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A Student Journal of Geography and Environmental Sciences

The Transformation of Rocky Mountain Arsenal National Wildlife Refuge

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Video Transcript

Hi, I am Brian Genge, and I am at Rocky Mountain Arsenal National Wildlife Refuge. This refuge is abundant with wildlife and being here you quickly forget you are only 10 miles from Denver. This refuge is home to both Mule Deer and White-tailed Deer. As well as Bison, all kinds of birds, and many more creatures. The arsenal has always been home to wildlife but today the wildlife does not combat exposure to chemicals like it once did. This beautiful place was at one point a chemical weapons manufacturing site. I will briefly tell you

about that past and what the arsenal looks like today. This is the story of how Rocky Mountain Arsenal National Wildlife Refuge went from a polluted superfund site to now one of the largest urban wildlife refuges in the United States.

As the United States entered World War 2, they sought out a site to develop chemical weapons. In 1942, the U.S. army selected 17,000 acres of farmland in Commerce City, Colorado (U.S. Army, 2021). Here they made chemical weapons

and rocket fuel. They then leased facilities to Shell who manufactured pesticides from the 1950s to the 80s (TCHD, 2021). It was this chemical production from Shell and the U.S. army which led to the pollution problems. In the past there were not well thought out standards for waste disposal. What happened as a result was millions of pounds of toxic waste being dumped in the arsenal. Some waste spills that were identified include 100,000 gallons of benzene in 1947 and in 1978 there was 58,864 gallons of DCPD and 87,000 gallons of other solvents, pesticides, and metals (CDPHE, 2007). There were many other leaks and in the 1950s a nearby farm had livestock with high levels of contamination. This ability for the contaminants to spread meant the groundwater was compromised (EPA, 2018). In the 1960s they would even use deep well injection to dispose of chemicals. This would contribute further to groundwater concerns and this practice was suspected of causing earthquakes (EPA, 2018).

It was in the 1970s that the arsenal received its status as a superfund site. Then in 1982 all production on the arsenal ended and congress established it as a future wildlife refuge (USFWS, 2021). In 1986, Bald Eagles, an endangered species at the time, were found at the arsenal which emphasized the refuges value (EPA, 2018). Thousands of waterfowl migrating through died when exposed to pollutants (Cohn, 1999). Badgers were one of the mammals with the greatest amount of dieldrin, which is a harmful pesticide. This is due to their behavior which involves burrowing in contaminated soils. For the most part the wildlife most affected by the pesticides left behind were smaller ones. The American Kestrel had less success raising young in polluted areas on the arsenal. “Kestrel nest success dropped 40 percent among nests with more than 50 parts per billion (ppb) of dieldrin in the eggs” (Cohn, 1999).

The methods for reducing pollution spread started with prohibiting access to groundwater. The U.S. Fish and Wildlife service also prohibited any consumption of game and fish on the arsenal

(EPA, 2018). Prairie Dogs are the foundation of the arsenal’s food chain, so they moved colonies away from areas of heavy contamination. The cleanup involved moving soil to on-site waste management. The cleanup cost 2.1 billion dollars and took 15 years (TCHD, 2021). It is important to note that the arsenal is not pollution free and instead polluted sites are now managed. With ongoing management of the site’s pollution spreading can be avoided. As of now 1,000 acres is managed by the U.S. Army which contains the waste and groundwater treatment centers (U.S. Army, 2021). Every 5 years representatives from these organization (U.S. Army, Shell Oil Company, EPA, Colorado Department of Health and Environment, Tri-County Health Department) work together to assess the management of the pollution on the arsenal.

The cleanup process at Rocky Mountain Arsenal National Wildlife Refuge has been a controversial topic for decades. However, as of today there has been significant progress made which makes the Arsenal safe for the wildlife and over 340,000 people who visit annually (EPA, 2018). Looking at data regarding bison we can access contamination. Bison are constantly grazing the grasslands and would show any bioaccumulation. The U.S. Fish and wildlife service wanted to know if the bison were free from contamination if they were to transfer them elsewhere and then possibly be consumed. So, they took samples of bison tissue at the arsenal. They found that the 13 pesticides they tested for were too low to detect in all but one individual. That individual had levels of dieldrin in the fat tissue sample. However, it was estimated that the other tissues would have low levels of dieldrin that meet the USDA limits for meat in the U.S. It was deemed safe to consume and that there was only a 1 in 256,000 increase in cancer if 84.4 kg (186 lbs.) of bison meat was consumed (USFWS, 2016). All other samples also met USDA standards for meat. The results were that the Bison from the Arsenal are safe to consume which is something that would have not been possible decades prior.

The Arsenal may still battle with environmental

issues like invasive plants and the ongoing management of waste. However, the risks are largely contained and monitored which makes the arsenal a safe place for people and wildlife. Today the arsenal serves as a wildlife oasis within the urban landscape. Something I was unable to fit into this video is the introduction of the Black-footed Ferret, which is one of the most endangered mammals in the United States. The reintroduction of the ferret has been very successful and further solidifies the importance of the arsenal. Thank you for watching and here are my sources where you can learn more.

Brian Genge will graduate with a Bachelor of Arts in Geography (Environment, Society, and Sustainability) in May 2023.

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