Fall 2017


Brian Straniti
stranitib@cwu.edu

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FRACKED PERCEPTIONS: CHANGES IN PERCEPTION REGARDING HYDRAULIC FRACTURING AMONG RESIDENTS OF DIMOCK, PENNSYLVANIA.

A Thesis
Presented to
The Graduate Faculty
Central Washington University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Cultural and Environmental Resource Management

by
Brian P. Straniti
November 2017
We hereby approve the thesis of

Brian P. Straniti

Candidate for the degree of Master of Science

APPROVED FOR THE GRADUATE FACULTY

____________________
Dr. Elvin Delgado, Committee Chair

____________________
Dr. Lene Pedersen, Thesis Committee Member

____________________
Dr. Pamela McMullin-Messier, Thesis Committee Member

____________________
Dean of Graduate Studies
ABSTRACT

FRACKED PERCEPTIONS: CHANGES IN PERCEPTION REGARDING HYDRAULIC FRACTURING AMONG RESIDENTS OF DIMOCK, PENNSYLVANIA.

By
Brian P. Straniti

November 2017

The primary objective of this research is to critically analyze changes in perceptions associated with hydraulic fracturing within Dimock, Pennsylvania. Residents of Dimock initially welcomed fracking in 2006 due to positive corporate rhetoric promoting economic benefits such as mineral rights acquisition, land-leasing, and local business development. However, economic benefits diminished as Dimock advanced through a boom period resulting in a current economic and ecological bust. Two months of data collection occurred in the summer of 2016 using semi-structured interviews, participant observation, and document analysis. Political economy of nature and political ecology theoretical frameworks were used to analyze and conceptualize the collected data.

This research explores the socio-cultural changes in Dimock, by understanding the residents’ perception change toward fracking. The central argument presented is fracking companies produced early positive perceptions of fracking externalities, but later
encouraged discord between residents in order to retain local support after the initial positive perceptions were not met. Initial perceptions revolved around high economic return with minimal change to environmental quality or rural aesthetics. Also, this discord is more widespread than environmental issues, as it is experienced by all community members. Residents supporting fracking find themselves at odds with residents claiming water contamination issues, as negative associations of the process triggers environmental activism in the area. Environmentalism is understood locally to increase regulation, which reduces the expected economic benefits resulting from fracking activities in the area. However, as I will show, production decreases only as a reaction to a complex global and national supply and demand chain.
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHAPTER I. INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td>I.I RESEARCH PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>I.II PURPOSE</td>
<td>7</td>
</tr>
<tr>
<td>I.III SIGNIFICANCE</td>
<td>10</td>
</tr>
<tr>
<td>I.IV LITERATURE REVIEW</td>
<td>11</td>
</tr>
<tr>
<td>I.IV.I Theoretical Frameworks</td>
<td>11</td>
</tr>
<tr>
<td>I.IV.II Neoliberalism</td>
<td>17</td>
</tr>
<tr>
<td>I.IV.III Governance</td>
<td>20</td>
</tr>
<tr>
<td>I.IV.IV Boomtown Scenario in Pennsylvania</td>
<td>23</td>
</tr>
<tr>
<td>I.IV.V Perception</td>
<td>24</td>
</tr>
<tr>
<td>I.V METHODS</td>
<td>27</td>
</tr>
<tr>
<td>I.V.I Participant Observation</td>
<td>28</td>
</tr>
<tr>
<td>I.V.II Archival Work/Document Analysis</td>
<td>34</td>
</tr>
<tr>
<td>I.V.III Semi-structured Interviews</td>
<td>36</td>
</tr>
<tr>
<td>I.VI OUTLINE OF THE REMAINDER OF THE THESIS</td>
<td>48</td>
</tr>
<tr>
<td>CHAPTER II. AN ALL-AMERICAN HISTORY OF RESOURCE EXTRACTION IN NORTHEAST PENNSYLVANIA</td>
<td>51</td>
</tr>
<tr>
<td>II.I NORTHEAST PENNSYLVANIA RESOURCE EXTRACTION HISTORY</td>
<td>55</td>
</tr>
<tr>
<td>II.II Coal Mining History in Northeastern Pennsylvania and its Influence</td>
<td>55</td>
</tr>
<tr>
<td>II.III Pennsylvania Hardwood’s Influence on Perceptions of Fracking</td>
<td>58</td>
</tr>
<tr>
<td>II.IV Pennsylvania Bluestone and Quarrying: Pride in Local Resource Extraction</td>
<td>60</td>
</tr>
<tr>
<td>II.IV Agriculture and Dairy: The Farmlands of Fracking</td>
<td>61</td>
</tr>
<tr>
<td>II.FRACKING IN DIMOCK TOWNSHIP TIMELINE</td>
<td>63</td>
</tr>
<tr>
<td>II.I Hydraulic Fracturing Timeline in Dimock Township, The Inception</td>
<td>63</td>
</tr>
<tr>
<td>II.II Initial Exploration - 2006 to 2008</td>
<td>65</td>
</tr>
<tr>
<td>II.III Carter Road Water Contamination Events – 2009</td>
<td>69</td>
</tr>
<tr>
<td>II.IV The Natural Gas Boom Period Begins – 2010</td>
<td>76</td>
</tr>
<tr>
<td>II.V Dimock Proud - 2010 &amp; 2011</td>
<td>81</td>
</tr>
<tr>
<td>II.VI EPA Intervention – 2012</td>
<td>84</td>
</tr>
<tr>
<td>II.VII Steps Toward Community Alignment - 2013 and 2014</td>
<td>87</td>
</tr>
<tr>
<td>II.VIII New York State and The EPA – 2015</td>
<td>89</td>
</tr>
<tr>
<td>II.IX Scientific and Legal Assessments 2016 – 2017</td>
<td>90</td>
</tr>
<tr>
<td>II.III CONCLUSION</td>
<td>95</td>
</tr>
<tr>
<td>CHAPTER III. THE LAND-MEN COMETH</td>
<td>97</td>
</tr>
<tr>
<td>III.I INITIAL ECONOMIC PERCEPTIONS OF RESIDENTS</td>
<td>103</td>
</tr>
<tr>
<td>III.II INITIAL ENVIRONMENTAL PERCEPTIONS OF RESIDENTS</td>
<td>111</td>
</tr>
<tr>
<td>III.III RESIDENTS INITIAL PERCEPTIONS OF SOCIO-CULTURAL ASPECTS</td>
<td>121</td>
</tr>
<tr>
<td>III.IV CONCLUSION</td>
<td>129</td>
</tr>
<tr>
<td>CHAPTER IV. TRANSFORMATION OF THE ENDLESS MOUNTAINS</td>
<td>133</td>
</tr>
<tr>
<td>IV.I CURRENT ECONOMIC PERCEPTIONS OF RESIDENTS</td>
<td>138</td>
</tr>
<tr>
<td>IV.II Changes to Economic Perceptions and Influences of Change</td>
<td>150</td>
</tr>
<tr>
<td>IV.III CURRENT ENVIRONMENTAL PERCEPTIONS OF RESIDENTS</td>
<td>151</td>
</tr>
<tr>
<td>IV.III Changes to Environmental Perceptions and Influences of Change</td>
<td>167</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (CONTINUED)

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV.III RESIDENTS’ CURRENT PERCEPTIONS OF SOCIO-CULTURAL ASPECTS .......</td>
<td>167</td>
</tr>
<tr>
<td>IV.III.II Changes to Perceptions of Socio-Cultural Aspects and Influences of Change ........................................</td>
<td>181</td>
</tr>
<tr>
<td>IV.IV CONCLUSION ..................................................................................................................................................</td>
<td>182</td>
</tr>
<tr>
<td>CHAPTER V. DIMOCK ON THE WORLD STAGE .............................................</td>
<td>187</td>
</tr>
<tr>
<td>V.I CHANGES TO ECONOMIC PERCEPTIONS AND THEIR ORIGINS ......................</td>
<td>192</td>
</tr>
<tr>
<td>V.II CHANGES TO ENVIRONMENTAL PERCEPTIONS AND THEIR ORIGINS ...............</td>
<td>200</td>
</tr>
<tr>
<td>V.III CHANGES TO PERCEPTIONS OF SOCIO-CULTURAL ASPECTS AND THEIR ORIGINS</td>
<td>207</td>
</tr>
<tr>
<td>V.IV CONCLUSION ..................................................................................................................................................</td>
<td>207</td>
</tr>
<tr>
<td>CHAPTER VI. CONCLUSION ..........................................................................</td>
<td>219</td>
</tr>
<tr>
<td>VI.I ADDRESSING RESEARCH OBJECTIVES .............................................</td>
<td>225</td>
</tr>
<tr>
<td>VI.I MANAGEMENT RECOMMENDATIONS ....................................................</td>
<td>230</td>
</tr>
<tr>
<td>VI.II Zoning and Setbacks ....................................................................</td>
<td>230</td>
</tr>
<tr>
<td>VI.II.III Emergency and Informational Call Centers .............................</td>
<td>231</td>
</tr>
<tr>
<td>VI.III Clarity in Site Occupation Timeline ......................................</td>
<td>232</td>
</tr>
<tr>
<td>VI.II.IV Community Coordination and Educational Workshops ..................</td>
<td>232</td>
</tr>
<tr>
<td>VI.II.V Best Available Technology ..................................................</td>
<td>233</td>
</tr>
<tr>
<td>VI.III FUTURE RESEARCH .........................................................................</td>
<td>234</td>
</tr>
<tr>
<td>REFERENCE LIST: .....................................................................................</td>
<td>237</td>
</tr>
<tr>
<td>APPENDICES .............................................................................................</td>
<td>265</td>
</tr>
</tbody>
</table>
LIST OF TABLES

TABLE          PAGE
I. Example of the frequency of response visual aid tables used in the economic, environmental, and socio-cultural sections of Chapters three and four ........................................ 45
II. Example of the observable changes to perceptions visual aid tables used in the conclusion section of Chapter four ......................................................................................................................................................... 47
III. Initial Economic Perceptions Frequency of Response Visual Aid Table .................................. 111
IV. Initial Environmental Perception Frequency of Response Visual Aid Table .......................... 121
V. Initial Socio-Cultural Perceptions Frequency of Response Visual Aid Tables .......................... 129
VI. Drivers of Perceptual Change ........................................................................................................ 131
VII. Current Economic Perceptions Frequency of Response Visual Aid Tables .......................... 151
VIII. Current Environmental Perceptions Frequency of Response Visual Aid Table .................. 167
IX. Current Socio-Cultural Perceptions Frequency of Response Visual Aid Table ........................ 181
X. Observable Changes to Perceptions Visual Aid Table, High Frequency Responses .................. 183
XI. Observable Changes to Perceptions Visual Aid Table, Medium Frequency Responses .................. 183
XII. Observable Changes to Perceptions Visual Aid Table, Low Frequency Responses .......................... 184
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Method of coding responses into specific nodes</td>
<td>43</td>
</tr>
<tr>
<td>II. Method for coding responses into specific nodes</td>
<td>43</td>
</tr>
<tr>
<td>III. Formula for understanding perceptual change or similarity</td>
<td>44</td>
</tr>
<tr>
<td>VI. US Natural Gas and Oil Consumption in 2005</td>
<td>53</td>
</tr>
<tr>
<td>V. US Natural Gas and Oil Consumption in 2015</td>
<td>53</td>
</tr>
<tr>
<td>VI. Total US Coal Consumption (by million short tons)</td>
<td>57</td>
</tr>
<tr>
<td>VII. Total US Coal Jobs (by the thousand)</td>
<td>57</td>
</tr>
<tr>
<td>VIII. Market Value of Agricultural Products Sold in Susquehanna County, PA</td>
<td>63</td>
</tr>
<tr>
<td>IX. Signage at Salt Springs State Park: Franklin Forks TWP, Susquehanna County, PA</td>
<td>64</td>
</tr>
<tr>
<td>X. Dimock TWP New Well Pads and Violations 2006 to 2016</td>
<td>70</td>
</tr>
<tr>
<td>XI. Well Site Violations to Date in Dimock TWP</td>
<td>70</td>
</tr>
<tr>
<td>XII. The Cabot Well Field in Dimock, Pennsylvania area of 9-mile moratorium/Carter Road Contaminations</td>
<td>73</td>
</tr>
<tr>
<td>XIII. Median Income Dimock Township 2000 to 2014</td>
<td>78</td>
</tr>
<tr>
<td>XIV. Dimock Proud Campaign Signage: Dimock TWP, Susquehanna County, PA</td>
<td>83</td>
</tr>
<tr>
<td>XV. Impact Fee Disbursements by Year (in millions)</td>
<td>87</td>
</tr>
<tr>
<td>XVI. Henry Hub Natural Gas Spot Price (dollars per million BTU)</td>
<td>92</td>
</tr>
<tr>
<td>XVII. Cabot Oil and Gas Consumptive Water Use and Well-Pad Identification Signage: Carter Road. Dimock TWP, Susquehanna County, PA</td>
<td>98</td>
</tr>
<tr>
<td>XVIII. A comparison of spaces, Dimock Township Building and Cabot Oil and Gas Susquehanna County Headquarters. Dimock TWP, Susquehanna County, PA</td>
<td>99</td>
</tr>
<tr>
<td>XIX. T-shirts and Sign Propaganda</td>
<td>119</td>
</tr>
<tr>
<td>XX. Drilled Wells in Dimock TWP 2007 to 2017</td>
<td>128</td>
</tr>
<tr>
<td>XXI. Metal Shed Offering Clean Water to Residents. The sign says, Diaz Water Shed, be respectful to others, keep it clean! Montrose, Susquehanna County, PA</td>
<td>134</td>
</tr>
<tr>
<td>XXII. Estimated Total Royalties from wells in Dimock, PA (in millions)</td>
<td>138</td>
</tr>
<tr>
<td>XXIII. Pounds of CO2 Emitted per Million British Thermal Units (BTU’s) of Energy for Various Fuels</td>
<td>154</td>
</tr>
<tr>
<td>XXIV. Adjusted ATSDR One-Mile Buffer Zone of PM 2.5 of the William Central Compressor Station</td>
<td>161</td>
</tr>
<tr>
<td>XXV. Truck traffic on Route 29 South, from Montrose to Dimock TWP</td>
<td>173</td>
</tr>
<tr>
<td>XXVI. Example of Well-Pad Infrastructure on Farmland. Susquehanna County, PA</td>
<td>173</td>
</tr>
<tr>
<td>XXVII. “No Incinerator” Yard Sign: Susquehanna County, PA</td>
<td>174</td>
</tr>
<tr>
<td>XXVIII. Spray Painted Trees on The Hollerans’ Property: Susquehanna County, PA</td>
<td>178</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES (CONTINUED)

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXIX. Gas Rights Wanted Advertisement, Dimock TWP, Susquehanna County, PA.</td>
<td>188</td>
</tr>
<tr>
<td>XXX. U.S. Natural Gas Imports and Exports to 2015</td>
<td>194</td>
</tr>
<tr>
<td>XXXI. Price of U.S. Natural Gas Imports and Exports to 2015</td>
<td>195</td>
</tr>
<tr>
<td>XXXII. U.S. Natural Imports, Exports, and Net Imports, 1950 to 2016</td>
<td>197</td>
</tr>
<tr>
<td>XXXIV. Cabot Oil and Gas Corp. Promotional Brochure Cover</td>
<td>214</td>
</tr>
<tr>
<td>XXXV. Cabot Oil and Gas Corp. Promotional Brochure Content</td>
<td>214</td>
</tr>
</tbody>
</table>
CHAPTER I. INTRODUCTION

I.1 Research Problem

Hydraulic fracturing, commonly referred to as “fracking,” is an extraction process by which horizontal wells are drilled to access natural gas and oil within shale rock. The process uses potentially hazardous chemicals to help fracture the rock containing natural gas deposits. Former President of the United States, George W. Bush, signed the Energy Policy Act of 2005, which contains a clause exempting hydraulic fracturing activity from the Clean Water Act among other federally regulated acts (Pub. L. No. 109-58 2005). This clause states that chemical additives utilized in hydraulic fracturing fluids are to be defined as tools rather than as pollutants (Pub. L. No. 109-58 2005). Therefore, restrictions that would typically be applied to pollutants are circumvented by hydraulic fracturing companies. As chemical tools used in the process, they do not need to be declared and can be stored or disposed in underground injection wells (Pub. L. No. 109-58 2005). The oil and gas industry is exempt from the Water Quality Act’s 1987 inclusion of rainwater runoff restrictions for industrial sources (Pub.L. 100–4 1987). As a result, the Federal Environmental Protection Agency (EPA) cannot regulate potential pollution that may occur as a product of rainwater runoff from drilling sites and drilling rig construction. This includes the Clean Air Act, Clean Water Act, Safe Drinking Water Act and the Superfund Act (Pub. L. No. 109-58 2005: SEC. 322). Specifically, the Energy Policy Act allows gas and oil extraction companies the freedom from disclosure of the harmful chemicals utilized in the extraction process.

The creation of the Energy Policy Act signaled hydraulic fracturing companies to expand rapidly within the United States, leading to potential energy independence
One of the first states to engage in the hydraulic fracturing process on a dramatic scale was Pennsylvania (Wilber 2015), which resides atop the Marcellus Shale, one of the largest shale gas deposits in the United States (EIA 2011). The shale bed covers an estimated thirty-four million acres and ranges as far west as Ohio and as far south as Maryland (PA DEP 2016b). The Northeast portion of Pennsylvania was drilled on a massive scale by the end of 2009 due to an outcropping of the shale rock, which enabled easier extraction (PA DCNR 2016). This area was described to locals by gas company employees as “the prime rib of the Marcellus Shale.” Susquehanna County, especially the township of Dimock, had entered a fracking boom by 2009, which has led to many economic, environmental, and socio-cultural changes and concerns.

Rural locations, such as Dimock, become challenged economically, environmentally, and socio-culturally as hydraulic fracturing companies tend to ignore negative repercussions of extraction for profit (Braiser et al. 2011; Jacquet 2011; Finkel et al. 2013). Decreased economic revenue in the area along with neoliberalization of policy (i.e. the shift of control of economic forces from governmental/public control to private/state control) and positive rhetoric produced from privately owned corporate entities normalizes the hydraulic fracturing process and gains support from residents, allowing for corporate governance. Normalization - or social processes in which ideas and practices come to be seen as normal or natural in daily life - is also accomplished locally by framing fracking as the next great resource in a history of resource extraction. After living in proximity to fracking, residents’ support of industry may change and conflicts arise. In this case, individuals’ perceptions of the impacts of production, such as negative economic, environmental, and socio-cultural conditions may shift from initial
positive perceptions (Davis and Hoffer 2012; Finewood and Stroup 2012; Malin 2013). Critically explored within this research are the negative economic, environmental, and socio-cultural effects, and how they change individual perceptions.

Hydraulic fracturing is associated with benefits as well as costs. Economic benefits include potential advancement towards national energy independence, sub-and-surface lease payments to land owners, local business development, and local tax revenue from job creation and industry earnings (Fitzgerald 2013). These collective benefits are enticing to both the global oil and gas market and to local economic stakeholders at the point of extraction. Unfortunately, there are negative consequences associated with this specific extraction technique. The initially welcomed gas industry, and the unconventional extraction process utilized by the industry, becomes controversial due to complications regarding economic, environmental and socio-cultural pitfalls.

Economically, locations in Pennsylvania such as Bradford County, Washington County, and Susquehanna County, are already stressed by increased unemployment and subsequent reduced populations, due to decreased local industry such as coal mining and agriculture (Brasier et al. 2011; Perry 2012; Malin 2013). The lull in local economies allows communities within these locations to be enticed by positive economic rhetoric of hydraulic fracturing, which commonly ends in disappointment as economic benefits fluctuate with supply and demand (Willits et al. 2013; Chen et al 2014). Environmental concerns related to the extraction process are cited globally, mainly due to improperly discarded and unretrieved wastewater; which can contaminate both ground and surface water (Howarth 2011; Finkel and Hays 2013; Schmidt 2013; Rivard et al. 2014). Similarly, air quality is called into concern from off-gassing of well-pad sites and CNG
compressor stations (ATSDR 2016). These economic and environmental outcomes funnel into problematic perceptions of socio-cultural aspects of hydraulic fracturing. For example, in similar perceptual studies (Brasier et al. 2011; Perry 2012; Schafft et al. 2013), comparable Pennsylvanian communities’ economic expectations turn from enthusiasm to disappointment as rapid growth of infrastructure, degradation of local aesthetics from rural to rural-industrial, and environmental complications lead to a decreased quality of life and ultimately, change perceptions of the hydraulic fracturing process. Local social and cultural factors influence the way in which people interpret and make sense of economic and environmental consequences. Therefore, a problematic change to socio-cultural factors would be one that modifies conditions perceived as emblematic to the location.

The unconventional procedure involves injecting millions of gallons of pressurized water, mixed with salt, sand, and potentially harmful chemicals, into wells at depths of up to ten thousand feet (A.N.G.A. 2013). The pressurized mixture fractures the shale, creating fissures to access the gas, while a proppant (sand) is used to hold the fissures open (A.N.G.A. 2013). The drill then uses pressure created from injection to reverse the flow back up the well to obtain the natural gas (EPA 2015). Chemicals are used in the processes to crack otherwise impermeable rock, and to lubricate the drill. Hydraulic fracturing releases naturally occurring hydrocarbons to be refined into a usable energy source (EPA 2015). In Northeastern Pennsylvania, companies extract natural gas through the process of fracking in gaseous form. Wells are connected to gathering lines, which transport the physically gaseous raw material to compressor stations (Curtis and Schwochow 2010). Compressor stations convert and transport the gas as compressed
natural gas (i.e. CNG) from the area of extraction to refineries, or production areas (Curtis and Schwochow 2010). These stations are needed every forty to one-hundred miles in transportation to compress and clean the natural gas by removing liquids, dirt, and other impurities (ATSDR 2016). Off-gassing of dangerous methane particulate matter 2.5 (PM 2.5) is being called in to question at these compressor stations (ATSDR 2016) and constant monitoring of air quality is being requested by residents in proximity.

Extraction in Susquehanna County accelerated from 2006 through 2008, eventually hitting its peak production during the years of 2009 to 2012, and has since leveled off (Wilber 2015). Previous research in the region has explored overlapping complications of the extraction process (Jacquet 2009; Theodori 2011; Perry 2012; Braiser et al. 2013), including economic, environmental, and socio-cultural problems such as decreased quality of life and transition from rural to industrial landscape following its initial acceptance. These complications create discord between residents and the hydraulic fracturing industry (Davis and Hoffer 2012). This thesis will focus specifically on Dimock Township in the Northeast corner of the state within Susquehanna County. Local fracking industry has been aggressive in this town, as exemplified in the 2009 Consent Order and Agreement (i.e. CO&A) (PA DEP. 2010). This CO&A signed by the local gas company, Cabot Oil and Gas, and Pennsylvania State Department of Environmental Protection created a nine-mile moratorium within the township after multiple violations were cited in the town, specifically on Carter Road (PA DEP. 2010). These violations consist of multiple occurrences of gas and chemical migration from well-pad sites to residents’ aquifers (PA DEP. 2010).
To describe it in colloquial terms, gas and oil companies, such as Cabot, Range Resources, and Chesapeake Energy, entered the area, “like a bull in a china shop.” After initial test-wells resulted in more gas than expected, companies began acquiring large land leases and fracking at a rate unexpected by residents or foretold by industry (McGraw 2011). There are no zoning laws in Susquehanna county to protect residents against corporate industrial occupation occurring in close proximity to their homes and water supplies. While ironically, zoning is understood locally to be an obstructive governmental regulation, rather than a protective force. In 2009, fifteen Dimock families affected by the Carter Road well-pad violations filed lawsuits over alleged water contamination issues associated with fracking (Lustgarten 2009). After the majority of the families agreed to settle out of court, and signed non-disclosure agreements, two families remained engaged and won a precedent setting 4.3-million-dollar case against Susquehanna County’s premiere drillers, Cabot Oil and Gas in March of 2016 (Dekok 2016; Philips 2016b). Increased economic activity and a rise in population, followed by subsequent lawsuits against the gas industry, over three-hundred well site violations (Marcellus Gas.org 2016), and a lull in area gas production (U.S. Energy Information Administration 2016) suggest a boomtown scenario in Susquehanna County (Stedman et al. 2012; Brasier et al. 2013). This thesis aims to critically analyze the current scenario in order to aid proper policy implementation of rural oil and gas extraction locations in rural locations, specifically, within the Marcellus Shale. “Boomtown,” is a common economic term, defined by rapid economic expansion occurring within a location where production or extraction of a commodity dramatically increases (Willow and Wylie 2014). To facilitate this scenario, fracking has been normalized by positive industry-created
rhetoric. That is, corporations have disseminated specific language with the purpose of gaining support for fracking activities. Furthermore, changes to energy polices, such as the Energy Policy Act of 2005, have permitted an initial sense of leniency on the part of fracking companies regarding ecological concerns, as companies become politically engrained in governance of the area through support and rhetoric. As companies omit initial consideration of local economic, ecological, and socio-cultural dangers accompanied by the process, this lack of consideration leads to disputes with the industry in the form of lawsuits, environmental group protests, and general discomfort and distrust of the industry in and around the town (Dekok 2016; Reible et al. 2016). This discord then spreads into the local community as support and opposition to natural gas extraction creates a significant a social rift, impacting the community as a whole (McGraw 2011; Wilber 2015).

I.II Purpose

The central argument of this thesis is that hydraulic fracturing, while promoting positive economic benefits, also creates various negative conditions within the community in the area of extraction. These negative conditions include local economics that are reliant on a fluctuating industry, disagreements between pro and anti-fracking residents, ecological hazards, changes to the landscape, and changes to perceived quality of life. Hydraulic fracturing offers many economic benefits during times of production. However, this thesis argues that the long-term negative effects outweigh the initial positive effects by demonstrating changed perceptions among residents. One single narrative does not exist in Dimock Township. Resident perception is on a case-by-case basis, but is generalized
into positive or negative perceptions. The perceptions are dependent on personal and situational aspects such as economic benefits, water and air quality, personal health, and proximity to industrial mechanisms such as well-sites and compressor stations. Therefore, this thesis explores these case-by-case situations in order to understand the pros and cons associated with hydraulic fracturing as experienced by residents of Dimock.

The purpose of this thesis is twofold: (1) to explore how perceived implications of hydraulic fracturing in Dimock, Pennsylvania have shifted from initial exploration in the mid-2000’s to the present and (2) to understand the conditions of perceptual change in regards to the extraction process and industry. An analysis of temporal change, from 2006 to 2016, will address local perceptions and outcomes of hydraulic fracturing in Dimock Township. In particular, this research will study the perceptions of economic, environmental, and socio-cultural aspects, which change in proximity to hydraulic fracturing. This research incorporates political economy of nature and political ecology as theoretical frameworks in order to conceptualize the final results and overarching themes of the research, while viewing the relationship of residents and extraction companies on multiple levels. The theoretical frameworks will then be employed to critically analyze the economic and ecological contradictions that exist when extraction companies degrade their own environmental conditions of production (O'Connor 1991). Furthermore, the theoretical frameworks will be used to explore the relationships between market-driven local fracking companies and communities in proximity to extraction, the relationship between them, and the resulting shifts in perceptions. The use of these theoretical frameworks helps to clarify an overarching theme and descriptive theory in a more
clearly defined manner. Utilizing these aforementioned means, the following objectives will be explored:

0.1: Properly determine whether residents' perceptions of hydraulic fracturing have changed since it first began in Dimock, PA.
   0.1.a: Determine residents' initial perceptions of hydraulic fracturing in general and explore how these perceptions contrast between residents.
   0.1.b: Determine residents' current perceptions of hydraulic fracturing in general and explore how these perceptions contrast.

0.2: If perceptions of fracking have shifted, determine the main drivers of the change by understanding the baseline of their perceptions.
   0.2.a: Determine the residents' own explanation for the change.
   0.2.b: Analyze the extraction companies' initial rhetoric concerning the economic and environmental impacts of fracking. [Did the initial rhetoric and policies of extraction companies normalize the hydraulic fracturing process, possibly in order to facilitate potential environmentally harmful extraction practices?]
   0.2.c: Determine the actual economic and environmental impacts of the fracking in the area.
   0.2.d: Explore the possibility of changes in residents’ perceptions of socio-cultural aspects due to extractions’ negative externalities such as: cultural and physical modification landscapes, relationship to these landscapes, perceptions on quality of life, and socio-economic livelihood.
The preceding objectives will be used to answer the following research questions:

RQ# 1: What were the baseline perceptions of fracking as it began in Dimock, PA.?

RQ# 2: Have the baseline perceptions of economic, environmental, and socio-cultural conditions of hydraulic fracturing changed among residents within proximity of extraction?

RQ# 3: Are these perceptual shifts a result of proximal relations with extraction companies or external political and economic forces?

I.III Significance

This research will aid in production of knowledge for energy resource management, land managers, energy policy, and public relations of the hydraulic fracturing industry regarding residents in proximity to the extraction. Similarly, this research will add to existing bodies of work within geography, anthropology, and sociology, specifically, research of critical resource geography, political economy of nature, political ecology, economic anthropology, and environmental sociology. The final study is replicable and applicable within any rural area around the world in which energy extraction takes place. It can be used as a template for local regulations within states that reside above the Marcellus shale, to enable safe production or exemplify hazardous conditions and relations. Studying the local and external stakeholders involved in the extractive process in Dimock will help educate local land-use managers’ and energy policy-makers’ assessments of hydraulic fracturing by examining perceptions of the before and after effects of the process economically, environmentally, and socially. This
research will similarly benefit conflict management and hazard mitigation for extraction companies by showcasing improper and proper relations of industry-resident relationship over time. Data indicates that the majority of Dimock’s residents share an acceptance of industry; it has imbedded itself into the landscape and the community and is not going anywhere. Both residents in support of and in opposition to hydraulic fracturing similarly aim to co-exist with one another and the industry. This thesis exemplifies positive and negative practices that enable industry/resident co-mingling with minimal conflict, or exemplify this as an impossibility. The research adds to a specific body of work regarding perceptual change in rural areas in connection with natural oil and gas production (Theodori et al. 2011; Braiser et al. 2013; Fershee, J. 2013; Schafft et al. 2013; Boudet et al. 2014; Malin 2014).

I.IV Literature Review

I.IV.I Theoretical Frameworks

This thesis explores the intricacies involved with neoliberal shifts of energy policy, governance, positive rhetoric, and how they work together to help normalize the hydraulic fracturing process (Malin 2014). In addition, this research addresses the potentiality of conflicts created when this normalized and incentivized process falters, and becomes politicized, dividing residents and shifting perception of local fracking industries (Watts 2002; Escobar 2006). In doing so, the research uses political economy of nature and political ecology as theoretical frameworks to critically analyze the aforementioned topics and examine how they enable the contradictory conditions of
production (Harvey 1999) (i.e., that capitalism degrades both the means and conditions of production), and the conflicts involved at the point of extraction (Peluso and Watts 2001), which hydraulic fracturing exemplifies. Aligning these aspects of hydraulic fracturing with larger bodies of work helps to identify overarching theories and themes in a manner that is more clearly defined, which will aid in the ultimate goal of understanding perceptual changes associated with fracking.

Within Dimock, Pennsylvania, contradictory and complex relationships exist between nature and society. Stewardship of the land can no longer be governed by the residents alone (Wilber 2015). Instead, a co-mingling with resource extraction based companies who lease land and purchase minerals from the residents become the new governing stewards (McGraw 2011), creating a contradictory process in which access and control of environmental resources shifts to an external profit-driven entity (Ribot and Peluso 2003). When natural resources, such as natural gas, are commodified (i.e. transformed into materials that can be bought and sold), they are given a societal use value and exchange value (Marx 1987) in order to avoid increased costs that accompany negative ecological effects and maximize profits, bypassing concern for the environment is common in resource extraction. This profit driven relationship with natural resources then normalizes the new stewardship of the land, as hydraulic fracturing become a lucrative and ubiquitous part of natural resource extraction in Pennsylvania while further disconnecting the hierarchal social relationship humans have with nature (Castree 2003; Robbins 2011).

The dual-sided framework of political ecology and political economy grants a focused perspective into the complex socio-cultural and political relationship of oil and
gas production. The focus of the research includes boomtown aspects of Dimock such as rapid economic expanse, how perceptions of fracking have been modified over time from initial positive perceptions, and what has influenced this shift in perception. The multidisciplinary lenses of political economy and political ecology are used in this research for a critical analysis of the interconnectivity constructed when a global commodity chain involves local residents in an area of extraction, creating rapid economic growth (Paulson et al. 2005).

Political ecology separates from the apolitical-ness of ecology, in which a blame of ecological degradation is pinned to local activity, and re-conceptualizes degradation to identify external forces that initiate harmful activity (Robbins 2004). Political ecology emerged in the early 1980’s as an approach used to analyze the ecological mismanagement between states and corporations in developed countries and has evolved into many realms of analysis (Robbins 2004). These realms illustrate the impact of global economic intervention on specific locations, such as Dimock, for economic gain from environmental goods (Watts 2003; Robbins 2004; Blaikie 2008). This intervention often initiates external mismanagement of local ecology and re-appropriation of governing structures to aid in production, which facilitates degradation of the environment, marginalization of the people within the area, and discord between local and external stakeholders (Paulson and Watts 2005).

Political economy enables a view of the actors involved with global economic entities, which control and govern complex relationships among capitalist economic activity (i.e. producers) and environment (i.e. natural resources) (Bakker and Gill 2003). The political economy theoretical framework dissects the complex, dynamic relationships
that are paramount when examining capitalist associations to local extractive industries (Harvey, 1999; Morse 1999. Auty 2001; Smith 2007). Actors, such as politicians and extraction companies, comingle in a process which transforms nature in order to enable its domination (Smith 1996; Bridge and Jonas 2002). This transformation creates an anthropocentric view of nature, one where the natural world is separate from the human world and seen as a means of profit (Smith 1996). The anthropocentric view establishes a hierarchy rather than a relative and reliant relationship between humans and nature. Therefore, nature’s commodification is justified as an economic liberty of free-market regulation and thus incorporated into global production and accumulation (Bridge and Jonas 2002; Bakker and Gill 2003). This multi-layered world-system view opens up exploration of different issues at multiple scales, rather than focusing primarily on the global production market. These scales hold varying layers of inequality and develop what Neil Smith (1990) refers to as, “uneven development,” in which the production of unevenly developed space through economics processes creates spatial inequalities (Smith 2010). This is exemplified in hydraulic fracturing when priority is given to the extraction industry’s development of economic benefits at the peril of residents’ location due to their proximity to extraction.

Political ecology proves to be a helpful theoretical framework for analyzing social and ecological processes by examining the broader political economic aspects, which control the commodification of natural resources (Peluso and Watts 2001). Perceptions of nature’s agency are altered socio-culturally by this broad system of commodification and the rhetoric it employs (Harvey 1999; Peluso and Watts 2001). Within this research, gas, as a natural resource, is a commoditized by giving it a societal used value and ultimately
a market price. Once commoditized, this natural resource is seen as an economic benefit of which must be taken advantage, through industry-supported media, which establishes the priority of extraction over sustainability. Therefore, political ecology is used in the current research to explore this nature-society relationship. Created by the aforementioned political-economic systems, the nature-society relationship is examined by using political ecology to view environmental degradation from the ground up, rather than by primarily focusing on global commodity relationships (Robbins 2011). Political ecology allows this study to examine the multiple actors, including local gas companies and global markets, who initiate risk signaling, “ecological distress caused by a broad system, rather than blaming proximate and local forces” (Robbins 2004 pg.5). It also critically examines the relationship that exits between local stakeholders and extraction companies in order to understand both negative and positive relationships between them. This research provides a critical analysis to better understand the divide between local residents and gas companies who have ignored issues associated with land management.

Conflict is a key issue within the political ecology framework (Watts 2003; Robbins 2011; Blewitt 2014). Political ecology examines the constant shifting interaction between society and extractive resources, with an emphasis on the relationship of power between entities who extract these resources and the society that owns them (Blaikie and Brookfield 1987). In this case, fracking companies create an uneven distribution of resources and wealth. This results in socially and economically marginalizing some citizens by ostracizing them for their complaints about water contamination. At the same time this uneven distribution divides residents across broad socio-political topics like environmentalism. The uneven distribution occurs as a result of the boom-bust economy
that fracking produces, which will ultimately falter. This uneven power relation creates a potential conflict between citizens who support hydraulic fracturing in Dimock, and those who do not support the industry. Conflict is discussed within the context of social argumentative conflict or a created discordant atmosphere, as is common in political ecology studies (Brogden and Greenberg 2003; Escobar 2006), as opposed to studies involving developing and semi-developed countries, in which conflict is exemplified through warfare and physical violence (Peluso and Watts 2001; Watts 2003). However, this social conflict gives way to the potential for physical conflict between disagreeing parties. Regardless, both types of conflict are instances where private industries abuse inhabitants and their environment at the point of resource extraction, creating politically charged resource disputes. The only difference is in the way in which conflict manifests itself. Regarding the present study, potential conflict becomes apparent between residents, whose interests may oppose those of the fracking industry’s, and others who support the industry.

In addition, political ecology provides a framework to view the politically charged multiple options, perception, positions, and rationalities residents hold toward environmental degradation and resource extraction (Paulson and Watts 2005). With these multiple opinions, environmental degradation becomes politicized, as conservation of the environment would deny lucrative resource production (Blaikie 2016) welcomed by state and town governments. In the U.S., environmentalism is perceived as a political opposition to mainstream neoliberal economics, which promotes irresponsible environmental regulation in the form of federal deregulation (Heynen 2007). As a result,
supporters and opponents of fracking find themselves on separate sides of an environmental and political debate.

Political economy of nature facilitates an understanding of the complex and intertwined relationship between a capitalist economy, local environmental processes, and the actors involved at various levels of connectivity (Castree and Braun 2001: 191). As such, political economy theory, in contrast to political ecology, is used here to take a top down view of gas and oil production and its relationship with laws and governmental entities on the ground. The theory examines the uneven distribution of power and wealth created by a broad capitalist system in order to maximize profits (Marx 1867), which abuses environmental and human inputs of production by ignoring specific conditions for economic gain (Peluso and Watts 2001). Political economy theory aids in identifying potential conflicts created when nature is commodified and exemplify the contradictions of capitalism, which promotes the degradation of nature for a profit (e.g. destroying its own environmental conditions of production) (O’Connor 1991).

I.IV.II Neoliberalism

Neoliberalism is the theory behind political and economic actions, which suggests that human well-being is best maximized and advanced by promoting individual market-based freedoms (Harvey 2005). This creates a relationship between citizens and government that federal level intervention simply destroys a self-regulatory and healthy market, ultimately limiting jobs and thus limiting individual economic potential (Shaikh 2005). The relationship between the community at the point of extraction, oil and gas producers, and a neoliberal power structure is extremely complex (Watts 2003; Perry
The power structure in this sense is an intertwined governmental and corporate system, which employs neoliberal economics to keep regulatory power in the hands of those set to benefit economically, and out of the hands of federal level protective regulators. This is done to decrease regulation, which would otherwise dramatically diminish profit. In this case, power becomes hegemonic in order to create support from the very community in which the uneven distribution of wealth is occurring. Hegemony, as a Marxist concept, reveals a dominant class that holds power over a lower class by using intellectual and moral leadership as a means to normalize their dominion (Gramsci 1971; Bridge and Perreault 2009). A shift in governance occurs, which becomes hegemonic, as energy policy is modified to deregulate restriction of extraction processes (Rabe and Borick 2013). Fracking companies utilize the 2005 energy policy act in order to overlook federal environmental regulation, which also plays into local political sentiment that federal intervention is unwelcomed. Therefore, neoliberal changes in energy policy boost production while ignoring, or altering, the opinions of local stakeholders by normalizing the fracking process (Davis and Hoffer 2012; Finewood and Stroup 2012; Malin 2013) while aligning with local political sentiment, thus enabling a hegemonic leadership role by the extraction companies (Gramsci 1971). This is exemplified in Dimock as industry propaganda is entwined in a local social dialect that fracking enables U.S. energy independence from foreign oil thus spurring nationalism, it creates jobs, and it is becoming a part of the areas rich history of resource extraction. Residents expressed a nationalistic responsibility to maintain natural gas extraction and production. Such dialect maintains a knowledge system that showcases the industry and
its interactions with economic, ecological, and socio-cultural aspects as only positive ones.

To invoke such institutional actions such as promoting private property rights, free trade, and free markets, is to suggest that a more individualistic economic system is a more successful economic system (Harvey 2005: 2), whereas the state’s role is to facilitate the proper measures to ensure this structure is in place (Harvey 2005; Mercer et al. 2014). Therefore, neoliberalism is pervasive to the individualistic aspects of freedom that Harvey (2005: 64) referred to as a “neoliberal state,” where priority is given to individual property owners, businesses, and corporations. The neoliberal state creates a mode of discourse through which federal intervention is obtrusive in corporate stewardship (Mahler 2007). As a result, corporate intellectual hegemony is solidified by this neoliberal agenda.

Neoliberal hydrocarbon governance is disrupted by alternative ideologies, which delegitimize particular beliefs associated with the industry’s intellectual hegemony (Mercer et al. 2014; Fry et al. 2015). It is problematic to assume that state government can be a neutral facilitator in the balance between the residents in the area and the beliefs of the extractive industries (McCarthy and Prudham 2004). Free market principles introduced within the 2005 Energy Policy Act, along with limited federal intervention of environmental regulations and an exploding hydrocarbon sector in Pennsylvania, make it the state’s responsibility to uphold the values of the industry’s governance (McCarthy and Prudham 2004: 276). As policies are introduced over time in Pennsylvania to assist in the regulation of the hydraulic fracturing, corporate neoliberalism and governance suggest that state intervention must be minimal, because states cannot question market
signals; this is the responsibility of the neoliberal free market-driven economy (Harvey 2007: 21). Therefore, outside intervention further deconstructs the industry’s intellectual hegemony, which is reinforced with neoliberal state stewardship (McCarthy and Prudham 2004; Harvey 2005; Mahler 2007; Mercer et al. 2014).

I.IV.III Governance

In this context, governance is not discussed simply as the act of being governed. Governance occurs in widely heterogeneous landscapes, and it is crucial to understand economic, social, and political aspects of life within these landscapes and how they may be changing due to homogenous governance (Bridge and Perrault 2009: 476). When a heterogeneous landscape is governed homogenously, it can be suggested that marginalization of communities is necessary, as political entities cannot represent everyone’s interest equally. In the case of this research, governance is placed in the hands of the fracking companies and the law makers who are set to benefit from natural gas extraction. Therefore, policy is enabled for protection of the fracking industry, while ignoring policies that protect individuals from water contamination problems, which marginalizes them and their interests. Within the sphere of resource extraction, where residents are commonly marginalized, the sense of consent to be governed must be manufactured. State level political action and extraction companies must reframe natural resources as expendable for profit and economically beneficial to the area, which suggests an expandability of those facing the negative repercussions of fracking (Hudgins and Poole 2014).
Oil and gas, as transnational commodities, create harmful socio-cultural, economic, and political ramifications, as they must realign the governance in the area of production to prevail (Watts 2002). In order to pose resource extraction as beneficial to a community, it must be reframed as an operation governed by residents in the area. Within capitalist resource extraction, economic activity is observed as layers of relationships between stakeholders, who hold the conditions of production (i.e. land, labor, and capital) who are in various degrees of relationship with and reliant stakeholders (i.e. government and society). This presents environmental and socio-cultural damage caused by extraction as an obstruction to free market business (McCarthy 2004; Bridge 2013). From this perspective, environmentally and socially responsible resource extraction would rely on land-owning communities to reject, or apply drastic conditions to, improper land-use rather than extraction firms holding the responsibility to uphold best environmental practices (Bridge 2013). Therefore, as neoliberal paradigm shifts have occurred to reappropriate resource extraction governance from public to private (Malin 2014), private corporations act in the interest of shareholders and global markets, while ideologically and economically governing residents in proximity, who have the guise of control giving them a sense of independent stewardship based decision making (McCarthy 2004). Thus, civil-society and federal governments are left out of decision making processes while corporate governed land-owners and residents make decisions through manufactured consent (Bridge 2013; Hudgins and Poole 2014).

Through neoliberal governance, consent of hydraulic fracturing is a shift of power from society based decision making to corporate based decision making, becoming further and further outside of democratic reach (Hudgins and Poole 2014). The role of the
state shifts as the state begins to function to ensure the economic and capital success of resource extraction companies (Bridge 2013; Harvey 2005). Rhetoric based strategies from companies and the state, promoting responsible stewardship through economic expansion of area enables a veil of freedom-of-choice and limited government intervention (Harvey 2005; Mitchell 2006; Hudgins and Poole 2014). Therefore, outside interventions such as federal rulemaking and environmental concerns are seen as invasive and steeped in disassociation with proper local land-use stewardship and economic responsibility.

Neoliberal governance is facilitated by a global economic free-market network, extraction industries, and the locations in which they operate (Harvey 2005; Mitchell 2006). However, a paradigm shift is represented as extractive based industries provide a non-inclusive benefit of opportunities toward socio-economic development (Bridge 2008: 389). As residents in proximity of extraction become incorporated in the governance of fracking companies, they become part of the hydrocarbon commodity chain (Bridge 2008: 415) and negative experience with industry ultimately change their perception, and thus their role in governance (Bridge 2013; Perreault 2008). Hydrocarbon governance shifts are contested by the industries and the states which support them, but eventually re-center their governance in a nation-state representative vision, but only as that vision becomes parallel with the peoples’ changed perceptions in areas of extraction (Perreault 2008). If this is not achieved, conflict can arise between the marginalized population who align themselves as anti-extraction (i.e. nation-state governance), and those who hold the hydrocarbon governance (i.e. neoliberal governance) ideology (Watts 2002; Perreault 2008; Bebbington 2012). Marginalization of state residents is an unavoidable product of
the boom-to-bust resource extraction formula, thus the product of a homogenous governance to a heterogeneous landscape.

I.IV.IV Boomtown Scenario in Pennsylvania

Positive economic perceptions of hydraulic fracturing are first facilitated by pro-fracking rhetoric then marred by experiences of residents within proximity of extraction (Jacquet 2009; Perry 2012; Brasier et al. 2013; Schafft et al. 2013). Along with pro-fracking rhetoric, the neoliberalization of policy to support hydraulic fracturing companies becomes evident in the 2005 Energy Policy Act, which places aspects of hydraulic fracking under state regulation rather than federal regulation (Davis and Hoffner 2012; Leiter 2014; Malin 2014). This rhetoric and change to energy policy facilitates neoliberal rationale, suggesting that corporate and local governance based stewardship supersedes federal involvement (Harvey 2005; Malin 2014). These aspects collectively enable a normalization of the extraction process. Once the process is normalized, and policy is in place, extraction escalates at a dramatic pace, damaging initial perceptions (Auyero et al. 2016). This creates a relationship between residents and extractive industries rife with disharmony (Watts 2003; Malin 2014). Nature becomes an obstacle to production as extraction compromises its own conditions of production by damaging the local economy, ecology, and modifying culture (O’Connor 1991; Boyd et al. 2001). As economic hopes are not met, and local amenities such as water supply and air quality are degraded from the harmful chemicals in wastewater and off-gassing of well sites, perceptual shifts of fracking occur (Theodori et al 2011; Davis and Fisk 2014). The shift of small insular agricultural communities within the Marcellus Shale to gas
producing landscapes degrades socio-cultural perceptions of place and quality of life (Perry 2013; Evensen et al. 2014).

As the area’s economy becomes reliant on one type of industry during the boomtown scenario, and that industry experiences financial or ecological hardships, production decreases and it modifies the boomtown toward a bust scenario (Scott 1998; Brasier et al. 2013). Similar ethnographic fieldwork conducted in Pennsylvania has showcased the advancement toward bust scenarios, leaving the community with increased populations and fewer jobs, increased property tax and rents, decreased tax revenue to support social services, faltering associated industries, and compromised ecology from fracking waste water and off-gassing. These aspects funnel down to modified cultural and physical landscapes, a change in relationship to these landscapes, perceptions on quality of life, and socio-economic well-being (Theodori et al. 2011; Finewood, and Stroup 2012; Perry, S. 2013).

I.IV.V Perception

In order to understand residents’ perceptual changes to these specific stages of boom-to-bust scenarios, the manner by which people come to perceive stimuli, and how that can change due to surrounding socio-cultural and political intervention is examined. The purpose is to expose the invisible lens, through which society views nature and experiences (Douglas 2013:7). Therefore, values and beliefs applied towards specific entities and ideas can be viewed as a part of society, rather than as a separate entity. This suggests that an individual’s values are not solely their own, but part of a social consciousness, mixed with associated experiences (Burns and Engdahl 1998). This is
exemplified by corporate governance, which occurs in relation to resource extraction.

This is not to suggest that individualism does not exist, rather, that individualism is affected by the introduced governance perceptions of proximal and global interests (Douglas 2013).

Understanding social perception entails a cognizance of the relative environmental aspects to which individuals are reacting (Zebrowitz 1990). These aspects can then be understood in social and cultural context, and the manner by which they are broken down into personal learned traits such as values, intelligence, and affiliations (Zebrowitz 1990). Personal traits are steps that are taken between initial stimuli presented and individual response (Nixon 1971). This suggests that individuals do not view relative aspects solely externally; rather, they internalize experiences through a filter of previous experience and core beliefs. Individuals have choices regarding the manner with which they deal and assess relative issues and conflicts; this is their ideology and individualism. However, perceptual theory suggests that specific strategies, in the form of established traits (e.g. values, intelligence, and affiliations), are detrimental to conflict free lifestyle in an area engaged in a specific pattern of social and cultural relations (Douglas 2013).

With external economic influences, such as fracking companies, changing individuals’ perception through relative experience, a discord free governance of point-of-extraction residents is not possible due to individual traits internalizing unique experiences (Watts 2003; Escobar 2006; Douglas 2013).

Another value called into question is that of value of nature and how it is perceived. Common western capitalist perceptions maintain that the natural world is separate from the human world, allowing for a human domination of nature (Castree
2003). If incoming stimuli and outgoing response to environmental hazards and the associated incongruities are filtered through a preconceived cognitive construct asserting that nature is on a lower hierarchal plateau than humans, it can logically be deduced that perceptions of that stimuli are formed through external influence (Bornstein and Pittman 1992; Castree 2003). Therefore, if individuals were to adhere to the polarized value that nature is relative to humans and imperative toward their survival, then the perception would differ. As nature is remade, or reimagined by people with various values, the manner by which conflict arises between stakeholders with various perceptions becomes apparent (Zebrowitz 1990; Castree and Braun 2001).

As values contrast between residents within an area involved in a global commodity chain of extraction, which is harmful to the area’s environment, discord is exacerbated while perceptions are changed (Brasier et al. 2011, Willits, 2011; Boudet et al. 2013). Data exists demonstrating that during the height of the boom period, residents’ perceptions in the Marcellus Shale region remained significantly positive toward the industry, even after considering positive and negative externalities (Willits, 2011). Interestingly, later research suggests that specific values and personal aspects, such as worldviews, gender, and education, dramatically effect Americans’ perceptions of hydraulic fracturing (Boudet et al. 2013). Within the thesis, the causes of these changes to initial perceptions will be addressed by discussing relative stimuli and values, and exploring the reasons these perceptions changed or remained similar. Theoretical frameworks aid in the understanding of Dimock’s connection to global markets and their interactions, while the sub-topics explore values and how they are perceived and modified.
I.V Methods

To answer research questions and objectives, while employing the aforementioned theoretical frameworks and concepts, I utilize a mixed methods ethnographic approach. Specific methods include: participant observation, archival work, document analysis, and semi-structured interviews. The methods employed are commonly utilized with perceptual change studies (Brasier et al. 2011; Davis and Hoffer 2012; Perry 2013). Semi-structured interviews ensure consistency while also allowing for a flexible conversation, which can be applied strategically in order to extract key perceptual data, to distinguish changes in the interviewee’s perceptions, or to showcase how experiences have helped change perceptions. The use of archival work, document analysis, and participant observation’s individual strengths round out the temporal study. These methods add key factors to understanding perceptual change such as understanding disagreements, through rhetoric and interpersonal interaction (Schensul et al. 1999; Patton 2005). These two approaches also act as supportive triangulation methods to corroborate information shared by interviewees in order to reinforce overarching themes and individual experiences collected in semi-structured interview. Previous research exists using mixed method ethnography to explore individuals’ perceptions of natural gas extraction through hydraulic fracturing. When used in similar studies, the methods have been integral in understanding periods of transition within boom-to-bust scenarios. Examples of their application are areas of Pennsylvania regarding hydraulic fracturing and the determination of individuals’ perceptions of the fracking process by examining multiple angles of impacts at the point of extraction (Brasier et al. 2011; Theodori et al. 2011; Perry 2013; Willits et al. 2013; Boudet et al.
2014; Simonelli 2014; Willow and Wylie 2014). Thus, these methods are applicable to the scenario in Dimock Township.

I.V.I Participant Observation

I arrived in Susquehanna County, Pennsylvania on August 1, 2016 and remained in the community until September 21, 2016. Immersion in a specific socio-cultural setting exposes the researcher to routine and normative activities, while engaging in social interactions with the participants within the research location (Jorgensen 1989). Participatory observation is essential to building relationships, which are fundamental in the process of conducting an immersive ethnographic study. Not only does this method allow for building of trust of the researcher within the community to facilitate honest interviews, it also provides the researcher with key cultural interactions and experiences, which can be treated as ethnographic data (Schensul et al. 1999). My fifty-one-day interaction within the community was set up similarly to the semi-structured interview process. It began by identifying events and contacts, some of whom were discovered prior to arrival. The main difference between participant observation and interviewing was that certain immersive activities, such as town hall meetings and other public affairs, are open to the public. Announcing my presence and purpose of attendance for each event was the only prerequisite. Relationships were perpetuated with some residents, and initiated with others through participatory observation. Participatory observation data was recorded by taking physical notes and digitally recorded notes, during events or directly after events occurred. A daily journal of interactions and personal perceptions was kept to act as supportive triangulation data from themes and observation described by
interviewees. As an example, some respondents portrayed a change in the landscape from rural to industrial, which became apparent by viewing the landscape change from neighboring New York, to Pennsylvania.

During my time in Susquehanna County, I was able to form important interpersonal connections while attending specific events, and obtain a detailed understanding of the recent history of extraction, which supports information for interviewees. The events I attended include the following: town hall meetings, a gas tour, presentations by community members, participatory observation of a well-pad violation, a local fair, and a brief tour of the Cabot Oil and Gas facility.

My observation of two town hall meetings at the Dimock Township building occurred on August 1, 2016 and September 12, 2016. Both meetings included approximately fourteen attendees, mainly consisting of community members. The township secretary and supervisors led these meetings. Key aspects pertaining to the research discussed were impact fees, infrastructure, and well-pad site announcements. During the public comments, I stood to introduce myself and my intentions in the area.

On August 12, 2016, I was able to attended a local activist led “gas tour,” which entailed a nine-hour tour of local fracking infrastructure and how it has changed the community, along with corresponding discussions with residents of Dimock and surrounding townships. These residents included one of the families who were awarded a 4.3-million-dollar settlement against Cabot Gas and Oil. The family members described the impacts they experienced by remaining in the lawsuit, which opposed some residents’ opinion of fracking and the economic difficulty they faced by remaining on trial and supplying their own potable water. There was another discussion, led by landowners who
had their property taken over by the local pipeline company, Williams. By order of eminent domain, Williams took their land and cut down their trees in order construct a pipeline to pass through their property. This pipeline, which was supposed to connect to New York State, was subsequently canceled. The Gas-Tour provided me with a rich understanding of clashes involved between residents and the local gas company, while also considering the adaptively the community has displayed to natural gas infrastructure over the past decade.

On August 12, 2016, I observed a community-based presentation and discussion of an incoming natural gas powered hazardous waste incinerator. Organized by the League of Women Voters of Susquehanna County, the presentation was facilitated in order to inform residents of details of the proposed project. There were approximately two-hundred people in attendance, most of whom were residents of Susquehanna County. The meeting was held in association with the air quality based community advocacy group, “Breathe Easy Susquehanna County.” The purpose was not only to create awareness of the incinerator but to raise awareness in residents of the adverse effects associated with the incinerator. These adverse effects included air quality hazards, a decreased economy from tourism, and transition from rural to heavy industrial, as incinerators are likely to invite other industrial facilities into the area. This experience provided me with the understanding that polluter industries are not accepted in the area, unless economically beneficial, as the incinerator would provide no economic benefit, while attracting similar polluter industries to the area. I arrived on this conclusion due to the fact that the meeting had been attended by both pro and anti-fracking individuals, and through personal discussions with residents.
While residing in the county, I observed a community reaction to a seven hundred and fifty-gallon diesel fuel spill, which occurred at a fracking well-pad site in New Milford Township on August 6, 2016 (SkyTruth Alerts 2016). I was able to view how the community interacted during this violation and voiced their concerns immediately to the state DEP. The DEP responded to a concerned community member, stating it was illegal to use diesel gas in well-site operation. The DEP then further clarified that while diesel gas is illegal to use in fracking fluids, it could be utilized and stored on-site to power fracking-related equipment. The residents involved included me in their email discussion and I had the privilege of witnessing the type of community based reaction which generates precautionary steps the industry might not have addressed a decade ago.

On August 23, 2016, I attended the Harford Fair in New Milford Township. This event helped me to engage in community interaction, establish contacts, and acquaint myself with the local culture. Residents had informed me that the local gas companies attended the fair in years prior in order to help solidify and establish community relations. However, the industry was not present this year.

Cabot Oil and Gas extended an invitation to tour their facility located in Dimock Township on September 9, 2016. The facility’s offices and parking lot appeared empty, while also being the largest and most modern building in the Township.

Throughout my time in Susquehanna County, I kept a daily log of information, personal thoughts, mood, and interactions with community members outside of recorded or documented events. All have been documented, and are considered supportive data.

Participant observation is fundamental to this research as it helps reshape the way in which the researcher interprets problems the area is enduring. Preparatory work for
conducting research often creates a superficial understanding for a given situation (Becker and Geer 1957). In other words, before participating in daily interactions among the residents of Dimock township, I possessed a bias or a preconceived notion of what I would experience. The intense value of participant observation is that it essentially modified this research away from the bias as I could now see both the benefits and detriments this community had been experiencing. For example, upon introducing myself at the township meeting on Aug. 1 2016, residents greeted me with mixed reactions. Residents have experienced researcher fatigue, as many doctoral and master’s students came to the area to conduct water quality tests, only to be forgotten about as disseminating research turns into a time consuming ordeal. Residents’ are well aware of the issues around fracking and local water sources, what they would like everyone one to become aware of is the complex relationships these events manifested. After absorbing this information, I was then able to re-frame my research to residents and myself. I subsequently boiled down my research questions from complex perceptions, to simply asking for resident’s stories and what they genuinely understood the pros and cons of local extraction are as a result of their individual experiences. After this, I thought of my own research differently and positioned myself as an unbiased researcher who simply wants to convey an important message.

In addition to expanding my understanding of the complex situation in Dimock, participant observation can also create barriers. After having to reposition my research to residents as social and cultural, rather than the qualitative water analysis they were used to, my research could still be understood as a hindrance to the fracking industry as most research portrays the industry as negative, and any negative portrayal of fracking is
perceived locally to impede extraction, ultimately obstructing royalties. Seeking the approval of *gatekeepers* (Creswell 2009), or persons who would allow my research to be conducted in the area, proved complicated as a result of perceived negative impacts researchers hold. Again, I gained approval from these gatekeepers by reorganizing my understanding of the situation, and the reconceptualization of my research as essentially a list of pros and cons within residents and industry comingling rather than simply demonizing the fracking industry.

This observational data is analyzed through the theoretical frameworks of political economy and political ecology and utilized by reinforcing overarching elements of findings. Observational data is useful in examining the discord between residents who support and oppose fracking, and discord between residents and external stakeholders. In addition, the data is used to examine the extent to which hydraulic fracturing has become normalized in Dimock as a result of the rhetoric promoted by the industry. The use of a theoretical framework is necessary to organize observational data among themes presented within other literature. (Jorgensen 1989).

Theoretical frameworks are applied to examine normative activities and relationship of residents and fracking companies, which present themselves in daily interactions. Participatory observation is a non-invasive and complementary form of ethnographic research. Similar research utilizes participatory observation in concert with other ethnographic methods in regards to hydraulic fracturing in order to: (1) display how normalized the fracking process becomes through employing positive rhetoric and the neoliberal ideological reorganization which accompanies it (Malin 2014), (2) showcase the perceptual shifts of nature and environmental activism that spring from negative
externalities of the process (Danza 2012), and (3) enable a vantage point to assess the socio-cultural and psychological factors of community health in relation to fracking (Perry 2013). Participatory observation is used to view interactions within the community. Similarly, it is utilized to view the relationship between community members and local fracking companies. The interactions and relationships, which are viewed using participatory observation, help explore hydraulic fracturing companies’ influence on perceptions. This addresses an endpoint to all of the proposed research objectives, while determining the socio-cultural interaction in the area, satisfying the goals of 0.2.d. The data is used ultimately to answer RQ #3’s goal, which is to understand the reasons for perceptual change.

I.V.II Archival Work/Document Analysis

Archival work and document analysis saves valuable time by utilizing data collected by others while further enhancing the comprehensiveness of personal ethnographic data collection. This methodology helps in understanding cross-cultural comparability and clarity of final results (Schensul et al. 1999). Collection of data such as local newspapers, town hall minutes, scientific literature, state and federal reports, local well-site violations, and laws and policies are utilized as research data. It serves to reinforce interview and participant observation data by triangulating and isolating specific terms and rhetoric, and creating underlying trends and patterns of shifts in perceptions of socio-cultural aspects (Patton 2005). The interviews provide key and overarching themes, which require documentation from other sources in order to confirm validity.
The summative approach is utilized in order to analyze content. This is the most flexible technique for content analysis, as it goes beyond a mere word or content count used in quantitative analysis (Hsieh and Shannon 2005). Rather, this qualitative method of analysis is designed to uncover the hidden trends and meanings of the content by coding specific contextual usage of the words or content (Hsieh and Shannon 2005). This is accomplished by using qualitative analysis software (e.g. Nvivo Qualitative Software) in order to color code content into distinct themes and meanings within the context in order to analyze trends and help answer specific research objectives and questions.

The data collected for this thesis dates from initial exploration of fracking (mid-2000’s) to current day. Similar studies using document analysis or archival work regarding hydraulic fracturing, have shown that: 1) local civic engagement raises awareness of the process as well as its negative externalities (Arnold and Holahan 2014), 2) fracking polices and regulations are maintained on state level in order to shift control to private entities, which enables greater manipulation in favor of the extraction companies (Davis and Hoffer, 2012), and 3) neoliberal pro-fracking rhetoric is impacting people, their environment, and the institutions involved by normalizing the harmful process (Malin 2014).

The data analyzed is composed of carefully selected documentation of local and global policies and laws, local and state media resources, and scientific literature. Documents were collected before, during, and after fieldwork, which allows for exploration of documents that are relative to interview and experience data acquired while in the field. This well-rounded process decreases the chance of bias within collected literature and explores perceptual shifts that have occurred over the boom and
bust period. The method is used to analyze the drivers of perceptual shifts in Dimock by exploring the language/rhetoric used in media and by residents, while considering the shift in policies regarding hydraulic fracturing. This will satisfy the goals of research objective 0.2, and 0.2.b; that is, to determine the drivers of perceptual changes and to explore the rhetoric employed by hydraulic fracturing companies. The data also satisfies all research objectives regarding perceptual change components and acts as supportive documentation to key themes and interviewees’ experience. Doing so will help answer Q.1: What are the drivers of perceptual change in Dimock, PA? Document analysis of archival materials will portray the manner by which energy policy has been changed, which influences local stakeholders.

1.5.3 Semi-structured Interviews

Interview methods are common to ethnographic data collection. Semi-structured interviews allow for distinct formatting of dialogue by using pre-formulated, open-ended questions while following a flow chart to maintain direction in the interview process (Schensul et al. 1999; Saldaña 2015). The order of questions designed for this study was specifically formulated to begin with broad questions, then become increasing more narrow as the interview progressed. Specifically ordering the questions in this manor allows the interviewee to take the investigator down a path while allowing for variability of switching back and forth from unstructured (e.g. asking follow up questions outside of the structure) and structured (e.g. specific formatted questions) interview styles (Leech 2002). This adaptable, semi-structured approach benefits research with a more
exploratory method of data collection. It prompts variability of responses and allows interviewees to tell the stories they wish to tell (O'Reilly 2005).

The data collected using this method is coded, which aids in understanding results within the context of the theoretical frameworks employed in the study. Coding interviews involves using qualitative software in order to analyze key themes in participant responses. Discovering these themes allows for triangulation of cultural understandings and perceptual shifts given the constrained themes of the interview (Tong et al. 2007; Saldaña 2015). Previous analysis of interview data collected in the Marcellus Shale region (Brasier et al. 2011; Schafft and Biddle 2014; Simonelli 2014) utilized various qualitative data analysis software to determine key themes in order to highlight perceptual change and how it affected the contextual relationships within a community.

Semi-structured interviews are extremely helpful and commonly utilized within the literature of hydraulic fracturing (Brasier et al. 2011; Perry 2013; Schafft and Biddle 2014). This method facilitates a timeline of boomtown perceptions of a location. For example, interview based data is able to clearly present a record of how fracking company activities are initially received through positive rhetoric and how the economic and socio-cultural perceptions are shifted over time from experience (Schafft and Biddle 2014). Perceptions explored through interview methods are able to identify individual transitional stages of boomtown economy and influences of perception as interviewees portray specific personal histories and experiences with the fracking industry, while identifying themes and trends (Brasier et al. 2011; Schafft and Biddle 2014; Simonelli 2014). This enables a view into the change of perceptions of the local population,
facilitated by policy makers, gas producers, and normalizing rhetoric, which are all connected to an influential global market.

Due to the cross-temporal nature of the study (i.e. it explores past and current perceptions), and its geographical scope, subjects chosen for these in-depth interviews fall under the following categories: (1) residents of Dimock who have not signed a non-disclosure agreement with extraction companies; (2) government employees of Dimock; (3) local activists who have had experiences with residents of Dimock; and (4) local industry professionals. These categories ensure that all interviewees have close experience with the issues under study while preventing any specific external bias. Many residents with whom I spoke shared a concern that my participating interviewees be residents of Dimock or deeply involved in hydraulic fracturing related events, which occurred in Dimock. They requested that I explore the actual experience of the people of Dimock, rather than that of external interest groups. I took this request extremely seriously and interviewed only people who possessed a deep connectivity with the area and its residents, in addition to those who actually lived within the region. Overlap occurred within categories of interviewees; however, the specific questions designed for each category were posed to participants who fell into multiple categories. For example, when interviewing a subject who fell into two interviewee categories, questions designed for both subject categories were used. Overlapping of interviewees’ categories does not promote double-dipping of respondents as this is not a statistical analysis. This data is used to prove an overarching theme that is represented in every interview. In addition, this data is supported with personal interactions and content analysis, which is then used
to corroborate and triangulate the data produced from the interviewees who provided personal experiences and repercussions of living in proximity of extraction.

Pseudonyms are used when quoting interviewees in order to categorize the participants, while retaining anonymity. The following identifiers are used for each category: residents = R, government employees = G, industry professionals = M, and local activists = E. Each categorical pseudonym will also be given a numerical value, used only to show definition between interviewees and to keep them categorized within Nvivo software. Anonymity is the responsibly of the interviewer (Spradley 2016), and has been extended not only in this thesis, but also in the software used to transcribe the interviews, and field notes taken.

News articles, case laws, town hall information, and environmental groups’ online resources were examined in order to identify potential interviewees. Exactly twenty-one participants were interviewed over fifty-one days in the field from August 1, 2016 to September 20, 2016. Interviewees were identified using the selective sampling and snowball sampling methods. Selective sampling involves identifying and contacting specific interviewees prior to arrival in order to arrange meetings and to develop a rapport (Blomberg and Burrell 2009). These potential interviewees were then contacted by phone or email. Once contacted, interviewees assisted in identifying similar potential respondents, which is referred to as snowball sampling (Blomberg and Burrell 2009). These methods of identifying and contacting specific respondents were used for the ease in discovering actors in the area, and to simplify the process of establishing connections, while being thousands of miles away from the research site. The methods of sampling
have proven successful in identifying respondents within similar research pertaining to hydraulic fracturing (Israel et al. 2015; Eaton and Kinchy 2016).

During the interview process, pre-formulated questions were used for each group following a flowchart, specifically developed for interjection of non-formulated questions (see appendix, figures eleven through fourteen for pre-formulated questions). These questions were composed to reflect the respondent’s history and relationship with the extraction process from the past decade, which is used to develop a chronology of perceptions. This chronology of perceptions showcases changes in perception, ultimately enabling answers to research questions and to successfully complete the objectives.

Of the twenty-one respondents, the average interview time was around one hour. Some lasted upwards of two hours in order to allow the participants to tell the stories they wished to tell. All respondents signed consent forms, which were verbally explained to them prior to the interview. The parameters within the consent forms and the measures taken to protect the anonymity of interviewee were approved and followed the protocols of the Internal Review Board, of the Human Subjects Review Program (HSRC) at Central Washington University. The approval study number provided by the HSRC for the research is H16094. The consent forms give participants the choice to opt out of the study at any point, raise awareness of any potential risks or benefits involved in the study, convey research objectives of the study, inform the interviewee of how a transcript of the interview could be obtained, and provide information regarding who interviewees may contact in the case that any mental or physical harm related to the study occurred. Careful steps were taken to reduce the risk of identifying the interviewees, such as omissions of personal information in the final document, password protection of digital data collected,
and a numerical identification pseudonyms of informants. The interviews were recorded using a digital recorder, which allowed for rapid transcription of the interviews utilizing NVivo Qualitative Software. During the recordings, handwritten time stamp notes were taken to create an outline, by which digital recordings could be kept properly itemized and organized. Upon completion of each interview, notes were immediately made regarding the mood, specifics of interviewee, theme to particular interview, or any abnormality that occurred. These notes act as devices to remember the finer points of the interview and keep organized, while they also serve as footnotes to prepare final analysis, as they are similar to observational data (Muswazi and Nhamo 2013). Nvivo Qualitative analysis software was utilized to distinguish key themes, trends, and topics (e.g. water contamination, social rifts, and infrastructural changes) within the interviews that facilitate an understanding of perceptual shifts within economic, environmental, and socio-cultural changes associated with the fracking process.

Within this study, semi-structured interviews showcase the current stage of the boom-to-bust scenario in Dimock Township. Interviews were formulated to portray how residents’ perceptions of hydraulic fracturing and its negative repercussions have changed over time, in relation with neoliberal changes of energy policy and rationale. Interview data is utilized in order to achieve the following research objectives,

1) to explore 0.1’s main goal of understanding if residents’ perceptions have changed since the process began in the area

2) to understand 0.1.a and 0.1. b’s initial and current perceptions by interviewing proximal residents about their relationship over time with the extraction process
3) to discern 0.2.a’s residents’ explanation for perceptual change

4) to help determine the actual economic and environmental impacts in the area by interviewing local governmental employees, environmental groups, and extraction company employees, and 5) to determine changes in residents’ socio-cultural perceptions due to extractions’ negative externalities.

Semi-structured interviews also aid in addressing research objectives and questions by developing a chronology of perceptual changes. Interview data is coded with the following method: Using NVivo qualitative software, interviewee’s responses to specific questions involving initial and current perceptions are highlighted and organized under corresponding nodes. Nodes, “let you gather related material in one place so that you can look for emerging patterns and ideas” (Nvivo 2016). For example, an interviewee’s positive response to a question regarding initial economic perceptions is categorized under the node, “Initial Perception>Positive>Economic” (See Figure I). An interviewee’s negative response to a question regarding current economic perceptions is categorized under the node, “Current Perception>Negative>Economic” (See Figure II). After the comment is categorized, the difference in responses determines the factors which changed the interviewee’s perception of the fracking industry, or helped examine factors that allowed their perception to remain the same (See Figure III). All specific situational data is corroborated using archival work, document analysis, and participatory observation. For example, if a respondent states that their economic view of local fracking activity changed due to decreased production, this statement is subsequently reinforced using obtained data from local gas production statistics.
Figure I. Method of coding responses into specific nodes

Figure II. Method for coding responses into specific nodes
In addition to these nodes, which help extrapolate initial and current perceptions among interview participants, Nvivo also allows for these nodes to be further categorized. For example, if a response is categorized under the node “Initial Perception>Positive>Economic,” this can be further categorized to what the interviewee’s positivity is precisely recalling. Therefore, if multiple respondents reply positively to initial perception of the fracking industry and give similar reasons, such as “royalties, local economics, jobs, local businesses,” this can be categorized to show an observable frequency of individuals who shared this sentiment. The further classification of responses provides a useful visual aid to help portray the frequency of responses to initial and current perceptions that residents and community members provided about the economic, environmental, and socio-cultural impacts of hydraulic fracturing. These visual aids are utilized to show overarching themes, rather than to quantify responses. To utilize these visual aids, Chapters three and four each have economic, environmental, and socio-cultural sections, which end in the aforementioned visualization table in order to offer a brief overview of initial and current perceptions discusses across the section. Furthermore, the frequency of response visual aid tables ultimately become helpful in
assisting to answer RQ# 2. Chapter four’s conclusion section uses a similar visual aid table to observe a comparison between the frequency of initial and current perceptions, thus giving a graphical visualization to the changes, or similarities to initial and current perceptions of fracking in Dimock. Again, these frequency of response visual aid tables are used to graphically display the information provided throughout the sections of Chapters three and four and provided the reader with a simple to use reference. The following figure (Table I) provides an example of the frequency of response visual aid tables used in Chapters three and four, followed by a description on how to read these tables:

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency</th>
<th>Medium frequency</th>
<th>Low frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial or current economic, environmental, or socio-cultural perception of hydraulic fracturing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table I. Example of the frequency of response visual aid tables used in the economic, environmental, and socio-cultural sections of Chapters three and four*

The top row (See Table I) identifies the frequency of responses. In order to coincide with the manner in which the interview data has been coded, the visualization of the data is presented as high frequency responses (twelve to twenty-one respondents reporting a similar sentiment), medium frequency (six to eleven respondents reporting a similar sentiment), and low frequency (one to five respondents reporting a similar sentiment). The colors are used to represent levels frequency. Red represents high frequency responses, orange represents medium frequency responses, and yellow
represents low frequency responses. This is done not only as a visual aid to help the reader quickly assess the frequency of responses, but also because the visual aid tables used in the conclusion section of Chapter four compares initial and current perceptions at a specific frequency level. Again, these tables are not used to quantify a precise number of responses and compare, these frequency of response visual aid tables are presented in order to develop a graphical representation of themes discussed extensively over the course of each section, then used to compare these themes in Chapter four at the individual frequency level (i.e. high, medium, and low). The bottom row (See Table I) depicts the initial or current economic, environmental, or socio-cultural perception of hydraulic fracturing given by respondents, depending on the section it is visually representing. In this bottom row, the high, medium, and low frequency overarching responses are displayed in order to give the reader a quick reference and a brief recap of the discussion over the course of each of the sections in Chapter three and four.

In addition to these frequency of response visual aid tables, Chapter four’s conclusion section employs the help of a similar table in order to compare all the preceding tables. At this point, all of the initial and current perceptions have been discussed and visualized. Therefore, in order to help address RQ# 2, Have the baseline perceptions of economic, environmental, and socio-cultural conditions of hydraulic fracturing changed among residents within proximity of extraction?” a similar visual aid table is used to compare the overarching initial and current perceptions by type of frequency (i.e., high, medium, and low). The following figure (See Table III) provides an example of the observable changes to perceptions visual aid tables used in the conclusion section of Chapter four, followed by a brief description on how to read these tables:
The top row of (See Figure 5) portrays the type of response; economic, environmental, or socio-cultural. The second row (See Table II) represents initial perceptions given by respondents organized in types of responses (i.e., economic, environmental, or socio-cultural), as realized in Chapter three. In this example, I have chosen to use the high frequency observable changes to perceptions visual aid table, simply to show the way in which the color representation used in the frequency of response visual aid tables are further utilized. There is third row left intentionally blank (See Table II) in order to aid the viewer in separating the initial and current responses. The fourth row (See Table II) is used to characterize the current perceptions of the perceptions given by respondents (i.e., economic, environmental, or socio-cultural) as revealed over the course of Chapter four. This is accomplished for the means of providing a recap of the data discussed over the course of the Chapter; and additionally, a way to compare initial and current responses at the frequency level in order to help
answer RQ# 2. In conclusion, the final and fourth row (See Table II) briefly describes the changes or similarities in the frequency level of initial and current perceptions. This method of displaying the data collected and discussed in the thesis was developed for this thesis specifically and is accomplished simply to help the reader visualize qualitative data.

I.VI Outline of the Remainder of the Thesis

In Chapter one, the problem, purpose, and significance addressed in this thesis is introduced. The theoretical frameworks utilized to investigate the research in a broad context is explored. The chapter contains the methodologies used, their application, and the manner by which they have been employed to triangulate key themes and a descriptive narrative, in order to answer proposed research questions.

In Chapter two, a brief historic recount of extraction based industry in Northeastern Pennsylvania is developed. The region’s history enables an understanding of the normative and standardized extraction based industry in the area. Normalized extraction permits the industry to promote positive economics along with nationalistic ideology through persuasive media promoting energy independence. A rich recent history of natural gas extraction in the area, along with a timeline, is provided. These tools create an understanding of the perceptual basis for residents of Northeastern Pennsylvania when analyzing how these activities change the way people perceive the industry in subsequent chapters.
In Chapter three the collected empirical evidence is used to answer RQ #1: “What were the baseline perceptions of fracking as it began in Dimock, PA?” Analyzing the interview data based on initial perceptions and supplementing the data with the theoretical frameworks has given insights into the baseline perceptions of Dimock and aids in answering RQ#3 by revealing the drivers of perceptual change in the township. The analysis This Chapter builds off the historical timeline, while adding specificities which are foundational to understanding the perceptual change component addressed in Chapter four.

In Chapter four, collected empirical evidence is used to answer RQ #2: “Has the baseline perceptions of economic, environmental, and socio-cultural conditions of hydraulic fracturing changed among residents within proximity of extraction?” Analyzing the current perceptions of hydraulic fracturing, is used to determine if the baseline perceptions of hydraulic fracturing in Dimock have changed and the key aspects that have enabled this change. Examining changes in response to research questions while considering Chapter three’s determined drivers of change, enables an understanding of the specific elements that have shifted perceptions, or caused them to remain the same. The social rift and discordant attitudes which resulted from fracking industries comingling with residents are fully exposed and discussed. Similarly, the boom-bust nature of extraction based industry is portrayed in this chapter.

In Chapter five, collected empirical evidence is used to answer RQ #3: “Are these perceptual shifts a result of proximal relations with extraction companies or external economic forces?” To answer this question, the key perceptual changes have been presented and interpreted through political economy and political ecology theoretical
frameworks, collected documents, and personal experiences in order to determine the root of the changes in perception. This thorough analyzation allows for a multi-scalar view of the relationship between the hydraulic fracturing industry and the residents of Dimock, on the state, federal, and global levels.

The sixth and final chapter contains a brief recap of the thesis, its findings, important concluding points, resource management suggestions, and suggestions for future research.

The following Chapter explores Susquehanna County’s deep history in extraction based industries. Understanding the region’s rich history in resource extraction showcases the normalization of extractive activities. Also, Chapter 2 offers an overview of Dimock’s recent history in natural gas extraction through hydraulic fracturing. This overview provides important foundational information to understand how the data collected corresponds to specific events which occurred from 2006 to 2016 and creates a timeline, which is imperative to the following Chapters.
CHAPTER II. AN ALL-AMERICAN HISTORY OF RESOURCE EXTRACTION IN NORTHEAST PENNSYLVANIA

Pennsylvania State’s economic census designates hydraulic fracturing as a mining operation in the same category as coal extraction. Energy resource extraction in Northeast Pennsylvania is a significant part of the region’s identity, especially coal mining. In general, engaging in resource extraction symbolizes a nationalistic and self-sustaining stewardship ideology, which is shared by working-class citizens (Veltmeyer 2013). This stewardship is a local value in Dimock, maintaining that proper land management and knowledge of resources is best handled by inhabitants of the location, based on knowledge and experience. Correspondingly, this stewardship also aligns with the neoliberal shift in public to private control of resources based on policy, which normalizes the impacts that extraction have on communities and reliant ecological services (Harvey 2005; Finewood and Stroup 2012). Therefore, multi-generational residents that are enticed by the hydraulic fracturing industry’s economic incentives embrace corporate economic decision making as their own stewardship decision, believing these choices are best for the location. Local stewardship ideology essentially asserts that local land management is proper management (McCarthy 2002). However, decisions are made by market-driven corporations with local stewards regarding issues such as energy resource extraction. These decisions can affect a much larger population than the local stewards as water and air pollution can migrate and impact future generations, resulting in a homogenous management system for a heterogeneous population. Homogenous management signals opposition to public driven dialogue that
could potentially establish federal level rules and regulation to hydraulic fracturing, which would limit residents’ historic stewardship and economic incentives.

Similarly, there is a nationalistic component behind local stewardship. Hydraulic fracturing for natural gas in Pennsylvanian leads to American energy independence (Schafft et al. 2013). Residents of Pennsylvania were delivered a narrative by “land-men,” (i.e. employees of fracking companies who lease land and negotiate prices for mineral rights). This pitch contained the promise of energy, a nationalistic ideology of independence from Middle Eastern conflict-driven gas and oil (McGraw 2011; Wilber 2015). The energy independence promise was not fiction. In 2005, around the time the natural gas boom began, 65 percent of U.S. oil and gas consumption relied on imports (EIA 2016d). Currently, imports supply only 28 percent of U.S. oil and gas consumption (EIA 2016d) (See Figures IV & V). This shift in consumption from imported oil and gas is directly related to natural gas and oil production within the United States borders, including the Marcellus Shale (Clemente 2015), which provides a sense of responsibility and nationalism to drive the locally appointed stewardship of the land. This nationalistic stewardship is facilitated by the neoliberal intervention of hydraulic fracturing policies such as the 2005 energy policy act, which limits federal level government interference (Finewood and Stroup 2012). By limiting federal level involvement, governance of the area had been appropriated to the fracking industries with the aid of supportive local stewardship (Hudgins and Poole 2014).
The primary objective of this chapter is to provide a critical exploration of the history of resource extraction in Northeastern Pennsylvania and to explore the manner by which the region’s history has enabled both normative and standardized extraction based industry within the area. Hydraulic fracturing for natural gas has become normative (i.e. considered to be the norm) due to the region's history of resource extraction and it has
become standardized (i.e. economically reliant on a particular industry) as a result of its normalization. Northeastern Pennsylvania’s unique extractive history has aided the fracking industry in promoting itself and helped align it with local extractive stewardship ideology. Residents have welcomed the fracking industry in the area due to positive economics in the form of individual mineral rights acquisition and land leasing, along with state and township level economic incentives. Acceptance of the fracking industry has been similarly accomplished by promoting the nationalistic ideology of energy independence through persuasive advertisements and land-men narratives. Hydraulic fracturing industry also filled an economic void as a country-wide recession began around the time fracking began in Susquehanna County. The second objective of this chapter is to provide a timeline of recent hydraulic fracturing history in order to create a foundational base for residents of Dimock Township when analyzing the manner by which extraction based activities have changed the way that individuals perceive the fracking industry. The events, themes, and topics discussed in this timeline will be analyzed in depth within subsequent chapters.

This chapter demonstrates that fracking company activities have been undoubtedly normalized in Northeastern Pennsylvania in part due to a rich history of local resource extraction. Essentially, this normalization has paved the way for residents of Dimock to view the fracking process as both nationalistic and as a good stewardship decision. Therefore, this chapter is broken into three sections. First, a history of resource extraction in Northeastern Pennsylvania in order to portray the influence other extractive industries has had on community members’ acceptance of fracking industry activities is compiled. Second, a timeline of recent fracking activities is provided for two reasons: (1)
as a foundation basis for subsequent chapter information (2) as means of exploring how fracking became both normalized and standardized in Dimock Township. Third, a conclusion section is included, which sums up the foundational information provided within this chapter.

II.I Northeastern Pennsylvania Resource Extraction History

II.I.II Coal Mining History in Northeastern Pennsylvania and its Influence

Coal burning was the primary means for industrial expansion and thus technological and urban development in the United States and around the globe throughout the 18th and 19th centuries (DOE 2013). Individuals working in the coal industry and residents involved in areas of extraction experienced a sense of national pride in their role in moving the nation ahead. United States industrialization, westward expansion, and advanced weaponization are all related to coal production due to its abundance in places like Northeastern Pennsylvania (DOE 2013). U.S. Coal supplied massive amounts of energy to factories and homes, and allowed for further expansion of the distance locomotives could travel in the 19th century, thus having a role in shaping America via westward expansion (Hoffman 1982).

Coal extraction is engrained in Northeastern Pennsylvania’s history and is a part of its local stewardship ideology. Four coal fields in Northeastern Pennsylvania contained the country’s largest anthracite coal source in the 19th century and early in the 20th century (Corlsen 1954). With almost two hundred thousand miners employed in 1917, coal extraction hit its peak in in the Susquehanna County region, producing 90 million
tons of coal a year (Marsh 1987). World War I era saw the area’s greatest expansion of coal mines, railroads, and boom of coal towns (Marsh 1987). From post-World War II era to present date, coal production increased, reached its pinnacle and is currently in decline (See Figure VI). Similarly, U.S. coal-based employment followed the same trend (See Figure VII). The sharp decline in U.S. coal production in recent years has been exacerbated by the abundance and low price of U.S. natural gas (Clark 2011, Weber 2012). As a result of heavy extraction rates, massive mining operations depleted easy-to-access coal in Northeastern Pennsylvania. The depleted amount of easy-to-access coal along with easier accessible coal beds elsewhere in the U.S. dramatically affected production rates in Northeastern Pennsylvania (Clark 2011). Production came to a near grinding halt after the vast majority of underground mines were shut down as a result of the Knox Mine disaster in 1959. After the disaster, only a few minor coal mining and strip mining operations remained in the area (ANGA 2013). This dramatic decline in coal production left areas in an economic bust scenario, which resulted in a decrease in coal town population (Marsh 1987). Currently, there is still coal mining in neighboring Luzerne and Lackawanna counties, but production is at an all-time low (Skrapits 2015).
Fracking companies employ a, “cleaner-burning than coal” rhetoric frequently in the area, suggesting that natural gas is the next logical step to keep the energy industry in Pennsylvania. When I discussed the topic of coal’s historical connection to Dimock, a community member provided this statement:
We're probably getting one hundred and fifty percent more power out of the same burning of natural gas that we would've in the 1980's [with coal]. And on top of that, the one hundred and fifty percent power is so cost effective and abundant that we're retiring so much old out of date coal. So during it, natural gas only emits carbon dioxide when it is burned, and H2O which many think is part of the global warming issue, which nobody talks about. But I guess the increase of water vapor in the atmosphere retains more heat than anything. But anyways, without coal, you're taking away all the particulate matter. All of that is being retired. So we're back down to 1990 levels [of carbon pollution]. M – 002, Interview, Sept. 16, 2016

Described here is the idea that natural gas is an improvement on the once dominant coal industry. This associates gas extraction through fracking with coal extraction in the area, while also complementing it with an element of superiority. The comparison and superiority aspect provides the residents with an additional reason to trust the stewardship decisions of the fracking industry as simply an improved energy resource from the one with which they are historically connected. With such a rich history, resource extraction is normalized and gives a sense of pride in the state of Pennsylvania, and subsequently in residents’ stewardship decision-making and perceptions. This is similarly apparent with other forms of resource extraction such as lumber.

II.I.II Pennsylvania Hardwood’s Influence on Perceptions of Fracking

Similar to coal, the Pennsylvanian hardwood industry is ingrained in the state’s history, while providing significant economic revenue (PHD/DOA 2010). The economic impact of the forestry industry is particularly important across rural Pennsylvania. Before the 2008 housing market crash, this activity generated nearly five billion in annual wages among one hundred twenty-eight thousand employees (PHD/DOA 2010). While Susquehanna County reported less than two hundred wood products jobs, neighboring Bradford and Wyoming Counties represent over five thousand jobs (PHD/DOA 2010).
The dramatic decline in residential housing construction due to the 2008 housing market crash impacted the hardwood industry significantly (PHD/DOA 2010). However, hardwood production is in the process of rebounding from the 2008 recession, when production and jobs declined by fifty percent (PFA 2016). This period of American economic recession also represents the period in which fracking increased in Pennsylvania. Implied here is that the historical stewardship of hardwood extraction in the area coupled with the decline in state and resident revenue from the recession helped to initially welcome hydraulic fracturing into the state of Pennsylvania. Hydraulic fracturing's increase is a direct policy response to 2008 housing market crash (Dougherty 2014). After the 2008 recession, fracking in the Marcellus Shale region supplemented the declining economic prosperity of the hardwood industry (Heinberg 2014: 98), while it created many new peripheral industries and regional economic advantages. The hydraulic fracturing industry has historically targeted lower income areas first, working under the assumption that residents of these regions are more likely to overlook the long-term impacts on their land and homes, thus siding with the industry on environmental issues, and focus on the potential of royalties from mineral rights (Heinberg 2014). Therefore, the Pennsylvanian hardwood recession assisted in the acceptance of fracking by residents and state regulators in need of replacement revenue, while adding to the ideology that industrial stewardship is a local value. Pennsylvania Hardwood is a traditional symbol of pride for the whole state, a symbol of pride specifically for Northeastern Pennsylvania is the quarrying of blue stone.
II.I.III Pennsylvanian Bluestone and Quarrying: Pride in Local Resource Extraction

Pennsylvania bluestone is unique to Northeastern Pennsylvania and parts of New York State. Bluestone is primarily found and quarried in Susquehanna County (Susquehanna County Commissioners 2016). Revered for its aesthetic quality and durability, this soft sandstone is commonly used for homebuilding and landscape uses such as walkways, patios, countertops, and tabletops. Similar to the hardwood industry, bluestone and quarrying products relied on home development and took a hit in the 2008 housing market crash. A resident provided this thought on local bluestone industry:

What happened was in 2008...what is bluestone used for? Home construction, paving sidewalks, home improvement. That is what blue stone is used for. Bluestone and lumber production. And builders. Because nobody was building a new home in 2008. And people weren't doing home improvement in 2008 and 2009. So the new home construction industry crashed. And in 2008 there is a bump in gas, because there are more people getting hired. But there was a drop of in bluestone. E – 005, Interview, Aug. 24, 2016

This respondent is portraying the way in which hydraulic fracturing could fill the void of other declining industries in Susquehanna County, especially products needed for real-estate development. Bluestone extraction is listed under the same mining category in Susquehanna Country as natural gas extraction on economic revenue census information; therefore, it is difficult to extract accurate data on bluestone employment and production. This lack of deviation between the two mining operations symbolizes the historic stewardship of general extraction in the area. However, Susquehanna County experienced a growth in jobs under the mining category of 593 jobs between 2008 – 2012 (Delta Development Group 2014). These jobs could be related to fracking industry, supportive gas industries such as top stone and sand mining for well-pad construction, or bluestone. However, bluestone quarrying is mainly done by small, independent quarry owners and
has been active in the area since 1850 (Susquehanna County Commissioners 2016). There is an earned sense of pride in the Northeastern Pennsylvania area of the stones uniqueness and economic value. I discussed this rich history of quarry mining and its effects on perception of fracking industry. This individual stated that:

My family was in the open pit mining business. Aggregate, stone, crushed stone, sand, and anything you can think of up there. So I grew up in that natural resource development mindset. M – 002, Interview, Sept. 16, 2016

Conveyed here is the message that quarry stone extraction is a part of the resource extraction mindset of the area. Most quarrying operations in Dimock and Susquehanna County currently are to provide rock fill for well-pad sites; therefore, fracking stimulates quarrying making it a complementary industry to existing good-stewardship activities. Not all industry in the area can be complementary to hydraulic fracturing activities, but other industry can benefit from the mineral rights and royalties accrued from land-owners

II.1.IV Agriculture and Dairy: The Farmlands of Fracking

Located in the “Endless Mountains” region, Dimock Township is composed of aesthetically appealing rolling green hills of farmland. The agricultural products from Susquehanna County are mainly livestock and dairy, making up around eighty percent of total value of farm products sold, with crop production making up around twenty percent of total value of agricultural products sold (USDA 2012). In 2005, when fracking became relevant in the area, livestock and dairy production were on a gradual incline, soon to be followed by a dramatic decrease (See Figure 10). A gradual increase of crop-based products is observable around the time fracking began, suggesting a benefit of extraction
to local farmers (See Figure VIII). When asked about hydraulic fracturing’s monetary benefits on farming in Dimock, a community member stated this:

“Then you had the land owners themselves, the farmers especially up here in Dimock. I can still remember the one farmer has the bumper sticker on his tractor that says, gas saved my ass.” Straniti, B., Susquehanna County, 16 September 2016

This benefit to farming is a common sentiment of residents of Dimock. Another community member shared this response:

[T]here's been a few of these farmers that have used the windfall [of royalties] to keep the family farm and legacies going. To expand it, to improve it, to do things that needed to be done that they didn't have money to do before. They weren't relying on it to be the end all be all. They know that eventually it will wind down, but I can think of several farmers who used it well. Yet in the same regard I can think of people that pee'd it down the rat hole. R – 010, Interview, Aug. 29, 2016

This interviewee suggests that some have used money accrued from royalties and land leasing to benefit their farms, while other perhaps were not so prosperous with their newfound income. Currently, small-scale farming is becoming an artifact of American history due to large scale agribusiness takeover (Hart 2003). Therefore, in question here is the ability of small farms to retain their economic viability simply through money gained via the fracking industry as it is historically a boom to bust industry. In order to accurately assess the boom to bust cycle of natural gas extraction through fracking, the following section will build a foundational timeline for fracking events in Dimock Township. Events that occur within this timeline are further described in all subsequent chapters and assist in telling an overarching story, which will be dissected in the following sections.
II.II Fracking in Dimock Township Timeline

II.II.I Hydraulic Fracturing Timeline in Dimock Township, The Inception

Natural gas extraction through hydraulic fracturing is a subject of regional pride for some Susquehanna County residents, as is the case with other local stewardship approaches described in previous sections of this chapter. Supporters of the fracking companies in the area frequently referenced Salt Springs State Park, where natural gas (i.e. methane) visibly bubbles up in a water well on the property. This park is noted for its vast trail system and aesthetically pleasing landscapes. The park contains multiple informational signs depicting the area’s history with natural gas (See Figure IX). In the 1920s, Montrose Gas, Oil, and Coal initiated plans to extract natural gas to provide potential customers from the north in Binghamton, NY, down to the south in Scranton, PA (Susquehanna County Gas Archives 2016). However, technology to enable
economically viable natural gas extraction would be nearly a century away (Susquehanna County Gas Archives 2016). Other than some small, traditionally extracted gas wells around New York and Pennsylvania, this area would not see large scale extraction until 2006. Nevertheless, the rhetoric of early natural gas exploration in Montrose, along with the methane well at Salt Spring State Park is embraced by local gas supporters and industry alike, as a means to discredit those who claim to have water contaminated from gas extraction activities. This suggests that gas exploration is a historic means of resource extraction and the methane well signals a celebrated account of natural gas contaminated water. However, residents with contaminated water sources complain not only about an increased level of methane in their groundwater but also appearance of toxic and lethal chemicals associated with fracking, as will be explained in subsequent chapters’ environmental sections.

Figure IX. Signage at Salt Springs State Park: Franklin Forks TWP, Susquehanna County, PA. Photograph taken by investigator, 11 August 2016
Hydraulic fracturing companies, such as Cabot Oil and Gas, recognized the potential of geologic projections in Susquehanna County and made advancements in the area in 2006 (Considine et al. 2009; Wilber 2015:10). During this period, the Marcellus Shale was estimated to be the largest unconventional gas deposit in the world (Considine et al. 2009; 4). This estimation sent a signal to the global and national economic markets:

The discovery of the Marcellus Shale comes at a critical juncture for the economic and strategic position of the United States. Natural gas is widely viewed as a bridge between the age of oil and the next energy paradigm, perhaps based upon some combination of nuclear, solar, wind, and biomass resources. Just 10 years ago, many believed that imported liquefied natural gas (LNG) would be a pillar in this bridge. By developing domestic natural gas resources here in the United States, greater energy import dependency and higher trade deficits could be avoided. (Considine et al. 2009: 8)

This signal suggested energy independence within a commodity chain, which typically required a reliance on export goods. Seemingly, hydraulic fracturing would lead to a strengthened U.S. economy, while acting as a cheaper and cleaner-burning energy source than coal (Burnham et al. 2011). Therefore, this political and economic venture would be a welcomed endeavor by most American citizens, politicians, and the individuals located in the area of extraction. Once armed with this nationalistic rhetoric, and policy and technology that had become favorable to hydraulic fracturing, the industry set its sights on the Marcellus Shale.

II.II.II Initial Exploration - 2006 to 2008

The arrival of fracking company land-men whose purpose is to secure surface and sub-surface rights from local landowners in Dimock Township, signaled an air of excitement and change for residents. Evidently, one can negotiate prices for surface and
sub-surface rights when the land-men come knocking at the door. Surface land leases began at twenty-five dollars an acre in 2006, while sub-surface mineral rights began at twelve and a half percent of revenue from market product price (i.e. a fluctuating sum) with a transportation fee deducted. Few residents of Dimock were aware of the possibility of price negotiation initially. These community members, enticed by potential economic incentives, frequently accepted whatever value of money offered without researching whether or not they could negotiate the initial prices proposed by land-men. When asked about negotiating a price with land-men at the beginning of exploitation, a community member stated that:

Well, in the beginning, we weren't hearing too much because, initially some of the wells that were dug, these landowners weren't saying anything. They were very hush hush about it. And the land-men who came around to get you to sign up were vague about it, the contract was vague. I know some people that were paid twenty-five dollars and acre for signing up, and then I heard some forty dollars and acre, and when they came to me it was fifty dollars an acre. R – 002, Interview, Aug. 9, 2016

Multiple residents in Dimock portrayed this initial vagueness of fracking industry land-men. Regarding the signing leases, another community member discussed the vagueness of initial agreements:

So when it [fracking] was something that was talked about, we had heard that some of the wells, early wells, were doing quite well. So I know they came to me and I signed an agreement with them, a lease agreement. I get the fifty dollars per acre. And after that, it sort of skyrocketed. And then shortly after that it skyrocketed to like twelve-hundred dollars, sixteen-hundred dollars, two-thousand dollars and I think it might have been 2010 or 2011, it was I had heard up to six-thousand dollars an acre, or five-thousand dollars an acre which is crazy. I asked the land man one time I says, how come you giving these guys more money than I got from mine? And he says, well look, we had to do the exploration, we had no idea, we just flying by the cuff, we didn't know there was that much gas down there. R – 003, Interview, Aug. 12, 2016
Residents portrayed an initial naivety toward the fracking companies. They were not aware of the negotiating power they possessed and were not mindful of the fact that they lived above one of the largest gas reservoirs in the world, the Marcellus Shale. This interview data corresponds with similar data demonstrating that residents in Pennsylvania had been taken by surprise during initial exploration of the state (Brasier et al. 2011; Schafft et al. 2013). Correspondingly, the residents of Dimock were completely unaware that technology developed by fracking based extraction companies in Texas would change their town and global aspects of energy production and consumption (Wilber 2015: 12).

The land-men, while being employed by national and multi-national gas and oil corporations (i.e. Cabot Oil and Gas, Chief Oil and Gas, and Range Resources), were locally perceived as cowboys as they were mostly from Texas and Oklahoma (McGraw 2011; Wilber 2015). To locals, the cowboy persona was both embraced and vilified. When asked about the initial perceptions of the land-men persona, one community member stated that:

It's the cowboy atmosphere of all of these guys. Because most of them are from Texas. So they're like cowboys to me. They’re from Texas, Oklahoma, Wyoming, you know? And so this is how they act. And they come into our communities. And you know we’ve seen it a bunch, they got the cowboy boots on, they have the big hats on, they have the big trucks. And they always have to have super big trucks. You’ve seen that right? So to me this is all cowboy activity. E – 004, Interview, Aug. 19, 2016

These representatives of the gas companies formed individuals’ first impressions of the fracking companies. Residents of the Endless Mountains initially viewed the land-men as outsiders or flatlanders. In the greater Appalachia region, a flatlander is someone who is not from the mountainous region, therefore, does not understand the stewardship or
culture of the area and cannot be fully trusted in affairs concerning local decision making (Montell and Glimm 1984). However, residents embraced the aspect that land-men came to their homes and conducted business over a countertop or dinner table, rather than in a sterile office setting, while addressing concerns and reverence for land ownership and stewardship (Wilber 2015: 18). Further embraced by residents was the fact that these representatives had come to their doors offering “free money.” The acceptance mentioned above represented a stage in approval of industrial stewardship, as these land-men seemed to embrace the regional ideology of personal property and independent rural values.

Land leasing and mineral rights acquisition in the area was conducted with a standard strategy used by hydraulic fracturing industries. This common approach requires the companies to obtain the signatures of larger farms and larger property owners in order to control main corridors of the Marcellus Shale (McGraw 2011; Wilber 2015). Strategically, companies were able to control large swaths of land, while also encircling smaller plots of land, and offering the least amount of money to the largest owners, initially (McGraw 2011; Safransky and Wolford 2011; Wilber 2015). This strategy became apparent to local landowners after land acquisitions began in 2006. When asked about these initial land acquisitions, a community member stated that:

[We] own a farm. We have almost 200 acres. And when the land-men first moved in, they went for large chunks. We were getting twenty-five dollars an acre, which we thought was a good deal, then we later found out that people were making a lot more money than that. Our neighbor got twenty-five hundred dollars an acre. G - 001, Interview, Aug. 16, 2016

This statement is describing the progressive land-lease value increase, which happened after residents became aware of the monetary value of their land. In particular order, first
the fracking companies acquired leases from owners of large plots of land for small sums of money, then medium plots for correspondingly medium amounts, then small plots for astronomical sums in comparison to initial prices offered (McGraw 2011). While this strategy is normative for mineral extraction based companies to secure areas of production in a competitive market (Safransky and Wolford 2011), it holds the potential to create an economic divide in the community, and resentment toward the industry. This economic divide is further investigated in all sections of Chapter four of the thesis. This preliminary trouble of haggling for land lease prices would fall short in comparison to the events which were about to take place in Dimock, events that would put the small town in the national spotlight.

II.II.III Carter Road Water Contamination Events – 2009

Natural gas extraction through hydraulic fracturing was in high production by 2009 in Dimock. Cabot had begun large scale extraction and focused on State Route 3023, Carter Road, which stretches south from Dimock to Springville. From 2006 to 2016, Dimock has totaled sixty-five well-pad sites, with three hundred thirty-eight violations (Marcellus Gas.org 2016). These violations mainly involved environmental health and safety regulations, such as failures to properly store, transport, process, or dispose of a residual waste. The violations occurred primarily between 2008 and 2012 (See Figure X) and most took place on or near Carter Road (See Figure XI). Inadvertently, these violations would become the catalyst for making Dimock the environmental poster child for anti-hydraulic fracturing groups, activists, and companies across the country (Bateman 2010, NPR State Impact 2012a).
The event that marked the inception of fracking awareness in the U.S. was when Norma Fiorentino's drinking water well exploded on New Year’s morning, 2009 (Cusolito 2010). Methane gas had migrated from a nearby fracking well into Norma’s drinking water well encasement, then somehow, most likely from the well-pump triggering, ignited and blew the concrete slab covering the well into the air (Cusolito
Soon after this incident, residents of Carter Road began coming forward and connecting with each other regarding the dramatic changes taking place to their water quality and personal health. When asked about these preliminary events, a resident of Carter Road informed me that:

It never occurred to [us] that there could be gas in the water. [Neighbors] said the water was getting really bubbly. And so the gas company said, we’ll test it and figure out what it is. Don't worry, you'll have clean water soon. They were the only house having problems at that point, that we knew of. Alright, then a couple of months later is when my next door neighbors tell me their water smells like chemicals. Around, end of July, beginning of August, it's summertime, my kids are on summer vacation. My kids start getting sick a lot.

This respondent continues to give representation of their community slowly discovering the issues, which would become central to the argument against hydraulic fracturing:

[Neighbor] walks up the road and says to me, come on down and look at my water. I want you to see my water, there is something really weird going on at my house. So I walk down to their house, and he's got plastic gallon jugs, like milk jugs and water jugs, across his cabinets in his kitchen. And there are like six or seven, one gallon jugs with writing on them across his cabinets. And I'm looking up at these cabinets and they say things on them like, Jan 1st, water was bubbly, Jan 2nd, well pump blew up, Jan 3rd bath tub catches on fire. And I'm like, what the heck, what does that mean bathtub catches on fire?

This specific interviewee continued by telling stories of water contamination taking place in 2009 and how it has been slowly discovered by neighbors until most of the residents of this particular road had come forward. After these events, news stories and speculations were shared around the country (Bateman 2010; Throupe et al. 2013: 218). It would be difficult living in a small rural town of 1,500 (U.S. Census Data) and suddenly be thrust into the spotlight for this new technology and its adverse effects. It would also be contentious, as the adverse consequences would lead to critical examinations of the industry, which had been
providing economic benefits to community members and the town as a whole. The buzz around the town was described as both exciting and worrisome.

The Pennsylvania State Department of Environmental Protection (PA DEP) began its intervention as the water contamination became public knowledge, and fracking began its ascent into the media spotlight. Initially, the PA DEP surmised that drilling activity contaminated ten water wells in Dimock, specifically on Carter Road, with methane (PA DEP 2010). Cabot Oil and Gas were fined one hundred and twenty-thousand dollars and ordered to sign a Consent Order and Agreement (CO&A) in November of 2009. This CO&A stated that, “the presence of dissolved methane and/or combustible gas in the ten affected water supplies occurred within six months of completion of drilling of one or more of the Cabot Wells. As such, Cabot is presumed to be responsible for the pollution to these ten affected water supplies” (PA DEP 2010: 4). Additionally, the CO&A required Cabot to provide usable water to the ten households that drilling activity had negatively impacted. Most notably, it demanded placement of a nine-mile moratorium around the Carter Road area in which drilling would be illegal (See Figure XII). A community member stated this about the CO&A:

And Cabot signed the consent agreement. There is a signature from a Cabot executive at the bottom agreeing that they did this. The legal document doesn't officially…it's not an admission to guilt. It's just going to provide water. It's all over the news. There is a documentary [Josh Fox’s, Gas-Land] that millions of people saw. E – 005, Interview, Aug. 24, 2016

The respondent portrays the CO&A as a connective result of the widespread representation that the events had in media. The CO&A would also require Cabot to significantly improve their drill castings methods to prevent future leaks, provide water to the affected residents, and devise a plan to restore affected
aquifers (PA DEP 2010). All this new regulation had been a massive undertaking for the industry, and the nine-mile moratorium would deny them access to a particularly troublesome, yet lucrative area. On a related note, new troubles awaited the local gas company.

On November 19, 2009, fifteen Dimock families whose aquifers and streams had been allegedly damaged from toxic spills filed a civil lawsuit against Cabot in federal court (Lustgarten 2009). The lawsuit requested that Cabot suspends any future drilling in

Figure XII. The Cabot Well Field in Dimock, Pennsylvania area of 9-mile moratorium/Carter Road Contaminations
Source: Wilber 2015: 64
Dimock Township while enacting a trust fund for impacted residents. Cabot would pay into this trust fund for the purpose of covering medical treatments for future health issues caused by toxic substances used in the drilling and extraction process (Lustgarten 2009). The statement included health complaints ranging from neurological to gastrointestinal disorders, while also alleging dangerous levels of similar metals found in the drinking water within the CO&A (Lustgarten 2009; Ely et al. v. Cabot Oil and Gas Corp. 2016). By allowing naturally occurring methane and heavy metals used in drilling and extraction to migrate into residents’ aquifers, this violation subsequently contaminated drinking water (Ely et al. v. Cabot Oil and Gas Corp., 2016). By contaminating potable water, Cabot had violated the terms and conditions of contracts signed by lease holding residents, stating that, “chemicals used in the underground manipulation process called hydraulic fracturing, could not contaminate groundwater and posed no harm to the people who live there” (Lustgarten 2009: 2). The PA DEP isolated fifty-two separate cases of chemical migration from 2004 to 2009 in Pennsylvania. Heavy metals and carcinogens were identified in individuals’ water supplies statewide (Rozell and Reaven 2012). These issues, in tandem with the CO&A signed with the PA DEP, led to strong criticism of Cabot. The company would endure the brunt of public negativity toward the fracking industry and its effects on human and ecological health.

The affected residents’ initiated the lawsuit in order to preserve their health, property values, and overall quality of life. However, this would represent the beginning of community discord, and a social rift within Dimock, as pro-gas residents found claims of contamination to be exaggerated (Wilber 2015: 166). Cabot had shut down the wells surrounding Carter Road and had been delivering drinking water to affected residents.
The media embraced the residents’ stories, and the families became the focal points of communities impacted by the fracking industry, which sparked discord between neighbors who were receiving royalties from the extractive industry and those who were being negatively impacted. A community member provided this statement about the beginning of the conflict in Dimock:

"So eventually at some point, all of this conflict started in Dimock. Neighbor against neighbor. Because some neighbors started to complain, God forbid. They started to complain because they were harmed. They started complaining in 2009. Then those who wanted the gas and wanted the drilling and would not believe their neighbors. They thought they were like whiny babies. You're just whiny babies and you don't think you're getting enough money! And then the complainers started to sue, because they weren't getting enough help. Finally, they got environmental lawyers from New York to put in a suit with a whole bunch of people, like a class action suit. Then, they got even more conflict and more bad press, anyone who complained. Those who are pro-gas called them names, maligned them, shunned them, would give them critical negative responses. E - 004, Interview, Aug. 19, 2016"

The conflict described above is more of a discordant attitude between residents and is expanded upon in all sections of Chapters three and four. For this portion of the thesis, the inception of the discord between pro-gas, and anti-gas residents will be depicted for the purpose of this foundational timeline. This conflict, as described by the respondent, spurred from pro-gas residents, whose mineral rights income decreased by the slowing of gas production, which was seen as a result of contaminated water and the moratorium. Essentially, residents perceived that negative complaints lead to reduced royalties. In comparison, the commotion in Pennsylvania resulted in thirteen-thousand public comments on neighboring New York State’s Draft Supplemental Generic Environmental Impact Statement (Draft SGEIS), which was issued in September of 2009 (Finkel and Law 2011). The negative aspects of fracking had entered the public sphere of knowledge.
and the political spotlight on a widespread level. Relatedly, hydraulic fracturing activities were about to increase a great deal in the United States.

II.II.IV The Natural Gas Boom Period Begins – 2010

As the production and extraction of natural gas accelerated, so did the royalty checks, peripheral businesses, and service based businesses in the area. The area’s population increased, employment opportunities emerged, roads were paved and widened to support industry trucks, and new businesses appeared while existing ones flourished. There was a much needed and desired economic transition happening in Susquehanna County, and the residents were mostly pleased to see their community prosper (Borick et al. 2014). The average income in the area nearly doubled from the 2000 census report to the 2014 report (See Figure XIII), whereas nationally, the average U.S. household income dropped by four-thousand dollars from 2000 to 2015. Socially, residents cast the fracking industry as a purveyor of hope, thus increasing its responsibility to the community. I asked every interviewee about this initial positivity of the fracking industry coming to Dimock, and the thesis goes into great detail about this topic in Chapter three’s economic perception section. For now, this is a simple introduction to the overall perception of the fracking industry. During an interview, a community member described this about the residents’ sense of hopefulness:

“Well, I can tell you this. Susquehanna County is a very poor county. There is not a lot of commerce here; there is not a lot of jobs; there is not a lot of opportunities. Most people that live here are a result of family farming. They have had the land in their families for generations. Some of the kids are still trying to make a go of it on these farms and some of them are giving and working as hard as they can just to keep it. So in a way, when the leasing came through it was a godsend; it was a blessing. They were really excited about the idea. Not knowing that they were really going to come and do it. That was interesting, while they got
that small windfall of money and people were living life high on the hog almost. Wow, we can pay our taxes and we don't have to even worry about it. Those were the types of things that were going through people’s minds. Some of those folks were first starting to get their checks, everybody started getting on board. Even the ones that didn't sign before were more apt to do it now. When you see your neighbor and he's driving his new fifty-thousand dollar combine that you've always wanted. Your life dream, you know? And that’s like kind of the culmination of everything you've ever wanted in your whole life and suddenly you can afford it. You cannot beat that in this kind of community. It was very difficult to convince anybody otherwise.” E – 006, Interview, Aug. 25, 2016

As illustrated here, the revenue from fracking is a blessing to some, and if an individual or group opposes fracking, they are obstructing that blessing. The money promised in the initial visits by land-men to residents’ homes made the fracking industry appear as a savior, while the revenue generated at this stage of development provided the means to for the industry to live up to this savior perception (Brasier et al 2001: 35). Between the summer of 2009 and the summer of 2010, Marcellus shale wells produced one hundred-eighty billion cubic feet of gas, which was more than double the production totals from shale and all other natural gas sources in the year prior (Wilber 2015: 180). In Dimock alone, this resulted in over two-hundred million dollars worth of natural gas (Marcellus Gas.org 2016). Individuals began benefitting from extraction revenue, which helped in solidifying the perception of the industry as proper stewards of the land.
The natural gas boom in the area, along with the negative press described in previous sections, gained the attention of the general public. In Dimock, local stewardship is a highly regarded value. When fracking became contested in the area by external environmental groups and media outlets, this opposed the local stewardship values. Therefore, residents do not welcome outsiders claiming utilitarian stewardship knowledge of the area. As an example, an exposé in Vanity Fair magazine, released in June of 2010 titled, “A Colossal Fracking Mess: The Dirty Truth Behind the New Natural Gas,” focused on Dimock and depicted the town as an industrial waste zone.

“You don’t need to drive around Dimock long to notice how the rolling hills and farmland of this Appalachian town are scarred by barren, square-shaped clearings, jagged, newly constructed roads with 18-wheelers driving up and down them, and colorful freight containers labeled “residual waste.” Although there is a moratorium on drilling new wells for the time being, you can still see the occasional active drill site, manned by figures in hazmat suits and surrounded by klieg lights, trailers, and pits of toxic wastewater, the derricks towering over barns, horses, and cows in their shadows.” (Bateman 2010: 2)

Residents who have lived in this town of fifteen-hundred for generations, or those who came here to escape more urban areas, pride themselves in knowing what is right for the
land through experience. As illustrated earlier, fracking industries saved their farms, gave them an opportunity to expand or open a business, or supplied them with a job. Following this resident supported industrial stewardship, the pop-culture magazine’s interpretation of their town as a grim wasteland was not well-received. Editorial pieces like this were rife with potential conflict between outsiders and residents of Dimock, as they undermined what the majority of residents believe is proper stewardship. As another example of this, in September of 2010, a documentary featuring residents of Dimock was released to critical acclaim. The film, Gas-Land, follows documentarian Josh Fox, who is himself a landowner within Pennsylvania, being offered money for sub-surface mineral rights (Fox 2010). To explore this offer, Fox begins a quest which initially lands him in Dimock Township and having conversations with the families on Carter Road (Fox 2010). This film skyrocketed fracking into the spotlight of environmentalists and social justice purveyors globally. When the documentary and its effect on the town came up, a community member stated that:

Well I think that you have a sort of divide. For instance, what is happening in Dimock with the Carter Rd. folks and all of that situation. And that made the national news, it was in Josh Fox's movie and so forth. They made a real big deal about it. For those of us who live in this area we could say that the type of water that is in this area, it's always been flammable. So the idea of saying, oh my gosh, look what the industry has done, they're lighting their water on fire. We can go a light lakes and ponds on fire too, we all thought it was funny. So that is not anything new. E–006, Interview, Aug. 25, 2016

The residents of Carter Road had essentially perpetuated outsider perception of Dimock as a wasteland by talking about their mishaps with the industry. The residents were looking for help to no avail, and Fox represented their harbinger of relief.

In mid-2010, The Pennsylvania American Water Company, a water utility company providing water and sewage to major cities in the state formulated a plan for a
water pipeline to service the residents with contaminated water on Carter Road (Swift 2010). The proposed pipeline from Lake Montrose, nine miles north to Carter Road. The costs involved with the construction of the pipeline and its further negative connotations furthered the emergent discord between residents (Wilber 2015: 196). In September of 2010, former PA DEP Secretary John Hanger stood in front of a crowd at a Dimock church, including Carter Road residents, activists, and film-maker Josh Fox to make an announcement. He declared that an eleven-million-dollar water pipeline would be the best answer to the water problems in Dimock (Rubinkam 2010). Hangar stated that the PA DEP had given Cabot every opportunity to amend this blemish on the company, and this pipeline would be the only way to settle ongoing tensions in the community (Wilber 2015: 196). A resident had this to say about tensions this pipeline created:

So at that point, secretary Hanger from the DEP got involved, and he came to Dimock church and we had a meeting there. He came up with the idea of having the Pennsylvania water company in Montrose put in a water line to our road. And bring everybody water that way. And that seemed like a great solution to us. The problem was, the gas company didn't like it. So they got a lot of people, there are about twenty-nine, to say that they didn't want the waterline. Because they were like, oh its really going to tear up our yards. And we’re going to have to pay for water, which we don't have to now. And if your water is not effected, they’re still going to make you pay for the water. They got a lot of people stirred up. So they were all, No pipeline. They started putting up no pipeline signs and stuff like that. They actually paid people to go to a restaurant, and they organize a whole bunch of people who were against it, and various other things. R – 004, Interview, Aug. 25, 2016

The proposed pipeline signaled that the people on Carter Road had an effect on the area, and the more negativity drawn to the area, the less gas production would occur, resulting in fewer royalties. This water pipeline would represent a potential symbol of guilt for Cabot, and they would oppose it any way they could.
In addition to all of this negative local and global press, the CO&A between Cabot and the PA DEP was revised one final time in December of 2010. Within the document, Cabot Oil and Gas state that they disagree with the PA DEP’s findings, but agree to the all of the terms (PA DEP 2010). Additionally, the CO&A required Cabot to pay settlements to the impacted families of over four million dollars, equaling twice the worth of their property values (PA DEP 2010). Cabot notified the DEP that it had met the requirements, and asked for permission to stop delivering water to the affected Dimock residents (Legere 2011a). Some families on Carter Road had refused this settlement along with a water filtration system that was part of the agreement, stating that this would not be enough to clean their water and make reparations (Legere 2011a). Regardless of the settlements, the tensions in Dimock had just begun.

II.II.V Dimock Proud - 2010 & 2011

The alignment of industry and industry-supportive residents led to an outcry against residents who opposed hydraulic fracturing within Dimock. Pro-gas residents and industry orchestrated divisive talk about residents of Carter Road and how their public uproar would divert jobs, revenue, and lease payments/mineral rights from profiting residents (Wilber 2015: 198). A community member provided me with this statement about the public objection to residents speaking out about fracking:

“Oh yeah, people have yelled. I had someone tell me that almost verbatim. That if I am against natural gas than I am against my neighbors and I don't want them to succeed financially. Like someone actually told me that to my face recently.” E – 002, Interview, Aug. 9, 2016

This respondent described the backlash they had felt from neighboring community members as outspoken opponents or even as cautious examiners of the gas industry. This
particular interviewee had signed a lease agreement but observed the actions of the fracking industry with caution. After the PA DEP had attempted to bill Cabot for the water pipeline, the company’s CEO, Dan Dinges published a full page letter in both regional New York and Pennsylvania newspapers addressed to the PA DEP stating that corporate responsibly for the pipeline was not fair (Legere 2010). He also indicated in the letter that Cabot did not believe that it was the purveyor of the documented water contamination and would fight allegations through its own scientific findings; they merely wished to remain a good corporate citizen by providing jobs and revenue to their fellow citizens (Legere 2010; Wilber 2015: 198).

Residents who were already organizing to support Cabot and fracking revenue eagerly received Dinge's statements. Through gas industry support, a community-based group formed in 2010 called, “Enough is Enough.” This group would give a voice to community members who were pro-drilling and anti-water-pipeline. (Rubinkam 2011). The group circulated a petition, which generated sixteen-hundred signatures to oppose the water pipeline (Rubinkam 2011), which signaled that a water pipeline would be unreasonable to some community members already fed up with anti-fracking actions. The group's campaign, which was titled, “Dimock Proud,” was a public ad-based initiative with billboards, yard signs, and newspaper ads promoting their slogan, “Dimock Proud, where the water IS clean and the people are friendly” (See Figure XIV), (Legere 2012a). I frequently spoke with community members about this campaign, and one respondent stated that:

Dimock was really controversial, they still are. It was especially around 2010 or something, maybe earlier. This group formed called Dimock Proud. Where they were like, those people were all liars, their water is fine, we're proud to
be in Dimock. Their slogan was, where the water is clean and the people are friendly. E – 001, Interview, Aug. 9, 2016

Within interviews, this sentiment is the overarching theme given by most respondents. The resulting discord from this group’s campaign is analyzed throughout Chapter four.

The campaign further discredited residents of Carter Road and others who opposed the industry. Residents who had known one another their entire lives were becoming distanced due to this contentious rift (Rubinkam 2011). In late October of 2011, Enough is Enough held a meeting at the Elk Lake School in Dimock, hosted by Bob Watson, a professor of petroleum and natural gas engineering at Penn State (Wilber 2015: 199). The meeting was attended by a variety of local and non-local stakeholders and activists, with the message that the negativity toward the town and fracking industry must stop (Legere 2011b). A negative public perception of the industry will kill opportunities and further the “wasteland” image of Dimock, preventing any other economic development (Legere 2011b). The focus of this negativity was the proposed water pipeline.

![Figure XIV. Dimock Proud Campaign Signage: Dimock TWP, Susquehanna County, PA. Photograph taken by investigator, 29 August 2016](image-url)
In a related event, Cabot halted water deliveries to affected households. Cabot appealed to the PA DEP to stop deliveries explaining that they had met the requirements in the CO&A (Associated Press 2011). The PA DEP expressed, “while we are continuing our review, to date, the data does not indicate that the well-water presents an immediate health threat to users” (Associated Press 2011). In order to avoid paying for the proposed pipeline, Cabot offered double the value of Carter Road residents’ properties to settle their lawsuit (Legere 2012b). Thirteen of the fifteen families settled in the following year. Immediately following the election of Republican Governor Tom Corbett, the PA DEP withdrew its demand for Cabot to build the water pipeline (Wilber 2015: 227). In an attempted show of compassion, the former mayor of Binghamton NY, Matthew Ryan, offered to send water trucks to affected residents in Dimock (Legere 2011a). Town supervisors subsequently refused the offer, insisting that this support would exacerbate the tensions between neighbors (Associated Press 2011). Another show of support was organized as Josh Fox, actor Mark Ruffalo, and busloads of activists arrived in Dimock to deliver water to Carter Road residents (River Keeper 2011; Wilber 2015: 228). This act was seen as supportive to residents who opposed fracking and as outsider intervention. Similarly, these events had gained national attention.

II.II.VI EPA Intervention – 2012

The Carter Road/Dimock water issues were gaining so much public attention that they could no longer be ignored on a federal level. Therefore, the United States Environmental Protection Agency (EPA) entered the contentious region to much resident dissatisfaction (Wilber 2015: 227). After analyzing initial sampling data, the EPA
released a statement in November of 2011 asserting that residents’ drinking water did not pose an immediate health threat (Associated Press 2012). In the preceding months, residents impacted with contaminated wells complained about being without a means of potable water and the federal organization revealed that they would be heading to Dimock in order to conduct their own water sampling tests, while providing affected Carter Road residents with potable water (Associated Press 2012).

Following these statements, the EPA released an Action Memorandum in January of 2012 (U.S. Environmental Protection Agency Region III 2012). This document stated that hazardous levels of substances such as arsenic, barium, and manganese found in testing conducted by the Agency for Toxic Substances and Disease Registry (ATSDR) could cause health impacts to individuals who become exposed to them in drinking water (U.S. Environmental Protection Agency Region III 2012: Section IV). It suggested mobilization of personnel to provide water, conducting addition water testing, and removal of potentially harmful chemicals in aquifers (U.S. Environmental Protection Agency Region III 2012: Section V). Michael Krancer, the former head of the PA DEP, wrote a letter to the EPA in which he suggests that federal level intervention only thwarts state and industry level know-how (Detrow, S. 2012).

We realize and recognize that EPA is very new to all of this and the EPA’s understanding of the facts and science behind this activity is rudimentary. Fortunately, Pennsylvania is not new to all of this and we have a long history of experience at overseeing and regulating oil and natural gas extraction activities in our state, including hydraulic fracturing. (Detrow 2012)

Krancer is employing neoliberal governance ideology, promoting state-level decision making governed by corporate control, over federal level investigation, which is a common tactic among the hydraulic fracturing industry in Pennsylvania (Finewood and
Stroup 2012; Cruger and Finewood 2013; Willow and Wylie 2014). This neoliberal tactic embodies the area’s corporate driven stewardship, that federal intervention steps on state and private decision making, thus limiting private industry (Harvey 2007).

In mid-2012, the EPA stated that the water in Dimock was safe to consume. After testing the water of five Dimock homes and finding accelerated levels of naturally occurring barium, manganese, and arsenic, the EPA declared the five homes should have water treatment devices installed that would reduce the harmful levels to acceptable (Gilliland 2012). Also in their statement, the federal agency stated that they had no further plans for testing and it was unnecessary for anyone to supply affected Dimock residents with alternative water sources (Gilliland 2012). Subsequently, in August 2012 the PA DEP temporarily lifted the moratorium on drilling in Dimock in order to allow them to complete seven wells which were unfinished within the Township, suggesting that Cabot had met all the requirements of the CO&A (Maykuth 2012).

The year 2012 also saw a revolutionary amendment to the state’s Oil and Gas Act called Act 13. Part of the new provisions within is new state-imposed, “impact fees.” Act 13 places an impact fee on all gas wells in the Marcellus Shale, which fluctuates from year to year based on the price of natural gas (General Assembly of Pennsylvania 2011; State Impact 2012b). To date, the Act has brought in over one billion dollars of revenue to the state (See Figure XV), with Dimock Township being one of the top recipients (Act 13 Public Utility Commission 2016).
II.III.VII Steps Toward Community Alignment - 2013 and 2014

Although the affected community in Dimock would never stop protesting the fracking industry, tensions among residents began to relax slightly in 2013. Neighbors who praised the economic benefits of drilling, and those who condemned it for its destructive tendencies united in 2013 to form a resident advocacy group aimed at ensuring that local gas industry employed the best available technology in order to reduce harmful air emissions (Farnelli 2013). The group, Breathe Easy Susquehanna County (BESC), was focused on harmful air emissions, which are the byproduct of multiple stages of natural gas extraction, production, and transportation. Their mission was to ensure that the gas company goes beyond state and federal level air quality regulations, on which they are already required to meet and report (Farnelli 2013). Air quality was less of a dividing issue, as everyone in the county is impacted by reduced atmospheric conditions, as opposed to the few affected by reported water issues (State Impact 2013).
Informants spoke very positively about the group, and one community member had this to say about BESC:

I think that what BESC did, was, our real goal was to manage public opinion. And I cannot believe I said this to an Associated Press reporter but I did and it was printed. I said, our goal is to make concern about air quality and public health as mainstream in Susquehanna County as going to church and apple pie. E – 003, Interview, Aug. 17, 2016

BESC operated under the framework that fracking companies were heavily invested in the area and were not going to simply pack up and walk away (State Impact 2013). To urge the fracking industry to employ the best available technology, the group united the community on air quality issues that impact the population as a whole rather than water problems, which seem to be more on a case-by-case basis. Understanding fracking company involvement, and limiting it based on connective means, such as air quality, represents a tension-free measure to suppress industry abuse while promoting community alignment. A blog created and updated by Cabot as a public relations measure, Well Said Cabot, even encouraged the group's formation when Cabot’s Susquehanna public relations manager stated on the blog:

As a leading producer of Marcellus Shale natural gas, Cabot recognizes the importance of such community-based dialogue, especially when talking about the environment and community health of Susquehanna County. In the spirit of open-discussion, let’s discuss some of the many initiatives Cabot started and, quite frankly, pioneered over the last four years to promote community dialogue and to protect regional air quality and health throughout Susquehanna County (DesRosiers, B. 2013).

Cabot recognized the importance of the group and its willingness to collaborate, which signaled a less conflict-driven application of community-industry interaction than the contentious discord over water based issues of the past. BESC would press the industry to utilize the best technology available to obstruct further
environmental degradation, while the industry could use these measures as a device for positive public relations. Fracking activities in Pennsylvania and all the surrounding issues and benefits was becoming the foundational knowledge base for similar areas considering hydraulic fracturing.

II.II.VIII New York State and The EPA – 2015

The State of New York, which also sits atop the Marcellus Shale, had a temporary moratorium on fracking since their 2009 Supplemental Generic Environmental Impact Statement (SGEIS) and on through subsequent studies (Simonelli 2014). These studies all examined Pennsylvania for experiences and potential hazardous impacts and economic benefits (Simonelli 2014; Leff 2015). New York’s 2009 SGEIS suggested further investigations to devise detailed requirements for well-pad permitting in order to avoid environmental hazards, and also to restrict drilling within watersheds that supply New York City (NYS DEC 2009: 2-4). In 2012, an extension of the moratorium on fracking was suggested by the Medical Society of the State of New York until there were clear results of health impacts resulting from the process (Medical Society of the State of New York 2012: 1-2). In late December 2014, to much acclaim and contempt, New York Governor Andrew Cuomo’s administration placed a permanent ban on hydraulic fracturing (Leff 2015). This ban would further smear the positive aspects of fracking, while helping to stop pipelines from shipping CNG out of Pennsylvania, and consequently limiting the economic benefits to residents of
Dimock. When asked about the New York State ban, a resident of Dimock stated that:

Right now New York State is the fly in the ointment. Which they shouldn't have too much of an issue because look what they did to here. It's all dang politics. If they can look past their own dang ignorance it's not all as bad as they're thinking it is. R – 011, Interview, Aug. 29, 2016

The respondent suggests that New York’s pause in development to further research on the long-term and systemic problems of hydraulic fracturing would limit economic benefits to residents of Pennsylvania, as well as residents of New York. Cuomo suggested a pause in development, as the potential hazards posed to public health could be understood (NYS DOH 2014: 77). This action ended the state’s comprehensive, seven-year research review and officially banned hydraulic fracturing in the state. However, the moratorium is an administrative decision, and therefore can be overturned in the future.

In June of 2015, the EPA published their Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources Executive Summary (U.S. EPA 2015). Their major findings stated that although there was potential for fracking activity to pose a threat to drinking water, this threat was not widespread or systemic (U.S. EPA 2015: ES – 6). The EPA suggests that the events occurring in Dimock were a rarity, and could be contained. While this document did not condemn hydraulic fracturing in the U.S., it would lead to subsequent findings.

II.II.IX Scientific and Legal Assessments 2016 – 2017

The New York moratorium and following delinquent reports of hydraulic fracturing came at a time when the projected supply of natural gas was in a slight decline,
while prices were in a substantial slump (US EIA 2016a). The Henry Hub natural gas spot price, a baseline pricing for U.S. produced natural gas, indicates a ten-year low at the beginning of 2016 (See Figure XVI). The average price of natural gas in 2015 fell forty-two percent compared to 2014 while U.S. proved natural gas reserves dropped sixteen percent in 2015 (US EIA 2016e). These drops in proved natural gas reserves can change dramatically year-to-year as geological projection and new gas discoveries are appraised (US EIA 2016e). This suggests that while prices are down, regulation tightens as gas companies have already entered a bust period of production. Chapter five of the thesis further discusses the topic of boom-to-bust production and the subsequent regulatory changes. The year 2016 would begin as a banner year for protective rulemaking. The PA DEP released a statement explaining that data collected since 2011 showed a dramatic increase in air pollution in gas producing regions of the state (PA DEP 2016a). The air pollution was attributed to harmful airborne particulate matter and off-gassing from well-pads and compressor stations (PA DEP 2016a). In another event, twenty-six of the thirty scientists on the federal EPA advisory panel began to question the EPA’s aforementioned assessment of fracking, stating that the report was in need of qualitative analysis to support its statistical findings (Mooney et al. 2016). Although the EPA’s conclusions find hazards of hydraulic fracturing to be contained and not widespread, they still dramatically affect communities and individuals on multiple layers.
Similarly, The Agency for Toxic Substances and Disease Registry (ATSDR), which is the federal level public health agency of the U.S. Department of Health and Human Services, released a health consultation on Dimock’s water supply. The conclusions within the consultation stated that:

ATSDR found some of the chemicals in the private water wells at this [Dimock Township] site at levels high enough to affect health (27 private water wells), pose a physical hazard (17 private water wells), or affect general water quality so that it may be unsuitable for drinking. Dimock residents’ current exposures to chemicals in their well water remain unclear. Ultimately, due to a lack of data, it is not clear whether a resident is consuming treated or untreated groundwater or whether treatment was successful or remains effective (ATSDR 2016).

This conclusion adds to the future of uncertainty, which exists in areas of natural gas extraction through hydraulic fracturing. In addition, the EPA created a final rule amendment to the emission standards for hydraulic fracturing citing excessive greenhouse gas emission and volatile organic compounds during flaring of a well (U.S.
EPA 2016). Flaring (i.e. burning off methane gas during unplanned over-pressuring of drilling equipment) would no longer be allowed in the U.S. (U.S. EPA 2016).

Almost seven years after it began, the two Carter Road families remaining in the class action lawsuit against Cabot prevailed in a precedent-setting win of 4.2 million dollars in March of 2016 (Ely et al. v. Cabot Oil and Gas Corp. 2016). This case represents the largest lawsuit settlement to date within the Marcellus Shale. In a subsequent event, New York Governor Cuomo created additional friction in Pennsylvania as his administration rejected the development of the one hundred and twenty-four-mile Constitution Pipeline within his state, citing potential water quality issues (Ailworth 2016). New York Department of Environmental Conservation chief permit administrator, John Ferguson stated that:

The Application fails in a meaningful way to address the significant water resource impacts that could occur from this Project and has failed to provide sufficient information to demonstrate compliance with New York State water quality standards. Constitution's failure to adequately address these concerns limited the Department's ability to assess the impacts and conclude that the Project will comply water quality standards (Waldman 2016).

The pipeline was set to help export Pennsylvania’s growing surplus of natural gas through New England and increase production and revenue (Ailworth 2016). New York’s halting of the pipeline was not helpful to fracking companies and residents of Dimock whose royalties were dwindling due to declining production and low gas prices. These developments only further agitated the residents in support of extraction as their corporate-guided stewardship was called into question on multiple levels.

Act 13, the amendment to the state’s Oil and Gas Act creating the aforementioned “impact fee” rule, was further amended in September 2016. In what was called a “win for environmentalists and municipalities” (Phillips 2016), the state’s Supreme Court set new
rules for extraction in Pennsylvania. One new amendment superseded the federal non-disclosure agreement of chemicals used in extraction, indicating that doctors needed to know chemicals for patients seeking medical help (Environmental Quality Board 2016a: 78a.122. c, Phillips 2016). However, this need to know does not pertain to trade-secret chemicals. Another new amendment forced the industry to notify private well owners of nearby spills or violations at well-pads (Environmental Quality Board 2016b: 78a.51. a). In the past, only operators of public water supplies were required to be notified before this rulemaking. Following these amendments, a group representing hydraulic fracturing industry in Pennsylvania, The Marcellus Shale Coalition, took legal action against the Commonwealth to delegitimize some of the vaguer specifications of the amendments (Maykuth 2016).

In 2017, the U.S. presidential administration changed hands from President Barack Obama to President Donald Trump. Trump appointed Scott Pruitt, a long-time advocate for U.S. energy exploration and climate change denier, as the head of the EPA. Before Trump and Pruitt took office, the federal organization released a statement claiming that fracking can contaminate drinking water (Davenport 2016). In a December 2016 announcement, the EPA reiterated that further investigation was needed and fracking could cause damage to water resources (Davenport 2016). This declaration occurred as the U.S. scrambled through a polarizing regime change, as President Trump’s divisive cabinet picks sought to fill the White House with corporate oil and gas invested individuals and staunch anti-environmentalists (Sheppard 2016). This unusually swift announcement proved to be a rational decision, as federal budget proposals defunded the EPA by up to forty-three percent (Elperin et. al 2017).
II.III Conclusion

The objectives of this chapter are twofold. First, a summative analysis of historical resource extraction in Northeastern Pennsylvania and the manner by which this history leads to normalization and acceptance of hydraulic fracturing industries and activities is provided. Subsequent chapters will rely on this information to build the conclusion that historical resource extraction helped residents welcome the fracking industry to Dimock and accept it as a proper steward of the land. Proper stewardship is similarly portrayed in this section of the chapter in order to illustrate the historical ties to the land this stewardship implies. This stewardship was also welcomed due to an occurrence of a nation-wide recession, which impacted other natural resource production around the same time that fracking exploration began. Second, a rich timeline of events in Dimock has been provided in order to present a foundational argument to the following chapter's events and occurrences. This timeline allows for a macro-level vantage point for subsequent chapters’ micro-level analyzation of events and specific experiences, which potentially alter residents’ perception of the fracking industry. To pursue these objectives, a combination of collected documents and data, along with interview data, has been utilized. When appropriate, aspects have been analyzed through theoretical frameworks, however, since this is a historical chapter, most detailed analyzation will be left to subsequent chapters. As illustrated in this timeline, there is an ebb and flow to the hydraulic fracturing industry. Early loose regulations led the way to national energy
independence, while more stringent regulations demanded by civil-society resulted in halted pipelines and decreased supply.

The following chapter builds from this timeline, as do all subsequent chapters, and provides an examination of collected data to properly portray the initial perceptions of hydraulic fracturing held by residents of Dimock in 2006. A robust understanding of initial perceptions will be expanded upon in order to reveal the drivers of perceptual change, which will be used to answer RQ# 1.
CHAPTER III. THE LAND-MEN COMETH

Arriving in Dimock Township in mid-summer of 2016, my initial observations revolved around the gradual change of landscape from neighboring New York State, to Pennsylvania’s Susquehanna County. As I drove down Interstate 81 South from Binghamton, NY, toward the Endless Mountain region, I began to observe an increased amount of large trucks and industrial-type facilities. I later learned that this area is referred to as the I-81 Industrial Corridor. Still, I marveled at the rolling green hills speckled with shale cliff-face. Exiting the highway and heading westward toward Montrose, Pennsylvania, and eventually Dimock, I observed a more abrupt change. I began to notice blue signs for consumptive water use next to red signs that displayed a gas company’s name along with the township name and address in order to have the information available for 911 emergency management (See Figure XVII). These signs were situated at the end of gravel roads that often looked as if they meandered endlessly into the woods. The signs are required at well-pad sites for permitting and emergency purposes as defined in Act 9. This act is part of a 2012 revision of the state’s Oil and Gas Act, requiring a 911 address for emergency response and GPS location (25 PA. CODE CH. 78: P. L. 67, No. 9). Various types of industrial infrastructure accompanied the signs, depending on whether or not the well is active or inactive. As I drove farther from the highway, and closer to Dimock, the number of well-pads became startling. As the frequency of well-pads increased, so did the number of large tractor-trailer trucks pulling everything from liquids, sand, salt, and industrial equipment. I started noticing pipelines, compressor stations, work vehicles, and gas company employees everywhere. The gradual change seemed to hit its pinnacle on route 29 South from Montrose to Dimock.
and within the vast country roads that meander across the country side. Still, the area retained its natural beauty. Greeted with rolling green farmland, set upon a magnificent blue sky adorned with picturesque white clouds, I arrived in Dimock Township.

Figure XVII. Cabot Oil and Gas Consumptive Water Use and Well-Pad Identification Signage: Carter Road. Dimock TWP, Susquehanna County, PA. Photograph taken by investigator, 12 August 2016

After warming up to the scenery in and around Dimock, it became increasingly difficult to ignore the omnipresence of the industry as I navigated Dimock’s backroads. This included Cabot Oil and Gas’ Susquehanna County headquarters, which is by far the largest, most modern structure in the town, residing just one mile from the Dimock Township offices. Built in 2012 during the height of the gas boom, this building exemplified the omnipresence of the industry while signaling that Cabot had its roots placed firmly in the ground. As I spent more time in Dimock, I came to see the building as symbolic of the social framework of resident-industry relationship (See Figure XVIII). The building portrayed the sharp divide between scales of power and wealth in Dimock,
which represents industry as the hierarchical power within the area (Gezon and Paulson 2005: 7). Visually, the Dimock Township building is dwarfed by Cabot’s headquarters in both size and economic value. Similarly, the township building seems impermanent, while the Cabot building suggests a permanent placement in the town. This interpretation left no question as to who possesses access and control over resources in Dimock. Although the residents receive royalties for their mineral rights, thus displaying a joined stewardship of the land with the fracking companies, it had become obvious to me that much larger political and economic actors held governance over this land.

*Figure XVIII. A comparison of spaces, Dimock Township Building and Cabot Oil and Gas Susquehanna County Headquarters. Dimock TWP, Susquehanna County, PA. Photos taken by investigator*
Additionally, this chapter introduces the concepts of discordant attitudes between residents, and a social rift experienced by community members, which results from serious disagreement or argument among opposing residents, or between residents and fracking companies. This disagreement spawns from the politicization of fracking and is perpetuated by the local fracking company in order to maintain support from the majority of town residents, who have experienced little to no environmental impacts. As the new, but not uncontested, stewards of the land, the fracking companies have gained local support through economic incentives promised, and maintained this support by aligning themselves with ideological and political affiliations associated with fracking, including neoliberal economics and an anti-environmentalist sentiment. As discussed earlier, this social rift is addressed here in order to, “understand public support and opposition, which is critical for planners tasked with addressing these disputes and other issues” (Boudet and Ortolano 2010: 2). Similarly, the differences between these groups “entails potential conflict over impacts associated with these activities and the distribution of risks and benefits” (Boudet et al. 2014: 3). A primary focus of the political ecology framework is to explore these distributions in order, “to attempt to understand the circumstances that bring about environmental degradation in regards to the political dimensions of power” (Robbins, 2012, p. 16). This indicates that exploring the circumstances of residents in proximity to hydraulic fracturing activities while considering uneven power distribution will help display the potential environmental conflicts involved (Hooper 2013; Willow and Wylie 2014; Cotton 2017). The environmental discord between individuals and stakeholders including associated impacts are of the utmost importance to facilitate clarity, “into understanding the interconnectedness between the environment and political
economy” (Hooper 2013: 3). The aforementioned interconnectedness is best examined by looking at economic, ecological, and cultural conflicts and struggles associated with natural resource extractions’ impacts (Escobar 2006). Therefore, discordant attitudes, a social rift, and the possibly of conflict, are all introduced in this chapter in order to aid in the initial discussion and will be further addressed in Chapter four.

The principal objective of this chapter is to explore resident opinion and experience at the point in time that the hydraulic fracturing industry entered Dimock Township (i.e. 2006). This chapter uses collected empirical evidence to answer RQ #1: “What were the baseline perceptions of fracking as it began in Dimock, PA.?” A detailed examination of responses to early interview questions is discussed within this chapter in order to gain an understanding of residents’ initial perceptions of hydraulic fracturing and its presence in their community. Analyzing coded interview data, specifically responses about initial thoughts pertaining to the fracking industry, helps identify deviations from more recent perceptions about hydraulic fracturing. This chapter fundamentally claims that by understanding the initial and foundational perceptions of residents, the drivers of change become obvious, aiding in answering RQ #2. These baseline perceptions are put in place by employees of the hydraulic fracturing industry, who themselves possessed limited knowledge of associated impacts, and who sold fracking as entirely beneficial. Any alteration, which changes these initial and foundational perceptions, is considered a driver of change. Therefore, baseline perceptions are the key to recognizing the drivers of change to further answer subsequent research questions two and three. These baseline perceptions are then conceptualized using the theoretical frameworks of political economy and political ecology. These conceptualizations of the baseline perceptions are
reinforced with data collected via archival work, document analysis, and participant observation. This chapter provides a cohesive understanding of baseline perceptions and the drivers needed to change these perceptions, which contribute to the analysis presented in Chapter four. The baseline perceptions and the revealed drivers of change contribute to Chapter four’s investigation into the question of whether alterations of initial perceptions are symptomatic of relationships with the fracking industry, or due to the environmental and socio-economic conditions that residents experience as a result of the industry.

This chapter is divided up into four sections. First, a review of the initial economic perceptions of residents is presented while considering the historical context in which the residents came in contact with the industry. Second, an examination the initial environmental perceptions of residents is outlined. This similarly contains a historic context, as residents were not initially aware of the hazardous implications which go in tandem with fracking operations. This is due to fracking simply being uncommon within the public sphere of knowledge until water contamination events became common around 2009, such as the events in Dimock. Third, an exploration of the initial perceptions of socio-cultural aspects of residents, again without prior knowledge of typical fracking-industry invasiveness, and an argument that residents’ mostly positive perceptions are formed by gas company employees is explored, as the social knowledge base for hydraulic fracturing at this point was non-existent. Finally, I conclude by summarizing the evidence and analysis to answer RQ #1 of the thesis.
III.I Initial Economic Perceptions of Residents

When gas companies such as Cabot began exploration of Susquehanna County between 2006 and 2008, company employees, or land-men, went door-to-door to declare their intentions in the area. The positive economic rhetoric delivered by these representatives of the industry would forge initial perceptions held by residents in the county, and create a baseline for perceptual knowledge in Dimock Township.

Economically speaking, this sent quite the positive buzz around the region. When asked about their initial economic perception, a community member stated:

Well, the positive things are, and I don't think anyone could deny that, was the money. The economic benefit. Firstly, you know as it trickles down you'll see. Susquehanna County was always a relatively poor rural area. Susquehanna County is you know one of the poorest in the state I believe so you got to see a lot of economic benefits for people. Build, remodeling, buying, doing all sorts of things which is good there. E – 006, Interview, Aug. 25, 2016

This economic buzz was indicative of the positive economics portrayed by gas company land-men. The main discussion seemed to circulate around amounts being offered by gas companies. A community member offered insight on this:

People were signing for cheap. Nobody knew. Who knew where these prices were going? They did! At the end, like after things settled down, we though $300 was high. So that is what my wife and I signed up, three hundred and twenty-five dollars or three hundred and fifty-dollars and acre right. Unbeknown to us, maybe a year later or so, it was up to one thousand dollars an acre. And I think the final figure that I heard was like people were getting around five thousand dollars an acre. And that is a TON of money. R – 003, Interview, Aug. 8, 2016

Similar reactions were obtained from the majority of the individuals interviewed. This narrative that Dimock had been a sleepy town previously to natural gas activities was continuously repeated. The community welcomed the fracking industry based solely on its economic advantages, which the land-men who came to their front doors with
grandiose offers portrayed. A community member helped explain reasons residents welcomed the industry:

Well, as far as Dimock goes, the people welcomed the industry in the beginning. They were told by the land-men all these stories about what the impact would be. So when they came in, they land men told them, oh you have ten acres, you'll probably get fifteen-thousand a month. And I just heard from _____ in Dimock, she said something like fifteen-thousand. It depends on how many acres. If you have ten to twenty acres, fifteen to seventeen thousand a month. E – 006, Interview, Aug. 25, 2016

Considering the economic advantages of royalties and land-leasing, the initial excitement reverberating around Dimock was understandable. Similar experiences are not uncommon with natural gas extraction through hydraulic fracturing in Pennsylvania. Local and personal economic benefits are generally the foremost reason natural gas development is welcomed into communities (Brasier et al 2011: 35,; Schafft et al 2013: 8). Relatedly, gas and oil possess a mythically powerful nature in contemporary western societies as defined by their prevalence in economic structures around the globe (Watts 2001: 191). Decades of wars to control gas and oil resources have created this mysticism behind the resource, giving it fetishistic qualities (Robinson 1996; Watts 2001; Watts 2003: 17). Therefore, gas and oil resources are seen as money and power, as subjective values are given to the resources (Marx 1906). It is understandable that alluding residents of a town to believe that they will become rich from natural gas, to which they hold mineral rights, will create excitement while allowing the industry to be perceived as harbingers of relief.

Economic benefits were not identified as simply individualistic; natural gas leases and revenue would purportedly give local business economy a massive boost as well. In my investigation, a handful of interviewees described the local business economy to be in
immediate need of resuscitation at the point that the fracking industry began its exploration in 2006. When asked about the reasons most residents welcomed fracking, one community member offered this statement:

This economy was dying, and if you look at the counties of Wayne, Susquehanna, and Bradford, you could see across the board that population was the same as it was twenty years ago, but it was getting older. Meaning all the young people were leaving. The median average income was lower than the state average. At some points in time the unemployment was some of the highest in the state. All of that has changed, in large part of the natural gas industry coming in here. M – 002, Interview, Sept. 16, 2016

The inclusive benefits will be discussed further in Chapters four and five, and contextual economic conditions were offered in Chapter two. For now, this respondent offers a narrative of the reasons that local economic conditions played a role in welcoming the hydraulic fracturing industry. Further, another community member emphasized the monetary excitement:

Oh yeah, money. Money was the big thing. Every small business, everybody was able to expand, add on. Add employees. R – 004, Interview, Aug. 8, 2016

Potential business development and expansion, and subsequent employment opportunities in an economically depressed area helped fuel the excitement of economic benefits associated with fracking. As displayed in Figure 10 of Chapter two, the median income in Dimock in the 2000 census was approximately thirty-five thousand dollars per year, while Pennsylvania’s median household income was approximately forty thousand dollars per year (U.S. Census Bureau 2002). While this is not a colossal difference, it still represents a lack of economic growth. According to a study conducted in 2010 by The Pennsylvania College of Technology and Penn State Extension, initial development of the fracking industry distributed a positive economic effect throughout Susquehanna County (Kelsey 2012: 15). In addition to personal economic gain, royalties received by
residents helped open new businesses and reinvigorate existing ones, creating one hundred and forty-seven jobs in 2010 (Kelsey 2012: 11). The largest employment-based economic benefits were received by local business and jobs connected with gas industry, such as quarrying for top fill and trucking companies to haul materials, while real estate and non-connective businesses experienced benefits as well (Brasier et al. 2011: 45; Kinnaman 2011: 20). The opposite side of this development is the boom-to-bust nature of natural resource extraction industries (Willow and Wylie 2014), which is further evaluated across Chapter four.

A less frequently portrayed initial economic perception of the fracking industry is respondents’ apprehensiveness toward the land-men’s rhetoric. These residents exhibited doubt that gas companies could live up to the potential they were describing. Doubtful reactions were most often described by residents who were asked to sign with the gas company following the initial land grab in 2006-2008. Owners of smaller pockets of land, which are enclosed by larger swaths of farmland that had been leased early on, gained a sense of apprehensiveness as they had been exposed to a small amount of gas company activity. In order to alleviate this, the gas companies offered increased amounts of money for land leases to these residents with smaller pieces of land (Brasier et al 2011: 51; Wiber 2015: 40), as their initial exploration had yielded an exponential quantity of gas (Slonecker et al 2013). When I discussed initial economic perceptions with a community member who had hesitated to sign on, they stated that:

… these land-men that came around representing the gas companies said, we’re going to give you like twenty-five dollars an acre to sign this agreement, giving up your mineral rights. And some people said, well, what’s in return for that, you know? You're going to give us some money, what will we have to do? And they said, you don't have to do anything, in fact, we may never come back. And if we do, we may drill a few wells and there might be a
few little tanks and values you'll see around but basically that is about it. So, the initial group of people that were contacted, they jumped at it without investigating it. And they sighed these leases surrendering their mineral rights for twenty-five dollars - thirty-five dollars to forty-five dollars an acre. Right away we thought to ourselves, you know I wonder if those neighbors are doing the right thing because where anybody comes up to your door and offers you money for something that you’re not quite sure about you should look into it. R – 003, Interview, Aug. 8, 2016

In this case, apprehension expressed by this individual came from experiences from other community members who had already signed mineral rights and land lease agreements with the local fracking company. Similarly, it became local knowledge that if you wait to sign, you can get more money. Therefore, apprehension stemmed from the land acquisition strategy employed by the gas companies. The topic of land acquisition was discussed with a community member who provided this statement:

As they consolidated, or as they acquired the big tracts for the less money. Then they acquired the medium sizes tracts for maybe a little more money, then they went in to get the smaller tracts who were the last ones to sell out. So, the prices have gone up to somewhere around forty-five thousand dollars an acre. R – 009, Interview, Aug. 27, 2016

Presumably, the land in Dimock is of mostly equal value, thus these large differences in land-lease amounts lead to tensions with the gas company (see Chapter four for a detailed description of these tensions). This interviewee suggests that the land acquisition strategy used by land-men, and the economic incentives associated with it, shaped the initial perceptions that the community members had toward the gas industry. Therefore, residents’ initial perceptions of economic incentives offered by the gas industry vary depending on their location, and the timeframe in which the land-men came to them. In these cases, it is obvious that perceptions might have already been formed based on neighbors’ experiences (Perry 2012: 85). These experiences could be positive or negative related to economic, environmental, and socio-cultural aspects (Crowe et al. 2015), or
could be perceived from a viewpoint of a specific affiliation to a group which already possess an opinion about extraction of natural gas through hydraulic fracturing. Essentially, it all comes down to connections residents may have had with neighbors who possess experiences with the gas companies, and at what point in time that the industry came to them. Nevertheless, if the economic benefits outweighed residents’ perceived risks, then they typically signed with the gas company.

Of the twenty-one participants interviewed, when asked about their economic perception of the fracking industry when they first encountered it, almost no one specified a strong negative response. The individuals interviewed appear to be a representative sample of the region. Most were longtime residents, or people in long-term connectivity with residents in Dimock. Their initial perceptions were formed primarily by land-men’s conjecture and projections, rather than being congested by the perceptions of outside interest groups or media. Those that signed on at a later point in time either emphasized a distrust of land-men, or a distrust of the industry in general due to preliminary resident-industry experiences. Initial economic perceptions were discussed with a community member who expressed a tremendous distaste for the industry. This individual stated that when the land-men came around:

I listened to this jackass open his mouth. Minimum you’re going to see on this property is five-thousand a month, maximum is fifteen-thousand a month for the next twenty years. Get the fuck out of here asshole. Number one, you don’t even have a well drilled around here yet. I go, how the fuck can you come up with this? Get your ass out the chair and out the fucking door before I pick you up and throw you through the door. I ran him out of here. R–001, Interview, Aug. 3, 2016

This quote represents an extreme case of initial distrust of the industry. The recollection of past perceptions here could be harsh due to current relations with the industry.
Regardless, the anger displayed here is strong and is not an entirely uncommon overarching sentiment in recent times. In this case, the interviewee experienced major water contamination over the past decade inflicted by the local hydraulic fracturing company, coupled with negative economic experiences such as loss of real-estate value. The interviewee continued with this:

So, now you’ve got to remember, I’ve got a fucking mortgage. But I don’t have insurance on the house. Bank hasn’t foreclosed on the house because they can’t even put insurance on it. Ok? Denied. Few years back, I get fed up with these guys and say, fuck you, I ain’t paying the taxes on a piece of property I cannot fucking use. It’s worthless. If the banks foreclose on it, its condemned property, you have no water. If you have no water, you can’t have no home. You can’t sell it, if it don’t have water, so it’s not a home. R – 001, Interview, Aug. 3, 2016

During the course of this interview, the anger directed toward the local industry was profound, as the interviewee went into great detail regarding the manner by which the industry had facilitated the immediate environmental and economic marginalization, thus the resulting discordant attitude. This individual had lapsed on mortgage payments as a result of being denied homeowners insurance and believing their property to be worthless as a result of industry activity. Thus, this individual possessed a home without value, and could not escape the economic and environmental impacts accrued from fracking industry activity and was therefore marginalized. However, the local industry activity is part of a national political-economic chain which is ultimately responsible for creating this conflict-driven marginalization (Fairhead 2001: 214). As seen in this respondent’s comments, this marginalization occurs by creating an unescapable economic situation from which this resident cannot recover. Without going into great detail and revealing the identity of this source, this individual had also lost their livelihood as a result of fracking activity and feels angry toward the industry. It is not uncommon for marginalization to
occur when disempowered individuals’ economic situations can be exploited (Robbins 2011: 91). A global network of consumption based on abuse of rural or rural-poor by external market forces is understood to be common in regards to capitalist resource exploitation (Adger et al. 2001). Economic and environmental marginalization is introduced here and further discussed in Chapter four, as marginalization and potential conflict occurred only after residents experienced the impending impacts of fracking on a rural location.

This section has examined the baseline economic perceptions of residents of Dimock Township. Visual aid tables are used in each section of this chapter to display the collected and analyzed information. Table three presents the frequency - high, medium, or low - of responses from interviewees of baseline perceptions of economic experiences related to fracking activities. These frequency of response visual aid tables are developed in the economic, environmental, and socio-cultural perceptions sections of Chapters three and four in order to represent initial and current perceptions and ultimately compare changes or similarities in the conclusion section of Chapter four. The frequency of response visual aid tables are simple visualizations of the data portrayed across the section they represent. Correspondingly, they also help identify the drivers of perceptual change in this chapter and understand how and if the drivers then alter perceptions in Chapter four. The chapter ends with a discussion of the responses to each component, high, medium, and low frequency of responses, which help reveal the baseline perceptions, while exposing the drivers of perceptual change. As described in the introduction, this chapter investigates the initial economic, environmental, and perceptions of socio-cultural aspects of fracking activities in Dimock, Pennsylvania. The
followwing section will explore the initial environmental perceptions held by residents of Dimock Township in regards to hydraulic fracturing activities.

**Table III: Initial Economic Perceptions Frequency of Response Visual Aid Table**

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency responses</th>
<th>Medium frequency responses</th>
<th>Low frequency responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial economic perception of fracking</td>
<td>Positive: royalties, local economics, jobs, local businesses</td>
<td>Mixed: Too good to be true economic projections</td>
<td>Negative: Distrust of industry</td>
</tr>
</tbody>
</table>

**III.II Initial Environmental Perceptions of Residents**

Similar to the economic perceptions discussed in the previous section, the initial environmental perceptions of fracking activities in Dimock rely on the land-men’s portrayal of the process, and begin to vary after this initial portrayal. This section examines how political and economic influences shape nature-society relationships, creating a need to redefine nature as a commodity (Castree 2005). With this redefinition, natural resources are viewed as a factor of production, which can be transformed into capital, rather than treated as fragile and beneficial (Castree 2005:155). This society-environment problem furthers an environmental dialectic (i.e. a two-way relationship or conversation between nature and society), in which a capitalist culture persists an ownership or dominance over natural resources (Schnaiberg 1994; Castree 2005:155). As described in the section titled *Northeastern Pennsylvania Resource Extraction History* in Chapter two, an environmental dialectic has been constructed historically in Northeastern
Pennsylvania. The concepts of environmental transformations and the political and economic bodies that govern them are further explored across Chapter five.

Most respondents interviewed either expressed positivity regarding environmental consequences involved with fracking activities, or possessed no opinion due to a lack of knowledge of the fracking industry and its practices. This is primarily due to hydraulic fracturing exploration beginning on a massive scale post Energy Policy Act of 2005, which enabled less federal regulation on the process (Pub.L. 109–58 2005). Therefore, fracking had not yet been in the social dialogue of most citizens at the point land-men initially entered Dimock. The highly publicized negative experiences in Dimock around 2008 to 2009 increased awareness of the undesirable environmental implications, which currently are connected with hydraulic fracturing (Bateman 2010). Residents possessed no perceptual basis for environmental degradation, which is now commonly associated with the extraction process. Individuals were only made aware that they owned the rights to a natural resource, which would be economically beneficial to them. This viewpoint was portrayed by a community member as follows:

They [extraction company land-men] said, you won't even know we were here. I actually thought in the beginning that they might do a well. In fact, at one point I thought, gee, did they do it already? I went walking back there [to the land leased] and I didn't see anything. And I thought, no pipeline? They said it would be like a fire hydrant, a big Christmas tree they called it. I thought maybe they backed the truck in, fill up the truck and leave you know. We had no clue as to the extent of it. E – 001, Interview, Aug. 9, 2016

This individual is describing how the land-men portrayed the extraction operation to the local population as discreet, barely noticeable. This portrayal of the industry as inconspicuous had been recounted by numerous community members. Another interviewee had this to say about the portrayal of fracking by land-men.
All they said was, if we drill, you'll never know. We'll drill for two weeks. There might be a little rig. And it will look like your well water head that you can plant a tree over. And I know that I said that already but the funny thing is that… they actually… that kind of all the valve tops over the well heads, they call that a Christmas tree. E – 002, Interview, Aug. 16, 2016

Respondents consistently provided me with similar statements of these discreet operations, offered to them by the land-men: the idea that fracking operations would be conducted without any obstruction to daily life. Pennsylvania requires resource extraction companies to post a land reclamation bond, which is incorporated in the surface use plan. A land reclamation bond ensures that the company is responsible for the cleanup of the land used. This bond is used to ensure environmental reclamation to former well-pad sites or over gathering lines (Mitchell and Casman 2011). With my experience in the area being multiple years after the gas boom occurred, there was certainly a large amount of work put into land reclamation by the gas companies. This reclamation, when portrayed by the land-men, seems to be overvalued in a way that claims that land will be restored immediately and perfectly, or can be used to over-shadow the possible harm to aquifers and air quality caused by wells and compressor stations. Nevertheless, I observed an omnipresence of the industry built into the natural landscape. Be it a few well-heads and metal fences amidst a large green field, or an active site with dozens of water containers and trucks, I had been continually reminded of the industry’s presence. Interestingly, the longer I remained in the area, the less I noticed the gas infrastructure. Therefore, the process could be normalized to residents who hold perceptions of fracking activities as unobtrusive, as they are surrounded by it daily. This is further discussed in Chapter four’s socio-cultural section.
The inconspicuousness of fracking that was initially promised seemed to be ignored after preliminary test wells returned vast amounts of natural gas and the area became choked with industry (Rahm et al 2015). The first wave of employees of the national and multinational gas companies that came to Susquehanna county were non-native, and came from extremely rural areas in Texas and Oklahoma (Wilber 2015: 17). As discussed in Chapter two on page sixty-four, the gas company employees entered the area with garish cowboy personas. They also had little experience with the landscape and geology, thus handled extraction as they would in the American Southwest. A community member had this to say about Cabot’s initial practices:

The breakdown of some of these first wells they did were probably not done the way they should have been. It's new rock, different rock formation from what they were used to drilling in the south. As far as Cabot. This is Cabot area. R – 008, Interview, Aug. 27, 2016

As explained to me by a fracking company employee, locations where natural gas through hydraulic fracturing extraction had previously taken place, prior to entering Pennsylvania, were flat with less complicated geology, with smaller, more dispersed population than the endless mountains region of Pennsylvania. This suggests that hydraulic fracturing companies were not expecting the amount of regulation and land reclamation with which they would have to deal, due to the population density and intrusiveness of hydraulic fracturing infrastructure, which would only increase over time. However, it is corporate capitalism’s tendency to expand geographically from location to location once gas is discovered, necessary innovations are created such as horizontal drilling, and polices are formed making natural gas production through hydraulic fracturing economically viable (Harvey, 2001). The theory, spatial fix, describes the geographical component to this location change. Spatial fix theorizes that resource
extraction is strategically flexible geographically, as capitalism needs to resolve its contradictions of abusing the conditions of production, but also becomes fixed to a particular location (2001: 25). When resource extraction becomes fixed to a specific area, an accumulation of capital is created by mistreating the land on which it has become dependent, only to move to a different geographic location in order to resolve the crisis created (Harvey 2001; Schoenberger 2004). Similarly, this generation of wealth economically marginalizes the residents who own the rights to the natural gas, but receive only a fraction of the wealth (Robbins 2004). In this case, the crisis is the economic, environmental, and socio-cultural impacts, which are discussed throughout this thesis. Upon realizing its potential, hydraulic fracturing companies invaded Northeastern Pennsylvania from areas previously exploited. Another problem within this stage of spatial fix revolves around a boom-bust scenario. As the fracking industry becomes the dominant economic entity in the area, and other business relies on it to increase population and spending, the area becomes standardized (Scott 1998) and reliant on the industry. This reliance on a singular industry is a common occurrence within “the neoliberal state of downsized federal regulation and unrestricted global corporations involved in resource extraction in a rural location” (Ferguson 2005: 378). Reliance on homogenized industry is problematic as the industry’s economic growth fluctuates up and down, taking the local industry up and down as well.

Residents who negotiated leases and mineral royalties later in the timeline had a greater chance of encountering articles or news stories about negative environmental impacts of fracking (Boudet et al. 2012). Similarly, they also had a greater chance of conversing or hearing about other residents who experienced negative environmental
impacts of fracking. As portrayed in the timeline presented in Chapter two, Dimock (post-2009) became the poster-child of water contamination for activist groups and environmental groups such as Eco-watch, Food and Water Watch, and The Sierra Club. Increased popularity of specific documentarian vehicles such as the film Gasland (2010) by Josh Fox and the article “A Colossal Fracking Mess” in Vanity Fair publicized the town’s water problems (Bateman 2010; Fox 2010). Impacted individuals use these documentarian sources as an outcry for help, while industry supportive residents elude to their absurdity in order to support the fracking industry. A community member provided me with this statement about the way that the media handled the environmental exploitation of the area:

Well, I think that you have a sort of divide [between pro-gas and anti-gas residents]. For instance, what is happening in Dimock with the Carter Road folks and all of that situation. And that made the national news, it was in Josh Fox's movie and so forth. They made a real big deal about it. For those of us who live in this area, we could say that the type of water that is in this area, it's always been flammable. So, the idea of saying, oh my gosh, look what the industry has done, they're lighting their water on fire. We can go light lakes and ponds on fire too, we all thought it was funny. So that is not anything new. E – 006, Interview, Aug. 25, 2016

Already displayed in Chapter two on page seventy-six, this quote perfectly exemplifies one side of contrasting views based on external involvement of media resources and their absurdity. In contrast, this community member portrays the helpfulness of these outside forces:

It was almost as soon as Josh Fox came through, then the lawyer started coming through. It was environmentalists, then it was Josh, then it was the lawyers. The lawyers came and they were like, hey, we need to sue. Now we weren't interested in suing at first, we just wanted water. All we want it is water. We just want replacement water and we’ll be fine. So I went to Cabot's offices and said, hey, you know, I live [in an area effected by water contamination], all my neighbors have bad water, I am worried about my
Chapter four communicates, in detail, the discord between pro-gas and anti-gas residents, and the discord between residents and local fracking companies. For the purpose of this section, however, the focus remains on the early environmental characteristics. Residents who signed a lease or a mineral rights agreement during or after 2009 would have their perceptions influenced by others who have experienced the impacts of fracking activities, and this “flammable water” anecdotal narrative had been facilitated in support of the fracking company in order to delegitimize complaints of residents with potentially contaminated water. The flammable water narrative is further discussed in the following socio-cultural section. However, residents were not complaining about the presence of methane in their water only, but about hazardous and carcinogenic chemicals used in hydraulic fracturing activities, and were hoping that their complaints would attract attention and help. This anecdotal narrative seems to be established by local drilling companies whereas post-fracking contamination is empirically significant. A pro-drilling website called Energy-In-Depth, which had been formed by the American Petroleum Institute and the Independent Petroleum Association of America (IPAA), gives this narrative about methane in resident’s water:

This region of Pennsylvania has a long history of naturally occurring methane in the water not only prior to the first Marcellus Shale, but before the first oil well, the Drake Well, was drilled in the United States in Southwestern Pennsylvania in 1859. In fact, the first recorded instances of lighting water on fire in the county took place a short drive up the road at Salt Springs State Park in Franklin Township in 1795. (Energy-In-Depth 2016)

Narratives like this led to changed perceptions among residents who signed on post-2009. Individuals’ specific values, formed through environmentalism and mixed personal
experiences, changed initial perceptions after drilling accidents began (Matz and Renfrew 2015). This follows a social psychological perspective reinforced empirically, that collective representations based around others’ experiences and our own ideological affiliations, can change perception without personal experiences (Ross et al. 1977; Burns and Engdahl 1998). In other words, if someone is already environmentally conscious and is then presented with evidence of the negative impacts fracking has had on a neighbor’s water, it only reinforces their beliefs. For example, a resident who is more environmentally conscious and learns about water contamination, would perhaps form a negative perception of the industry without any personal experiences.

The Energy-In-Depth article continues by discussing local anti-activist groups and provides an image that states: “Susquehanna County, Lighting Our Water on Fire Since 1785!” (See Figure XIX). Some respondents and personal conversations with residents alluded to the possibility that the fracking company had led these efforts, along with the historic methane narrative and the Enough is Enough/Dimock Proud pro-gas groups (see Chapter two’s timeline section), in order to defame the anti-gas residents. Upon discussing the pro-gas organizations, a respondent provided me with this insight:

There was a group called Energy In-Depth. So, there is a lot of shit spreading done by Energy-In-Depth. I know that Cabot provided the signs, "Dimock Proud." They made the Dimock Proud website. So, it was essentially a company-led effort to get their landowners to stop because their lease money wasn't going to come in because of this nine-mile moratorium [in Dimock post 2009 contaminations on Carter Road]. E – 005, Interview, Aug. 24, 2016

This interviewee provides an explanation for the social rift established by the fracking company. Essentially, Dimock had a three-year period (2006 – 2009) in which a narrative had been shaped by fracking company land-men that no environmental changes or damages would occur. Water and air quality apparently had not been discussed within
this narrative. The generated narrative provided fracking companies the appropriate time to grab large tracts of land in order to encompass smaller tract owners, who were then pressured to sign regardless of their perceptions. After fracking gained a negative connotation, gas companies and pro-gas residents created the Dimock Proud and Enough Is Enough groups to reduce the severity of the claims of environmental degradation that individuals were expressing. Reproducing nature through these discursive practices, such as employing a narrative to legitimize environmental harm, shifts the way in which knowledge is produced as a means of power and hegemony (Foucault and Lewis 1991; Braun and Wainwright 2001). Essentially, by rerouting the way in which knowledge is gained about fracking, from general media to produced knowledge from the fracking companies, the producers of knowledge gain a certain amount of control over the area and its residents.

I discussed initial perceptions with a few residents who depicted exceedingly negative initial perceptions of the industry’s environmental practices, in casual conversation and in formal interviews. These negative perceptions were based around
water contamination issues along with the uncertainty of the future health of their aquifers. Some of these reactions were captured during the activist lead “Gas-Tour” I attended on August 12, 2016, hosted by residents of Dimock, who became whistleblowers in order to protect their community, only to be later ostracized by pro-gas individuals. Similarly, one resident’s interview response, who signed on post-2009 did so only with environmental apprehension in mind:

We were the last ones in the valley to sign actually. We signed because of our water quality. It was the main emphasis, not the money. Because it said in the lease that they would be responsible for our water quality. We figured that everyone else signed, they're going to be drilling all around us, and if they hit our aquifer and pollute our water, were going to have to start from square-one and say, Hey. you're responsible. And in the lease, it says they're responsible. R – 005, Interview, Aug. 27, 2016

This type of response portrays the way in which people view the fracking companies through a lens of experience. This resident had formed his or her opinion based on others’ experiences, rather than the land-men narrative described in this chapter. Therefore, people who signed on post-2009 Carter Road water contamination events, possessed a foundational perception of environmental repercussions of natural gas extraction in Dimock. This perception could be positive or negative based on their environmental or political ideology.

This section has examined the baseline environmental perceptions of residents of Dimock Township. Frequency of response visual aid Table four represents the initial perceptions of environmental aspects related to fracking activities. The frequency of response visual aid table is used to understand residents baseline perceptions, while exposing the drivers of perceptual change, which are identified at the end of this chapter in the conclusion.
Table IV: Initial Environmental Perception Frequency of Response Visual Aid Table

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency responses</th>
<th>Medium frequency responses</th>
<th>Low frequency responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial environmental perception of fracking</td>
<td>Positive: Land reclamation emphasized by land-men or environment not discussed.</td>
<td>Mixed: Late lease-holders and people who cited existing methane in water.</td>
<td>Negative: High environmental damage</td>
</tr>
</tbody>
</table>

As described in the introduction, this chapter investigates the baseline perceptions of economic, environmental, and socio-cultural aspects of fracking activities in Dimock, Pennsylvania to detail the drivers of change in the area. Now that the environmental perceptions are presented, the following section will explore the initial socio-cultural perceptions held by residents of Dimock Township in regards to hydraulic fracturing activities.

**III.III Residents Initial Perceptions of Socio-cultural Aspects**

Indeed, initial perceptions of socio-cultural aspects of natural gas extraction through hydraulic fracturing in Dimock were primarily formed by land-men’s narrative of the process. Negative socio-cultural specifics of extraction such as landscape modification from rural to industrial, health concerns, and potential conflicts can be overwhelming to residents involved and be detrimental to their experienced quality of life (Finewood and Stroup 2012; Stedman et al. 2012; Schafft and Glenna 2013). However, most interviewees reported that land-men suggested that fracking would be non-invasive to the community and the landscape. In fact, health concerns were not mentioned.
initially, suggesting that drivers of change arrive from new experiences, as well as changes to initial perceptions. Previous research similarly claims that land-men indicated that the industry would be as unobtrusive as possible (Wilber 2015: 9) or suggested that extraction would occur, then the industry would be gone.

There are several types of socio-cultural changes that are commonly associated with fracking in rural areas. Fracking can transform a rural location’s aesthetic, thus altering its perceived identity (Meng 2014). For instance, as described earlier, the gradual transformation I experienced when traveling from Binghamton, NY to Dimock, PA is representative of aesthetic change. Traveling through small, rural towns, I observed a transformation from rural, to rural-industrial, as I entered Susquehanna County. Such transformation can alienate individuals from their own surroundings as they no longer identify with the cultural aesthetic it provides (Olwig 2005; Hochschild 2016). From this change, many socio-cultural factors can be identified as a result of resource extraction in an area, such as changes to customs, lifestyles, and values of the residents (Albrecht 1978). In a letter to the editor of *The Scranton Times*, Audrey Simpson of Shavertown, PA has this to say about the land-men’s initial portrayal of the industry;

> When the land-men showed up in Pennsylvania a decade ago promising landowners that extracting shale gas via fracking was a benign, unobtrusive process, they knew about the problems in Colorado. There is no way to guarantee safety. State lawmakers realize this is a facade. (Simpson 2016)

This resident of Northeastern Pennsylvania suggests that amidst the portrayal of unobtrusiveness represented by the fracking industry, land-men were acting dishonestly. As anecdotal evidence, no one interviewed described problems other locations had had with fracking until the extraction process had become highly publicized post-2009. Therefore, the aforementioned socio-cultural changes could be ignored when land-men
first improperly depicted the non-invasiveness of the industry to residents of Dimock Township.

Within Dimock, fracking has also created socio-cultural changes to resident’s quality of life by introducing potential conflict and discord to the area, and creating uncertainty and risk surrounding current and future health problems (Rozell and Reaven 2012; Perry 2013; Schafft et al. 2013). These are not uncommon occurrences associated with fracking operations, however, they will not be discussed in length until Chapter four, as initial perceptions were benign as described by land-men and represented in the interview process.

An in-depth analysis of changes to socio-cultural factors is provided in the following chapter’s socio-cultural section. For the purpose of setting determinants of perceptual change, the initial responses given by respondents are exhibited in this section. As a result of the discreetness of the industry land-men’s narrative, most responses regarding initial perceptions of socio-cultural aspects of fracking either remain positive, or neutral due to a lack of preliminary awareness about the industry. In order to appreciate both perspectives, some responses considered that local fracking companies similarly lacked information about the processes with which they were getting involved.

A community member specified that:

I was talking to one of the Cabot people afterwards, and I said to him: oh, you all didn't have no clue what you were getting into, did you? And he just looked at me, and I said: yup, you didn't know. And he said: we really didn't. When they hit the first well, then it was like whoa! We really are in a very sweet spot. So, I think that they didn’t really know what they had here. G – 001, Interview, Aug. 16, 2016

While the land-men emphasized the non-intrusiveness of hydraulic fracturing (Bateman 2010: 2), it would also be a fair assessment to acknowledge that upon arriving in
Susquehanna County in 2006, the industry did not possess knowledge of precisely how complex or invasive extraction would be in the area (Wilber 2015). Therefore, land-men would not have been able to accurately explain the precise events that would take place in Dimock. However, they did not try to present any potential information regarding socio-cultural change that may have already taken shape in similar situations, leaving residents ignorant to the socio-cultural detriments associated with hydraulic fracturing.

With the partial initial naivety of the gas company, and the land-men rhetoric of non-invasive extraction, the people of Dimock’s initial perceptions of the socio-cultural changes, which would occur in their town, were either positive or non-existent. That is, the initial perceptions were formed by land-men, who either portrayed discreet activities or simply did not discuss factors of socio-cultural change. When asked about how the industry portrayed itself initially, one community member provided this statement:

[Land-men portrayal] you're not going to feel any impact because we’re only going to drill one well for the whole town of Dimock, which is thirty square miles, about fifteen-thousand people, an average town in the county. And it's just going to be one metal rod in the ground and you won't even know that we were there. We’re going to go in so quickly and come out, you won't even know what the hell happened. That is the story that we go t. And we had no idea that there was any infrastructure involved or what a gas site looked like because nobody knew nothing. I didn't know anything and nobody else knew anything. None of us knew how they were going to get the gas out. We thought that they would bring a little truck in, like a tanker, and oil tanker. And you would hook it to the rod, to the pole, and you pour the gas in there and you just drive away. We had no idea there were pipelines involved, compressor stations, processing plants, treatment plants, storage facilities, they mentioned none of it. We didn't know there was going to be over 1400 gas holes in the whole county. That means gas wells. We had no idea that would happen. E – 004, Interview, Aug. 19, 2016

This individual described how the process had been depicted to them. Essentially, residents believed what the land-men described. Conceivably, this is due to the excitement generated about the economic benefits. The residents who signed early
witnessed their landscape changed, or observed the water contamination events of Carter Road, which would make other residents more likely to act with caution. Again, these post-2009 changes to socio-cultural aspects of Dimock are evaluated across Chapters four and five. By signing land-leases, initial land-use decisions were being made by the landowners. These decisions were guided by profit-driven fracking companies who tend to obfuscate understandings of hydraulic fracturing (Finewood and Stroup 2012: 77). Therefore, decisions made by land-owners to lease their property are massively influenced by hydraulic fracturing companies, who prioritize profit-maximization over responsible land management (Mitrova et al. 2016). In this case, profit-driven gas companies employ neoliberal tactics, such as emphasizing individual entrepreneurial freedoms and private property rights over state and federal intervention (Harvey 2005), in order to muddle proper land management decisions (Finewood and Stroup 2012). In other words, a focus on privatized resource management displaces federal level rule-making by employing local stewardship strategies in which fracking companies portray extraction as primarily positive in order to gain resident support. These strategies are only a façade, as corporate, profit-driven stewardship is set in place by land-men, who influence residents with the positive aspects of fracking. Along with the area’s historical and normative view of resource extraction as depicted in Chapter two’s history section, this and the aforementioned façade cumulatively makes residents perceive fracking as good stewardship by prioritizing individual decision making over federal level decision making, and aligning fracking with historical resource extraction. This brings to question the fracking industry’s ability to be long-term stewards of proper land-use management. Research shows that short term socio-economic benefits exist within areas involved in
hydraulic fracturing (Barth 2013). However, due to the boom-bust nature of fracking (Brasier et al. 2013) and resource extraction in general, long-term uncertainties and risks were overlooked by land-men in order to retain the process’s impression of harmlessness for corporate stewardship motives. These risks and uncertainties would lead to the main socio-cultural changes endured by residents, such as a discordant social rift, health concerns, and landscape modification, which are further explored in Chapter four’s socio-cultural section.

In contrast, interviewees who signed on with the gas company a bit later, who were already aware of the initial level of invasiveness the industry employed, displayed a slight amount apprehension and uncertainty. A community member provided this sentiment when asked about the initial ambiguity of the extraction process:

[S]o it's uh, something we heard from neighbors and some from other people about it. It was very vague. Um, from what I heard, it’s nothing to be worried about. Uh, were just going to come in and drill a whole and extract the gas. And that is pretty much the way it was portrayed. R – 002, Interview, Aug. 8, 2016

The process described above possessed ambiguity and uncertainty for the future, even after personal experiences had been acquired. From 2006 until the events of Carter Road in 2009, residents discussed the process and experienced minor socio-cultural hardships. These hardships mainly revolved around explorative operations taking place, such as helicopter surveys of land, trucks with equipment driving down roads day and night, and seismic surveying thumper-trucks (i.e. trucks that create seismic waves to check for gas deposits) slamming the ground. A discussion about fracking company activity provided this insight:

R - 005: Oh, you should have been here when they were doing with the thumper. They went up on our property and drilled down I don't know how
many pilot holes. R - 006: And they put dynamite or something down in there. Then they blow it up. And they take reading off of it. The had miles of extension cords. They would drop them with helicopters. R - 005: The helicopters would come with the big bags, and they would pick up the cording and everything. Investigator: That's a little bit cool to watch right? R - 005: It is but when they’re right here and the whole thing is shaking. R - 006: Maybe the first couple of times! (laughter) R – 005 & R - 006, Interview, Aug. 9, 2016

These community members conveyed this information with the sentiment that they were not speaking badly about the local gas industry, rather that they were experiencing minor hardships, which were significantly outweighed by economic benefits. In other words, the initial drilling, testing, and surveying had been coupled with excitement of boomtown aspects (i.e. local economic benefits and jobs) enough to overlook initial negative socio-cultural aspects, or these negative aspects just were not as obvious as they would become during 2009 to 2012 during the period of rapid developmental expansion and subsequent violations. Optimism about economic incentives often derails apprehensions about negative socio-cultural concerns in regards to hydraulic fracturing (Brasier et al. 2010; Kargbo et al. 2010; Willits et al. 2013).

Respondents portrayed a buzz of excitement when exploration began in Dimock. As the industry developed over time, individuals’ perceptions would become obscured by others’ perceptions and personal experience. As expressed by respondents and by the forty-five complaints filed by Dimock residents to the Pennsylvania DEP, grievances about intrusiveness of the industry did not reach their peak until late 2008 through 2013 (Public Herald 2016). These complaints were obtained from Public Herald, an investigative news nonprofit agency, and include grievances from residents of Dimock such as fracking water fluids being dumped into creeks, flow-back fluids not being properly disposed of on well-pad sites, and unknown sediments found in potable water
supply. This evidence along with the timeline of wells developed in Dimock Township (See Figure XX) represents the boom in natural gas production and fits uniformly with interviewee data of initial benign perceptions of the fracking industry, followed by uncertainty and risk as the timeline progressed.

The following frequency of response visual aid table portrays the responses to initial perceptions of socio-cultural aspects related to natural gas extraction by means of hydraulic fracturing received through the interview process. Frequency of response visual aid tables are used in each section of this chapter to display the collected and analyzed information. Table five presents the frequency of responses from interviewees of initial perceptions of socio-cultural experiences related to fracking activities.
Table V: Initial Perceptions of Socio-cultural Aspects Frequency of Response Visual Aid

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency responses</th>
<th>Medium frequency responses</th>
<th>Low frequency responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial socio-cultural perception of fracking</td>
<td>Positive: Land-men portrayed little to no modification to area or quality of life aspects.</td>
<td>Mixed: Reactions from other residents has been vague. Uncertainty.</td>
<td>Negative: Did not believe rural aesthetic would remain. Risk.</td>
</tr>
</tbody>
</table>

The conclusion section will explore these baseline perceptions and extrapolate the drivers of change by examining these initial perceptions.

III.IV Conclusion

Research question one; “What are the baseline perceptions of fracking as it began in Dimock, PA.?”

This chapter has explored respondents’ baseline thoughts of economic, environmental, and socio-cultural aspects, which are commonly altered by hydraulic fracturing activities (Brasier et al. 2011, Schafft et al. 2013) in order to create a foundational understanding of perceptions, reveal the drivers of perceptual change, and aid in answering RQ #2. As investigated in this chapter, hydraulic fracturing companies such as Cabot Oil and Gas entered Dimock with a standard narrative, that fracking would provide needed income with very little change to environmental or socio-cultural particulars, in order to gain the acceptance of residents (Guignard 2013, Matz and Renfrew 2015). This rhetoric promotes job availability in both fracking-related industries, and non-fracking related industries, economic growth both individual and communal, and promises to reinvigorate historical local industries while creating a new local industry
(Schafft et al. 2014). Since many of these initial perceptions were formed before large scale extraction began in 2008 to 2009, initial economic excitement experienced by residents would obscure the initial observable, minor negative aspects of natural gas extraction. This provides an opportunity to determine structural baseline perceptions, which when altered, result in transformed perceptions. Therefore, to answer RQ #1, the baseline perceptions of fracking in Dimock were mainly positive as economic revitalization was promoted through a “rags-to-riches” narrative, coupled with no forewarning of environmental and socio-cultural detriments. All of which is a fracking company narrative employed to gain peoples’ support. Thus, the data portrayed in this chapter creates the determinants for understanding the drivers of perceptual change associated with fracking within in Dimock Township. In addition to answering RQ #1: “What were the baseline perceptions of fracking as it began in Dimock, PA?” this chapter also reveals that modifications to these baseline perceptions consequently become the drivers of perceptual change.

Undeniably, determining the drivers of perceptual change in Dimock relies on many variables, specifically how and when each individual experienced fracking, and whether that experience was positive or negative. Therefore, any shift from baseline perceptions as portrayed over the length of this chapter would be considered changes in perception. For example, a resident who portrayed a positive economic perception of fracking due to royalties received, could experience a perceptual change if their royalties decreased or increased overtime. By understanding this simple logic and applying it to the explored initial perceptions, Table six displays the basis of the drivers of perceptual
change, which will be used in the following chapter in order to compare current perceptions and see if they have been altered

Table VI: Drivers of Perceptual Change

<table>
<thead>
<tr>
<th>Economic Drivers</th>
<th>Change to economic incentives, positive or negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Drivers</td>
<td>Change to natural environment and water or air quality, positive or negative</td>
</tr>
<tr>
<td>Socio-Cultural Drivers</td>
<td>Change to landscape aesthetic, health, quality of life, positive or negative</td>
</tr>
</tbody>
</table>

The primary objective of this chapter has been to explore baseline perceptions of hydraulic fracturing activities in Dimock, while additionally exploring the drivers of change. To pursue this objective, baseline perceptions have been identified through the interview process and supportive data, as described over the length of this chapter and pertain mainly to initial perceptions of the industry. By understanding the foundational perceptions arrived upon by exploring internalized information, it becomes important to understand that changes to these foundational perceptions would lead to a shift in perception. Therefore, the arrived-upon drivers of change would be the ones that alter the baseline perceptions. In the following chapter, current perceptions of fracking in Dimock Township are explored. By doing so, answers to RQ #1 are solidified and expanded upon with experiences, as the changes to these influences are explored in detail. These baseline perceptions and drivers of change are used to determine the adjustments to residents’ perceptions when examining their current perceptions. It is important to note that the initial perceptions evaluated fit similar empirical data, which examine
perceptions of the hydraulic fracturing industry within similar locations in Pennsylvania (Brasier et al. 2011; Weigle 2011; Brasier et al. 2013; Schafft et al. 2013).
CHAPTER IV. TRANSFORMATION OF THE ENDLESS MOUNTAINS

As I continued my exploration of Susquehanna County and became accustomed to backroad shortcuts around the small townships within, I discovered a structure that would be symbolic to my research. Driving from my temporary home for the summer to downtown Montrose, PA, just nine miles north of Dimock, I noticed a small metal shed with a handful of cars lined up around it on Bank Street (See Figure XXI). Each car’s occupants were unloading plastic containers of all sizes and shapes in order to be filled with water. This metal shed is a water filling station, provided by a local water well drilling company Diaz Water Shed LLC. The idea crossed my mind to stop and chat with the people filling their water jugs. I would introduce myself and declare my intentions in the area to assess the pros and cons of hydraulic fracturing’s effect on a rural community, assuming that would be a welcome discussion. I decided I would undertake this task at a subsequent date. A few days later, while engaging in an off the record conversation with a local contact via telephone, I mentioned my idea to talk with the water retrieving folks at the metal shed. My contact’s response was simply that this would not be a good idea. It was suggested to me that the individuals collecting water at this metal shed did not want to be associated with water contamination issues. Residents within these communities who have water problems and who talk about their water problems openly become ostracized by the people who support the industry, or the pro-gassers, to which they are referred. The pro-gassers are the majority in the area, and people who do not support the industry, or anti-gassers, are the minority. I did not create the terms anti-gasser or pro-gasser. They are in fact common dialect in the area when discussing ideologies pertaining to fracking. It seems that anti-gassers are viewed mostly as trouble makers by the pro-
gasser majority; their rhetoric about water contamination compounds and leads to activism, media attention, and subsequently slows production. Whereas pro-gassers are generally understood as supportive to local economic prosperity and nationalistic aspects, as it is understood that fracking leads to U.S. energy independence. Production is already slowed due to the nine-mile moratorium in Dimock, pipeline delays, and fluctuating natural gas prices. These actions infuriate the pro-gassers, who are typically residents who either receive royalties, own businesses, or have jobs that rely on periods of increased gas production.

Social discord between residents that could potentially lead to conflict is common within areas of natural gas extraction by hydraulic fracturing (Weigle 2011; Perry 2012), and with resource extraction in general (England and Brown 2003). Conflict, as result of the comingling of resource extraction operations and residents of the location in which
the extraction takes place is especially common to gas and oil, while also being a reoccurring theme among political ecologists and political economists (Khan 1994; Ross 1999; Watts 2001; Andrews and McCarthy 2014). Therefore, the discord between residents and with the local gas companies is symbolic of corporate activities within rural locations. In this location specifically, the discord and potential conflicts can be examined as local stewardship accepts corporate governance due to economic benefits. However, not all residents are experiencing these economic benefits as outweighing the costs to environmental and socio-cultural characteristics. Central to this chapter is the argument that resource development by private corporations creates discordant attitudes and a social rift, which could potentially lead to conflict between residents of the area development (Robbins 2004: 173). Once this becomes politicized by groups taking one side or another, control of the resource then becomes contentious, as each side fights for what they believe to be proper governance (Robbins 2004: 173; Rabe and Borick 2013). The effect of this is a struggle between residents who support fracking companies, and those who do not. The majority reside on the supportive side. Therefore, the minority becomes ostracized by locals, but embraced by environmental organizations, further politicizing fracking in the area, as outsider intervention clashes with local stewardship ideology and the concept that flatlanders, or outsiders, lack the local historical knowledge for proper land management. Therefore, this chapter asserts that fracking activities in Dimock have created economic and environmental impacts felt by some, while also producing a widespread and systemic social rift which is experienced by all residents.

The primary objective of this chapter is to explore residents’ current opinion in Dimock Township toward hydraulic fracturing companies. Collected empirical evidence
is used to answer RQ #2: “Have the baseline perceptions of economic, environmental, and socio-cultural conditions of hydraulic fracturing changed among residents within proximity of extraction?” Further analysis of interview data determines if the baseline perceptions towards hydraulic fracturing in Dimock have changed, and if so, what has enabled this change? The drivers of change are considered anything that modifies the land-men’s rhetoric of positive economic incentives mixed with no environmental or socio-cultural detriment. They are considered along with the frequency of responses in both initial and current perceptions. In doing so, this approach will identify the key elements that have contributed to a shift in perceptions, or helped them to remain the same. Coupled with data gathered through participatory observation in Susquehanna County as well as interview data, this chapter explores the changes in perception and the socio-cultural impacts created by these perceptual changes. The discord, which is a result of fracking industries comingling with residents, is exposed and discussed. Similarly, this chapter also further portrays the boom-bust nature of the hydraulic fracturing industry. Discussing these aforementioned negative aspects also sheds light on the positive aspects of residents and industry comingling. As considered throughout Chapter three, many residents discussed an acceptance of the industry’s presence, while acknowledging the positive changes they have made since their initial entrance into Susquehanna County and Dimock. A great deal of the residents of Dimock view the local industry as good neighbors, which is explored in this chapter. What they believe is missing is an admission of guilt by the industry on water contamination issues, and a residual anger for not fully disclosing the invasiveness of the industry. That being said, there is a massive swath of varying experiences to be portrayed in order to represent all community members’
perceptions appropriately. This elaborate storyline overlaps mainly on issues based around the aforementioned social rift and community discord.

Similar to Chapter three, this chapter is divided into four sections. The main difference is that the first three sections which discuss residents’ perceptions include subsections describing changes to perceptions and influences of change. First, the current economic perceptions of residents are reviewed while considering baseline responses and drivers of change that were explored in Chapter three. This, as with all perceptual knowledge exploration in this chapter, is presented as the cumulative frequency of responses of perceptual change, rather than an individual case-by-case basis. However, the individual cases are explored in order to explain the cumulative frequency of responses. This aids in representing a varying degree (high-medium-low) of perceptions as was accomplished in each section of Chapter three. The varying degree in responses is determined by using Nvivo qualitative software to code and view the frequency of responses. Second, the current environmental perceptions of residents are examined (2016) while considering responses to baseline perceptions (2006), and the drivers of change. As little knowledge of fracking’s impacts on environmental aspects, such as water and air quality, existed in the previous section, this section provides a lengthy exploration of knowledge acquisition based on individual and town-wide experience. Likewise, since fracking now embodies a political-ness that it did not in 2006 when exploration began, there is a great deal to be explored, as support and opposition of fracking now corresponds to right and left-wing political ideologies, respectively. Third, the current perceptions of socio-cultural aspects of residents are explored. Again, without prior understanding of typical fracking-industry invasiveness, this section contains a great
deal of experience based perceptions and the political ideologies behind these perceptions based on pro and anti-fracking groups. Fourth, the conclusion section in which the total and varying degree of perceptual change from each subsection is decisively assessed and compared to the initial perceptions in order to properly answer RQ #2.

IV.I Current Economic Perceptions of Residents

Economic incentives are the primary reasons for industry acceptance in rural areas engaged in hydraulic fracturing activities in Pennsylvania (Sangaramoorthy et al. 2016). This factor is no different in Dimock Township. Currently, individual economic benefits are potentially recovering from a low, after recent heights in 2013 (See Figure XXII). This leaves residents who are in favor of the industry to support fewer environmental regulations and more pipelines in hopes that their royalty checks will return to their former and larger amounts, while non-supportive residents feel slightly vindicated but concerned about a resurgence in production.

![Image: Estimated Total Royalties from wells in Dimock, PA (in millions)](image-url)

*Figure XXII. Estimated Total Royalties from wells in Dimock, PA (in millions)*

*Source: Adjusted from Marcellus Gas.org 2017b*
While royalty income is currently down from its height in 2013 (See Figure 24), it seems that there must be someone to blame. Residents who remain in total support of the industry described two main factors that hold fracking activities back, rather than attributing drops in production to the decline in the price of natural gas. First, they espoused that general environmentalist intervention has creates tighter restrictions, such as the additions currently being added to the states oil and gas regulations under Act 13 that limit extraction. These new limitations are further discussed in Chapter five’s environmental section. And second, they asserted that neighboring New York State had banned fracking and terminated construction of the Constitution Pipeline, connecting Susquehanna County natural gas to all of New England. These two restrictive factors of production also have a connection. When asked about problems with current royalty amounts and restrictions, the following conversation developed:

Oh the trouble right now is the royalties is drying up. Because they're not in production. You might see a little bit of a raise when they [the fracking company] got to burn one off. That is because of this matter (shows a pipeline map to me). That is for the proposed pipeline up into New York State. It's a very short section. R – 010, Interview, Aug. 29, 2016

This prompted this sentiment from another interviewee:

Right now New York State is the fly in the ointment. Which they shouldn't have too much of an issue because look what they did to here. It's all dang politics. If they can look past their own dang ignorance it's not all as bad as they're thinking it is. R – 011, Interview, Aug. 29, 2016

In response to this, the first interviewee replied:

Well you have too many Hollywood celebrities laying in on it. R – 010, Interview, Aug. 29, 2016

Theses interviewees are referencing that activism in the area has drawn national celebrities such as Yoko Ono, Sean Lennon, Susan Sarandon, and Mark Ruffalo, who
have all visited Dimock in order to advance public knowledge of hydraulic fracturing’s impact on water and community (The Times Tribune 2011; Ojeda 2013). This represents outsider intervention on an area engaged in neoliberal, corporate led stewardship.

Neoliberal philosophy promotes privatized industry, while the role of federal government is merely to institutionally assist privatized industry (Harvey 2005). The lack of federal level intervention represents individualism within a democratic society, which reinforces the “locals know best” stewardship ideology. Therefore, celebrities coming into town to argue for federal level intervention is not welcomed by the residents who support fracking industry activity. An interviewee who is in total support of the industry gave a similar statement:

They don't have any place to put it [extracted natural gas] now. The pipelines are stopped. New York stopped the pipeline. That pipeline was going to open all of this up around here, and [New York Governor, Andrew] Cuomo says, no. And that stopped it. Oh, they brought a great big bus in from New York with Yoko Ono on it, and others, and they came through to view all of the places you know. Because they don't want it. You're either for it or against it. R – 006, Interview, Aug. 9, 2016

These interviewees represent some of the most outspoken supporters of gas industry in Dimock with whom I spoke. They shared this sentiment toward outsider intervention and its impact on pipelines. Interestingly enough, neither families have become rich from fracking, but they willingly support the neoliberal philosophy employed by American industry.

Although individual royalty revenue is down, some residents retain positive perceptions of the industry as townships are still receiving substantial amounts of money. Individual residents who are still receiving some royalty and land-lease income continue to support industry activity in hopes that production will increase, and they will return to
the larger sums of income from years past. These supportive residents emphasize that the hydraulic fracturing industry has “set up shop” in the area, and they will not be going anywhere while profitable resources remain in the ground. However, this is a much more pragmatic sentiment than the overnight rags-to-riches one that was promised to them by gas company land-men in 2006. When questioned about current natural gas extraction in Dimock, a community member contributed this statement:

The economic benefits are good. Of course, the price of gas is way down as you’re probably aware of, from where it was back in 2009 and 2008. And the wells, they deplete. You know they have a sharp decline in the shale and everything. But they’re producing, they’ve kind of leveled off. The biggest thing is the price. You know, everyone that is involved with a well is still getting a check so. That is a good thing. As soon as the price goes up, they’re going to come back and it going to be just like it was before. Because there is just so much of it. They’re going to come for it. They got all the land, they have it all leased, they have it all locked up. It’s money in the bank here. They got to be in no hurry. It’s just going to sit here. And there isn’t anything any of us can do. R – 008, Interview, Aug. 26, 2016

This statement portrays the more pragmatic sentiment toward the industry currently in Dimock Township and was maintained by a good majority of community members in the area. Curiously, since hydraulic fracturing has quieted down in Dimock, individuals have embraced a sentiment of excitement about less fracking activity, as if they were experiencing a period of calmness before a chaotic one returns. Another community member provided a similar statement when asked about current production:

And getting back to the good part of the natural gas industry, my wife and I both retired, and the well units that were in, that we are collecting royalties from. Even though the natural gas prices have gone down, we still get a check every month. It's not a lot but it pays two or three bills. And if we didn't have that, I would probably still be working. So, I mean, you can say what you want, but that is the aspect of the good part, if you want to classify it as good. R – 003, Interview, Aug. 8, 2016
Again, this is not the “rags-to-riches” example portrayed by land-men in 2006, but it is a display of positivity toward current and future economic relationships with fracking companies, coupled with an imperfect view of economic fluctuations commonly associated with natural gas (Boudet et al. 2014; Willow and Wylie 2014). Similarly, this also follows a structure developed by Brasier et al. (2011: 34), in which residents forge a new path within energy resource extraction, described as enthusiasm, uncertainty, panic, and finally, adaptation. One community member described this adaptation as follows:

And how the new businesses open up to cater to [the fracking industry], then all of the sudden the gas industry is gone and they're gone, closing. I guess, myself, I've been thinking about that over time. I guess just how you have to re-adjust yourself because of the impact of the industry itself and royalty checks that people are spending in their towns. R – 009, Interview, Aug. 29, 2016

The path of excitement to adaptation emerges in areas associated with fracking, rather than the path commonly associated with oil and coal extraction, which commonly ends in an unrecoverable bust (Gilmore 1976; England and Albrecht 1984). Represented in these statements is the adaptation portion, as residents are aware of the pros and cons associated with the process but remain essentially neutral.

There are community members in Dimock who would rather the industry disappear as a result of their economic shortcomings. A great deal of these community members have also been impacted by the environmental shortcomings of the hydraulic fracturing industry, which will be further discussed in the environmental perceptions section of the current chapter. This negativity also emanates from residents who experienced no water contamination but complained about short-lived economic benefits, a lack of knowledge that lease amounts could be negotiated (resulting in neighbors receiving different amounts for the same mineral rights), and decreased property value.
When asked about current economic shortcomings of the fracking industry, a community member stated that:

The gas industry, when they first came here said they're going to start hiring local people, so when your kids graduate from high school aren't going to have to move away, they can work for us. Well that was fine till about three years ago when the market for natural gas crashed. The price went from five dollars for cubic foot to like a buck-twenty. Well, talk about boom or bust! About two to three years ago, all of the sudden the trucks started disappearing, all of the rigs started disappearing, they're not drilling, they're not doing anything around here. And all of the kids who have got jobs with the gas companies lost their jobs. So that’s the nature of the energy industry. The boom or bust thing. The fact is that the gas is still down there but the gas companies aren't going to extract it at a buck-twenty a cubic foot. R – 003, Interview, Aug. 8, 2016

The economic boom-to-bust had been portrayed by many residents. Another resident similarly stated this:

The initial boom period where there was just huge amounts of cash floating around. People felt good about things and they were able to stimulate the local economy. A lot of businesses opened up as a result of it. But unfortunately, over the last five years it has been a decline. They're not drilling as often. The rigs, there are very few of them so the pads are getting prepared in shorter times, they are sitting there. They're ready to go but they're not being drilled. Those types of things are happening. So economically, a lot of the business that were built up due to the gas industry are failing. Some of them have outright closed. Whether it was food, or retail, those are things that were a direct result of the industry E – 006, Interview, Aug. 25, 2016

Economic boom-to-bust scenarios are extremely common in literature associated with hydraulic fracturing in Pennsylvania (Brasier et al 2011; Perry 2012; Andrews and McCarthy 2014; Willow and Wylie 2014). Residents of Dimock welcomed the fracking industry, trusting their economic assurances by investing in complimentary businesses and reinvigorating existing industries and storefronts. When these economic incentives falter, it is understood in the
preceding sentiments that a level of trust is broken, thus altering perceptions of
the industry.

No longer was this boom-to-bust term just a factor of natural resource extraction I
read about in books and journal articles, it was right in front of me, being discussed by
real people who were impacted. An anecdotal experience that was part of my participant
observation illustrates the scenario. While searching for respondents in Dimock, I was
referred to a local business owner, with claims that this individual would love to talk with
me about local fracking issues. Upon arriving at this individual’s establishment, I was
instantly reprimanded about how my type of “journalism” is impacting people’s
livelihood in the region. I insisted that my intent was not suspect and that I have never
been a journalist. All the while, this individual continued to condemn my “type” for
creating negative connotations of the industry, which hinders individual’s livelihood. I
wished this person well and left their establishment. I recounted this experience to a
handful of locals with whom I had made acquaintances. They communicated to me that I
received an expected reaction from this individual. As a local business owner, this
individual had been experiencing the economic bust in two ways. First, this individual’s
retail business had been potentially impacted in the same way others had in the area after
the boom to bust cycle. Second, this individual contributed an investment in a
complementary industry to fracking activity, which had gone bad due to the current
economic bust. The frustration directed toward me is understandable as this individual
perceives outsider intervention as obtrusive to their livelihood, rather than understanding
that gas extraction and production is based on market values, which were down at that
point in time.
Along with the boom-to-bust nature of the industry, there are additional reasons that current perceptions are negative in regards to economics. As portrayed within Chapter three’s initial economic perception section, land-men assured large sums of money to landowners in the form of mineral rights and land-leasing, quite literally suggesting that everyone was going to be rich. Land-men expressed to residents they could see upwards of fifteen thousand dollars a month, while actual amounts began at twenty-five dollars an acre and twelve and a half percent for royalties of gas extracted. It had not been discussed with land-owners that these amounts could be negotiated when one signed a contract. This lack of clarification led certain residents to receive more money than their neighbors for the same mineral rights. Other scholars studying the economic benefits of fracking activities in Pennsylvania have explained that the conflictive attitudes associated with residents living among fracking industry activity are a result of a higher production of economic loss than economic profit for residents in the long run (Hudgins and Poole 2014; Sovacool 2014; Powers el al. 2015). Upon discussing their lease, a resident of Dimock indicated that:

They were very hush-hush about it. And the land men who came around to get you to sign up. Were vague about it. The contract was vague. I know some people that were paid twenty-five dollars an acre for signing up, and then I heard some at forty-dollars, and when they came to me it was fifty-dollars an acre. So, when it was something that was talked about we had heard that some of the wells, early wells, were doing quite well. So, I know they came to me and I signed an agreement with them, a lease agreement, I get the $50 dollars per acre. And after that, it sort of sky rocketed. And then shortly after that it skyrocketed to like twelve-thousand dollars, sixteen-thousand dollars, two-thousand dollars an acre and I think it might have been 2010 or 2011, it was I had heard up to six-thousand dollars and an acre, which is crazy. It caused some problems. Some guys did it better than others. R – 002, Interview, Aug. 8, 2016
Many individuals described this aspect of uneven economic incentives. In a very small community, there are few secrets. Therefore, residents feel conflicted about the increasing amount of money offered, and direct their frustration toward the industry for improper portrayal of economic incentives, while also feeling a sense of betrayal by their neighbors. A community member shared the following statement about the economic disagreement:

So that was upsetting in that it is still a divided community. I was just talking with [neighbor] last night about royalties. He's a very close neighbor and he says, what was your check this month? And I told him and he said, wait a minute, I have three times as many acres as you and I didn't get that much. And I said to him, well what is your percentage? And he said, well, I get twelve and a half percent royalties. I said, well I get sixteen and a half percent. Well how did you get sixteen and a half percent? I said, I negotiated. And they were like, well the land man told me that twelve and a half percent was the most they could give me. And these neighbors who are very close friends and now there is like, not that they are jealous but it's like, they feel betrayed because they didn't know they could negotiate for more royalties. So I say to them, well, you should have done your homework, you should have looked into it more. And they're like, well, that is easy for you to say. Socially it has created a rift among the residents. It's a shame. R – 003, Interview, Aug. 8, 2016

This rift between neighbors was frequently described by interviewees. However, interviewees also described the rift as becoming less contentious currently, as local gas extraction has slowed. Since few people were receiving royalties, arguments about money decreased and the anger turned toward the industry for not coming through with the money promised.

Similarly, conflicts between neighbors have altered perceptions of the gas industry since 2006. As initially discussed in Chapter three, reduced royalty checks have led to discord and distrust among residents. For example, if one is anti-gas, or has complained about issues with water contamination, pro-gas residents may view this
person as a hindrance to their income, and make observations that this person might just be jealous of others’ income. This discordant attitude among residents also led to what was described to me as a silent war by an interviewee:

“There were neighbors fighting neighbors for years. It's a silent war now.” R – 009, Interview, Aug. 27, 2016

This silent war is one that constrains those who have potential water problems as a direct result of fracking to remain unforthcoming as to not be ostracized by the pro-gas majority. The conversation with this community member about these tensions continued:

That’s why it used to be civil-war down there [on Carter Road]. One neighbor fighting another because one had good water still, and the other neighbor had bad water. And they wanted to bring in a water line actually. From Montrose a couple years ago and the residents down in Dimock fought against it. How are you going to fight against it? Because their neighbors had bad water but the other neighbors say no you don't, my water is fine so is yours. We don't need a water line down here. Then they could have sold their house. They could have hooked up to city water and then sold their house at market value. R – 009, Interview, Aug. 27, 2016

Disputes over water contamination are a result of the fracking company’s errors, which facilitate the division between pro and anti-gas residents, with a focus on the Carter Road contamination. As the residents of this specific road became the poster children for water contamination, the blame began to resonate around town. These issues were discussed with a community member who stated:

I would ask [pro-gas residents] why [condemn residents with water issues] and they would say, oh they're lying, they're making it up, they just want to make more money, they're just whiny babies. And the pro gassers would say to me, I want that well right next to me. I want that well in my damn kitchen! If they want to put a well a fucking drill in my kitchen, I want them to put it in there! That is how much they want it. They want that money. E – 004, Interview, Aug. 19, 2016

To some residents, it seemed shocking that the response to a call for help had been total denial in favor of monetary compensation. However, this is exemplary of the
individualism and utilitarianism, which are representative of the neoliberal philosophy (Gray and Lawrence 2001; McCarthy and Prudham 2004). Locally, fracking is understood by some as a means for the greater good as it promotes American energy independence and benefits to local and state economies. Therefore, a small sample of residents’ wells becoming poisoned can be perceived as a sacrifice for the greater good. Similarly, the water contamination is seen as a private problem, rather than a social issue, even though the contamination has the potential to migrate. This can be understood as a “perverse form of individualism,” which “blames the victim by privatizing social problems” (Braedley and Luxton 2010: 172).

Decreased real estate value is another negative economic aspect that respondents discussed. In Pennsylvania, when one purchases a house on a piece of land, that piece of land may or may not include the sub-surface mineral rights (PA DEP 2007). Most residents with whom I spoke in Dimock owned their mineral rights, therefore, possessed the ability to accrue royalties from gas or to sell off their rights altogether. To escape the water contamination issue, certain people would prefer to move, but were unable to sell their homes without also selling the sub-surface mineral rights along with their houses. This is problematic as their houses would hold much less value without the mineral rights, making moving very difficult. When asked about economic pros and cons, a resident discussed real estate value:

R - 003: Well, here’s the thing about land values. If I put my house on the market right now, the first thing that a potential buyer would say is, are you selling your mineral rights along with your house? So that makes a big difference. Investigator: So you can potentially move but keep your mineral rights? R - 003: Yes. It is a separate deed. It’s a separate deed from the deed to your house and your surface property. Houses sell around here, and the people that buy them are looking to buy them with the mineral rights because they know that there is a resource under here that may generate income for the next
hundred years. So if I put this house on the market and said ok I want two-
hundred thousand but no mineral rights. I'm probably not going to sell it.
R – 003, Interview, Aug. 8, 2016

This individual is potentially looking to escape the area in the near future due to
uncertainty and risk of air and water quality, but selling the house without mineral rights
would be impossible, and they expressed that they would not be able to relocate without
selling the mineral rights. The conversation continued as such:

[I]t is affecting a lot of people, and it's going to affect [us] someday. When we
go and try to sell the house. And my wife said, there might be 100 years of
natural gas under us, I'm not selling the mineral rights, I want my kids to have
it. These little grandchildren someday are going to have to go to college, it's
expensive. So I'm saying to my wife, yeah but we can't buy, if we sell it with
the mineral rights we could buy a nice beach house down at the Jersey shore
maybe. And she's like, I don't care, we're leaving our mineral rights to our
grandchildren, to our kids. That’s a social part of it. People are having to
decide what they're going to do because of this whole gas industry thing. R –
003, Interview, Aug. 8, 2016

The previous statement demonstrates the level of invasiveness of the fracking industry on
residents. These individuals either have to sell their houses with mineral rights, or remain
in the area in order to help their children and grandchildren financially. Comparatively,
this scenario is better than other residents’ situations with contaminated water, who are
confronted with no options other than to endure. One resident of Dimock had this to say:

As a homeowner, my health and my family’s health has suffered due to
drinking and showering in polluted water for months without knowing it. As if
this wants bad enough, now my house and property value is worthless. R –
001, Interview, Aug. 3, 2016

In an area where stewardship and private property rights hold such high regard, the
hydraulic fracturing industry is invading on the massive investment of private land
ownership. This is an example of degrading the means of production (Steiner 1977),
while alienating the individuals involved. The sub-surface land the interviewee owns,
becomes a capitalist means of production when mineral royalties are agreed upon (Marx 1977). As a result, individuals in Dimock have become alienated from their own land as they move to avoid water issues, which furthers perpetuates humans and nature being of a separate and hierarchical system (Tolman 1981). This hierarchal system of humans dominating nature is a result of capitalism’s tendency to destroy its means of production in order to maximize economic utility (O'Connor 1991). Similarly, home ownership/property ownership is a major investment, while also culturally symbolic of a conservative impact, as the owner becomes part of the economic capitalist land ownership system (Gilderbloom and Markham 1995). Therefore, the owner now possesses a stake in the perpetuation of this economic system (Gilderbloom and Markham 1995). Consequently, when water contamination occurs as a result of fracking, it can be perceived as a threat to this cultural perception of homeownership as it attacks not only one’s monetary investment, but one’s political and cultural ideology as well (Fitchen 1989). The following subsection will describe and portray the changes to economic perceptions as reported by residents of Dimock.

IV.I.I Changes to Economic Perceptions and Influences of Change

The preceding section explores the economic perceptions of residents and community members in Dimock. The baseline economic perceptions in the region were mostly positive due to lack of knowledge of fracking’s boom to bust nature and landmen’s grandiose portrayal of economic incentives such as royalties, local economics, jobs, and local businesses. Therefore, it was determined that any change to these economic drivers, positive or negative, would result in a change of perception, while no
change in perception would reflect a positive or neutral relationship between community members and gas industry. Of course, this is a multitier perspective as various residents have had diverse and specific interactions with fracking’s economic outcomes. Therefore, information is displayed by the level of frequency of overarching responses. The following frequency of response visual aid table (Table VII) depicts the current economic perceptions, as discussed in this chapter, in a level of frequency:

Table VII: Current Economic Perceptions Frequency of Response Visual Aid Tables

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency responses</th>
<th>Medium frequency responses</th>
<th>Low frequency responses</th>
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**IV.II Current Environmental Perceptions of Residents**

Environmental perceptions are perhaps the most tumultuous aspect of the conversation surrounding hydraulic fracturing in the United States. There is a social and political polarization behind the scientific basis that the various stages of the fracking process damage the natural environment (EPA 2015; ATSDR 2016; Elliot et al. 2016). As introduced in Chapter three’s initial perceptions of socio-cultural aspects section, this polarization creates a rift between community members who are pro-drilling and those who are anti-drilling, and every bit of grey area between. This rift is due to many intricacies, which are central to the idea that negative environmental impacts, specifically
water contamination, facilitate obstructions to the fracking industry. These impacts are perceived to decrease the total amount of revenue generated for individuals and the community by hindering production through tightening regulations, while deterring national energy independence. Interestingly, a similar environmental hazard produced by gas extraction activities and transportation is unifying the region under a common cause. Breathe Easy Susquehanna County, a community interest group based on monitoring compressed natural gas (CNG) compressor station emission and keeping large industrial waste facilities out of small townships, is seemingly realigning some conflicting residents. The group is doing so by addressing air quality degradation, which is experienced by all, rather than water issues experienced by only a small percentage of the population. These aspects are considered as this section explores the current perceptions of fracking activities in Dimock, Pennsylvania.

As explained in Chapter three, environmental impacts were an unknown factor of extraction among residents of Dimock when fracking activities began in 2006. Therefore, the current positive environmental aspects associated with the fracking industry pertain mainly to regulations that have been developed over time, or the industry’s response to these regulations. These regulations include the new 2016 amendments to Pennsylvania’s Oil and Gas Act’s section 78 on unconventional wells titled, Act 13 (25 PA.COE CHS. 78 and 78a). This further amended section 78a includes increased regulations on the following:

Major areas of this final-form rulemaking in Chapter 78a include public resource impact screening, water supply replacement standards, waste management and disposal, and establishing identification and select monitoring of wells located proximal to hydraulic fracturing activities. Other new regulations include standards for well development impoundments, a process for the closure or waste permitting for wastewater impoundments,
onsite wastewater processing, site restoration, standards for borrow pits, and reporting and remediating spills and releases. Chapter 78a also contains requirements for the containment of regulated substances, oil and gas gathering pipelines, well development pipelines and water management plans (WMP) (Pennsylvania Bulletin 2016: 1).

A Cabot Oil and Gas representative expressed that the company wants nothing more than to co-exist in the community and employ the best possible practices to help maintain relationships. These positive practices had been portrayed by community members, both pro-gas and anti-gas, with the exception of individuals with severe water contamination issues. Upon asking a resident of Dimock about Cabot’s environmental practices, they provided the following statement:

If you drive around and you look you can see where they put the pipelines through. I mean it's going back to wild again, you know? And when they're done it's just like sitting on the porch here, everything is cleaned up, everything is done. When they're done, it's clean, it's cleaned up, there is no mess. I mean they're absolutely, I mean you cannot say enough about how much they do so that nobody hates them. R – 006, Interview, Aug. 9, 2016

The clean-up to which this respondent is referring in this statement is the land reclamation required and monitored by Pennsylvania’s Department of Environmental Protection (DEP). These requirements state that hydraulic fracturing companies are obligated to reclaim land within nine months of plugging the well (Act 13- § 3216(a)). This includes aesthetic restoration of well sites, the clean-up of pits used to hold fracking waste water or industrial waste, and removal of extraction materials and equipment (Act 13- § 3216(a)). As introduced in Chapter two’s timeline section, Act 13 is an amendment to the State’s Oil and Gas Act passed in 2012 and modified in 2016. Therefore, it is a result of experienced fracking impacts occurring between 2006 to 2016 in Pennsylvania and determines which limitations must be enforced. The language in Act 13 is convoluted, as an active well site maybe inactive for up to five years while being
considered on inventory (i.e. waiting to be restated, plugged, or connected to a pipeline) (Penn State 2014). Consequently, a great deal of the wells in Dimock that are classified as active are not finished due to the nine-mile moratorium, but are still visible, as reclamation is not recommended at this stage. In my personal experience, I noted a great deal more well-pad presence in Dimock than in any other surrounding Townships I visited in Susquehanna County. The restored well-pad sites and gathering line clearances were very noticeable as the trees were still small in comparison to the older growth surrounding the sites.

Fracking companies have created a narrative which renders their as product being responsible for decreased carbon dioxide (CO$_2$) emission levels in the U.S. regarding power plant emissions, as opposed to coal or conventional oil power plants. While natural gas does indeed emit significantly less CO$_2$ in comparison to coal and conventional gas and oil when burned at the point of pollution, it possesses a host of other contributing factors in addition to CO$_2$ emissions (See Figure XXIII).

![Figure XXIII. Pounds of CO$_2$ Emitted per Million British Thermal Units (BTU's) of Energy for Various Fuels](source: Adjusted from U.S. EIA 2017d)
These factors include evidence that methane gas is a stronger greenhouse gas than CO₂, and a great deal of it is released at the point of extraction and transportation due to off-gassing, flaring, storage, and compression (Howarth et al. 2011). Thus, the actual comparison of natural gas methane pollution as a result of fracking is twenty percent higher than coal when examined on a long-term timeframe and when including all stages of extraction, production, transportation, and consumption (Howarth et al. 2011). Nonetheless, as expected, the clean-burning narrative persists as it benefits corporations’ profits while not disrupting the fossil-fuel power based infrastructure already in place across the country. When asked about the carbon emission benefits of fracking, an employee of a natural gas distribution company stated that:

I just saw report today that said CO₂ levels are down to 1992 levels primarily because of hydraulic fracturing. So, there are people that don't want to hear that. I guess I want people making a decision based on the truth, and if they feel like not using that gas that is available is going to change the world that is their decision. M – 001, Interview, Aug. 10, 2016

The truth here is subjective. CO₂ emission levels at power plants have decreased, however, type of emissions and stages at which they are released are factors that are not considered in this narrative. As described by this interviewee and a few others, natural gas burns cleaner at energy plants than other finite energy resources. However, the product it releases (i.e. methane) is a more harmful greenhouse gas and a great deal of it is released during extraction and transpiration as described above (Hayhoe et al. 2002; Alvarez et al. 2012). Hence, this cleaner fuel narrative is supported by pro-gassers, but does not seem to be convincing the opposition who are considering more expansive research. Indeed, these factors add to the political polarization of hydraulic fracturing.
As with the current economic perceptions, there are people who remain pragmatic or cautious of fracking industry activity in regards to environmental perceptions. These people tend to see both positive and negative aspects of fracking in Dimock, and remain vigilant of industry activity, as they seem to be aware that any corporation’s first priority is shareholder profit, rather than the surrounding community. Upon discussing their current environmental perception related to fracking, one community member contributed this statement:

We were basically on a wait-and-see like everyone else. Here is the difference, we weren't able to control it anyway. Whether we had signed or not was not going to make a difference, they were drilling. So all we could do is hope for the best. In our case we were very lucky that all of the wells that were drilled around us, which there are four of them at the moment. None of them have had any accidents, there has been very few incidence reports. We check all of that online, we keep up with all of those things.

E – 006, Interview, Aug. 25, 2016

This specific respondent is receiving royalties for fracked natural gas, while remaining guarded toward the industry due to its reputation. This sentiment was conveyed more often than expected: that residents with an opposition to the negative environmental aspects had signed royalty and/or land-leasing agreement with the local gas company simply because drillers were going to be extracting the gas regardless. Interestingly, one resident reported that they signed solely to safeguard themselves from environmental degradation:

We were the last ones in the valley to sign actually, or one of the last. They showed us the maps and what we heard from the neighbors so we signed because of our water quality. It was the main emphasis not the money. Because it said in the lease that they would be responsible for our water quality. We figured that everyone else signed, they're going to be drilling all around us, and if they hit our aquifer and pollute our water, were going to have to start from square one and say, hey you're responsible. And in the lease it says they're responsible. R – 009, Interview, Aug. 27, 2016
As described in Chapter three’s initial economic perception section, this resident signed a bit later than initial exploration, therefore had become aware of the negative connotations of extraction. While enjoying the sporadic economic perks of gas royalties, this respondent remained cautious about industry activity and is prepared to hold the industry accountable for any environmental degradation that may be experienced. Similarly, another community member cited this corporate responsibly when asked about environmental repercussions:

> We have more power against them with a lease than without. So after a lot of back and forth, we signed a lease. But after a lot of the land man coming and being like, well this might be the last time I am going to stop here! Oh my god, I just wanted to throttle that guy (laughs). E – 002, Interview, Aug. 9, 2016

Again, this community member portrays the notion that residents possess more power against the local drillers with a contract than without, and since the drillers are going to acquire the resources regardless, residents might as well sign. The latter half of this statement was described fairly frequently, as discussed in Chapter three. This is part of the strategy employed by resource extraction companies to circle smaller tracts of land in order to give residents no better option than to sign a lease and/or royalty agreement (Malin 2014). Therefore, gas extraction is less of a choice than it is an adaptation (Brasier 2011: 34).

Whether due to personal experiences, negative connotations of the industry, or the resulting local conflict from water contamination issues, there seems to be a large amount of current negative associations with fracking, related to environmental issues. This is not to say that everyone in this town is an environmentalist; it is quite the opposite, in fact. Rather, even if a resident is pro-gas, chances are they have had to deal with some aspect
of water degradation, repeated water-testing, air pollution, or conflict resulting from these environmental exposures. Upon discussing current environmental perceptions, a community member provided this insight:

The DEP started coming in and it was one violation after another. Then phone calls from the land owners who are next door to it or near it, their water was changing. And for some reason, the Dimock area seems more sensitive to other areas than our county. We started getting these phone calls, my water is spritzing, it never did that. When I pour it into a glass it is bubbling, it never did that. It's changing colors, the odor is changing. When I am showering I am feeling faint, like something is coming out of the hot water. Their children even had to lay down after taking a shower. E – 004, Interview, Aug. 19, 2016

This respondent is describing the various health impacts water contamination has had on residents of Dimock over a period of time. These impacts became worrisome not only for the people affected, but by community members who may be at risk of contamination in the future. When discussing potential risk, one resident provided this apprehensive statement:

Well, they started having water problems here in Dimock. And my first reaction was, I knew they were drilling up behind the house, right on the hill above us here. My first reaction was, at the same time I found out that [I was about to become a grandparent], and I was like I am not taking any chances, I called up a bottled water service, we had a dispenser put in our kitchen. R – 003, Interview, Aug. 8, 2016

It seems that the water pollution problem has not reached epidemic levels in most residents’ minds, but it had been enough to cause concern due to a potential future of uncertainty and risk. One resident who has been directly affected had this to say:

So, after we had that meeting [town hall meeting in Montrose, PA to discuss water testing and legal parameters in 2009], the DEP ordered testing. And they ordered very comprehensive testing, many many pages. I had really high [levels of] barium, manganese, magnesium, sodium...barium and sodium was quite high. Lithium was high. A lot of the heavy metals, iron, copper, I cannot remember what they all are but things did show up. R – 007, Interview, Aug. 25, 2016
It would be difficult to find anyone in the county with no level of concern regarding drinking water, regardless of whether one is directly affected by water contamination, or if it poses an uncertainty of risk to one’s daily life. Even pro-gassers have had their water tested repeatedly during the extraction phase. While residing in the area, I exercised caution and decided to purchase a series of sizeable two-gallon containers of water for consumption and cooking. While doing so, I noticed that the local supermarket carried an excessive supply of bottled spring water in large sizes. Frequently, the markets were sold out of the cheaper brand. Consumption of contaminated water, or the potentiality of consumption, is seen as risk. Since individuals in a community with a higher income base could just move away, or perhaps be able to afford a greater level of litigation against the contaminator, this risk is a type of marginalization (Collins 2008). This marginalization indicates the way in which economic inequalities place limits on the options these residents have to occupy hazardous environments, and their available resources to cope with environmental degradation (Blaikie and Brookfield 1987; Robbins 2004).

Essentially, residents see no option other than to coexist with the industry as they are essentially better for signing leases, while managing their risks and detriments as well as possible with the economic resource they possess.

Similar to water contamination, air pollution has become a large issue in Dimock and the surrounding townships, resulting in a negative current perception of fracking related activity that facilitates this air pollution. As introduced earlier, the air quality issue had been unknown to residents and is mainly a result of compressor stations used to transport the extracted product. Air pollution is a far less polarizing topic, as everyone is impacted rather than the smaller population of residents impacted by water pollution. The
local resident advocacy group, Breathe Easy Susquehanna County (BESC), surmised this and has joined forces with pro and anti-gassers alike, pushing the Agency for Toxic Substances and Disease Registry (ATSDR) to test the local compressor stations. In response to higher than average results of particulate matter 2.5 (PM 2.5), the PA DEP enforced the local pipeline company, Williams, to install a twenty-four-hour monitoring system at each compressor station testing for PM 2.5 by 2018, rather than testing at optimal times when readings might be artificially low (Hurdle 2016a; PA DEP 2016c).

When asked about the compressor stations, one resident had this to say:

Yeah, they're probably the biggest concern. That is where you get your noise from, if you live close to them I mean some of these are loud, there is no doubt about it. There are things that are emitted through the stacks. You know obviously, Williams or whomever claims it's harmless. R – 008, Interview, Aug. 27, 2016

The general observations of the compressor stations fall along these lines: they can be loud for those individuals who live near them, and there is a general concern about what they are emitting and the way in which the emission impacts community air quality. I discussed the topic of living among compressor stations with a community member who provided this statement:

[T]hey [PA DEP] did talk about the compressor station, and they did find that it was PM 2.5, it's on a website. It's Brooklyn Township PM 2.5 ATSDR health consolation. And very briefly what they found was the average level of PM 2.5, by the compressor station where you are right now. They found that it was 8 points higher than the average level in Scranton. They found that it was higher than the average level in Martha's Hook, which is an industrial complex in south Philly. And the conclusion was that, for chronic exposure to these levels of PM 2.5 it presented a significant health risk to the entire population. E – 003, Interview, Aug. 17, 2016

I had been unaware that the host house at which I would be staying during my fieldwork is located within a one-mile buffer zone of the William Central Compressor Station, and I
was not aware of the environmental harm these stations produced. This compressor station in particular is the largest in the county and the focal point of the ATSDR’s study, the one described by this interviewee, exposing risk of air contamination (See Figure XXIV) (ATSDR 2016).

As Augusts go in Pennsylvania, it had been dramatically humid since my arrival. My comfortable living space happened to be in a basement apartment, which fortunately remained somewhat cool. I began opening the small windows at night, putting fans near them to let in the night air. Every morning when I awoke, I experienced the sensation of having, “a lump in my throat,” that would last until about noon. I have mild seasonal allergies, so assumed they were responsible for my new aliment. Upon talking with some residents, they suggested that I sleep with my windows closed, as the compressor station
does most of its methane emissions at night, and the dew that settles in the early morning keeps the emissions in the valley. After following their suggestions and sleeping a few nights with the windows closed, I noticed that my throat felt fine once again, even though I was being exposed to the seasonal allergens on a daily basis as I explored the local trail system at Salt Springs State Park. My allergies did not seem to be the culprit.

Breathe Easy Susquehanna County has facilitated community alignment through a common means: air quality degradation from compressor stations. Since its formation, BESC has initiated a program for continuous air quality testing and facilitated the 2016 Agency for Toxic Substances and Disease Registry (ATSDR) report with the following conclusions:

Conclusion 1: (short-term exposures) Exposure to maximum levels of PM2.5 may be harmful to unusually sensitive that are a concern to the general population. Conclusion 2: (chronic-exposures) The estimated annual average PM2.5 concentrations of 15 to 16 μg/m3 may be harmful to the general population and sensitive subpopulations, including the elderly, children, and those with respiratory or heart disease (ATSDR 2016: 5).

This report goes on to state that:

Per the local citizen request, only PM2.5 data were collected to assess local citizen’s specific environmental health concern at this location. Given the potential that there are additional air emissions of potential public health concern at these locations, ATSDR recommends more robust assessment of air quality, including seasonal monitoring, including winter, near this natural gas compressor station. (ATSDR 2016: 6).

The particular citizen mentioned in ATSDR’s report happens to be a member of BESC who formerly lived down the hill from this compressor station, the same compressor station near which I had spent nearly two months living. Five days after the ATSDR published this report, the state DEP proposed a new General Plan Approval to have constant ambient air quality monitoring at all compressor stations and points of extraction.
for PM 2.5 by 2018 (PA DEP 2017a: paragraph 38a). Similarly, an article published by Yale University’s School of Public Health released one of the most extensive studies on health-related issues associated with hydraulic fracturing. The findings of this report indicate that twenty carcinogens identified in the air and water are linked to various types of cancer, showing a correlation to an increase in childhood leukemia in Pennsylvania (Elliot et al. 2017). Essentially, this formerly undisclosed consequence of natural gas extraction from fracking is currently entering the public sphere of knowledge in Susquehanna County, just as water contamination did in 2009. However, airborne contamination is widespread and systemic, unlike water contamination. Consequently, this represents a change in environmental quality facilitated by the local fracking company, who did not previously disclose this aspect of extraction. Nevertheless, local fracking companies act in concert with demand and market prices and require compressor stations to move the product from location to location.

Current negative perceptions related to environmental degradation has led to disagreements between impacted and non-impacted residents, in addition to between impacted residents and the local gas company. As explored in earlier sections, negative environmental impacts associated with fracking are perceived to slow extraction, thus allegedly eventually slowing royalty checks and decreasing local economies. Therefore, people who are impacted by water quality issues, when outspoken, are seen as obstructive by pro-gassers. The perception of these individuals as antagonistic is upheld by the local gas company as it helps them promote positive aspects of fracking by delegitimizing negative aspects. I have described the social rift between local stakeholders as an economic issue in the previous section, however, the foundation behind the economic
perception resides in the environmental issues in Dimock and surrounding townships. If a family’s water is contaminated and they are outspoken about this impact, they are seen by some pro-gassers as liars who want money out of the gas company, as if they are jealous of those who are receiving money. This is something that had been described by many respondents in both on and off the record discussions. One community member explained this:

When things started to go wrong [with water supplies], industry just divided the community by saying, oh you’re just anti [fracking], and you’re just jealous, oh it’s all naturally occurring. They created this smoke screen and for people who really want to think that they’re going to make money because maybe they were losing their farm or they were in debt. E – 003, Interview, Aug. 17, 2016

Frequently portrayed, this sentiment seemed to have subsided a bit during my residency in the area as extraction was in a lull. Another resident had this to say about the division between community members:

They [pro-gassers] started a group called Dimock Proud. And that was kind of to harass people that this stuff [water contamination] happened to. They put up signs all around town that said, Dimock Proud, Where the Water IS Clean and the People Are Friendly. And the point they were trying to make is that they were trying to make us out to be liars and to be bad people. Well our water wasn’t clean, but we’re friendly! We weren't unfriendly people! R – 007, Interview, Aug. 25, 2016

From interviews, conversations, and experiences, it appears that everyone possesses an opinion about water contamination and an assumption about the objective of the people impacted by the contamination. This is a key theme used by political ecologists, that this multiplicity of opinions, perceptions, and ideologies exists among residents in proximity of resource degradation (Blaikie 1985). Therefore, this multiplicity of opinions may lead to a discordant community, especially when the issue becomes politicized. Discord based
around physical changes to the environment attributed to land owner decisions is based on a perception of degradation (Blakie and Brookfield 1987). The land-owner who chooses to lease his or her land and experiences no contamination does not see the extraction process as degrading to the environment, while the landowner who bears the brunt of the contamination understands it as degrading (Blakie and Brookfield 1987), thus, posing two conflicting perceptions of environmental degradation from landowners. As depicted in earlier sections, the fracking companies have become the local stewards to supporters through economic incentives, and emphasizing a neoliberal philosophy of private ownership of resources. By accomplishing this, the majority of residents who are in support of industry activity adopt this discordant narrative regarding those who oppose the industry. This conflict is then the result of the manner in which a capitalist global system, which abuses the natural environment for resources, creates polarizing and damaging perceptions of degradation between the people who reside near economically controlled resources (McCarthy 2002; Escobar 2006).

The current negative environmental perspective is not unique to inter-resident differences in opinion, but also to discord between individuals and the perceived purveyors of degradation and marginalization, the local extraction company. Indignation arose from the persons impacted by water contamination, but also from those who merely wanted the inter-resident social rift to end. A community member had this to say about the local gas company:

If Cabot could just admit, Hey, we had well casing failures. It was 2008 and we were drilling the first wells that we ever drilled in PA. We screwed it up, we’re going to compensate these people fairly and help them move. Historically if you look at old brown fields like in Pittsburg. US Steel has this legacy of pollution from their brown fields in their old steel mills. They did say, we did leave a lot of crap there over the years, we’re going to help clean
it up. Or we're going to own the fact that we have a toxic legacy. We're a corporation, we also provide a lot of jobs and economic opportunity. It's American energy. All that stuff. But to just admit you made a mistake is impossible for them. E – 005, Interview, Aug. 24, 2016

Many people expressed that they wished Cabot would admit a level of guilt and ask for forgiveness from the community that has endured the subsequent impacts. Admission would somehow correct some of their mistakes and enable better coexisting methods. Upon discussing the fracking industry’s potential guilt, another community member stated that:

Because the industry keeps denying that they have any impacts to speak of, that they're not polluting any water. They're not harming anybody. They're an asset to the community. And they won't even admit to any water contamination, even when the PA DEP says they have done it and we have faulted you. And even with like the consent order [CO&A], have you heard about the consent order? E – 004, Interview, Aug. 19, 2016

This unapologetic attitude is evident and examined in Chapter two’s timeline section along with the manner in which Cabot reluctantly agreed to the consent order and agreement’s (CO&A) terms while never straightforwardly admitting their fault was discussed. Cabot has accomplished a great deal of public relations that can be observed as an apology, which will be detailed in the following subsection. While an admission to guilt would not solve all the problems involved in these conflicts, interviewees repeatedly communicated a desire for such a concession. The following subsection will describe and portray the changes to environmental perceptions as depicted by community members of Dimock.
IV.II.I Changes to Environmental Perceptions and Influences of Change

The preceding environmental perception section of the chapter exhibited the current environmental perceptions of residents and community member in Dimock. As explored in Chapter three, the initial environmental perceptions of residents in Dimock were almost non-existent. Industry land-men employed a narrative of land reclamation and discreet operations, which had been met with acceptance and some hesitation to the residents who signed on a bit later. Therefore, any change to the natural environment (e.g. water or air quality), positive or negative is considered a driver of change, and results in a perceptual difference. Again, the information is displayed as done in Chapter three, in a way to view the frequency of specific responses. The following frequency of response visual aid table (Table XIII) depicts the current economic perceptions, as discussed in this chapter, in a level of frequency:

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency responses</th>
<th>Medium frequency responses</th>
<th>Low frequency responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current environmental perception of hydraulic fracturing</td>
<td>Negative: Water contamination, air pollution, marginalization, and the resulting conflict.</td>
<td>Neutral: Remained the same. Pragmatic view of environmental hazards, tolerance.</td>
<td>Positive: Regulations created to regulate hazards from fracking/no environmental impact</td>
</tr>
</tbody>
</table>

IV.III Residents’ Current Perceptions of Socio-cultural Aspects

Within the scope of this research, perceptions of socio-cultural aspects are based on residents’ perceived quality-of-life and cultural definition of the area. This section explores the current perceptions based around those two elements, which are experienced
in the area as a result of engaging in natural gas extraction by means of hydraulic fracturing. Indeed, there are elements of this social rift and marginalization described in this section as well. These elements are explored through individuals’ thoughts pertaining to how their lives have changed since 2006, when they were seemingly promised a rags-to-riches scenario. In Susquehanna County, regardless of the unstable local economics resulting from fracking’s boom-to-bust nature, local driller Cabot Oil and Gas has invested astronomical amounts of money in the form of impact fees and donations to various organizations in Susquehanna County. These investments serve to give the impression that fracking, unlike coal, is perhaps an industry that can recover quickly from an economic bust. Additionally, these investments positively impact the quality-of-life for many residents. The positive aspects of fracking are portrayed in this section and the reader is reminded that this research is essentially an exploration of the advantages and disadvantages of living among hydraulic fracking activity as told by the residents.

The social and cultural benefits of living in an area engaged in fracking activities can be numerous, especially when extraction is at its peak. Pro-gassers and anti-gassers alike share the perception that a community with strong economic resources is one that can build and maintain organizations, which are beneficial to them. The largest community benefit to the area, as described by many residents, is Cabot’s funding for a new medical facility in Montrose, PA. Cabot promised to match donations up to one million dollars for the new five-million-dollar physician’s clinic section of the new hospital building (Wilson 2012). The previous facility was described as worrisome. As explained by many residents, the peace of mind that comes with the creation of a modern
healthcare facility is a huge boon to hosting the gas industry in their town. A resident of Dimock provided this enthusiastic sentiment about the new medical facility:

“One of the best outcomes is there was an awful lot of giving, an awful lot of giving. We have a new hospital. That is huge, that is massive. I don't know if you have been there or not but the hospital was in this fragmented junky little building that was falling down. You had to go through a series of mazes and steps to get to the emergency room.” R – 006, Interview, Aug. 9, 2016

Cabot, while unpopular for numerous reasons, is seen by some as a charitable company near which to live. Interviewees frequently cited Cabot’s donation to the hospital, a two and a half million-dollar donation to the Lackawanna College School of Petroleum and Natural Gas, widening of narrow backroads, and a yearly Christmas toy drive. The first three of these, while being generous and helpful contributions to the community, are also seen as benefits to the company. Fracking activities can be very dangerous to the workers involved (McAleenan et al. 2013; Williams et al. 2016). Studies demonstrate an increased hospitalization rate in areas associated with fracking by site workers and residents alike (Srebotnjak and Rotkin-Ellman 2014; Jemielita et al. 2015). Therefore, it is beneficial for Cabot to have a modern medical facility central to the location where extraction is most relevant. Nevertheless, this amenity would not exist without the company.

Having residents identify the local gas industry as a valuable neighbor can only benefit the stewardship persona the company has ascertained through economic benefits and actions that align with the neoliberal philosophy, which has been reiterated throughout this thesis. The industry has promoted itself through mutually beneficial donations, benefits that would not be accessible to the residents without the industry.
When conversing about these benefits with a community member, they provided the following testimonial:

Of course all of the organizations that they help, the hospital and that. I mean they're handing out money left and right, and you know that is all part of the game. Politics, you know? Make people happy, look how good we are, everybody loves you. That is all, it's just a part of doing business. They finally got around, they got public relations guy. When they first came around they had no public relations. You had no idea what was going on. There was really nobody to talk to but now at least, and I can only speak about Cabot, now they have [name withheld] there. There are people that you can talk to and get some answers. That will listen. And maybe that is because when they came, the mess that they made with the water in particular. They're a little more open to listening and trying to be a good neighbor now because they really got some flack. And they deserved it, I am not saying they didn't. They did a lot of things they shouldn't have done. R – 008, Interview, Aug. 27, 2016

Some perceive Cabot Oil and Gas as owing the community these benefits, due to the hardships endured by the community. It is beneficial to Cabot to create positive public relations, while also funding self-beneficial means such as hospital renovations, a branch of a University focused on training individuals to work in the industry, and maintaining widened roads for their large trucks to traverse. However, it is similarly beneficial to residents, as these amenities would not exist without the gas company's investments.

As described above, a great deal of positivity exists due to these charitable public relations investments. However, there is some apprehension and uncertainty involved as well in regard to current local perceptions of socio-cultural aspects. Every single respondent discussed the intrusiveness of the industry when the conversation migrated toward infrastructure, unavoidable truck traffic, and subsequent noise and pollution from the trucks. While the emissions the trucks output adds to the industrial pollution in the area, the increase in truck traffic adds to both a decreased quality of life and the modification from rural to rural industrial cultural perception of the area, ultimately
making this issue a socio-cultural problem as described by residents. According to the United States Geological Service, one and a half to sixteen million gallons of water are used to frack each well (USGS 2017), and large scale water trucks can hold around five to ten thousand gallons of water. This gives rise to a great deal of truck traffic on roads, as described by residents, especially during the boom period when the industrial activity was at its height. In my personal experience, I witnessed a great deal of loud, noisy, dusty, truck traffic (See Figure XXV). I recall waiting to cross the road in downtown Montrose on a weekday afternoon and the amount of truck traffic that passed by created a cacophony as loud as a large city block. Respondents expressed a concern that traffic levels would increase when drilling would increase, posing a sense of uncertainty. A discussion about truck traffic prompted this statement from a resident of Dimock:

Probably the truck traffic is still one of the biggest downfalls of problems when they're drilling or going to frack in your area. They just run night and day and it dust and dirt is the biggest thing. Montrose isn't too bad now but I think that last summer at this time, the whole town was just filthy. The trucks just running and they just make dust. It was terrible. R – 008, Interview, Aug. 27, 2016

This part of industry occupation is seen as obtrusive by all. The local aesthetic is green, rolling hill farmland intertwined with dirt and gravel roads. These trucks detract from the quiet appeal of the area, ultimately impacting the rural-ness of the location. While everyone complained about the truck traffic, some also linked it to the modification of the cultural associations of the area from farmland-rural, to rural-industrial. One resident had this to say about the modification:

And the price kept rising and then the whole natural gas industry descended on Dimock, Pennsylvania and they started drilling everywhere. And every well they drilled they hit a huge amount of natural gas. And our whole life changed. Now quiet rural area was we had all moved here to get away from the city life, became an industrial zone. There were drill rigs everywhere.
There were workers from Texas, out of state. There was a housing shortage. There was a tremendous amount of truck traffic on the roads. R – 003, Interview, Aug. 8, 2016

As stated earlier, Dimock township has no zoning. Therefore, other than the addition to the Oil and Gas Act stating that a well-pad must be more than than three-thousand feet from an existing residence (General Assembly of Pennsylvania 2011: § 3211 b, 1), well pad location can be detrimental to cultural settings. This enabled industry access to key extraction points, while comingling industrialized zones with residential and agricultural zones (See figure XXVI). As I learned in my time in Northeastern Pennsylvania, zoning is perceived to be unwelcomed governmental interference. The land belongs to the citizens who own it, and any intervention is perceived as obstructive. This allocates stewardship responsibility on those who are set to benefit economically, while those who endure the burden of fracking’s externalities are positioned to try to obstruct fracking the only way possible, by creating new zoning ordinances, which further ostracizes them in the eyes of pro-fracking residents. No matter what the perception, cultural landscapes are very important to residents regardless of how important they may or may not seem to outsider opinion (Lewis 1979). Subsequently, when that perceived cultural landscape is reshaped by the stewards of the new economy of the area, it creates a new landscape that is harmful to residents by inciting social and environmental injustices, such as creating water contamination issues and denying them, which consequently creates conflict (Mitchell 2008).
The lack of zoning and the resulting comingling of industry and residential land has led to a much larger sense of uncertainty in the area. After getting acclimated and beginning to enjoy the country roads in Susquehanna county, I began noticing a large number of lawn-signs with the words “No Incinerator” (See Figure XVII). As described earlier in the thesis, while pipelines were being stopped from transporting the natural gas from Susquehanna County, it seems that natural gas powered industry was trying to make its way into the area. When asked about this, one community member stated that:
It's my feeling Brian, this incinerator will be the anchor of the industrialization of Susquehanna County. Susquehanna County is open for business. They want to attract plastics and chemicals. Right now it's industry being attracted to a source of abundant gas. And that is why the incinerator wants to go there. Because of cheap abundant gas. It will be run on natural gas. So you've got the incinerator in New Milford Township, you have Gulf Oil, they want build an CNG processing, storage, and transport facility in Great Bend. E – 003, Interview, Aug. 17, 2016

This potential industrialization is something for which no one wished. In Dimock, a level of individual tolerance to industrial occupation exists, dependent on personal experience and economic incentives. However, the issue of the potential incinerator and other potential industrial occupation, followed by the resulting air pollution seemed nonnegotiable to most. While this incinerator would potentially increase pollution in the area, this currently remains a socio-cultural detriment as most residents are as concerned with the rapid industrialization of their farming communities, which would ultimately change the rural identity of the location.

Figure XXVII. “No Incinerator” Yard Sign: Susquehanna County, PA. Photograph taken by investigator, 18 August 2016
On August 16, 2016, I attended a meeting hosted by the League of Women Voters of Susquehanna County at Blue Ridge High School in New Milford Township, PA. This had been one of many events planned with the purpose of educating the public about issues regarding environmental impacts, regulatory processes, economics, politics, and public health that exist in locations with hazardous waste incinerators. The host of the event, Dr. Paul Connett, a graduate of Cambridge University who holds a Ph.D. in chemistry from Dartmouth College, is a waste resource management professional who has led discussions to stop over three-hundred of this type of incinerator all over the globe. Dr. Connett kept a theme to his presentation, to urge people to keep incinerator issues separate from fracking issues. He suggested that even if one is pro-fracking, he or she must realize that a natural gas powered hazardous water incinerator is an entirely different beast. He went on to insist that inviting the facility into the area would promote almost no new jobs, no economic benefits, and no nationalistic incentives. If anything, the incinerator would decrease potential economic gains from tourism and would contribute to changing quality-of-life related aspects, such as increasing air pollution and adding to the rural to industrial transformation of the area. At the meeting, I noticed that attendees ranged from well-known local anti-fracking activists, to pro-fracking residents. This seemed to add to the uncertainly of pragmatists in the area, while giving pro-gassers something to oppose that may damage their rural aesthetic, other than fracking. This also suggests that the main incentives fracking possesses can be outweighed by future uncertainties. In a location where politically right-leaning individuals support the neoliberal philosophy by upholding beliefs of privatization, which fracking companies emphasize, it is this very belief that can damage their own quality-of-life, as companies
abuse their political and economic hold on the land. Despite this, the choices made by residents to support hydraulic fracturing activities make sense in the context of their philosophical beliefs, as governmental intervention is seen as obtrusive and alienating (Hochschild 2016). Nevertheless, rather than empowering the residents through economic means, local fracturing related activities tend to degrade quality-of-life as the industry navigates through economic highs and lows, while residents become marginalized as they too experience these highs and lows. In a region experiencing varying degrees of economic disadvantage, marginalization is linked with the manner by which victims are casualties of revenue-driven political economic entities, who ignore negative repercussions in order to maximize profits (Simonelli 2014: 271). Political ecologists have perceived that humans’ impact on environmental change is disproportionately distributed in a way that poor and marginalized groups tend to experience the largest share of unfavorable effects (Watts 1983). These residents have already been facing environmental marginalization through hydraulic fracturing, and now are feeling further disadvantaged, as other polluting industries threaten their location. Potential development of this incinerator, and other natural gas powered industries in Susquehanna county, is discussed in this section as it poses a future of risk and environmental uncertainty, however, it immediately threatens social and cultural aspects, such as local quality of life and perceived identity of the area.

Hydraulic fracturing tends to impact the quality-of-life experienced by residents of Dimock on multiple levels. During my fieldwork, I attended an activist led “Gas-Tour,” during which we toured the Susquehanna County area, while residents told stories of how gas company occupation has impacted their lives. During the tour, I met members
of the Holleran family, who staged a public protest on their property in order to block Williams Pipeline Company from using eminent domain to cut down their trees to install a leg of the one-hundred and twenty-four-mile Constitution Pipeline (Gibbons 2015). Williams had navigated through the proper steps to employ eminent domain by applying to the Federal Energy Regulatory Commission (FERC) (154 FERC ¶ 61,092). In December 2014, FERC had deemed constitutional a section 7(c) certificate of the Natural Gas Act (15 U.S. Code § 717f), which ordered that eminent domain would benefit public convenience to build and operate the Constitution Pipeline across the Hollerans’ property (154 FERC ¶ 61,092: I.2). The Hollerans, along with assistance from Alexander Lotorto (i.e. former Shale Gas Program Coordinator for Energy Justice Network) staged the protest and requested a denial of tree cutting from the FERC. The trees on the property had been used in the past by the Hollerans to produce maple syrup. They became symbolic of the intrusiveness of the gas company’s occupation. In attempts to halt the eminent domain land retrieval, protesters occupied the land every weekday morning from January through March of 2016. While the FERC’s order had accepted Williams’s request to remove the trees, the independent contractors who were hired to cut were not allowed to do so while the land was being occupied by protestors. Strategically, the protesters spray painted images of stars and stripes on the trees, suggesting that if the trees were cut down, American civil liberties would fall as well (See Figure XXVIII). This deliberate measure made this procedure of eminent domain national news, as it gained public interest and focused on impeding private land rights, a hot topic in American ideology, and one that hydraulic fracturing for natural gas seemingly upheld. On March 1, 2016, armed US Marshalls accompanied the tree cutters to remove the
protesters, enabling a safe area to chainsaw the trees (Hurdle 2016b). Ironically, the Constitution Pipeline remains unfinished, as the New York State Department of Environmental Conservation denied Williams’s application citing water hazard issues (Schubring 2016). Therefore, the pipeline could not be completed as planned from Susquehanna County to Schoharie County, New York, where it would join with other completed pipelines. This suggests that as the detriment of fracking and its peripheral industries become more understood, there is an even greater risk to the residents, as the nature of the industry impedes on their private lives. I tried to contact Williams Pipeline Company numerous times. I received a message stating that they do not do interviews.

While discussing current perceptions of connected issues regarding hydraulic fracturing in Dimock, nearly every person cited the social rift that had occurred in the community post Carter Road events in 2009. Regardless if one is a pro-gasser or an anti-

Figure XXVIII. Spray Painted Trees on The Hollerans’ Property: Susquehanna County, PA. Photograph taken by investigator, 12 August 2016
gasser, this social rift, as it had been described, is a detriment. In the area, there are three major pillars of this rift. First are residents who are supportive of fracking activity, who view residents claiming water contamination as liars and as obtrusive to revenue. Second are residents who have water problems and do not come forward, as they do not want to be involved in this social rift. And third, there are residents who have come forward with water contamination who have become shunned as a result. There are varying levels in each category, but these are the major three observed. When asked about the current state of the social rift, one respondent said:

Well, I think that there is still sort of a divide in the community. There is the us vs. them stuff. That is kind of sad to see. Again, the people that were not finically benefiting, there is a lot of anger, there is a lot of jealousy, those types of things. I have seen it divide churches, I have seen it divide school, baseball teams, all kinds of weird places that you wouldn't think to see that but it has happened. E – 006, Interview, Aug. 25, 2016

This type of divisiveness seems to affect most residents to varying degrees. Some get emotional and oppositional, while other are able to accept it and wish everyone could move on with their lives. Yet, everyone interviewed acknowledged this issue and wished it had not happened. Again, the divide is viewed by some as divisive by the gas company, in order to garner support after creating an environmental hazard. One resident of Dimock gave this portrayal of the gas company’s influence on the social rift:

And the gas industry guys were going around and starting rumors about the people that were getting affected by it [water contamination events]. And they try to make them sound like liars. They’ll say the water was always bad. The found people to say that people on Carter Road, that could light their water on fire. Forty years ago, everyone was lighting their water on fire. It was like a party game that they were doing on Carter Road. They said that the Fiorentino’s, that they deliberately stage it [the well explosion on New Year’s Day] that they put the gas into their well water because they want money. They also said that they had a meth lab in that well housed under the ground. They were cooking meth down there. Mind you it was like 1 or 2 degrees
those days. They said old Mrs. Fiorentino's is down there cooking meth. R – 007, Interview, Aug. 25, 2016

In this situation, there are residents who support the industry and condemn the impacted residents, and impacted residents who claim that the industry driven narrative maintains this rift. Regardless of who is correct in this issue or its origins, it is obviously intrusive to residents’ quality-of-life and would be a non-existing factor if one of two outcomes occurred: (1) if the gas company admitted fault and enabled a degree of closure, or (2) if the gas company moved out of town. The latter of these options has been described understandably as impossible. Residents, pro and anti-fracking, have accepted that the industry is imbedded in the area, and it is their responsibly as the new co-stewards of the land to support or antagonize them, which adds another detriment to the industry occupying the county and state. When asked about the current embeddedness of the industry, one resident provided this statement:

People were trying to stop this right up to a few years ago. I am thinking, the train has left the station, are you kidding me? I mean, you know, millions, probably billions of dollars that they have invested in leases and this and that. And what they have found? They're not going anywhere; you're not going to shut them down. Who do you think you’re dealing with? Some old mom and pop out of Montrose or something? These are energy companies; you don't fight them. It's like fighting city hall. They just have dollars and lawyers and time. They’ll drag it out till your broke. Don’t try to fight these people, you got to try and work with them and make it work. You're not going to chase them away, believe me. It's not going to happen. R – 008, Interview, Aug. 27, 2016

Thus, it is accepted that the industry is not going anywhere and most of the residents are not able to move. Therefore, coexisting measures are desired by residents and the gas company. The following subsection will describe and portray the changes to perceptions of socio-cultural aspects as described by community members of Dimock.
IV.III.I Changes to Perceptions of Socio-Cultural Aspects and Influences of Change

The preceding section exhibits the current social and cultural perceptions of residents and community members in Dimock. The initial perceptions of socio-cultural aspects were mostly positive, as land-men depicted a lack of invasiveness of the industry’s occupation. No change in the social and cultural aspects to this community had been conveyed initially. Consequently, any change to residents’ perceived quality-of-life, such as landscape aesthetic, health, conflict, and community relations, positive or negative, would result in a change of perception, as revealed in Chapter three’s conclusion section. Again, the information is displayed as it is in Chapter three, in order to view the frequency of overarching responses, which contain many individual stories. The main difference with the current perceptions of socio-cultural aspects is that nearly every respondent shared the same views, regardless of their social stance on fracking. The following frequency of response visual aid table (Table IX) depicts the current economic perceptions, as discussed in this chapter, in a level of frequency:

<table>
<thead>
<tr>
<th>Frequency of responses</th>
<th>High frequency responses</th>
<th>Medium frequency responses</th>
<th>Low frequency responses</th>
</tr>
</thead>
</table>

Table IX: Current Perceptions of Socio-Cultural Aspects Frequency of Response Visual Aid Table
IV.IV Conclusion

Research Question Two: “Have the baseline perceptions of economic, environmental, and socio-cultural conditions of hydraulic fracturing changed among residents within proximity of extraction?

In this chapter, respondents’ current thoughts of economic, environmental, and socio-cultural features associated with living in proximity of natural gas extraction by fracking have been explored. By doing so, the manner by which perceptions have changed from 2006 until 2016 have been examined, and the drivers of change that impacted perception and the frequency that people have reported that change have been identified. The primary objective of this chapter has been to explore the current perceptions of hydraulic fracturing in Dimock in order to assess changes to baseline perceptions. To pursue this objective, these perceptions have been identified through the interview process and supported with data as described over the length of this chapter. As investigated within this chapter, fracking corporations such as Cabot Oil and Gas enter rural locations and their invasiveness does not go unnoticed (Brasier et al. 2011; Schafft et al. 2013; Wilber 2015). A great deal of their resulting community impact, positive and negative, have been explored as a result. These impacts embody a rich narrative of compounded experiences from the past decade. Careful consideration has been taken to allow all aspects of this narrative, as described by the residents and community members of Dimock Township, to be expressed. By allowing this rich narrative to surface, the dramatic change to baseline perceptions has become evident, by considering the drivers of change revealed in Chapter three. By revisiting these baseline perceptions and drivers of change, while examining Chapter four’s current perceptions, it is clear that practically no perceptions have remained the same over time. The following table (Table X) explores
the highest frequency of initial and current perceptions, as revealed by interview,
displaying the change in perceptions:

Table X: Observable Changes to Perceptions Visual Aid Table, High Frequency
Responses

<table>
<thead>
<tr>
<th></th>
<th>Economic</th>
<th>Environmental</th>
<th>Socio-cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Perceptions (High Frequency</td>
<td>Positive: royalties, local</td>
<td>Positive: Land reclamation emphasized by land-</td>
<td>Positive: Land-men portrayed little to no</td>
</tr>
<tr>
<td>responses)</td>
<td>economics, jobs, local</td>
<td>men or environment not discussed.</td>
<td>modification to area or quality-of-life aspects.</td>
</tr>
<tr>
<td>Current Perceptions (High Frequency</td>
<td>Negative: Economic bust,</td>
<td>Negative: Water contamination, air pollution,</td>
<td>Negative:</td>
</tr>
<tr>
<td>responses)</td>
<td>conflict over royalties, real</td>
<td>marginalization, and the resulting conflict.</td>
<td>Social</td>
</tr>
<tr>
<td></td>
<td>estate value.</td>
<td></td>
<td>rift</td>
</tr>
<tr>
<td>Change</td>
<td>Perceived initial economic</td>
<td>Change from positive to negative environmental</td>
<td>Created</td>
</tr>
<tr>
<td></td>
<td>benefits not met.</td>
<td>quality perception.</td>
<td>distrust between residents and with gas co.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Industry benefits to local culture and quality-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of-life.</td>
</tr>
</tbody>
</table>

The following table (Table XI) explores the medium frequency of initial and current
perceptions, as revealed by interview, displaying the change in perceptions.

Table XI: Observable Changes to Perceptions Visual Aid Table, Medium Frequency
Responses

<table>
<thead>
<tr>
<th></th>
<th>Economic</th>
<th>Environmental</th>
<th>Socio-cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Perceptions (Medium Frequency</td>
<td>Mixed: Too good to be true</td>
<td>Mixed: Late lease-holders and people who cited</td>
<td>Mixed: Reactions from other residents has been vague.</td>
</tr>
<tr>
<td>responses)</td>
<td>economic projections</td>
<td>existing methane in water.</td>
<td>Uncertainty.</td>
</tr>
<tr>
<td>Current Perceptions (Medium Frequency</td>
<td>Neutral: Remained the same.</td>
<td>Neutral: Remained the same. Pragmatic view of</td>
<td>Negative: Change of aesthetic to industrial</td>
</tr>
<tr>
<td>responses)</td>
<td>Pragmatic view of economic</td>
<td>economic incentives, tolerance.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>incentives, tolerance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
environmental hazards, tolerance.

<table>
<thead>
<tr>
<th>Change</th>
<th>Similar, pragmatic view of economics involved with hydraulic fracturing.</th>
<th>Similar, pragmatic view of environmental aspects involved with hydraulic fracturing.</th>
<th>Uncertainty to negative change.</th>
</tr>
</thead>
</table>

The following table (Table XII) explores the low frequency of initial and current perceptions, as revealed by interview, displaying the change in perceptions:

Table XII: Observable Changes to Perceptions Visual Aid Table, Low Frequency Responses

<table>
<thead>
<tr>
<th></th>
<th>Economic</th>
<th>Environmental</th>
<th>Socio-cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Perceptions</td>
<td>Negative: Distrust of industry</td>
<td>Negative: High environmental damage</td>
<td>Negative: Did not believe rural aesthetic would remain. Risk.</td>
</tr>
<tr>
<td>(Low Frequency responses)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Perceptions</td>
<td>Positive: Royalties. Gas company’s economic portrayal expectations met. Excited for more drilling.</td>
<td>Positive: Regulations created to regulate hazards from fracking</td>
<td>Null</td>
</tr>
<tr>
<td>(Low Frequency responses)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td>Few distrusted industry, then few felt economic expectations were fully met.</td>
<td>Few initially perceived environmental damage, then few viewed regulations as sufficient.</td>
<td>Null</td>
</tr>
</tbody>
</table>

These tables do not suggest that each individual depicted the same level of response on both initial and current perceptions; they are simply devices to explore the frequency of responses, as determined by coded interview data. The information is
displayed in order to observe the perceived pros and cons associated with hydraulic fracturing. What is observable with these tables, is the frequency of responses from interviewees and how the responses to perceptual based questions have shifted over time. For example, Table four (i.e. high frequency responses) demonstrates that the majority of responses describe a positive followed by a subsequent negative change, while in table six (i.e. low frequency responses), the opposite can be observed. This reveals that a larger fraction of people have experienced positive to negative shifts in perception, while there is a dramatically lower occurrence of shifts from negative to positive. Undeniably, this rich description of individual experiences provides a means to answer RQ #2 of the thesis: *Have the baseline perceptions of economic, environmental, and socio-cultural perception conditions of hydraulic fracturing changed among residents within proximity of extraction?* From these tables, and the contents of the chapter, it is evident that there are certainly changes to baseline perceptions as a result of drivers (i.e. experiences that need to change in order to alter perception). These changes have variable considerations as discussed in this chapter. This provides a framework for understanding energy extraction company relationships in rural areas, and displays the associated pros and cons. By examining the current perceptions in tandem with the initial perceptions, and the frequency in which these perceptions have been portrayed, changes have been identified.

In addition, over the course of this chapter and the broad swath of experiences and stories represented within, the evident underlying theme reported by interviewees is that fracking activities can create economic and environmental detriments, but are not experienced by everyone. The impacts associated with fracking which are experienced by all residents and community members is the associated community discord and social rift.
Created by the politicizing of fracking and perpetuated in order to keep a majority of residents on the side of fracking companies, the social rift is experienced by all and creates a detriment to local quality of life.

In the following chapter, the changes in perception discussed in this conclusion will be explored with collected data, along with empirical and theoretical information. This will aid in determining if these perceptual changes are the result of residents’ relations with hydraulic fracturing companies in Dimock, or if they are a result of external political and economic forces. By doing so, the connective relationship from the top down, between political and economic landscapes, and individuals on the ground level of resource extraction may be ascertained. Again, it is important to note that current evaluated perceptions align with similar empirical data, which has examined perceptions of the hydraulic fracturing industry within similar locations in Pennsylvania (Brasier et al. 2011; Weigle 2011; Brasier et al 2013; Schafft et al 2013)
Throughout my stay in Susquehanna County, one of the most common sentiments residents expressed was that my timing was off because, as they stated, I should have been conducting my research five years ago at the pinnacle of hydraulic fracturing activities. I imagined how exciting it would have been to experience the fracking boom. Residents told stories of hundreds of company trucks racing around the area, local businesses flourishing, and town hall meetings with hundreds in attendance with threats for arrests from tumultuous anti and pro fracking attendees. On the contrary, I believe I arrived at the perfect time. At the time of my research, gas prices and production hit a low, enabling a vantage point of the after-effects of the hydraulic fracturing industry. Arriving at this specific time allowed for an entire spectrum of residents’ perceptions of the cross-temporal period that fracking had been in Susquehanna County.

Another focal point in my study revealed itself as my research progressed. While exploring Dimock, I observed an advertisement declaring the statement, “Gas Rights Wanted” (See Figure XXIX).
After this sign caught my attention, I began noticing similar ads in local publications such as the local Penny Saver and The Northeast Driller, a fracking industry owned and operated publication created to inform residents of fracking industry activity in the Northeastern section of Pennsylvania. As this research has proven empirically thus far, resident tolerance for the invasiveness of the fracking industry relies on economic benefits. Third-party companies seem to be purchasing mineral rights from residents while taking advantage of current low gas prices, which subsequently reduces residents’ income from royalties. Accordingly, residents will be more likely to redistribute part or all of their mineral rights to these companies in order to pay their bills. They will be much less likely to accept fracking industry shortcomings if they do not provide the economic incentives they once did, if and when production recovers (See Chapter four’s introduction section for royalty total data). This change in potential economic incentives resulting from fracking activity signals a key discussion point to this chapter: natural gas.
prices are susceptible to global, political and economic market changes, thereby altering the interactions between residents and local hydraulic fracturing companies.

Natural gas prices are a result of multiple factors and actors involved, including conditions of extraction and production, state and federal government regulation, market prices, and supply and demand (U.S. EIA 2017b). As prices fluctuate, conditions at the point of extraction become variable as a boom-town transitions to bust-town (Cosgrove et al. 2015), while residents essentially have no choice than to being overcome by the industry (Malin 2014). Facilitated through a multi-scalar network of actors and conditions including market supply and demand, production levels, petroleum prices (as natural gas considered to be a substitutive resource to petroleum), and seasonality, these price fluctuations are a result of the national governmental entities who subsequently oversee the price of U.S. natural gas through controlling regulations of production and net imports (U.S. EIA 2017b). The effects of these fluctuations are experienced down the commodity chain by the residents of Dimock who are at the mercy of boom-to-bust socio-economics. The residents experience consequences as prices of natural gas fluctuate. The overall experiences of residents from a top-down and bottom-up perspective are observed in this section. This multi-scalar observation will allow a dual perspective of natural gas activity on the ground level of production, facilitated by local gas industry activity, while considering how these actions are a result of price fluctuations from political and economic decision-making at national and global scales. The neoliberal philosophy employed by this political and economic decision making is assessed, resulting in a vantage point that adequately addresses the source of Chapter four’s changes in perceptions assessment.
Scholars argue that hydraulic fracturing employs neoliberal tactics in order to normalize the process in rural areas (Finewood and Stroup 2012; Hudgins and Poole 2014). This normalization, in addition to an existing economic crisis in the area, leaves the residents thoroughly incentivized to sign leases or royalty agreements with the industry (Malin 2013). Therefore, aspects of ideology and economics permit the hydraulic fracturing industry to enter rural locations like Dimock. Reviewing the costs and benefits of hydraulic fracturing, and how they are distributed across stakeholders in these rural areas, points out the contradiction in the economic incentives promised, along with the neoliberal ideology used to establish acceptance of the fracking industry among residents (Sovacool 2014). As described in Chapter three’s initial economic and environmental perception sections, the costs and benefits portrayed by the fracking industry to the residents of Dimock were initially described as high economic benefits and low environmental costs. Contradictory to this, fracking is unevenly beneficial to residents as prices endure fluctuations due to governmental decision making based around supply and demand (U.S. EIA 2017b), and fracking companies see the most economic benefits while not fully accounting for environmental externalities (Jackson et al. 2014; Sovacool 2014). This uneven development occurs as capitalism concentrates a great deal of wealth for the owners of production and economic oppression and marginalization for the means of production (Smith 1990), which in this case are the landowners who sign with hydraulic fracturing companies. In addition, this is contradictory to the neoliberal ideology supported by the residents. Neoliberalization is embraced as federal level deregulation is seen to maximize market transactions and ultimately provide more economic incentives (Harvey 2005). However, this simply gives
the power to the deregulated industry, while stripping the power from landowners (Finewood and Stroup 2012). This relationship between global and federal entities, the hydraulic fracturing industry, and the residents of Dimock is unexplored and provides a unique window into energy production in rural areas as the media attention directed at instances of pollution in Susquehanna County provide an extreme example of this connective relationship.

The primary objective of this chapter is to explore the relationship that exists between the global economic gas and oil market with the people who live at the point of extraction in Dimock. The consequences associated with fracking activities are revealed by assessing this relationship between global and local stakeholders. Another goal of this chapter is to use the empirical evidence presented to answer RQ #3, “Are these perceptual shifts a result of proximal relations with extraction companies or external economic forces?” Further analysis of the interviews and archival work conducted during fieldwork will be conceptualized using political economy and political ecology as theoretical frameworks, ultimately to better understand the connectivity among this commodity chain of production. To accomplish this, the changes of perception arrived upon in Chapter four’s conclusion section will be traced to their origins in order to determine if the changes are a result of industry-resident comingling or a result of external economic forces. These changes will be interpreted through the lenses of political economy and political ecology, collected documents, and supported by interviews in order to determine the root of the differences in perception.

This chapter is divided in to four sections. First, a section exploring the changes in perception of hydraulic fracturing based on economic circumstances is included. This
section looks at the root causes of the economic fluctuations which occurred from 2006 to 2016 in order to understand the source of perceptual change to economic situation involved with fracking in the area. Second, the environmental perceptual changes are investigated. A great deal has occurred in Dimock regarding environmental aspects of the hydraulic fracturing process since 2006. This section investigates the perceptual changes that are a result of these environmental conditions, while also elucidating the origins of the altered environmental conditions. Third, changes to perceptions of socio-cultural aspects in the area are considered, while exploring the origin of these changes. Similar to what was reported in the environmental section, Dimock has undergone a great deal of alterations to perceptions of socio-cultural aspects based on hydraulic fracturing activities. Fourth, a conclusion section answers RQ #3 of the thesis, “Are these perceptual shifts a result of proximal relations with extraction companies or external economic forces?” This is accomplished by presenting gathered empirical evidence and by exploring collected content and documents, which aid in interpreting the origins of the perceptual shifts described by residents of Dimock.

V.I Changes to Economic Perceptions and Their Origins.

As discussed across Chapters three and four, residents of Dimock were unmistakably provided an economic “rags-to-riches” narrative by fracking company land-men when exploration began in 2006, which has produced highly variable experiences of economic benefits associated with fracking activities. The wide variation is a result of initial positive perceptions of the economic benefits of the industry’s occupation not being realized, such as individual royalties, job availability, and local
business creation. Even pro-gassers shared the sentiment that although they fully support the industry, they were highly anxious about the return of large-scale fracking due to its nature of invasiveness. Consequently, whether one supports or opposes the industry, local economic perceptions have not been fully realized as gas prices fall and extraction decreases, while local business falter.

There are many reasons for the fluctuation in price of natural gas in the United States. According to the U.S. Energy Information Administration, in 2016, the average price of natural gas hit its lowest price since 1999, due to a large supply of natural gas and warmer than average winter temperatures (U.S. EIA 2017a). In Pennsylvania, local fracking industries initially represented the economic benefits without mentioning these considerations, which cause the market to fluctuate and ultimately decreasing royalty amounts paid to residents. In addition, economists suggest that historically both natural gas and crude oil are comparatively priced as they are substitutive in consumption, while also being competitors in production (Villar and Joutz 2006). This means that they can both be used for the production of energy as well as petrochemical end-products, but are competitive as a result of availability. However, as technological advancements, geological exploration, and policy (i.e. the 2005 Energy Policy Act) began to favor hydraulic fracturing for natural gas, the U.S. has moved into a historical position. The U.S. advanced from being one of the largest importers of crude oil and gas, to being on the verge of self-sufficiency in less than a decade (Wang et al. 2014). Predictions suggest the possibility of full self-sufficiency sometime in the next decade, provided that technological advancements and exports maintain growth (U.S. EIA 2017a; Worland 2017). In 2017, U.S. natural gas exports have begun exceeding the imports (U.S. EIA
2017c). Post-2006, the pricing of oil and natural gas has transformed from being dependent on one another, to oil and natural gas being independently priced. This has occurred as fracking technology and geological surveys have increased the accessibility to natural gas reserves around the globe (Batten et al. 2016). As natural gas prices begin to act independently in the U.S. markets, this energy revolution has created less dependence on foreign gas and oil as imports increase and exports decrease (See Figure XXX). This has occurred while also producing a decrease in price of natural gas from 2006 to 2016 as projected reserves and supply has decreased the Henry Hub spot price (See Figure XXXI) (Wang et al. 2014; U.S. EIA 2016). Therefore, as the availability of natural gas has increased in the U.S., the price per million British thermal unit (BTU), decreased.

![U.S. Natural Gas Imports & Exports](image)

*Figure XXX. U.S. Natural Gas Imports and Exports to 2015
Source U.S. EIA 2016d*
This national and global restructuring of gas prices, which occurred as a result of gas reserve expansion from fracking, is experienced as economic fluctuations for the fracking industry down to the residents at the points of extraction (Brasier et al. 2013; Willow and Wylie 2014). Boomtown literature suggests that a local economic restructuring in which residents become reliant on one industry will falter as profits from the fracking industry decrease (Perry 2012; Boudet et al. 2014; Willow and Wylie 2014). The concept of a boom-to-bust economy should have been historically evident to Pennsylvania natives, as local former coal towns have experienced the same economic downturns, without the glamorous industry proposals for simply owning land. Rather, fracking company representatives should have reported the true nature of the extraction-based industry as one that experiences fluctuation, as opposed to over glamorizing the
benefits. When asked about the manner by which the industry portrayed the benefits, one resident commented:

I think we're a little bit disappointed in it [the fracking industry] because they first came in you heard all of these stories like, oh jeez, you can make some money off this stuff. And I shouldn't be putting so much emphasis on money. It's like everybody heard all of this stuff and yet it was quite a bit of money in the beginning. Things have died down so much now, and there is still a lot of truck traffic. You're not one of the sacrifices, like the people that had pads put on their property, or the people that had a pad right next to their house or whatever. They're still dealing with a lot of issues. And the money is not there anymore. I mean it has kind of dried up. So, you could couple that with the fact that, geez, we only got like $300 an acre, and we have this huge monstrosity in our front yard, and they're only giving us like a little bit of money. And now they're seeing all of the transportation costs that the company is taking out of their checks. This really sucks, I would have never signed with them in the beginning had I known all of this. So yeah there are some negative feelings right now. R – 002, Interview, Aug. 8, 2016

This quote is representative of the overarching theme presented from residents in regards to economic factors associated with fracking throughout the past decade. Perceptions of economic benefits from residents not fully being realized are the result of changing gas prices, while the perceptions of these benefits are the product of local fracking company narratives. Regardless of whether or not the economic benefits are recoverable, promises made by the hydraulic fracturing company during initial exploration were too grandiose.

As mentioned in the Current Economic Perceptions section of Chapter four, this follows Brasier’s model of boom-bust perceptions in similar locations of the Marcellus shale, which range from enthusiasm to economic incentives, to the adaptation of fracking company occupation (2011).

The current U.S. energy boom, which is a result of fracking for natural gas, is transforming the global energy landscape. Infrastructure once intended to pump imported natural gas to various regions for use in the U.S. is now used to export a portion of
reserves (Blackwill and O'Sullivan 2014). As this energy landscape changes, the U.S. changes from being a net importer to an exporter of natural gas (See Figure XXXII).

Figure XXXII. U.S. Natural Imports, Exports, and Net Imports, 1950 to 2016
Source U.S. EIA 2016d

This surplus of gas similarly indicates a low price point of gas, which also represents a decrease in amounts extracted and royalties at the point of extraction due to a market signal, suggesting that supply has surpassed demand. To circumvent the over-accumulation of natural gas and increase export revenue, the U.S. began negotiations of two international trade agreements to expedite exportation of natural gas to foreign markets. The Transatlantic Trade and Investment Partnership (TTIP), an agreement between the twenty-eight countries of the European Union, and the Trans-Pacific Partnership (TPP), an agreement between eleven countries in the Asia-Pacific and the Americas (Ratner et al. 2013; Granville 2016) were both created in order to facilitate the
expedited exportation of natural gas from the U.S. Countries who hold free-trade agreements with the U.S. receive automatic approval for applications for terminals to ship natural gas (Blackwill and O'Sullivan 2014). The shift in energy exports allows the U.S. to empower allies among global networks while generating revenue from this newfound energy stream. However, the TPP as designed under the Obama administration has been terminated by the Trump administration. While this agreement is not without its flaws, cancelling it means withdrawing from a unification of countries, which together represent forty percent of the globe's economic output (Granville 2016). While the TPP would have potentially created a great deal of environmental and socio-cultural complications, as fracking would have increased in Susquehanna County and similar locations to 2012 levels or higher, this anti-globalist, pro-nationalist decision has denied the area, the extraction companies, and the U.S. massive amounts of revenue. The Trump administration canceled these plans despite the fact that these deals would help promote the energy independence rhetoric of the Republican Party. This rhetoric is a strategy of the party’s neoliberal philosophy used to help individuals identify with nationalistic, “America first” tones (Giroux 2004). A major component of the Trump presidential campaign in 2016 had been to promise a focus on American economic recovery while vilifying globalist deals like the TPP (Wertheim 2017). However, increasing national economic revenue while ignoring international trade seems unreasonable. In comparison, the TTIP sought to decrease the European Union’s dependence on Russian natural gas, while benefiting relationships with the U.S. (Brattberg 2017). Since its inception in 2013, the TTIP has been in negotiations, and is likely to become more complicated as the U.S. realigns its focus on non-global partnerships and the United Kingdom breaks away from
the European Union for similar pursuits (Brattberg 2017). Likewise, the cancelation of
the TTIP would align with the accusations among the federal investigations of the Trump
administration for colluding with Russia on multiple illegal fronts in order to help win the
U.S. election (Shalby and Finnegan 2017; Yee He Lee 2017). As with the TPP, the TTIP
is not a perfect plan as it would create economic benefits for some member states while
degradng the environment in locations for their resources (Brattberg 2017).

To summarize this section, fracking companies do not set the price of natural gas,
therefore, they are not directly responsible for the economic shortcomings, which change
residents’ perceptions overtime. Nevertheless, the economic incentives promised were
overly ambitious. Fracking companies do not set the price of natural gas, although, they
are responsible for the economic shortfall in the region as a result of the inaccurate
narrative presented by the land-men to the residents. Anecdotally, if incentives were
described initially as variable and supplemental income, rather than the “rich overnight”
narrative employed, fewer negative feelings might exist today. Similarly, if the variability
of economic incentives were locally understood as a result of political and economic
decision-making, perhaps residents would feel less divided over issues that falsely limit
production, like water contamination. However, the current situation in Dimock aligns
with literature that fracking employs neoliberal ideology to gain support (Finewood and
Stroup 2012; Huggins and Poole 2014). The variability in pricing of natural gas is
believed to be a product of government controlled environmental regulation, but in
actuality, it is reliant on many factors discussed over this section such as supply, demand,
and seasonality. Natural gas extraction and production within the U.S. has become a
geopolitical strategy to reorganize the complex system of reliance on foreign oil (Pierce
2013) and therefore it is not susceptible to be dramatically changed by individuals with water contamination issues.

V.II Changes to Environmental Perceptions and Their Origins.

Chapters three and four provided a vantage point to view the initial and current perceptions of environmental aspects associated with hydraulic fracturing in Dimock, Pennsylvania. This section builds from the changes in perceptions as reported by the residents of Dimock in order to portray the origins of these perceptual changes to align with the general theme of the thesis, which is to provide an examination of the pros and cons of hydraulic fracturing in rural locations. The hydraulic fracturing companies created a scenario that no environmental hazards existed, followed by denial of associated adverse environmental outcomes of fracking. Local fracking companies gave the overwhelming impression that residents would hardly notice that well-pads were ever installed upon completion. As described earlier, the area’s premier drillers, Cabot Oil and Gas had been fracking in Texas and Oklahoma before exploration began in Pennsylvania. The areas in which Cabot had been previously extracting happened to be even more remote than Dimock. Consequently, the company itself had been unaware of the potential disruptiveness that could occur while using the fracking methods that were standard in 2006. Regardless, the fracking companies failed to live up to the initial perceptions created by land-men regarding non-invasiveness. The level of intrusiveness experienced by residents varies depending on their individual experience. Nevertheless, whether speaking about water contamination, air quality, or the resulting discord, most residents
describe minor to major frustration as a result of initially undisclosed aspects of hydraulic fracturing.

Water contamination has been a critical issue related to fracking since it entered the social sphere of knowledge around 2009 to 2010. Indeed, Dimock played a role in the transformation of public knowledge regarding the process, as the township had been used by pioneering documentarian sources to describe this new-to-the-public process (Bateman 2010; Fox 2010). The media focus on Dimock served to dramatize the water quality issues, resulting in a split ideology, that is, those with water problems versus those who claim that water problems are exaggerated. Respondents frequently describe this dramatization:

I would ask them [pro-gassers] why [residents had been complaining about water contamination] and they would say, oh they're lying, they're making it up, they just want to make more money, they're just whiny babies. And the pro-gassers would say to me, I want that well right next to me. I want that well in my damn kitchen! If they want to put a well, a fucking drill in my kitchen, I want them to put it in there! That is how much they want it. And that want that money. They wanted that fifteen-thousand a month that they were told by the land-men, that most didn't see. That is how they would talk, these people are ruining this, they're giving Dimock a bad image. They're giving Dimock bad press. And we're a great town, and were wonderful and clean. There is no problem here and people are lying. So they're talking about dozens of people lying. And were talking about people who have lived here for generations. E–004, Interview, Aug. 19, 2016

Respondents provided similar statements claiming that fracking companies had essentially created the melodrama as a means to maintain support:

They tried to make us [residents with water issues] sound really bad. And they did all kind of things to harass everybody that had any problems with their water. Because they wanted the gas industry to... they wanted to make money. And the gas industry guys were going around and starting rumors about the people that were getting effected by it. And they try to make them sound like liars. They'll say the water was always bad. They found people to say that people on Carter Road that could light their water on fire. Forty years ago everyone was lighting their water on fire. It was like a party game that they
were doing on Carter Road. They said that the Fiorentino's, that they deliberately stage it [the well explosion on New Year’s Day discussed in Chapter two] that they put the gas into their well water because they want money. They also said that they had a meth-lab in that well house under the ground. They were cooking meth down there. Mind you it was like one or two degrees those days. They said Mrs. Fiorentino's is down there cooking meth.
R – 007, Interview, Aug. 25, 2016

A divide resulting from the water issues is represented by interviewees, and portrayed across the whole thesis. The intent here is simply to reiterate the severity of the divide, and portray its origins. The divide has led the townsfolk to disagree with the new public knowledge that fracking can create water contamination and aligned them with the new local stewards of the land, the fracking company. Understandably, the media focus on negative aspects of one's hometown is discouraging. Nevertheless, water contamination exists in Dimock (PA DEP 2010; ATSDR 2016), and whether or not it is widespread, it has facilitated this divide, along with industry support. Thus, the divide is a strategy perpetuated in order to maintain a split ideology that individuals speaking out against fracking are halting royalties and progress on American’s energy independence.

Along with media coverage and personal opinion of water contamination issues in Dimock, there is an extensive paper trail of complaints and violations as a result of aquifer degradation from fracking in Dimock. As displayed in figure seven of Chapter two, the number of violations due to water contamination spiked from 2009 to 2012, resulting in three hundred and forty-one violations from the state DEP in Dimock to date with only one-hundred and twenty wells drilled (Marcellus Gas 2016.org). These violations vary from improper disposal of waste water, water pollution violations under the Clean Streams Law, and failure to adopt pollution prevention measures required by the Pennsylvania DEP (Marcellus Gas.org 2016). In addition, Public Herald, a non-profit
organization of independent journalists has gathered forty-five complaints to the state DEP regarding water contamination from 2008 to 2015 (Public Herald 2017). These complaints range from witnessing trucks dump waste into Meshoppen Creek, just south of Carter Road, to general potable water quality complaints. Essentially, substantial and empirical proof exists that fracking has indeed compromised some aquifers and water wells in Dimock Township. While not widespread, these complaints and violations represent a change in environmental quality and result in the social rift and divisive rhetoric used to perpetuate this rift.

In order to keep fracking profitable, the fracking industry must ignore a certain amount of environmental alleviation. As portrayed throughout the thesis, the inception of hydraulic fracturing in the U.S. is a result of three factors: (1) technological innovation to horizontally access the natural gas trapped within shale rock (Golden and Wiseman 2015); (2) the discovery of massive shale gas deposits within the U.S. from geological exploration (Davis and Hoffer 2012); and (3) the amendment to the 2005 energy policy, which would allow extraction companies to circumvent EPA involvement in the regulation of chemicals used in the process (Davis and Hoffer 2012). Without federal regulating the fracking process under U.S. EPA, environmental degradation and the harm to people who bear the burden of the impacts become negative externalities (Sovacool 2014). A negative externality describes a cost, which is suffered by a third party by way of an economic exchange (Barth 2013). For example, in hydraulic fracturing, the costs not considered when economic impact studies are conducted include, water pollution, air pollution, landscape modification, and public health, to name a few (Barth 2013). Therefore, initially undisclosed environmental degradation and the resulting discordant
attitudes and marginalization of the people in Dimock can be considered ways in which local companies ignore these negative externalities for profit: “when externalities are accounted for, [extraction companies] produce more net economic losses than profits” (Sovacool 2014: 249). If considered in the price of natural gas, these negative externalities would destroy the profit margin, and as a result, the U.S. energy independence would not exist (Sovacool 2014).

Since natural gas extraction from fracking began in Dimock, a great deal of new regulations and policy amendments have been created to absorb a portion of these negative externalities. Proponents of hydraulic fracturing claim that its impact on the environment can be moderated, reduced, or possibly eradicated by enacting increased rules and regulations, and by the use of industry determined best practices (Miller and Garber 2017). Along with no zoning in Dimock, a 2009 decision made by the Pennsylvania Supreme Court in Huntly Huntly Inc. v. Borough Council of Borough of Oakmont (2009) stated that municipalities and townships may incorporate some of their own rules regarding how or where drilling/fracking can take place. However, municipalities and townships cannot bar drilling/fracking. These rulings further expedited natural gas exploration in the state. Subsequently, in 2012 the Pennsylvania House and Senate approved Act 13, the plan which brings about the impact fee as discussed in Chapters three and four, from every well-head in Pennsylvania (HB 1950). This act also initiated new limiting regulations including increasing the assumed area of liability of fracking companies from one-thousand feet to twenty-five thousand feet from a water source for contamination (HB 1950). The act also states that companies are required to disclose chemicals used in the fracking process to physicians and other individuals who
work in community health in order to better understand community health measures. However, healthcare workers are required to sign non-disclosure agreements stating that signees are not allowed to warn a community of potential water or air contamination, or divulge what resulted in health problems (Brasch 2012). In 2016, the Pennsylvania Supreme Court furthered the act by stating that the so-called, “doctor gag rule,” in addition to fracking companies’ exemption from requirements to notify private well owners of hazardous spills, was unconstitutional (Woodall 2016).

Within the scope of this research, it is unclear is if these amendments and regulations were passed due to the citizens of Pennsylvania demanding the best possible technology, or rather, if natural gas had declined so far in production in the area that these new regulations, while not aiding in the profitability of fracking, could actually be addressed, due to less extraction. Regardless, as environmental degradation is further constricted as a result of the change in perceptions associated with fracking, new regulations may potentially be created.

While regulations such as Act 13 are created to ensure increased environmental cautiousness of fracking companies, these regulations are initiated gradually, as both fracking technologies and exports of natural gas increase. This gradual increase of regulation allows for a new level of negative externalities to be accounted for as the cost of fracking goes down, while profits increase. When the shale gas revolution began in the U.S. in 2005, Pennsylvania extracted around one hundred and seventy-thousand, million cubic feet (McF) of natural gas (U.S. EIA 2016b). In 2015, Pennsylvania extracted almost five-million McF of natural gas (U.S. EIA 2016b), suggesting that the industry could handle more regulation at this dramatic rate of increased extraction. The increase in
extraction of fracked natural gas over the past decade coincides with drop in the price of natural gas at the wellhead (Fukui et al. 2017), meaning that as production increases, the cost to extract natural gas at the wellhead decreases, which would allow for further costly regulation and technological advancements to be fixed into the price of natural gas. Fukui et al. also suggest a “learning-by-doing” phase of fracking in which loose environmental regulations from the federal government allow for loose environmental regulations from the state government to increase much needed state revenue (2017: 5). This particular phase would allow the U.S. to advance rapidly toward the current scenario in which it is becoming a net exporter of natural gas (U.S. EIA 2017c), thus restructuring the geopolitical landscape of oil and gas globally. This is accomplished as Pennsylvania experienced rapid environmental degradation by extraction companies not considering initial and future risks of fracking (Cronshaw and Grafton 2016). Therefore, while tighter regulations and more stringent energy policies toward the fracking industry may be economically feasible now, the industry could have potentially been encumbered upon its initial phase. Thus environmental degradation created by the fracking company can be understood as the industry acting in accordance to a market signal for demand, with little environmental regulation, and the federal government facilitating this demand as a geopolitical strategy to reorganize energy exporting powers.

To summarize this section, fracking companies act in accordance with state and federal law, along with supply and demand in order to maintain the profitability of fracking. Therefore, perceptual shifts are a result of proximal relations in this case, while these relationships are forged in state and federal decision making. An increase in the consideration of the negative externalities of production represents amplified production,
partially as a reaction to negative impacts accrued directly from the fracking companies. However, these negative externalities are only being addressed as technological advances allow for considerably lower extraction costs, and further consideration for the health of the environmental and the residents can be accomplished while still making a profit (Sovacool 2014; Miller and Bolton 2015).

V.III Changes to Perceptions of Socio-Cultural Aspects and Their Origins

The preceding two chapters offer a rich description of the initial and current perceptions of the socio-cultural aspects associated with hydraulic fracturing in Dimock, Pennsylvania. The scenario created by the hydraulic fracturing companies is one in which no socio-cultural detriments exist in association with fracking. However, in this scenario, fracking has provided many benefits to the area, as described in the previous chapter’s socio-cultural section, such as funding toward advancing the local hospital, impact fee money, and expanded road infrastructure. Along with these benefits, many negative aspects are described over the length of the thesis, such as landscape modification from rural to semi-industrial and conflict or potential conflict resulting from environmental impacts. Due to these positive and negative aspects, there have been variable experiences in regard to socio-cultural issues associated with living in proximity to hydraulic fracturing. Furthermore, these experiences are the result of fracking company/resident interaction, while the fracking company acts in concert with global and national supply and demand markets.
During the course of this thesis writing, a dramatic shift occurred in the political representation of the people of the United States. A new “America first” ideology of the Trump administration promotes looser regulation on environmental regulations in favor of increased production of natural resources. This leaves the U.S. with a dramatic shift in the EPA, as Scott Pruitt, a known climate change denier has been appointed as the new head of the agency (Bump 2017). This, along with President Trump fulfilling a campaign promise to pull out of the Paris Climate Agreement, signals a shift in climate change responsibility by the United States Executive Branch of Government (Shear 2017). In 2015, the EPA released their initial statement regarding fracking, affirming that fracking can cause water pollution, however, it may not be widespread or systemic (2015). In the months before the Trump administration took control of the White House, the thirty science advisers to the Environmental Protection Agency contested the 2015 findings, stating that the report needs more “quantitative analysis that supports its conclusion” (Mooney et al. 2016; U.S. EPA 2017). Essentially, the scientific board at the EPA was expressing that there needs to be more research regarding the communities affected socially and culturally by fracking operations. Existing socio-cultural research states that energy resource extraction provides many detriments, which are systemic of environmental and economic problems as it modifies the quality of life experienced by impacted residents (Perry 2012; Boudet et al. 2014; Willow and Wylie 2014).

Over the course of my stay in Susquehanna County, my research became more accepted by residents as they became aware that I was not there only to test the water and release another statement concluding that fracking pollutes aquifers, or not. The community embraced me as they realized that I was there to discuss the social
implication of the impacts associated with fracking. One resident provided this statement about the type of scientific research being conducted in and around Dimock:

I think that what I would ask, and if you're going into this field, would be we need more people who actually know the science. Independent researchers who can come into situations like this and look at both sides of the story and listen to what the gas companies are saying and claiming, and listening to what the residents are saying. And filter out all the bullshit. Get down to the science and say, look, this is what is going on. This is the effect it has on the environment and the social end of it also. And make it known. R – 002, Interview, Aug. 8, 2016

This statement, along with the declarations mentioned earlier from the EPA’s council of scientists, provide a sense of importance to the research collected, and an importance to disseminate these individuals’ stories and represent them properly. In order to portray these stories accurately, the socio-cultural ramifications are significant as they are experienced by everyone, rather than water issues experienced by few. Thus, fracking is socially connected to water contamination issues. However, it arguably should be linked to more widespread issues discussed within this thesis, such as the social rift which has occurred, marginalization, and modification of land aesthetic.

The discord between residents, which nearly every interviewee mentioned as a negative socio-cultural aspect, is a direct result of the local hydraulic fracturing company. Interviewees stated that it is public knowledge in the area that the fracking companies facilitated and supported the pro-fracking movements designed to shame and keep those with water contamination silent. Fracking companies also have supported and operated propaganda-type media outlets such as the, “Well Said, Cabot” blog, local television advertisements, and ads in the Northeast Driller publication. All these outlets also supported the concept of nationalism through promoting national energy independence (see Figure XXXIII).
Similarly, Matz and Renfrew conducted a qualitative content analysis of Energy in Depth, a Northeast Marcellus Shale initiative owned and operated by front groups formed by the American Petroleum Institute, and the Independent Petroleum Association of America (2015). They described that patriotism through energy independence is used to generate support for natural gas, as well as used as a divisive means to polarize communities involved (Matz and Renfrew 2015). As a result, these organizations create
and perpetuate an ideology that an anti-gasser is inevitably an anti-nationalist, as denying fracking maintains the U.S.’s involvement in international oil and gas (Hudgins and Poole 2014:12; Matz and Renfrew 2015). When asked about this nationalistic rhetoric, one resident provided this quote:

With the money and the energy independence thing. Ok, this is part of making America great again, you know? Drill baby drill. That is the motto. There were billboards on the way to Dimock when the water war was going on. [stating] Our water is great, drill baby drill, Dimock Proud. Bumper stickers, lawn signs. They defeated the water line [to provide clean water to Carter Road residents] coming down. Somehow they defeated it. R – 009, Interview, Aug. 27, 2016

Another resident provided this similar sentiment:

Well, the positive thing is, and I don't think anyone could deny it, was the money. (laughter) The economic benefit. Firstly, you know as it trickles down, you'll see. Susquehanna County was always… North Eastern PA is relatively poor, rural area. Susquehanna County is, you know, one of the poorest in the state I believe, so you got to see a lot of economic benefits for people. Build, remodeling, buying, doing all sorts of things, which is good there. But I like the idea of homegrown fuels, so to speak, rather than paying the terrorists. Getting it overseas. I don't understand that about people still thinking we should get it from over there. Were just funding them, you know. R – 008, Interview, Aug. 27, 2016

Therefore, the American energy independence and the nationalistic ideology which accompanies the neoliberal philosophy of promoting private industry and individual freedoms (Harvey 2005) helps fuel this local sentiment of responsibly to energy independence. This is also a common sentiment associated with perceptions of hydraulic fracturing by Americans (Finewood and Stroup 2012; Cruger and Finewood 2013). The neoliberal philosophy is changing the way in which Northeastern Pennsylvanians prioritize and value nature (Castree 2003), prioritizing private industry over local environmental issues which impact them directly. As towns like Dimock are dismissed as expendable to benefit national interest (Drotzer 2014; Guignard 2015) and private market
investments, the residents experience a social reorganization of priorities as the fracking industry, through neoliberal philosophy, becomes the new stewards of the land. This stewardship, as exposed throughout the thesis, shifts economic and environmental priorities and marginalizes certain residents, creating discordant attitudes and modifying social relationships.

As the area is portrayed in this context as expendable, local hydraulic fracturing companies create the experiences which alter residents’ perception. However, fracking companies act based on shareholder interest and supply and demand, which do not take into account the negative externalities created by gas extraction (Rabe and Borick 2013). In this specific case, the negative externalities include the social and cultural relations between residents and the cultural setting of Dimock Township. The experiences are extremely variable and contingently based on personal ideology and experience. As a social and cultural setting, I experienced Dimock as a town divided over a particular issue, but also as a town realigning as natural gas extraction by fracking has begun to slow. As mentioned previously, the industry is omnipresent in Dimock. However, the area retains its natural and rural beauty. Residents have unquestionably benefited from the industry, and residents have certainly had their lives destroyed. An interviewee shared this emotional understanding with me:

I have done several interviews and I have told them all, if I could today write you [the local fracking companies] a check for all the money you have ever given me, and you would go away, I would do it. Leave me alone. Go away and I'm sorry you didn't portray it as it actually was but I think you lied and you hurt the environment and you're hurting the people. I go to some seminars, I listen and I talk around and they say that these chemicals that are coming out cause nose bleeds, respiratory problems; they can cause heart problems. Various different physical ailments because of the chemicals that come out of these. And I have seen it. I have seen people leave here because their kids have bleeding noses. So I don't know if it will come out in the future
Aside from the commonly associated economic, environmental, and health issues mentioned, the creation of the social rift that is a result of these problems, is the major overarching issue caused by fracking in the area, as every single interviewee addressed the topic. This social rift, while being a result of new energy exploration in Pennsylvania, is directly attributed to the local fracking company, as they have sought to perpetuate this division in order to retain support through economic benefits and ideological positioning on topics such as environmentalism and neoliberal free market rights. As discussed earlier, residents reported that local fracking companies created the Dimock Proud movement, or at least facilitated it, in order to help their reputation in the county and township. Regardless of the truth behind this, it is evident that the industry supports the rhetoric and maintains the discordant divide among the community, deeming residents who support fracking as proper stewards and patriots and those who do not as anti-community and anti-nationalist. This nationalist ideology is exemplified further in local advertisements and brochure literature (See Figures XXXIII, XXXIV, and XXXV).
The strategy of using nationalism and creating a social divide based on the multiple opinions of fracking in Dimock is understood to keep support for the industry
high, while initial phases were wrought with problematic socio-cultural transformations. Currently, there are one hundred and sixty-two wells permitted on sixty-five well-pad sites in Dimock township (Marcellusgas.org 2017b), which is only thirty square miles. Surrounding Dimock, within a four-mile radius, there are one hundred and nine well-pad sites (Marcellusgas.org 2017b). The transformation from rural to rural mixed with industrial, which occurred in less than a ten-year span, is understood as alienating or simply upsetting to residents. However, this alienation can be circumvented by fracking companies offering individuals royalties from mineral rights and also by the fracking company strategically using neoliberal rhetoric to gain support from residents, while advancing through the problematic initial phases. As explored in this chapter’s section on environmental perceptions and their origins, gaining support during the initial problematic phases of fracking is necessary in order to keep profits high for fracking companies, and to help the U.S. advance toward its current net exporter status of natural gas (U.S. EIA 2017c). Therefore, the neoliberal rhetoric used to align the fracking company with the local political sentiment emphasizing private property rights and minimal governmental interference in free market driven enterprise actually benefits the U.S.’s advancement toward energy independence, while socio-culturally hindering the area through the change in landscape and the social rift facilitated by the fracking company.
V.IV Conclusion

Research question three: “Are these perceptual shifts a result of proximal relations with extraction companies or external economic forces?”

Explored throughout this chapter are the root causes of perceptual changes reported by residents of Dimock, PA. First, economic relationships between natural gas prices and its producers are explored in order to understand the price fluctuations of natural gas. This demonstrates the manner in which natural gas price variations are seen by the community as a result of intrusive environmentalist action, while in actuality, they are a result of a complex geopolitical restructuring of the U.S. among energy exporting nations, and common prices manipulators such as supply and demand. Second, environmental impacts associated with fracking are further discussed in order to understand their origins. In this case, Cabot, along with other fracking companies, initially ignored negative externalities in order to meet the high demand for natural gas. This occurred during a time period in which a fracking boom within the U.S. began, assisting in the U.S. restructuring from a net importer, to a net exporter of natural gas (U.S. EIA 2017c). Third, causes to socio-cultural perceptual change of fracking are identified. This section explores the way in which fracking companies have preyed upon the plurality of political and environmental opinions held by the residents of Dimock and perpetuated the social rift that fracking creates. This has been accomplished by using nationalistic rhetoric in order to maintain the argument that pro-fracking symbolizes “pro-United States,” while perpetuating the social rift by helping in the organization of pro-fracking groups. Again, this has occurred at a time when the U.S. is restructuring from a net importer to a net exporter of natural gas. Therefore, it is in the interest of the
fracking company to act while demand is high, and to socially marginalize the opponents of their economic endeavors.

In addition to summarizing the findings in this chapter, this conclusion section provides an answer to RQ #3 three: “Are these perceptual shifts a result of proximal relations with extraction companies or external economic forces?” As discussed over the course of this chapter, there are many aspects to explore when discussing the origin of the perceptual shifts in Dimock associated with hydraulic fracturing, both local and politically economic. From the local perspective, fracking companies in Dimock facilitated improper portrayal of industry-resident commingling and created potential conflict, leading to a problematic social rift. From a political and economic perspective, local fracking companies are acting in concert with national and global supply and demand economics, while ignoring negative externalities as capitalist consumption tends to do with natural gas extraction by hydraulic fracturing (Hudgins and Poole 2014, Phelan and Jacobs 2016). Some residents recognize that fracking companies only react to their shareholders and they do not directly blame the companies for economic, environmental, and socio-cultural impacts associated, while other residents directly blame the local drillers and are very hostile toward them. The latter seem to be residents who have experienced heavy water contamination and have had their lives massively disrupted by the issue’s ramifications. Therefore, to answer RQ #3, the wide range of individual experience displayed over the course of this chapter suggests that the perceptual shifts documented in Chapter four are a result of both proximal experiences with extraction companies, who act in concert with political and economic forces. However, initial phases of fracking in Dimock appear to be negligent of all aspects
involved in order to rush to the point of massive extraction levels. This has allowed the
fracking industry to remain profitable while safe technological advancements are only
economically feasible at a massive level of extraction in the near future.

In the following concluding chapter, a brief review and summary of research will
be provided, followed by an explanation of the way in which the research objectives were
satisfied, and how they have helped to answer individual research questions. In addition,
a short section of management recommendations is delivered, along with insight into
future and connective research.
CHAPTER VI. CONCLUSION

The underlying objective of this research has been to portray the benefits and
detriment to a rural community experiencing rapid economic expansion as a result of
hydraulic fracturing activities. Throughout the last decade, the energy landscape in the
U.S. has progressed through an extensive transformation, which as a result, reshaped the
economic landscape in Dimock, Pennsylvania. The emergence of hydraulic fracturing as
a lucrative and stable energy resource is changing the U.S. from a net importer to an
exporter of natural gas (U.S. EIA 2017). This transformation has resulted in a conversion
of small towns and cities near locations involved in hydraulic fracturing operations. An
unknown and welcomed economic development opportunity was presented to these
already economically depressed areas in 2006 and began to flourish around the time that
they were likely feeling the impacts of the 2008 housing market crash, which had created
massive personal and corporate debt in the United States. Fracking essentially promised
free money to residents for minerals they were unaware they possessed, while further
incentivizing the operation with the promise of jobs and local economic development as
complementary businesses would develop. As argued in the economic sections of
Chapter three and four of this thesis, these promises were initially met, followed by an
economic and environmental boom-to-bust scenario, traditionally associated with rapid
economic development from energy resource extraction (Scott 1998; Brasier et al. 2013).

This thesis sets out to investigate the manner in which residents’ livelihoods and
experiences have changed as a result of interactions associated with the hydraulic
fracturing industry. These interactions are a result of local hydraulic fracturing
companies, who act in response to political and economic policies and market signals. To
explore these interactions, the research has used a multi-scalar theoretical approach of political ecology and political economy of nature. These frameworks have allowed the interactions between residents and industry in Dimock to be displayed as a complex and layered connectivity from political and economic decision-making, to basic daily interactions. The result is a study of the change in economic, environmental, and of socio-cultural aspects of the industry, facilitated by multi-scalar decision making and the resulting interactions between community and industry. This research contributes to critical resource geography literature as it relates to fossil fuels and the contradictive and conflictive relationships between the hydraulic fracturing industry and the communities in which extraction takes place. This thesis primarily argues that fracking companies create a false narrative of the benefits to the communities in which they engage, while in Dimock specifically, local drillers have created more widespread and systemic impairment to the community than the economic or environmental detriments. That is, the local fracking company has facilitated an inescapable social rift and community discord.

During the past decade, in which the transformation from boomtown to bust-town occurred, a myriad of individual experiences related to hydraulic fracturing transpired in Dimock Township. Dimock became the prime example of environmental degradation associated with hydraulic fracturing as it had been exemplified in various types of media, including the acclaimed documentary, “Gas-Land,” and countless news articles and exposés, resulting in a town divided between pro and anti-gassers. However, the central argument of this thesis asserts that environmental conditions are only a minuscule part, or perhaps the catalyst, of the negative impacts associated with fracking. As this lucrative
area became the center for U.S. media’s newfound attraction to hydraulic fracturing’s environmental effects, the local fracking companies employed seemingly divisive means to retain local support and align themselves with the political and ideological right, who view environmental regulations as obstructions to economic progress within the U.S., and in this case, as inhibiting energy independence. Similarly, the ideology aligns the local fracking companies with the current economic model and political philosophy: neoliberalism, which gains support from rural communities as it promotes a lack of government involvement in economic development and land ownership (Harvey 2005). As a result of this, local pro-gassers associate themselves with the rhetoric employed by fracking companies who have promoted this neoliberal philosophy, allowing the companies to become trusted stewards of the land. The economic-based stewardship advocated by the industry maintains the hierarchical human-nature relationship as ownership of minerals that residents were not even aware they possessed and their land leased to fracking companies becomes part of a commodity chain of ownership. Thus, proper stewardship of the residents’ land becomes the lucrative option of welcoming the fracking industry, while ignoring potential environmental degradation. Similarly, supporting local fracking industry aligns with preexisting local stewardship values of living off the land associated with historical coal mining, foresting, quarrying, and agriculture, which are all engrained in the local ideology and cultural image of Northeastern Pennsylvania.

The general ideological consensus described above is a result of this joint stewardship of the residents in support of extraction and the extraction companies themselves, which has facilitated the resulting complications experienced by all residents.
As presented in Chapters three and four, these complicated experiences mainly deal with the multiple events associated with the local clash in ideologies and the resulting social rift this ideology has created, and how the fracking companies have perpetuated this rift through divisive means. As argued in Chapter four, nearly all residents expressed disappointment with the ideological and social fragmentation this community has experienced as a result of the hydraulic fracturing industry entering their area. As discussed with interviewees, this discord between residents, which spawned from accidents committed by the local fracking Cabot Oil and Gas on Carter Road, could be circumvented by an admission of guilt from the industry. However, the company instead has persisted with divisive methods to retain the support of the majority of town residents while alienating and marginalizing those with water contamination issues. The divisiveness has been accomplished via local campaigns that condemn those with water issues, and also by solidifying the nationalistic ideology behind fracking and the responsibility to uphold this set of beliefs in Susquehanna County.

Additionally, this thesis advances empirical work on qualitative research associated with critical resource geography and similar fields, which utilize political ecology as a means to display the ground level impacts on the commodification of natural resources. For instance, as presented in Chapter five’s socio-cultural section, more empirical qualitative research has been requested by the United States Environmental Protection Agency regarding the social impacts associated with fracking in Pennsylvania. This request, along with residents’ own claims that they suffer from fatigue of researchers coming to the area and testing the water, only to hear that contamination exists or not, without any follow up or solutions further eludes to the necessity for more social
scientific research in the area. Essentially, these factors signal that further qualitative research is needed to express the more widespread and systemic impacts of hydraulic fracturing in rural areas as opposed to merely testing for water contamination. As portrayed across this thesis and emphasized by community members, perceptions based on interconnectivity with fracking companies and the companies actions themselves create a degradation to economical, ecological, and socio-cultural livelihood, which is more of a widespread systemic problem than water contamination is currently.

In conclusion, this thesis explores the initial (2006) and current (2016) perceptions of the residents and community members of Dimock, Pennsylvania in order to understand the benefits and detriments hydraulic fracturing inflicts on a rural community. In Chapter two, a timeline of natural resource extraction, including the current timeline of natural gas extraction, is presented in order to solidify future chapters’ arguments and provide the reader with foundational knowledge to understand subsequent chapters’ key themes and materials.

In Chapter three, interview data is used to examine the baseline perceptions held by residents of Dimock in order to understand the drivers of perceptual change in regard to hydraulic fracturing. By doing so, it becomes evident that residents were promised a great deal of money for signing land-leases or royalty agreements with fracking companies. Similarly, they were given the idea that hydraulic fracturing operations would be conducted with a great deal of discreetness in regard to environmental and socio-cultural change. Thus, any activities that have not aligned with these initial perceptions created by fracking companies are understood as drivers of change. Therefore, Chapter three argues that baseline perceptions were formed in Dimock by company land-men who
went door-to-door preaching economic incentives with no foreseeable detriment to the community. Also, that the general public at that time (2006) possessed no base knowledge of the hydraulic fracturing process, which furthers the argument that initial perceptions were mainly forged by fracking companies.

In Chapter four, collected data is explored in order to understand the current perceptions of fracking activities provided by residents of Dimock. When these current perceptions are contrasted with residents’ initial perceptions, it is evident that the hydraulic fracturing companies’ initial promises have not been met properly. Chapter four also provides an extensive and diverse storyline provided by residents and community members of Dimock of how the fracking companies have not fully met economic expectations, while creating environmental degradation that acted as a catalyst for community discord, as residents vehemently support or disagree with hydraulic fracturing on ideological, political, and experience based levels. Finally, Chapter four presents the changes to initial perceptions in order to expand upon the origins of these changes in the following chapter.

Chapter five takes the data collected and applies it to a broader spectrum. The perceptual changes as defined in the preceding chapter are followed to their points of origin. In other words, economic, environmental, and socio-cultural detriments or benefits as explained by residents of Dimock, are understood in this chapter as externalities of a larger commodity chain. Hydraulic fracturing companies do not act independently. These corporations are merely profit driven entities, which are a part of a geopolitical plan to reorganize the U.S. energy landscape from a net importer of natural gas to a net exporter. Therefore, the actions perpetrated by the local fracking industries
are reactions to signals of the supply and demand chain, initiated from federal level
decision making to increase the level of produced and reserved natural gas in the United
States. Signals include the deregulation of fracking chemicals under the Clean Water Act,
advanced technologies that allow fracking to become more lucrative, and discovery of
natural gas across the United States. Consequently, actions of the fracking companies,
including the generation of high levels of pollution followed by the facilitation of the
social rift in Dimock in order to marginalize the minority of residents complaining of said
pollution, have been carried out in order to retain public support despite fracking’s earlier
clumsier phases. Once reaching a point where fracking could remain lucrative while also
considering environmental needs, new restrictions were applied on a state and federal
level. The following section briefly addresses the research objectives presented in
Chapter one, in order to understand how research questions have been addressed, and
how these conclusions have been made.

VI.1 Addressing Research Objectives

The research objectives presented in Chapter one provided an outline of
information needed to ultimately answer the stated research questions. This section will
briefly address how all research objectives were met, and how they correspond with the
methods used to answer research questions discussed in this thesis.

• 0.1: Determine whether residents’ perceptions of hydraulic fracturing have changed
since it first began in Dimock, PA.

This objective has been completed by means of interview questions, archival
work, and document analysis. Semi-structured interviews allow for direct questions and
subsequent analysis of the perceptions residents had in 2006 and in 2016. Archival work and document analysis methods provide views of local newspapers, complaints to the Pennsylvania Department of Environmental Protection, and similar documents addressed across this thesis to determine if the overarching sentiment toward fracking in the area has changed. Indeed, the answer is variable and connected to diverse individual experiences discussed in the thesis, which similarly helps portray the social rift that occurred as a result of residents’ interactions with the fracking industry. This objective assisted in answering RQ #1 and #2.

• 0.1.a: Determine residents' initial perceptions of hydraulic fracturing in general and explore how these perceptions contrast.

The research methods used in this work have provided an overview of residents’ initial and current perceptions of hydraulic fracturing. However, considering the in general aspect of this objective provides a challenge, as residents’ perceptions span a wide spectrum and are impossible to generalize. The frequency of response tables included in Chapter three help to address this aspect, which were determined by coding semi-structured interviews using qualitative software. The way in which these initial perceptions contrast is essentially the crux of the research and is explored in great detail in Chapter three. Similarly, these perceptions were corroborated with archival work and document analysis across the thesis. Again, this objective has assisted in answering RQ #1 and #2, while also providing foundational information for RQ #3.

• 0.1.b: Determine residents' current perceptions of hydraulic fracturing in general and explore how these perceptions contrast.
As with the previous objective, the in general aspect of this question is addressed by using the frequency of response tables included in Chapters three and four, which were determined by coding semi-structured interviews using qualitative software. The way in which these current perceptions contrast is central to this research and is explored comprehensively in Chapter three. Similarly, these perceptions are corroborated with archival work and document analysis across the thesis. Again, this objective assisted in answering RQ #1 and #2, while also providing foundational information for RQ #3.

• 0.2: If perceptions of fracking have shifted, determine the main drivers of the change.

This objective is achieved at the end of Chapter four by examining the frequency of responses to initial and current perceptions along with Chapter three’s determined drivers of change, which are subsequently examined and contrasted with current perceptions. The objective is satisfied using semi-structured interviews, coding responses using software, and comparing responses.

• 0.2.a: Determine the residents’ own explanation for the change.

Again, this objective is one of the focal points of the thesis. Residents and community members provided overwhelmingly rich and varied descriptions of both the benefits and the detriments associated with living among hydraulic fracturing activities in Dimock. This objective has been fulfilled using mainly semi-structured interviews, but also by corroborating specificities of explanations with archival work, document analysis, and participatory observation.

• 0.2.b: Analyze the extraction companies' initial rhetoric concerning the economic and environmental impacts of fracking. [Did the initial rhetoric and policies of extraction
companies normalize the hydraulic fracturing process, possibly in order to facilitate potential environmentally harmful extraction practices?]

Local extraction companies’ description of impacts of fracking, as explored across the thesis, had been portrayed to residents by company land-men. These individuals described ideas of non-invasiveness, providing the foundational knowledge for local residents’ assessment of the hydraulic fracturing process and its impacts, as fracking had not yet entered the social sphere of knowledge. The nationalistic rhetoric employed and stewardship based neoliberal philosophy helped normalize the process, along with the area’s rich history of resource extraction. Indeed, these aspects were then used to help fracking companies ignore negative externalities of extraction by aligning the community members with their pursuits while shaming those facing environmental degradation. All aforementioned methods have been used to determine this objective.

• 0.2.c: Determine the actual economic and environmental impacts of the fracking in the area.

This objective has been satisfied mainly by employing archival work and document analysis. As this is an empirical social science document, the methods do not satisfy ecological and economic models for assessing these impacts. However, a great deal of research into other documentation of economic and environmental impacts has been assessed in order to corroborate semi-structured interview data and participant observation data. The actual impacts are evaluated throughout Chapters three, four, and five of the thesis and suggest a positive to negative economic fluctuation as the area has become reliant on the fracking industry, which ebbs and flows with national gas markets. Research also shows that there is widespread environmental degradation from air quality.
as a result of extraction, storage, and transportation of natural gas, while suggesting a future of uncertainty. This uncertainty also exists with regard to water contamination. While water quality issues are seemingly less widespread at the present time, they may potentially affect anyone residing in proximity to gas extraction in the future.

• 0.2.d: Explore the possibility of changes in residents’ perceptions of socio-cultural aspects due to extractions’ negative externalities such as: cultural and physical modification landscapes, relationship to these landscapes, perceptions on quality of life, and socio-economic livelihood.

To satisfy this objective, semi-structured interview data interpreted throughout the thesis has pointed to mixed experiences and perceptions. First, fracking companies have enhanced the local quality of life through economic contributions to the area via impact fees, business development, and charitable donations such as the massive contribution to the local university and hospital. Second, these contributions are self-serving for the industry. The area has gone through a rapid change from rural to rural mixed with industrial. Personal experience through participant observation has provided a current snapshot of industry occupation, while semi-structured interviews and archival work/document analysis has provided a view of the area’s transformation, and how perceptions of the industry have correspondingly changed as a result of this activity. This helped in answering RQ #2., as these changes are associated with perceptual change, while also aiding in answering RQ #3, as this objective helps portray the community/industry interaction and cohabitation in Dimock.
VI.II Management Recommendations

In this section, a total of five management recommendations is provided as a result of the nature of this thesis. As initially stated in this chapter, this research is essentially a list of pros and cons related to communities living among fracking activities. Therefore, the following five recommendations are extracted from the complaints and acclaims provided by residents and community members of Dimock. These recommendations can be considered not only by locations in Susquehanna County but also by any rural area experiencing natural gas exploration.

VI.II.I Zoning and Setbacks

Proper zoning methods to distinguish residential, commercial, and industrial sites would be highly beneficial to an area prior to engaging in drilling activity, when first discussing the impacts of hydraulic fracturing. The regulations stating required distance, also known as setbacks, of well-pad location from existing structures, and distance of responsibility to aquifer restoration from well-pad has increased over time. As fracking infrastructure encroaches on residential areas, setbacks are determined after impacts are felt and are perceived as political compromises on the part of the fracking companies (Fry 2013). However, designation of areas for specific industrial activity and predetermined setbacks would help these increasing regulations, while lowering the direct impacts accrued from fracking such as water and air contamination. Given the attitudes of residents of Dimock Township, PA, zoning in this location would not be a welcomed endeavor as private property rights usurp all other rights in the area. Individuals do not wish to be told what they may or may not do with their land. Having no zoning laws is a
contradictory stance to both keeping a location’s rural identity, and allowing for
industrial expansion, while acting as an additional detriment to fracking in rural locations
as mixing industry with residential creates the problems explored in this thesis.

VI.II.II Emergency and Informational Call Centers

As discussed across Chapter five, there have been policy changes in Susquehanna County to increase the area of liability that fracking companies have on water
degradation from one-thousand feet to twenty-five hundred feet from a residence (HB
1950). Further, Pennsylvania Supreme Court recently declared that parts of Act 13, such
as the “doctor gag-rule,” filing for eminent domain for natural gas storage facilities, and
the prohibiting of private well-owners from warning of hazardous spills is
unconstitutional (Phillips 2016). For example, fracking companies must inform residents
of a toxic spill at any fracking site, which can impact their drinking water (Woodall
2016). While these are steps in to prevent further issues, residents and community
members would prefer that local fracking companies and emergency call centers
coordinate an operation which would immediately inform citizens of any spill or leak of
methane or chemicals used in the hydraulic fracturing process, or an increased amount of
Particulate Matter 2.5 from the many liquid natural compressor stations. Many
discussions with residents eluded to this suggestion. Similarly, residents suggested that
this call center operation could take calls about fracking accidents, inquires, and
complaints, which would in return prove useful for the industry.
VI.III Clarity in Site Occupation Timeline

The Pennsylvania Department of Environmental Protection also made revisions to Act 13 regarding the amount of time required to restore well-pads to an original state. Nine months after drilling occurs, the operator must restore the well-pad to its original environmental status (§ 3216(c)). However, many surface use agreements made with individuals contain clauses that keep a site operational or unfinished over significant periods of time and allow industrial equipment to be stored on their property. Keeping a well-pad site operational while not fracking it poses a detriment to those who sign agreements without being thoroughly informed, and to community members as areas become unsightly. Therefore, clarity in contracts and addressing unsightly and lengthy occupation of sites are recommended. The local hydraulic fracturing company in the present area of research, Cabot Oil and Gas, has done an exceptional job of restoration. However, various sites remained inactive and highly visible to passersby from the road.

VI.IV Community Coordination and Educational Workshops

Engaging with community coordination and providing non-biased educational workshops before fracking activities begin in an area would be beneficial to a region about to engage in natural gas extraction through hydraulic fracturing. Fracking companies provide a significant amount of information to their customers and residents in the area of extraction. However, most of these resources are promotional and therefore simply endorse the economic and nationalistic aspects of fracking, while supplying contextual evidence that has no environmental consequences. Regardless of their literature, fracking activity involves heavy industry moving into rural areas. Even if the
process does not contaminate aquifers and degrade air quality from transportation, there is still polluting elements and socio-cultural transitions involved, regardless of the type of was industry moving in. Therefore, a disclosure of past discrepancies and a thorough explanation could ease future issues for fracking extraction companies and be more comprehensive to residents involved. Before a lease or mineral rights can be signed, perhaps a resident should be required to attend an educational seminar facilitated by a neutral party, which would display both the pros and the cons to all stakeholders involved. Only after this seminar would the landholder be authorized to sign a contract for surface or subsurface rights.

VI.II.V Best Available Technology

As discussed in Chapter five, the extraction companies in Northeastern Pennsylvania are slowly adopting the best available technology for extraction over time. Immediately implementation of improved technology and the cost of the improved well-bore casing and sealant, waste-water retrieval/storage and recycling, regular water testing for contamination, and constant monitoring of air quality at compressor stations should be considered in the cost of extraction. Without these aspects, the company can expect to spend an incalculable amount of money on legal fees and public relations. What Cabot Oil and Gas has done in Dimock can be utilized by other companies to demonstrate what not to do in regards to denying the contamination, and help facilitate this social rift in the community. These exploitative actions are seemingly the reason that Dimock has become the poster child for U.S. hydraulic fracturing activities and contamination. The fracking industry must learn from its mistakes in order to remain relevant.
VI.III Future Research

Throughout the interview process, it became apparent that residents of Dimock, supportive of the industry or not, are all impacted by some extremity of hydraulic fracturing’s consequences. This thesis explores the way in which each resident possesses his or her own unique story and perception. To further this research, or expand upon it, it would be helpful to include within interview and coding methods the following aspects to better understand the situation of each respondent.

1. The amount of time lived in Dimock Township: In Dimock, as with other rural locations across the U.S., there seems to be a social evaluation based on the duration of time a resident has resided in the area and how seriously one’s conviction toward or against the fracking company is in regards to environmental contamination. As an anecdotal example, one respondent who said their family had moved to Dimock almost four decades ago told me that multigenerational residents view the family as outsiders. Therefore, this individual was not very outspoken about his semi-negative stance on the industry. Consequently, an element of consideration to the community members’ amount of time in residence could help clarify how seriously that particular resident is being taken, as individuals are shunned for being outspoken against the industry by industry supportive community members.

2. Gender: Individuals of different gender experience the same situations in different ways. Considering factors of gender within interview questions could play a role in this or future research as some female participants seem to take dissimilar tones in contrast to male participants, suggesting that perceptions of hydraulic fracturing in Dimock are experienced differently by men and women.
3. *Proximity to extraction sites:* It became apparent to me that an individual living with infrastructure near or on their property would be more likely to be impacted by environmental or socio-cultural effects of fracking. Therefore, considering the proximity of extraction, or setbacks, to interviewees would have been beneficial. However, since the research is not a direct comparison of specific individual initial and current perception responses, the omission of these factors does not degrade the research, but could have potentially strengthened the perceptual analysis, while strengthening the argument for proper zoning laws.

4. *The amount of royalties and fluctuation of income:* An examination of research on Dimock and other fracking towns in Pennsylvania has eluded to a level of tolerance of industry activity due to the amount of royalties and lease money residents have accrued. This correlation between tolerance and economic incentives is evident, as residents are more vocal about their complaints toward the industry with a decreased monthly income. In fact, a reduced monthly income becomes another complaint against the industry. Perhaps, additional interview questions considering whether or not subjects are receiving economic benefits from the industry, and how benefits have changed from initial leases/royalty agreements to their current states, then comparing that to how their perceptions have changed would help shed light on drivers of perceptual change.

   Overall, this thesis has provided a more complex view of perceptions of fracking in Dimock than initially expected. However, it has been meaningful to portray the experiences and perceptions of the residents of Dimock with clarity and consideration in regards to all aspects. There are no simple answers to perceptual questions associated with hydraulic fracturing activates in Dimock, Pennsylvania. This location is exceptional
to the average area engaged in fracking activates as it was one of the earliest locations in Pennsylvania to engage in this boom-period of modern non-conventional drilling for natural gas, one of the first to be publicized nationally due to resulting environmental degradation, and one of the earliest to engage in, and ultimately win, lawsuits against the hydraulic fracturing company occupying the land. This perfect storm of events set this tiny township on the world stage, which can only further politicize the events which took place. The residents of Dimock welcomed me into their small community and gave me the responsibility to portray their stories. Whether their specific story was positive or negative toward the fracking industry, it has been my intention to display, empirically and unbiasedly, the information kindly provided.
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APPENDICES

Table 11: Interview Questions for Residents

<table>
<thead>
<tr>
<th>Questions for residents</th>
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</thead>
<tbody>
<tr>
<td>Can you recall when or how you first heard about hydraulic fracturing?</td>
</tr>
<tr>
<td>What were your impressions when you first heard about hydraulic fracturing? Economic – Environmental - Socio-cultural</td>
</tr>
<tr>
<td>What would you say were your initial positive thoughts about hydraulic fracturing?</td>
</tr>
<tr>
<td>What would you say were your initial negative thoughts about hydraulic fracturing?</td>
</tr>
<tr>
<td>Do you remember what influenced these initial reactions?</td>
</tr>
<tr>
<td>What personal experiences have you had with the industry, positive or negative?</td>
</tr>
<tr>
<td>Now to fast forward to the present: What are your current thoughts about hydraulic fracturing? Economic – Environmental - Socio-cultural</td>
</tr>
<tr>
<td>Can you explain what caused your thoughts to change/remain similar?</td>
</tr>
<tr>
<td>How do you view your communities’ relationship with hydraulic fracturing?</td>
</tr>
<tr>
<td>What direction would you like to see the industry take?</td>
</tr>
<tr>
<td>Is there anything I am missing that you would like to point out? I would love to hear any important aspects of your story that I have forgotten to ask about?</td>
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Table 12: Interview Questions for Government Employees

<table>
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<tr>
<th>Questions for government employees</th>
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<tbody>
<tr>
<td>What is your role in local government?</td>
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<tr>
<td>In what way does your role interact with hydraulic fracturing procedures or policy</td>
</tr>
<tr>
<td>Can you explain how the local government involved is with the hydraulic fracturing companies?</td>
</tr>
<tr>
<td>What is your experience with the community in regard to hydraulic fracturing?</td>
</tr>
<tr>
<td>Have you seen policy changes regarding hydraulic fracturing? If so, what has brought about those changes?</td>
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<tr>
<td>What, as you recall it, what was the community’s initial reactions to hydraulic fracturing?</td>
</tr>
<tr>
<td>Can you explain the community’s current reactions to hydraulic fracturing?</td>
</tr>
<tr>
<td>What do you personally believe caused their thoughts to change/remain similar?</td>
</tr>
<tr>
<td>What, if any, conflicts have you seen between community and the industry?</td>
</tr>
<tr>
<td>What would you say the positive outcomes from the hydraulic fracturing industry have been? Economic – Environmental - Socio-cultural</td>
</tr>
<tr>
<td>What would you say the negative outcomes of hydraulic fracturing industry have been? Economic – Environmental - Socio-cultural</td>
</tr>
<tr>
<td>Is there anything I am missing that you would like to point out? I would love to hear any important aspects of this story that I have forgotten to ask about?</td>
</tr>
</tbody>
</table>

Table 13: Interview Questions for Community Members/Local Activists

<table>
<thead>
<tr>
<th>Questions for community members/local activists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you explain to me the purpose of the organization (s) you are affiliated with and your role within it?</td>
</tr>
</tbody>
</table>
Please describe any community engagement or help your organization, or you, have had with residents of Dimock/Susquehanna County?

<table>
<thead>
<tr>
<th>Questions for hydraulic fracturing/natural gas company employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you please tell me your title and duties at ________?</td>
</tr>
<tr>
<td>How long have you been working for the hydraulic fracturing industry?</td>
</tr>
<tr>
<td>Can you recall when you first became aware of the hydraulic fracturing process?</td>
</tr>
<tr>
<td>Do you remember your initial thoughts about the hydraulic fracturing process?</td>
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<tr>
<td>In your opinion, how would you say the industry has been received by the public?</td>
</tr>
<tr>
<td>Economic – Environmental - Socio-cultural</td>
</tr>
<tr>
<td>In your experience, has the industry been met with opposition from the public?</td>
</tr>
<tr>
<td>Economic – Environmental - Socio-cultural</td>
</tr>
<tr>
<td>Has the extraction process itself changed as policies have changed?</td>
</tr>
<tr>
<td>If so, has the public become more or less accepting of the process?</td>
</tr>
<tr>
<td>In your experience, what is the industry’s impact on local economics?</td>
</tr>
<tr>
<td>Can you explain is the industry’s effect on local environmental concerns?</td>
</tr>
<tr>
<td>Is there anything I am missing that you would like to point out? I would love to hear any important aspects of this story that I have forgotten to ask about.</td>
</tr>
</tbody>
</table>