Books.

APPENDIX
INTERVIEW SCHEDULE

Introduction: Thank you for your willingness to help me with this research project. I am Travis Milburn and I am a doctoral student in criminology and criminal justice at Old Dominion University in Norfolk, Virginia. Today we will discuss your experience with the Lynchburg train derailment that occurred on April 30, 2014 including the aftermath of the event and any developments up to this point.

Your participation in this project is voluntary and you may choose to end our conversation at any point that you would like. Your participation is also confidential. This means I will not use your name or identifying information without your permission. I intend to use what you say during our conversation, but this will not include personal identification of you unless you would like for me to do so.

I will be recording our conversation today with your permission. The purpose of this is so that I can listen to the recording later in order to take notes and so that I can focus on our conversation. I will be the only one that will have access to or hear this recording. Once the project is complete, I will destroy the recording.

I will also gladly share the research with you once it is completed if you would like for me to do so.

Do you have any questions before we get started?

- 1) Let us begin with some information about your connection to Lynchburg.
 - a. What is your connection to Lynchburg (resident, work there, from there?)
 - b. How long has that connection existed?

2) Now let us focus on the Lynchburg oil train derailment that occurred April 30, 2014.

- Describe where you were and how you heard about the Lynchburg train derailment that happened in April, 2014.
- Can you explain how the event affected you—such as business, recreation, and health?
 - What about the environment?
- What was the community reaction to the derailment?
- What was your experience with the cleanup procedure after the derailment? How did public and company officials deal with public concern?
- Now that it has been over a year since the derailment, how would you describe how the event transpired? Was the derailment handled effectively? What could have been improved upon and by whom?
- How did city officials inform the public about the event? How did city officials inform the public about the aftermath? Why do you think that this event happened and what informed this?
- How has this event changed you? Has it changed your opinion of officials, CSX, the oil or railroad industry, your consumption of oil/gas?
- What can you tell me about the media coverage?
 - During the event?
 - Since the event occurred?
- What measures, if any, have been taken to improve safety?
 - By whom?
 - What do you think about this?
 - What should happen
- Do you think anything illegal happened here?
 - Why do you think that?
- Do you have any questions for me?

Conclusion: Thank you very much for your time and for sharing your experience with me. I hope our discussion has been useful for you. This research project is ongoing, but once the project is completed, I will share it with you if you would like.

VITA

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PUBLICATIONS

Milburn, Travis, David May & Peter Wood. 2014. "Military service in lieu of imprisonment: Voices from the inside." *Political and Military Sociology: An Annual Review*, Vol. 42:149-176.

RESEARCH

Milburn, Travis & Justin Turner. 2015. "Concerned parents, nervous schools, larger profits: Middle-class values through protective consumption." In Progress.

Turner, Justin & Travis Milburn. "Neoliberalism, the school, and interpersonal violence: A perpetuating cycle in the drift toward securitization." In Progress.

Milburn, Travis. "The New England Compounding Center and the meningitis outbreak: Implicating an industry." In Progress.