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"The Fight Starts Here:" Appalachian Mountaintop Removal in Three Contemporary Young Adult Novels

Sarah Mawhinney

“The Fight Starts Here:” Appalachian Mountaintop Removal in Three Contemporary Young Adult Novels

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By
Sarah Mawhinney
University Honors Scholars
East Tennessee State University

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Sarah Mawhinney, Author Date

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Dr. Scott Honeycutt, Faculty Mentor Date

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Dr. Kevin O’Donnell, Faculty Reader Date

The trees were lush and large, with holly, mountain laurel, and dogwood filling in the forest floor. As we came over a gentle rise the trees ended abruptly. What lay before us was a scene of unimaginable devastation. We stood on the edge of a flat moonscape two miles across…

- Christopher Scotton, *The Secret Wisdom of the Earth*

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I. Introduction

Mountaintop removal is an issue that has plagued Appalachia as companies harvest coal from the mountains, and the consequent environmental effects are numerous and varied. Erik Reece, an author who dedicated a year to the issue of mountaintop removal, observed Kentucky's Lost Mountain as it was mined. He wanted to witness the ramifications of mountaintop removal for himself and the ironically named mountain was the ideal location. As Reece so aptly states, mountaintop removal, "is the story of how the richest ecosystem in North America is being destroyed, and how some of the poorest people in the United States are being made poorer by a coal industry that operates with little conscience of constraint" (Reece 5). Since mountaintop removal is of such concern in the Appalachian region, it is unsurprising that young adult literature has started to reflect the issues that arise from the process.

The aim of this paper is to look at three contemporary young adult novels that focus on mountaintop removal. *Saving Wonder* (2016), *Dig Too Deep* (2016), and *The Secret Wisdom of the Earth* (2015) were all chosen for their subject matter pertaining to mountaintop removal, and these three novels are the primary works pertaining to this issue. Therefore, they were all utilized to discover how each novel portrays and accurately reflects the real environmental and consequent community effects of this type of coal mining. Additionally, through looking at the problems present in the novels and how they correlate to the real-life issues, this paper will show that young adult novels should not be discounted as mere stories but as a category of fiction that has a purpose, can teach lessons, take positions on controversial environmental issues, and help young readers better understand their world.

Young adult (YA) novels are often discounted as not having any real worth because, "YA books present the teenage perspective in a fundamentally uncritical way. It's not simply that YA readers are asked to immerse themselves in a character's emotional life […] but that they are

asked to abandon the mature insights into that perspective that they (supposedly) have acquired" (Graham). Writer Ruth Graham's perspective on young adult novels highlights the unimportance some individuals place on this category of fiction because they view it as uncritical and the abandonment of mature insights. By arguing for the perspective that these novels are "fundamentally uncritical," young adult novels can be labeled as frivolous narratives that offer nothing of worth for readers. Therefore, through critics like Graham, some individuals may consider young adult novels to avoid controversy and mainly have the purpose of enjoyment.

However, there is opposition to Graham's claim. Other critics argue that young adult novels matter. Gary Salvner, an author and professor, is one such proponent of young adult literature because he thinks, "an obvious lesson is that literature has the capacity to enter our lives, to interact with what we already know and believe, and perhaps even to change us" (Salvner 9). Salvner's argument focuses on the impact literature has on young students who can either relate to the stories they are reading or become inspired by them, and he even claims that young adult novels can, "address the questions of our day, and allow students to ponder and decipher real answers" (Salvner 12). Gretchen Schwarz is another critic who thinks young adult literature provides value. Schwarz demands that readers start being critical of young adult literature because these novels feature, "ideas related to quality, moral behavior, and purpose [that] deserve critical consideration" (Schwarz). Largely, Schwarz is trying to convey the message that young adult literature has significance, it must be viewed critically in an attempt to uncover moral, ethic, quality, and much more.

As with any topic, there are two sides to the argument, but it seems most likely that young adult literature does have something valuable to offer, promotes critical thinking, and teach its readers about controversial topics. Schwarz's article also states that, "critical thinking

demands that we examine the social and economic contexts of young adult literature" (Schwarz), and by examining mountaintop removal in young adult novels, social context will be unveiled and ultimately readers of the novels will have the opportunity to "address the questions of our day" surrounding mountaintop removal (Salvner 12). Building off of these ideas about why young adult literature matters, research focusing on young adult dystopian novels offers insight. Specifically, this research has focused on how dystopian novels can reflect societal concerns. Issues in society that help form the basis of dystopian novels as "fictional fear-based scenarios that align with contemporary cultural concerns" take a primary focus in the novels (Ames 4). In this way, young adult dystopian novels are creating a space for readers to acknowledge and potentially gain a better understanding of issues happening within their current societal space.

Furthermore, dystopian novels typically share many common themes such as conformity, an overreliance on technology, an oppressive government, and environmental degradation (Basu). These themes can reflect real feelings of teenagers or act as a warning for some aspect of the current society. In some ways, mountaintop removal can even be considered as a type of dystopian society due to the dramatically changed landscape and power dynamics in coal towns. Therefore, if young adult dystopian novels can be looked at to explain and analyze societal and cultural concerns, then it follows that other types of young adult novels can reflect current environmental problems.

Young adult novels that feature mountaintop removal matter because they offer readers an opportunity to learn about a current environmental problem facing a region of the United States, a chance to be critical of this issue, and show how young adult novels can reflect and express an environmental issue in an accurate way. At this time, there is a broad range of young adult novels featuring environmental issues, but there is not an extensive spectrum of young

adult novels focused on mountaintop removal. The three novels used in this research are the primary candidates because it remains to be seen if mountaintop removal is an enduring topic in young adult literature since these novels are only a few years old.

Reading young adult novels about mountaintop removal gives individuals exposure to an environmental problem they may not have heard of before, or it can give readers in the Appalachian region a relatable story that may inspire them to act or work to improve their environment. Young adult literature should not be simply discounted due to its classification. Instead, it should be read critically by young readers and adults alike to see what can be learned from it or how it is addressing real problems facing the world. Mountaintop removal devastates the environment in ways that are irrevocable, and these environmental effects then create community concerns. The importance of young adult literature cannot be understated, and the three novels being examined will reveal the significance these works hold.

Saving Wonder, by Mary Knight, focuses on seventh-grader Curley Hines and his life in the Appalachian Mountains of Wonder Gap, Kentucky. Curley lives with his grandfather as a result of both his parents and his brother dying in mining accidents; therefore, Curley has a strong reason to fight against mining in his town. When a new family moves to town, Curley experiences chaos in his life. The father of this family wants to mine the mountain behind Curley's house, but Curley feels a special connection to this mountain as he grew up around it and on it. When a school project has Curley look more into a topic that was a result of mountaintop removal, he visits a site himself for the first time. Curley is astonished by the devastation and decides to fight for his mountain. With the help of his friends, Jules and JD, Curley protects his mountain and inspires his fellow townspeople to speak up. Through his adventures and research, Curley introduces readers to a large variety of environmental concerns

surrounding mountaintop removal. He also portrays the importance of protest groups and fighting for the cause.

Dig Too Deep by Amy Allgeyer is the second young adult novel studied for its relation to the topic of mountaintop removal. In this novel, Liberty Briscoe, a high school junior, moves to Ebbotsville, Kentucky to live with her grandmother. As an outsider, Liberty notices things happening in the community that do not seem right. People in town, including Liberty's own grandmother, are becoming sick, and Liberty sets out to find the reason. A major issue that Liberty notices over and over again is the orange water that runs from the taps in everyone's home. Most people try to avoid drinking the water, but it is impossible to avoid using it completely. When Liberty begins to investigate the coal mining company and the mountaintop removal they are conducting near the town, she begins to find a pattern that may be the cause of many of the town's problems. As Liberty discovers more information, she begins to receive threats as she finds out the truth about the water and other environmental problem stemming from the mining site. With the help of a few friends, Liberty is able to take a stand against the company and make a small difference.

The final novel being examined in conjunction with the other two is *The Secret Wisdom of the Earth* by Christopher Scotton. Much like Liberty in *Dig Too Deep*, Kevin is an outsider to Appalachia when he and his mother move to live with his grandfather in Medgar, Kentucky. Kevin, who is fourteen, loves the mountain around his Grandfather's house, and he is exploring one day when he notices the massive mountaintop removal site on a close mountain. Through his stay in town, Kevin observes how the coal company is pillaging the town and the people. He notices people being hurt as a direct result from the mine as well as many injuries against the environment. Kevin's grandfather is a major opponent that speaks out against the coal company,

and Kevin soon joins in the fight to the best of his ability. When the company wants to buy Jukes Hollow, a family plot of land that is very important to Kevin's grandfather, Kevin and his grandfather do everything they can to stop the company from buying the land. Through his grandfather, Kevin learns the importance of and an appreciation for the mountains.

Using these three novels, many environmental and consequent community effects will be discussed as they relate to the actual problems in Appalachia. However, to help give context and better understanding to the discussion of these problems, a brief overview of mountaintop removal is essential. Before the process is explained, it is important to note that mountaintop removal does not occur throughout the entire Appalachian region from New York to Alabama. Instead, coal mining is focused in the Cumberland Mountains which is mainly located in Kentucky, West Virginia, Virginia, and Tennessee. Consequently, these states, most particularly Kentucky and West Virginia, experience the hardships mountaintop removal brings to the region.

With that clarification in mind, coal mining itself started in Appalachia between the 1750s and 1800s, and this first mining took place as a primitive form of underground mining. In the 1870s, large-scale coal mining began in the region, and during the second half of the twentieth century, mountaintop removal —also called strip mining or surface mining— overtook underground mining ("Environment" 113). Mountaintop removal became the standard for coal mining because it, "supplied the demand for coal faster, with fewer casualties and higher productivity per man, than underground mining" (Burns 12). Since mountaintop removal was a faster, often cheaper, way to make money, it is unsurprising that coal companies committed wholeheartedly to this process of coal mining to make as much money as possible.

Shirley Stewart Burns describes the process as, "the complete obliteration of mountains and streams through mountaintop removal coal mining, an aggressive form of strip mining that

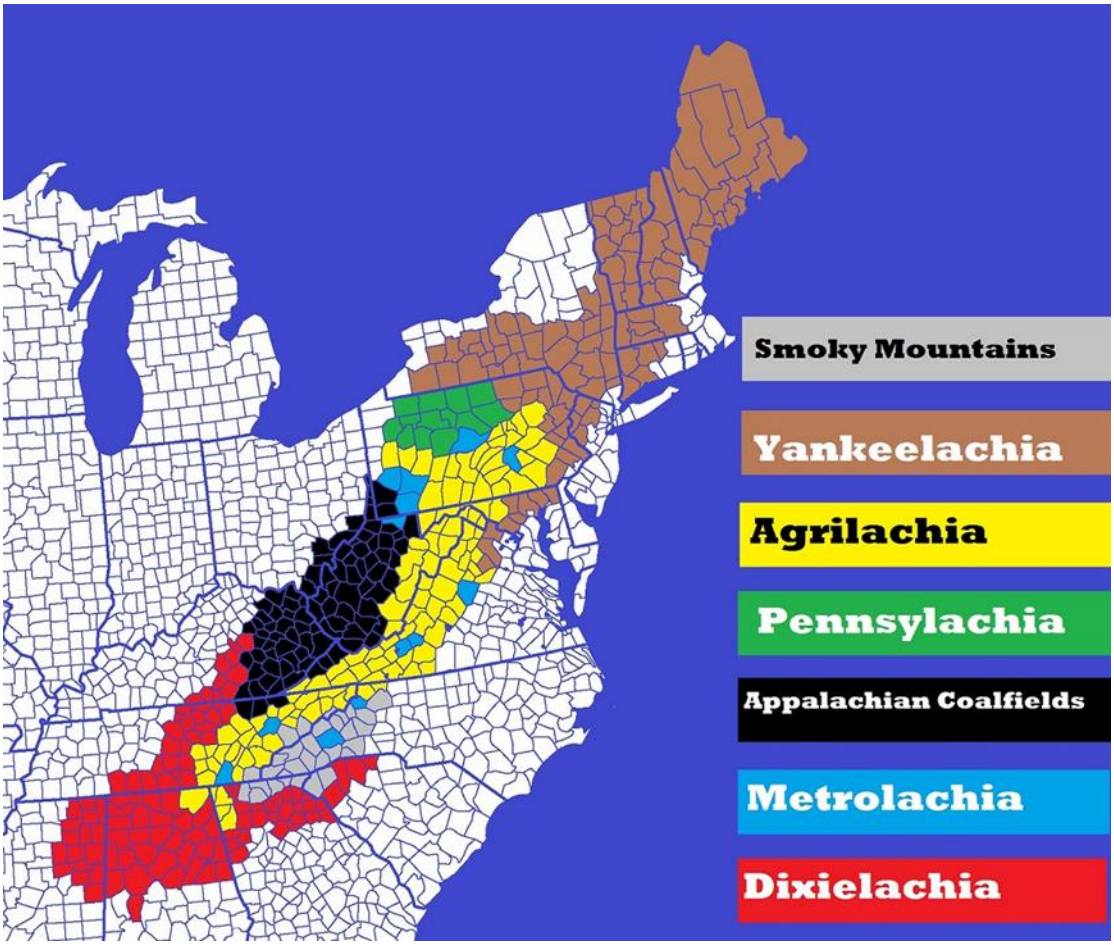

Figure 1. Different Areas of Appalachia with Coalfields in Black from: "Understanding the 7 Distinct 'Nations' of Appalachia." Appalachian Magazine, 30 Jan. 2017, appalachianmagazine.com/2017/01/30/understanding-the-7-distinct-nations-of-appalachia/

literally blows away mountains to gain easy access to the coal seams" (Burns et al. 16-17). Essentially, obliteration happens when a coal company decides to start a mountaintop removal project. The process of mountaintop removal causes tremendous destruction as the entire top of a mountain is removed to reach the underlying coal seam for coal extraction. To help with the vast removal of earth, machines called draglines are utilized. Draglines are enormous machines that can excavate 100 cubic yards in one scoop (Wickham 335). Millions of pounds of explosives are also used to help remove the earth and expose the coal seams. Between draglines and explosives, up to 1,000 vertical feet can be removed from a mountain undergoing the mountaintop removal process (Allen 187).

Valley fills and overburden are more major components of mountaintop removal. Overburden results from, "some of the material that once comprised the mountaintop […] Not all of the overburden can be put back into place because its volume expands when broken up by explosives" (Allen 187). Essentially, overburden consists of the earth and other matter resulting from mining. Since overburden's volume expands, the extra needs to be disposed of in areas that are termed valley fills. To dispose of the excess mining spoil, coal companies dump the excess into valleys. Consequently, the overburden, "fills valleys and buries stream" as coal companies dispose of the waste they created (Lutz 1). The filling of valleys and streams wreaks havoc on the environment and can eventually lead to affects in the community. In the most basic sense, mountaintop removal is the process of removing the tops of mountains to reach coal seams, and draglines, explosives, overburden, and valley fills are some of the most common aspects of this process.

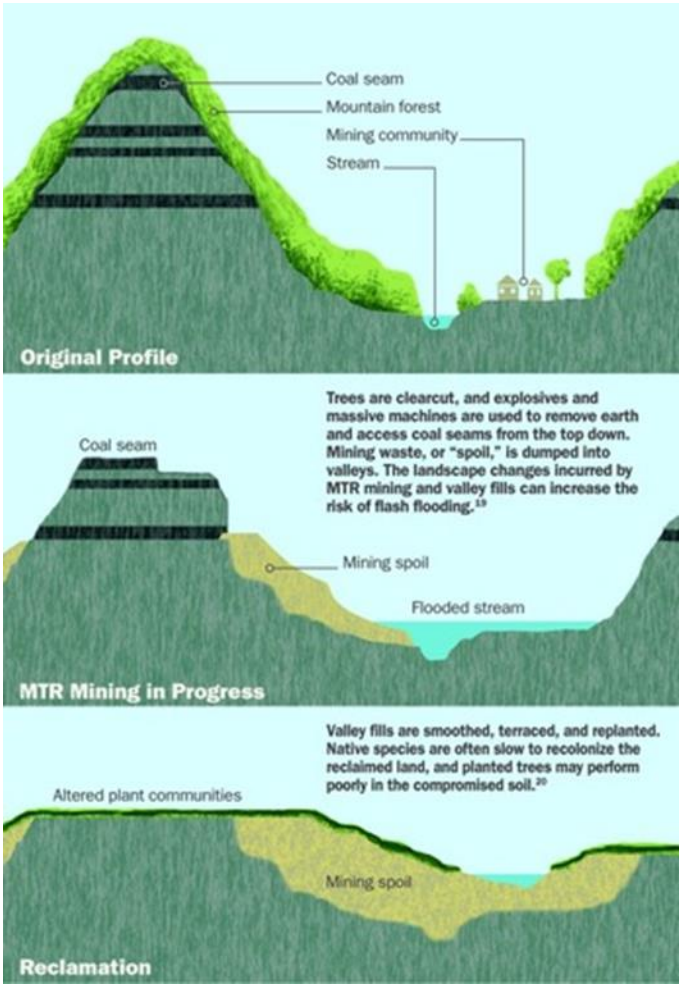

Figure 2. Mountaintop Removal Mining in Progress from: National Institute of Environmental Health Sciences, U.S. Department of Health and Human Services, 1 Nov. 2011, ehp.niehs.nih.gov/doi/10.1289/ehp.119-a47

From this brief overview of mountaintop removal and the basics of what it entails, the invasive and destructive nature of the process becomes apparent. Every aspect of mountaintop removal focuses on the sole purpose of harvesting the coal from the mountain as the coal

industry is still viewed as a necessity by many individuals in society. However, Wendell Berry, an acclaimed environmental writer, comments on the coal industry and coal's place as a commodity and source of energy. Berry acknowledges that coal is still a commodity that we need at the present though he is quick to qualify that we should hope that we will not always need it. However, one of his most pressing points states that, "the source of the coal itself is not renewable. When the coal is gone, it will be gone forever […] The natural resources of permanent value to the so-called coalfields of Eastern Kentucky are the topsoils and the forests and the streams. These are valuable, not, like coal, on the condition of their destruction, but on the opposite condition: that they should be properly cared for" (Berry). Berry is stressing the importance of the Appalachian environment and how its natural resources should be placed at a higher value than coal. Mountaintop removal does not heed the permanent value of these natural resources, and the worth placed on coal instead of the environment will be easy to understand when examining the novels and their connections.

II. Clearing the Mountain

In each of the three young adult novels, the protagonists come face to face with mountaintop removal and its effects on their communities and families. Of the three main characters, Curley, from *Saving Wonder*, is the only one who truly originates from the Appalachian region. His life is deeply intertwined with the mountains, but even with this connection, he did not realize the effects of coal mining beyond the accidents that caused his family's deaths. Liberty, from *Dig Too Deep*, and Kevin, from *The Secret Wisdom of the Earth*, have family members from the region, but they only come to live in Appalachia as a result of extenuating circumstances. Though all three characters come to the region in different ways, they

come to acknowledge the destruction of mountaintop removal on the mountains they hold so dear. Each character has a moment where they first observe mountaintop removal, and this first look becomes deeply ingrained as they are shocked by what they see.

Curley's first encounter with a mountaintop removal site occurs when he is taking an elk tour on one of the reclaimed sites. The elk tour is a result of reclamation and the coal company's efforts to make their process seem as beneficial as possible. The elk and reclamation will be discussed in more depth at a later point, but at this time, the elk tour is the reason Curley sees a mountaintop removal site and consequently becomes an advocate for his mountain. As the bus pulls up to the site, Curley receives his first view of mountaintop removal, and as, "the road levels out and a vast, lunar-like landscape opens up before us- solid, gray rock and hard-packed dirt as far as the eye can see. There are mountains in the distance, hinting green, but the stony wound in front of us is so wide and gaping that it looks like God Himself swiped away the mountaintop with one mighty claw" (Knight 76). Curley is so astonished by what he sees that he cannot even recognize it as the remnants of a mountain. Instead, he compares it to a lunar landscape that is barren and gray. Curley's view of the site and reclaimed mountain make him feel sick and unsteady, and he realizes that mountaintop removal may not be as great as the coal companies make it out to be.

Liberty, from *Dig Too Deep,* and Kevin, from *The Secret Wisdom of the Earth,* have similar reactions as they visit favorite spots from short family stays with their grandparents. Upon arriving at her new home in Ebbotsville, Liberty takes to the mountains behind her grandmother's house, and during her adventure, "that's when I see it. Or rather, don't see it. Tanner's Peak. The whole top of the freaking mountain… it's just gone […] I'm staring, openmouthed, thinking about all the things that are gone" (Allgeyer 9-10). Liberty is astounded

Figure 3. Mountaintop Removal Before and After from: Romm, Joe. ThinkProgress, 14 June 2010, thinkprogress.org/rand-paul-i-believe-business-should-be-left-alone-from-government-e1ad3a7fb220/.

that the top of an entire mountain is simply destroyed, and she acknowledges that it is not just the top of the mountain that is gone, but spots around it such as a blackberry patch, a cave, and a lookout (Allgeyer 10). Kevin's reaction follows suit when he looks over the horizon and, "something seemed out of place. The silhouette of the mountains over by the Hogsback was strangely malformed, as if some giant had cut off the peaks, leaving a flat gray table" (Scotton 16). The scene does not make sense to Kevin as he cannot fathom how a mountain can lose its entire peak, and he even notes that the mountain is "malformed" by the loss of its peak. Curley, Liberty, and Kevin are all struck speechless at their first sight of mountaintop removal because it looks so foreign and unreal with their expectations for the mountains around them.

These initial reactions to mountaintop removal are notable because they act as the catalyst for the protagonists to realize how much the mining process can harm the environment and communities around them. Curley, Liberty, and Kevin are inspired to start taking notice of what is actually happening at and around the mine sites, and they try to find ways to help the

mountains and people they love. As the characters themselves are confronted with the horror of mountaintop removal, young readers begin to learn about the process and its numerous effects. By looking at the experiences of the characters and comparing them to the actual processes and facts of mountaintop removal, the valuable lessons and information in young adult fiction will be noted. Though Curley is the only character to experience it, the mountaintop removal process begins with the need to cut down the forest on the selected mountain. In *Saving Wonder*, Curley and his best friend Jules have a special tree called Ol' Charley that they like to sit in and talk. When Tiverton Coal prepares to mine Red Hawk Mountain, Curley and Jules find out that the company will cut down Ol' Charley and all the surrounding trees. To delay the process, Curley and Jules stage a sit-in and record a video about why Tiverton Coal should not be allowed to mine Red Hawk Mountain.

In their video, the friends implore the help of their audience as they explain what happens during the initial preparation phase. They speak to their audience by saying, "Not only does Tiverton Coal want to run over Ol' Charley, but they want to *eradicate* every living thing on Red Hawk Mountain. That's right. After they put in this mining road, they're going to burn down all the trees, which will kill or scatter all the critters, of course" (Knight 171). Though Curley explains the process in a very simple way, his statement allows readers a basic understanding of what happens in a way that reflects the actual actions of starting the mining process on a mountain. To prepare a mountain, the trees are deracinated at the site and for the creation of a mining road, if one does not exist already. The removal of part of the forest has considerable effects on the flora and fauna of the region, and Curley touches on this when he mentions the critters that will be killed or scattered. From Curley's statement in this novel, readers are opened to the possibility of a deeper understanding about the first stages of mining.

As Curley mentions, trees like Ol' Charley and all the surrounding ones will be destroyed by the coal company as they make way for the mine. In Appalachia, deforestation is a very real concern with multiple consequences such as the clearing of large forest tracts, the effects on wildlife populations, erosion, sedimentation of streams, and surface runoff ("Environment" 113). Removing large areas of forest tract alters not only the view of the mountain itself but also the ecosystem. When Reece recounts first seeing a cleared mine site, "scalped is the word that keeps repeating itself in my notebook: This mountainside has been scalped. The trees that covered it now lie in massive piles all down the slope. The pile at the bottom has become a burning pyre, and a haze of smoke fills this concave southern valley" (Reece 33-4). Reece's description of a real mountaintop removal site reinforces that Curley's fictional account was not an exaggeration. An entire section of the forest was cleared and burned to make way for the mining of coal. One study concluded that mountaintop removal has resulted in the, "removal of 6.8% of forests" in Appalachia, and it is likely that the number will only grow as the process continues (Fox 2144).

With the lack of trees at mine sites, erosion becomes a problem because the region is, "particularly susceptible to erosion because much of the land consists of steep mountains and hills […] Surface mines remove a mountain's infrastructure, leaving barren crags prone to landslides and earth failures. Flooding and water contamination are thus greatly increased around surface mines" ("Environment" 119-20). The issue that Curley specifically focuses on is the species that are affected by the changing ecosystem resulting from the loss of tree coverage. As he notes, the loss of trees will, "kill or scatter all the critters," and that is essentially what happens to organisms living in the forest when the landscape is drastically changed (Knight 171).

The loss in species diversity results from multiple factors such as the distribution of native forest communities, topography, and climate change. For the flora and fauna that do not

Figure 4. Cleared and Mined Site near Black Mountain. KY from: Author's Picture

perish in the burning or cutting of the forest, the habitat is drastically changed in a way that they may not be able to acclimate or inhabit the area anymore. Within Appalachian forest ecosystems, the native forest communities are distributed in a natural pattern, but when mountaintop removal begins, these patterns are interrupted when forests are destroyed (Wickham 343). Additionally, a change in topography starts with the deforestation of the area, but it is furthered when layers of the mountain are removed to reach coal seams. Ridges become lower in elevation and broader while valleys become higher in elevation. One study concluded that, on average, ridges were lowered by roughly 34 meters and valleys were raised 53 meters (Wickham 338). The changes in elevation obviously affect the flora and fauna of the area as their habitats experience substantial change, and it can even impact the climate as it has been suggested that a loss of 300 meters can

raise the temperature 1.5-3 degrees Celsius (Wickham 339). When all these factors are taken into consideration, it is no surprise that the flora and fauna of the region suffer from the loss of trees and other consequent changes to their environment. Some species can only exist within a specific elevation range, temperature, or forest habitat. Though Curley does not explain all these detailed ramifications of deforestation as a result of mountaintop removal, he does indicate to readers that there are complex consequences for destroying a forest and mountain.

III. Blasting and Flyrock

Once a mountaintop removal site is cleared of trees, vegetation, and wildlife, the next step is blasting to begin the process of removing layers of earth to reach coal seams. In his impassioned speech to protect his mountain, Curley mentions the effect on the wildlife of the area. As important as that is, he does not forget to mention an aspect that will affect not only the environment but the community itself. He says, "And then they're going to blow up our mountain. That's right, blow up our mountain. I'm not kidding. Right here in our backyard" (Knight 171). Curley appropriately emphasizes that the mountain will be blown up, in the process of blasting, and this will happen right in the townspeople's backyards. Though blasting has numerous environmental effects, this is also where the community effects start to manifest. Since Curley is able to put a stop to mountaintop removal on Red Hawk Mountain, he does not see the truth of his statement. However, *The Secret Wisdom of the Earth*'s character Kevin witnesses the chaos of blasting in his own community in Medgar.

Blasting is a necessary part of mountaintop removal because the coal seams are layered under sandstone, shale, and slate. Reece describes the Appalachian Mountains as, "a geological layer cake with seams of coal two to fifteen feet thick" (Reece 73). To reach the coal, layers of

earth have to be stripped away, and the easiest process to remove the earth is blasting. The blasting process begins with sixty-foot deep holes being drilled into the earth every ten feet or so. As the holes are created, a mixture of ammonium nitrate and fuel oil is filled into bags on site as the substances are too volatile to transport. Once each bag is filled, they are placed into the pre-drilled holes with blasting caps positioned over them (Reece 89). The site is then ready for blasting, and with a mixture that is too volatile for transportation, it is not surprising that the explosion can have quite an impact. Reece equates the explosion to a Las Vegas fountain that spews rock as debris, typically called flyrock, shoots out of every hole (Reece 90). On Lost Mountain, Reece watched the actual blasting process occur, and though Kevin, in *The Secret Wisdom of the Earth*, does not receive such a close view, he has an experience similar to Recce's description of blasting.

Kevin's grandfather is a veterinarian who makes house calls to farms in Medgar. As the story progresses, Kevin begins to tag along with his grandfather to help him on his calls. One such call at the Mitchell Farm is interrupted by blasting on a nearby site. Kevin says, "Just then, a piercing explosion broke across the valley and a plume of smoke and debris rose from the hauled-off mountaintop at the back of Grubby's farm. We all turned to it as if we were watching fireworks on the Fourth" (Scotton 61). Kevin, his grandfather, and Grubby can actually observe the debris flying into the air, and the explosion is piercing. It is clear that the mine site is not far off from the Mitchell Farm if the explosion can be observed both auditorily and visually. It follows that there is danger in such blasting processes on mountaintop removal sites because the sites truly are close to the communities. If they are close enough to see the debris in the air, then there is the possibility for an injury or other accident.

The community of Medgar feels this danger firsthand when one of their fellow residents is killed as a direct result of blasting. Nearly every evening Pops, Kevin's grandfather, sits on his front porch and talks with people that stop by for conversation. One such evening, Paitsel, a friend and townsperson, stops by with some somber news about Simp Dodger, another community member in Medgar. Pops and Kevin learn that Simp was, "'killed by flyrock this afternoon … in his own damn backyard,' Paitsel said, measuring out the syllables like they were bitter medicine […] 'Flyrock is what comes off the mountain when they're blasting […] We are becoming a regular war zone the way they are blowing up everything'" (Scotton 43). Simp Dodger was minding his own business on his property when he was struck by flyrock, a byproduct of blasting, and his life ended instantly. Paitsel says that the rock that hit Simp was the size of a basketball and took off most of his skull (Scotton 44). Simp did not have a chance to

Figure 5. Blasting at a Mountaintop Removal Site from: Melnik, Dmitri. Earthjustice, 31 Jan. 2017, earthjustice.org/slideshow/images-of-mountaintop-removal-mining

protect himself or have a say in the mining practices that resulted in his death. Instead, everyone in Medgar is living in what Paitsel describes as a war zone. Unfortunately, the account of Simp's death is not just a narrative detail as actual accidents and tragedies from blasting occur in Appalachia.

Blasting can cause an array of problems from breaking foundations to injuring or killing people. Since blasting from mountaintop removal sites often occurs close to homes and communities, it is not uncommon for wells or building foundations to crack from the forceful explosions. This is problematic for community members as their property values depreciate from the cracked foundations or wells, and often, their property is their most valuable asset. Additionally, communities are impacted by flyrock which can range in size from pebbles to boulders. No matter the size of the flyrock, it has the potential to injure or kill individuals if the debris falls down the mountain either during the explosion or at a later time (Appalachian Voices).

Reece also expounds on accidents that can result from blasting and flyrock. He argues, "People were getting hurt, chimneys and houses foundations were cracking, dishes were shattering. An older couple in Knox County was sitting beside their small pool one afternoon when a boulder came flying at them from a strip job behind their house. That particular piece of flyrock splashed down in the pool, cracked the concrete bottom, and soaked the man and wife […]. This year, eight off-site flyrock violations were reported in Kentucky, and in one case, children were playing in their pool when debris started falling around them" (Reece 88). Flyrock and blasting accidents are not rare occasions, and Reece outlines many instances where there could have been a much more tragic end. These accidents have become common occurrences in Appalachian communities where mountaintop removal is happening, and Kevin's story in *The*

Secret Wisdom of the Earth accurately reflects actual consequences of mountaintop removal and blasting. Curley's words also come to the forefront again as mountains are being blasted apart in people's own backyards.

IV. Waste and Water Pollution

Once the removal of a mountain has started, the excess material from blasting and clearing needs to be disposed of in some way. Instead of trucking debris out of the site, coal companies typically utilize the valleys adjacent to their site to dispose of the excess soil, trees, or other matter. In *Dig Too Deep,* Liberty's first view of mountaintop removal, discussed earlier, is followed by her realization that the coal company dumped the excess into the valley. As she stares stunned at the scene before her, Liberty says, "I'm wondering what they did with the rest of the mountain when I realize the valley floor is only half as deep as it used to be, and filled with raw dirt, rocks, and tree roots. They must have carved off the top third and dumped it into the valley between Tanner's Peak and the next hill over" (Allgeyer 10). Liberty's observation that the top of the mountain was dumped into the adjacent valley is astute and follows what coal companies actually do with excess dirt, rocks, and vegetation. Such an observation allows young readers to understand how each step of the mining process affects another as it is a direct result of deforestation and blasting that material needs to be disposed of by the coal companies.

The excess material that once comprised the mountain is termed overburden, and the valleys where the material ends up are coined valley fills. Though coal companies use a small portion of the material to recontour the mountain once mining is complete, a majority of the overburden cannot be put back into place as its volume expands when it is disrupted and broken up by explosives. In some areas, there is so much overburden that valley fills can reach 1,000

feet wide and over a mile long (Allen 187). Since so much matter is dumped into the valleys, the natural valley is entirely changed, and the landscape becomes unfamiliar. Once Liberty notices the filled-in valley, she states, “I’m staring, openmouthed, thinking about all the things that are gone: the lookout where you could see all the way to Bakersville, the blackberry patch, the little cave Granny and I hid in once when a thunderstorm blew up, the best hole for crawdads in the whole county” (Allgeyer 10). Liberty is noting all the places that she frequented on visits to the mountains, and they are simply gone now that there is a valley fill. Liberty mentions that the blackberry patch is gone which indicates that any vegetation in the valley has since been covered with dirt and rocks. The loss of vegetation is important because the creation of valley fills results in the loss of large amounts of forest. Since valleys have different flora and fauna makeup than other sections of the mountains, valley fills and overburden can cause a disproportionate loss in different types of forests such as cove forests and floodplain forests (Wickham 343).

Liberty is not the only character to notice or have a connection to overburden and valley fills. Kevin’s grandfather, Pops, owns a plot of land that used to be his family home. He constantly tells Kevin about this land, called Jukes Hollow, and how special it is. Bubba, the coal company owner, wants to buy Jukes Hollow, but Pops confronts Bubba’s motives by saying, “‘I suspect you’ll need somewhere to push all that overburden. The other side of Bridger is all Old Blue National Forest. The park boys will never let you hollow fill Blue. Jukes is the only option you’ve got” (Scotton 107). In this case, there is a personal connection to the land that the coal company wants to bury under their mine waste. Bubba does not care about the connection to the land or the unique environment of the hollow. He is only thinking about business and the cheapest way to mine the coal seams on Bridger Mountain. In his stories, Pops tells Kevin about a beautiful waterfall and pond in Jukes Hollow, and if the land becomes a valley fill, the water in

the hollow will be buried and contaminated. That leads to another major consequence of valley fills and mountaintop removal.

The Appalachian Mountains are home to many streams, and often, when overburden is dumped into a valley fill, streams are completely buried. A 2003 study found that 6.8% of forested territory is affected by overburden, and out of 59,000 miles of streams, valley fills covered 724 miles between 1985 and 2001. Though 724 miles were covered, the effects did not stop there. A total of 1,200 miles of stream were affected, either covered or contaminated, by valley fills ("Environment" 114). Contamination of streams and water has a major impact on both the environment and communities, and all three characters express this concern and its importance at some point. While there are technically regulations under the Clean Water Act that are supposed to protect streams and rivers from mountaintop removal pollution, it is not uncommon for streams to become contaminated. One of the first effects of this contamination is seen in the aquatic wildlife. Pollution causes major concern because Appalachia hosts one of the highest rates of aquatic biodiversity of any temperate region in the world. The primary threat to this high rate of diversity is habitat alteration, contamination, and the loss of species ("Environment" 143). Mountaintop removal directly threatens aquatic biodiversity as streams are buried or contaminated and subsequently, aquatic life is lost or altered.

Curley learns about the loss of aquatic life as a result of pollution when he is visiting the mountaintop removal site. He asks the guide about a lake he vaguely remembers fishing at with his dad. The guide says that it was most likely Crystal Lake because it was well-stocked with fish. The guide adds though, "'Yeah, that was a great place. It's just about a mile from here. Can't fish in it anymore, though […] Things kind of died off […] Could have something to do with runoff from the local mine" (Knight 75). In that moment, Curley realizes the consequences

Figure 6. Contaminated Waterway from: Schmerling, Mark. Earthjustice, 31 Jan. 2017, earthjustice.org/slideshow/images-of-mountaintop-removal-mining, slide number 8

of polluted water as Crystal Lake, which used to be a great fishing hole, can no longer support life. Liberty also notices a change to aquatic wildlife as a result of contamination. Liberty and her grandmother visit a family-known crawdad hole in an attempt to supplement their food supply. At a first glance, Liberty does not notice much about the creek except that, "the water's really muddy and there's some weird foam caught in the rocks on the far side" (Allgeyer 100). Ignoring those signs that the creek has changed, Liberty starts to collect crawdads.

As Liberty deposits crawdads into a bucket, she notes, "as I hand the fifth one to Granny, I notice something. Something not right […] 'Look. His head.' Really, that isn't grammatically correct. Because there isn't just one head. There are two. A Siamese twin crawdad. Like the fish I saw pictures of on the *End Mountaintop Removal Mining* website. Two heads. Two tails. Too many fins. Too many eyes. Mutants" (Allgeyer 101). Liberty cannot ignore the unnaturalness of

Figure 7. Coal Piled Next to Water from: Author's Picture

Figure 8. Polluted Water Next to Coal Piles- No Fishing or Swimming from: Author's Picture

the crawdads that are in the creek where she used to catch them in fresh, clean water. The contaminants in the streams from the mountaintop removal site turn the crawdads Liberty catches into mutants. Curley and Liberty both learn that mountaintop removal has consequences beyond just the site. Once a stream or water source is buried, contaminated, or otherwise changed, its polluting effect reaches throughout Appalachia.

V. Contaminated Drinking Water

Unfortunately, Liberty and Kevin learn that the alteration of streams does not have repercussions for just the environment. The communities surrounding mountaintop removal sites feel the burden of contaminated water in their health. As discussed previously, when overburden is dumped into valley fills, there is the potential for streams to become contaminated. Pollutants can leach into the water source from the overburden, and the pollutants can find their way into groundwater sources. Once pollutants enter the groundwater, it is largely unpredictable where they will end up. Consequently, contaminated water supplies have been the basis for many lawsuits against coal companies as the contaminated water can lead to adverse health effects (Holzman). Kevin first learns of the contaminated water when Mr. Paul, a community member, brings it to attention. Mr. Paul says, "'Do you know what Bubba Boyd's done to the streams and the wells around here? Poisoned. The water from the taps up Corbin Hollow comes out gray now. Everyone up there is getting sick from it" (Scotton 75). Mr. Paul claims the water is poisoned because the pollutants in it are making everyone that consumes it sick.

Research shows that Mr. Paul's claims of water making individuals sick is not farfetched or only an idea created for fictional content. Reece expounds upon an Eastern Kentucky University study that concluded that children in Letcher County suffered health problems as a

result of their drinking water. Due to the sediments and dissolved minerals in the drinking water, these children suffered from high rates of nausea, diarrhea, vomiting, and shortness of breath. These are only the short-term effects. The long-term effects can include digestive tract cancers, bone damage, as well as spleen, kidney, and liver failure (Reece 109-10). When these health concerns manifest themselves in children as a result of contaminated water, it does not seem so exaggerated to call the water poisoned. Though communities cannot always see their groundwater, they can observe streams in their communities that reflect the poor quality of the water. Liberty observes this in the creek with the foam and mutant crawdads, and Kevin also encounters a creek that is obviously polluted. As they are hiking, Kevin and Pops come across what used to be a rushing creek but is now, "a trickle of fetid brown metallic sludge, discoloring the rocks like a giant swath of burnt sienna paint" (Scotton 295). The description of this once rich, flowing creek makes its disparity obvious, and the description of metallic sludge indicates pollution as it is not natural to have metallic in a creek. Though Liberty and Kevin observe polluted creeks in these instances, that water could very well lead to their groundwater.

Liberty is the character who most directly observes and feels the impact of the polluted drinking water. On her first day living with her grandmother, Liberty notices something unusual about the water. She says, "I turn on the faucet to rinse the plates and almost drop them in the sink. The water's orange. Like neon" (Allgeyer 17). Her grandmother informs her that the county claims the water is safe, but she adds that, "'Ever since they started pulling down that mountain, ever'body's well water been orange'" (Allgeyer 17). It seems like too much of a coincidence that the water turned orange right when mining started, and Liberty is instantly skeptical and suspicious of why the water is neon orange. Throughout the rest of *Dig Too Deep*, Liberty focuses most of her attention on the water issue and how the mountaintop removal site affects it.

The real catalyst for Liberty's dedication to discovering the truth about the water results from her grandmother's sickness. Liberty's grandmother has a few health concerns that finally make her go to the doctor. The doctor does not have good news as she has cancer, and he indicates that her sickness is not unusual since they live on the east side of the mountain; the side with mountaintop removal. He says, "'We've seen a lot of health issues cropping up in that area in recent years […] Cancer. Heart disease. Kidney disease. Birth defects. It's a cluster all right'" (Allgeyer 55). Liberty immediately draws the conclusion that the reason for the health problems may be the bright orange water. Liberty's fictional tale draws connections to actual problems resulting from mountaintop removal much like the earlier concerns discussed. Like the cancer cluster in Liberty's community, real communities can suffer from cancer clusters resulting from the mine activities and infected water. In Prenter Hollow, West Virginia, water pollution led to a brain-tumor cluster. Out of a ten-house neighborhood, six individuals were diagnosed with brain cancer, and four of them ultimately passed away as a result of their cancer (Appalachian Voices). It is extremely unlikely that six people in such a small neighborhood would contract the same health issue, so examining mountaintop removal and its pollution to their surrounding environment, and subsequently, water is important.

Figure 9. Contaminated Drinking Water from Wise County, VA from: Appalachian Voices, 2017, appvoices.org/end-mountaintop-removal/community/

Liberty's biggest problem with the water issue is that everyone says the county verified that it was safe to drink, and everyone tells her to drop the investigation. She refuses though, and

she is confounded when she ponders, “why the hell nobody’s worried about the water. It’s bright freaking orange- not like any rust I’ve ever seen. But Granny said the county tested it and found it safe. And numbers don’t lie. But after what I’ve read… I’m just not sure” (Allgeyer 60). Ultimately, Liberty discovers that the coal company ran the tests and faked the positive results to hide the damage they had done. The true tests revealed that the water was unsafe for consumption, and as a result of the coal company’s neglect, many individuals contracted illnesses. The company likely hid the results because they did not want the added expense of fixing the problem or to be forced to close the mine. In the actual mountaintop removal process, nearly sixty different chemicals can be used to wash coal, and many of them are highly toxic. These chemicals can leach into groundwater infecting thousands of individual’s drinking water. If their water is contaminated, then whole communities can be advised to stop using their tap water for drinking, cooking, and even bathing (Appalachian Voices).

VI. The Danger of Slurry

Another way that chemicals can leach into water sources and streams is through slurry impoundments. When coal is removed from the seams, it is unclean and must be washed before it can be shipped anywhere. The beforementioned sixty chemicals are used to wash the coal, and the leftover washing solution is called slurry. Since slurry is toxic, it has to be stored in large areas called slurry impoundments or containment ponds which are basically dams in mountain hollows. These slurry impoundments can hold billions of gallons of slurry (“Environment” 115-16). Sometimes, coal companies pump slurry directly into old mine shafts, and this can allow slurry to seep through coal seams into groundwater supplies (Holzman). Liberty’s explanation of slurry and its ability to contaminate closely follows the actual facts of the process. Liberty

explains it as, “aside from the containment ponds, the place they dump the water laced with sixty different chemicals they use to clean the coal, the site is dry. I stare at the pond, halfway down the east side of the hill, remembering what I learned during my research. The carcinogens and heavy metals from the cleaning process sink to the bottom of the containment pond, enter the groundwater, and, rolling downhill, end up in the rivers and wells down in the valley” (Allgeyer 163-4). Liberty nails the number of chemicals used, and her explanation, while easy to understand for readers, correctly conveys how slurry can contribute to water contamination.

Water contamination is not the only concern when it comes to slurry compounds. Slurry spills or floods are very real worries in Appalachian communities plagued by mountaintop removal. *Saving Wonder* and *The Secret Wisdom of the Earth* both mention slurry floods as a result of a faulty impoundment. For Curley, his mother and brother passed away from a slurry spill. Curley recalls, “Ma and Zeb were gone, too, swallowed up by a river of sludge. It had been raining hard all week, and the coal company’s slurry pond at the top of the mountain over from ours broke through its walls. A thick stream of black mud came cascading down the holler, covering everything in its path. Ma and little Zeb were winding their way back home from old Ida’s house along the creek bed. I guess they couldn’t get out of the way fast enough” (Knight 2). Curley’s story is all too familiar as many families have suffered a loss from slurry breaches.

There are many documented slurry spills that resulted in deaths or injuries. The Buffalo Creek slurry spill (1972) is one such example where community members lost their lives. In this particular spill, 130 million gallons of slurry flooded Logan County, West Virginia. The initial breach resulted in a 15-20-foot wave that traveled at an estimated speed of seven feet per second for 15 miles (Appalachian Voices). This 15-mile disaster resulted in the deaths of 125 individuals, and it left 1,100 injured and 4,000 homeless (“Environment” 109, 115). The tragic

Figure 10. Slurry Impoundment from: The Tragedy of Mountaintop-Removal Coal Mining: The Issue, Plundering Appalachia, 2009, www.plunderingappalachia.org/theissue.htm

death of family members in a slurry flood is a real worry for many Appalachian families, and Kevin also learns of the dangers of faulty slurry impoundments when he attends a meeting where a community member explains, "'Six months after this photo was taken, the dam here burst and two hundred million gallons of coal slurry flowed down the hollow into Clemet River […] Eleven people drowned that day'" (Scotton 95). The appearance of slurry accidents in two of the three novels examined proves that this issue is not uncommon. Though the slurry spills often do not receive high media attention, these accidents have devastating effects for communities.

As with almost any other problem resulting from mountaintop removal, breached slurry impoundments do not have one sole effect. The environment also pays a high price when slurry spills occur. The Inez slurry spill is one such example that has become known as the largest man-made environmental disaster east of the Mississippi. In Inez, Kentucky, a slurry impoundment failed in October 2000. More than 300 million gallons of toxic sludge flooded the headwaters of Coldwater Creek and Wolf Creek. The Inez spill was thirty times the size of the *Exxon Valdez* oil

disaster, yet many people have never heard of the slurry spill (Reece 128). With such a large amount of slurry choking Coldwater and Wolf Creeks, all aquatic life was wiped out, and the slurry traveled 75 miles in streams which forced shutdowns of drinking water in many communities ("Environment" 115). If slurry impoundments can cause so much environmental and community devastation with a single breach, it seems logical that coal companies should be highly responsible for keeping their impoundments up to code and as safe as possible. However, that is often not the case as coal companies want to make as much money and spend as little as possible. Kevin describes a slurry pond as, "the infinite black maw of slurry, murky and foul, as if everything malevolent in Medgar was spawn of his disconsolate brew" (Scotton 292). This description leaves readers feeling unsettled and truly indicates the evil consequences of slurry.

VII. Reclamation

Once a mountaintop removal site has served its purpose and all the coal that can be reached is extracted, coal companies are charged with the reclamation process. Under the Surface Mining Control and Recreation Act (1977), coal companies must restore, or reclaim, their mine sites to closely resemble the general surface configuration of the site pre-mining. However, coal companies can apply for a variance in certain conditions which means the company will not have to reclaim the site closely to its original configuration (Copeland 2). Though some coal companies try to reclaim the land, they have often failed, "because mining reshuffles soil layers and exposed silt shales with much of the topsoil buried, and newly exposed soil was too acidic to sustain plant life. The consequent failure of revegetation compounded erosion problems, which had an impact not only on actual mine sites but also on surrounding areas" ("Environment" 114). Based on this reason alone, it is very difficult to return a mountain

to its pre-mining state once mountaintop removal has destroyed it. The soil used in reclamation efforts is typically graded overburden that lacks little to no native topsoil. This is problematic for reclaiming a site to its former condition as soil on reclaimed sites can be physically and chemically unsuitable for native tree growth (Sena 132).

Curley quickly notices that a reclaimed mine site is not all it is chalked up to be. On the elk tour, Curley and his friends visit a reclaimed mine. Curley cannot equate what the ranger says with the mountain that should be there. He says, "'Well, if the word *reclamation* means to bring something back to its original condition, then where's the top of the mountains? I mean, it seems that what we have here is a field, which is real nice for the elk, like you said, but as far as I can tell, sir, the mountaintop is *gone* […] Seems to me the word *reclamation* is just plain wrong. Seems to me that if you're going to remove the top of a mountain, a better word would be *irrevocable*, because there's no getting it back" (Knight 82). Curley clearly indicates the problem of reclaiming mountaintop removal sites with his statement. Unfortunately, a majority of the time, reclaimed sites do not reflect the original mountain in any way. Curley does not even note any trees in his description. The lack of trees reflects the real issue of forest reclamation on sites being unsuccessful. Reclamation efforts have not been able to reproduce the pre-mining forest community on old mountaintop removal sites. The lack of success results from the unfamiliar soil conditions as well as companies' tendency to use grasses on reclaimed sites (Wickham 342).

If reclamation efforts are to be successful, then coal companies need to implement practices that introduce and nurture native flora and fauna back into the environment on and around the site. When the mountaintop removal process begins, there is great loss in wildlife and vegetation of the area. Therefore, when reclamation efforts are implemented, this loss needs to be remedied in some way. In *Saving Wonder*, Curley focuses on the elk at the mountaintop

Figure 11. Reclaimed Mountaintop Removal Site from: Mountaintop Removal 101, Appalachian Voices, 2017, appvoices.org/end-mountaintop-removal/mtr101/

removal site since he is doing a project on them for his class, and in this case, the elk are considered part of the reclamation process as eastern elk used to be native to the region. However, there is a catch. As Curley learns, the elk he sees at the site were transplanted from the west since the eastern elk were extirpated years ago. Curley's guide at the site makes the elk a positive sign as he says, "'Elk like to hang out on mountaintop removal sites such as the one we're about to see, where the land has been reclaimed. The mining company is responsible for resurfacing the mining site after its been stripped of coal […] Turns out, elk love these new grassy plateaus" (Knight 71).

As Reece indicates in his work, elk were in fact reintroduced to Appalachia from western states just like Curley discovers in *Saving Wonder*. However, Reece explains that the elk at

reclaimed mountaintop removal sites are simply a happy occurrence for coal companies as they actually had nothing to do with the reintroduction of elk to the region (Reece 64). Curley's guide tries to pass off the idea that the elk have the perfect environment at the grassy plateau, but in reality, this grassy space is not ideal for the elk. A representative of the Rocky Mountain Elk Foundation claims that most of the reclaimed land in Appalachia is inadequate, and therefore, only 35 percent of reclaimed land in Appalachia can support wildlife and fish (Reece 148). Since most coal companies fail to reclaim mountaintop removal sites in a way that actually represents the pre-mining mountain configuration, native forest composition, and wildlife diversity, reclamation efforts are typically inadequate and only continue the degradation of the once natural environment around the site.

VIII. Conclusion

Mountaintop removal is a complex process with many stages from beginning to end. When discussing the coal industry, Wendell Berry is quick to point out that it, "has imposed the highest and most burdening 'costs of production' upon the land and the people. Many of these costs are, in the nature of things, not repayable. Some were paid by people now dead and beyond the reach of compensation. Some are scars in the land that will not be healed in any length of time imaginable by humans" (Berry). Berry is critiquing the costs of mountaintop removal because of its effects on the environment and the people of surrounding communities, and the young protagonists in the three novels all realize the detriments of the process and the need to fight for their environment and communities. After observing scenes similar to what Kevin describes as, "the flat gray wound from the strip-mine operation, running across three stubbed

hills and hollows," each character acutely feels the devastation left behind from mining and decide to act (Scotton 54).

Curley begins his fight by staging a protest at Ol' Charley with his friends. They have a sit-in, make the video speaking out against the mining of their mountain, and inspire their community to join in the fight. Curley loves the mountains and claims, "I will do anything to save our mountain. And the fight starts here" (Knight 166). By not stopping when others tell him to, Curley is able to make a positive change in his community. He sends the word out about the mountain, and he even gains the support of people outside his community (Knight 236). Ultimately, Curley stops mountaintop removal on the mountain behind his home when his video garners him supporters who help find an ancient Cherokee burial site on his mountain. The burial site allows the mountain to be protected, and Curley saves his environment and community from suffering the consequences of mountaintop removal.

Liberty also learns to take a stand for what she believes in even when others try to stop her. The main concern Liberty focuses on is the polluted groundwater and the effects of that on the health of her community. The dichotomy of the mountaintop removal site and surrounding forest act as a reminder to her that something is not right. She says, "Everything's dressed in green, except the top of Tanner's Peak, which looms above us just as raw and red as ever. It's like the bloody stump of a mountain that never scabs over" (Allgeyer 177). It is the byproduct of this bloody stump, in the form of contaminants and slurry, that Liberty learns is harming her community. When she has evidence that the water safety reports have been altered, Liberty confronts the coal company head and demands change. Unaware of Liberty's plan, the head of the company admits tampering with the results and that the water is actually polluted. At the end of her story, Liberty manages to record the confession with the help of her friends, and even

though she fails to shut down the entire coal company, she exacts justice for her grandmother and friends' families. Their lives are changed with checks that the coal company head pays them for the damages he has caused, and Liberty's recording can act as the catalyst for further change.

Kevin sees the devastation of the land and community continually throughout his stay in Medgar. He experiences deaths from accidents, polluted water, corruption of the coal companies, and degraded environments. In his fight to protect his family land, Kevin sides with many community members to fight against the coal company. When Bubba, the coal company head, repeatedly tries to buy Jukes Hollow, Kevin learns from his grandfather that the land should not be for sale to someone that only wants to use it as a dumping ground. The lesson that Kevin most intimately learns comes from his grandfather. Pops tells Kevin, "'Men like Bubba Boyd think the earth owes them a living. They take whatever wealth they can from the mountains and move on. I actually feel sorry for him, I really do. He can't for the life of him see the simple beauty in a waterfall or understand the importance of history and place. If I have one hope for you, Kevin, it's that you never become one of those men'" (Scotton 281). Due to this lesson, Kevin fights to protect the land from mountaintop removal, and his story ends by fast-forwarding to the future. Kevin and his grandfather succeeded in protecting Jukes Hollow, and Kevin is now an adult visiting Medgar once again for his grandfather's funeral. Once the funeral is over, Kevin heads to Jukes Hollow, alone, to contemplate the past and the importance of the family land.

Though all three protagonists have their own motivations for fighting against mountaintop removal in their communities, they all fight to make a change. The protagonists are all young individuals who may often be discounted based on their age. However, as they fight for their communities and environment, they prove to everyone that they can have an impact. From this, young readers can learn that they too have a voice and can make a difference in their

communities. Each protagonist must fight against opposition, but when they do not let the naysayers stop them, the possibilities are truly endless. Protests or community involvement to stop mountaintop removal are not uncommon in Appalachia, and these novels reflect that.

Nina McCoy is one such community member in Martin County, Kentucky. The McCoy's live in a community near a mountaintop removal site, and they have experienced many of the problems resulting from it. One accident in particular was a slurry spill in 2000 that went right by their house. Since then, Nina has become an activist in her community as she tries to rally people to fight for clean water and put a stop to the mine site. To further this goal, Nina created SAVE: Save Appalachia's Vital Environment (Reece 140-42). Nina is unwilling to simple stand by as her community and environment are destroyed, and there are countless other stories like hers.

By tracking the mountaintop removal process in *Saving Wonder*, *Dig Too Deep*, and *The Secret Wisdom of the Earth*, it becomes clear that these novels accurately reflect many steps throughout mountaintop removal. Each novel has some issue that it focuses on more than the others, but when read in conjunction with one another, all three books help create a broad overview of mountaintop removal and what it entails. Though the novels may not give exact numbers and details for every step of the process, the information presented is correct and given to readers in a way that they can understand. Young readers are able to comprehend that, "coal mining has greatly affected the natural environment in the region" as well as the communities around them ("Environment" 112). Since the material is related in a way that most young readers can relate to, it is likely that readers will be more interested in the topic and maybe even be inspired to continue researching mountaintop removal.

Mountaintop removal has many devastating and irreversible costs on the land and the people, and comparing the ramifications in the novels to the actual, researched facts shows that

young adult novels are a worthwhile classification of fiction as readers are prompted to think critically, engage with societal issues, and learn about an important environmental problem. In these novels, readers are introduced to, "the true cost of coal [as it] is externalized onto the land and the people of Appalachia while absentee coal companies siphon off the profits. We also build deadly impoundment ponds rather than use a safer dry-filter-press system […] we plant grasses rather than native trees and call it reclamation; we bury streams under billions of tons rather than tunnel underground for coal […] But the current price of coal tells nothing near the truth about the cost of air pollution, water pollution, forest fragmentation, species extinction, and the destruction of homes" (Reece 186-7). None of the information in the novels is exaggerated, and readers stand to learn quite a bit about mountaintop removal by reading these stories. The true price of coal is revealed to them as they progress through the novels. Young adult novels should not be discounted due to just their classification because they can offer readers of any age insight into current problems facing society and the environment.

One reason that mountaintop removal and its consequences should be brought to the awareness of more people is due to the uniqueness of Appalachia. The Appalachian Mountains are home to one of the oldest and most diverse forests in North America, and the mining process destroys this one-of-a-kind environment (Reece 34). Due to its antiquity resulting from 600 million years of growth, the Appalachian Mountains are, "one of the oldest continuously inhabitable terrestrial environments on earth. This antiquity is important to understand Appalachia's biological wealth, for older habitats have simply provided more time than younger ones for new species to evolve and diverse species to colonize" ("Ecology" 40). This simply means that since Appalachia is such an old environment, it has greater diversity in its flora and fauna. As this environment is destroyed by mountaintop removal, 600 million years' worth of

growth and diversity are destroyed in a shockingly short amount of time. Since reclaimed mine sites are often not habitable to native species and do not resemble the pre-mining mountain, it is difficult for the natural environment to refurbish itself. The antiquity of the mountains is destroyed forever when mountaintop removal devastates a mountain.

Appalachia is such a unique and special place to families and communities all throughout the region. When their environment begins to diminish as a result of mountaintop removal, its effects are felt in a multitude of ways, and stories are a great way to capture these feelings and lessons. Some critics of young adult fiction critique this category of fiction as frivolous and unworthwhile. However, by critically analyzing young adult fiction, it becomes clear that lessons can be learned, and readers can acquire knowledge about prevalent issues within their communities. Critically analyzing *Saving Wonder*, *Dig Too Deep*, and *The Secret Wisdom of the Earth* proves that these novels portray mountaintop removal and its environmental and community effects in an authentic way. If these novels can teach young readers about an environmental process and its consequences, then it follows that other fiction young adult novels can hold similar lessons for its young readers. It is important not to discount an entire classification of fiction just because of its target audience, and these three novels prove the importance of young adult literature for the information it can bring to readers. Within these stories, it becomes clear that what happens in one part of Appalachia can have lasting effects on essentially every other part, and with this knowledge, readers are given the opportunity to strive for positive change.

Web Resources for Teachers and Students

American Geosciences Institute
www.americangeosciences.org/critical-issues/maps/interactive-atlas-coal-mine-maps-kentucky
The American Geosciences Institute (AGI) offers users an interactive map of the coal mines located in Kentucky. The map provides searches through the state file number, company name, or seam name, and additional information such as mine type, seam thickness, map year, mine status, and mine owner are provided when possible. AGI also offers an interactive map of coal mines in West Virginia on their site.

Appalachian Voices
http://appvoices.org/
Appalachian Voices is an organization dedicated to fighting for a just economy and healthy environment in Appalachia. They help defend the region from environmental threats, such as mountaintop removal, and the organization promotes solutions that provide better environmental protection and economic promise for communities. The website gives information about five different states in Appalachia, economics, energy savings, fracking, mountaintop removal, and a host of other resources and materials.

Coal River Mountain Watch
https://www.crmw.net/
Coal River Mountain Watch (CRMW) is a small non-profit group that is working to stop mountaintop removal in West Virginian communities. They witnessed mining destroy their environments and communities, and they are now fighting to protect and improve the quality of life in areas affected by mining. CRMW has information about mountaintop removal, its impacts, the organizations current projects, volunteer opportunities, photos, and other resources.

Earth Observatory
https://earthobservatory.nasa.gov/world-of-change/Hobet
Earth Observatory is a website created by NASA which mainly provides satellite imagery and information about the climate and environment. The site offers a time-lapse satellite image of a mountaintop removal site in Boone County, West Virginia. The mining site is called Hobet Mine, and the video shows the satellite footage of the mine's expansion from 1984 to 2015. The site also has information about the controversy of coal in Appalachia.

iLoveMountains.org
http://ilovemountains.org/
This website is dedicated to ending mountaintop removal in Appalachia. The site offers a host of resources such as information about the process, how it puts communities at risk, the human costs, and reclaimed sites. There is also a resource page with maps, pictures, and videos, and iLoveMountains.org even has sections for the latest news and how to take action.

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