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American Indians and the Environment

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AMERICAN INDIANS AND THE ENVIRONMENT

A Capstone Experience Manuscript

Presented by

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Title: **AMERICAN INDIANS AND THE ENVIRONMENT**

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Chapter One

Introduction

Forces of Change

In an age dominated by progress, the word “change” has a positive connotation. It conjures images of innovation; technological advances; breakthroughs in science, medicine, and industry. Change brings with it more jobs, more spending money, a higher demand for goods and services: in short, a stronger economy. That stronger economy should lead to a healthier country—physically, mentally, and socially—because stronger economies increase in the standard of living, providing a better life for all.

Yet is “change” always a positive force? It is true that advances in technological and scientific fields usually benefit everyone—eventually. However, healthy countries are based on more than simply strong economies. Although the United States economy is currently experiencing a downturn, it has in the past been strong compared to other countries. Yet despite this strength, the United States continues to suffer from social problems and high rates of poor health.

One population in particular continues to suffer the effects of poor health and a broken culture more than any other in the United States: American Indians. With rates of diabetes, alcoholism, suicide, and other physical and mental health problems significantly greater than the country as a whole, American Indian communities have been exposed to a series of negative changes throughout the last few centuries that have done serious damage to both their health and their culture.

For many Indian communities, these negative changes included removal from their native lands and hindered access to their traditional practices or sacred lands. This

had a negative impact on the Indian cultures involved because culture is based on the beliefs and practices of a society. If honoring those beliefs and practices is made harder or even impossible, a society's culture will suffer. A loss of culture creates a disconnect between members of a society and how they identify themselves, how they situate themselves in the larger world context, and such ambiguities can and have created emotional and even physical health problems. And the damage to culture and health Indians face is only made worse by the growing tide of environmental problems facing the country.

A Changing World

The loss of nature this country has experienced in the last few centuries is devastating. When Viking sailors first spied the shores of North America, they saw coastlines covered in thick forests. Explorers traversing the Great Plains for the first time encountered enormous herds of buffalo roaming free. Lakes were full of fish and clear water, and the Colorado River actually reached the Pacific Ocean.

Today the forests along the coast are composed of buildings rather than trees. Buffalo roam the heart of this country in spirit only. Water pollution makes clear water and healthy fish mere memories in our lakes, and the Southwest drains the Colorado long before it reaches its former destination.

Such environmental damage affects everyone, yet the prevailing thought in this country continues to underestimate just how vital the natural world is to our society. American Indians are affected more than most communities, however, because they are already at a disadvantage in terms of health and because in their culture the natural world is sacred. Traditional Indian beliefs state that people are a part of nature, a small part,

connected to everything else. The natural world enables their existence and therefore deserves the utmost respect and care they can give. This closeness, this connection, means that environmental damage hurts not just Indian health but Indian cultures as well.

There are numerous instances of the negative effects on American Indians of environmental damage in this country. Reservation Indians in particular are at greater risks from these issues than the average American. Indians on reservations face increased rates of health problems—some of which are caused by environmental problems themselves—that exacerbate the negative effects of more environmental hazards. They are also generally exposed to more environmental risks than the average American, due to problems such as concentrated pollution and illegal waste dumping on reservations, instances of environmental injustice or racism. Resource scarcity and climate change also negatively impact both the health and the cultural practices of many tribes in the United States. Of all the communities in this country, American Indians are more negatively affected by environmental damage than any other.

Yet amidst these examples of damage and degradation, there are examples of hope, tribes that have instituted environmental protection programs that have been successful. As environmental concerns plague us at increasing rates each year, the United States should look to the effective environmental protection programs found on some reservations as models for the creation and management of larger programs for the entire country.

A Note on Terminology

The term “American Indian” will be used in this paper rather than “Native American” because it is a more specific term. The classification Native American

includes American Indians, Eskimos, Aleuts, and Native Hawaiians. Each group is ethnologically distinct, and this paper is only focusing on American Indians. Therefore, the narrower term is used.

Chapter Summary

This chapter serves as an introduction to many concepts. First, environmental problems have been increasing drastically in the United States throughout the last few centuries. These problems affect everyone in the country, yet American Indians feel the negative effects of such problems more acutely than the average American. This is due to a number of factors, including a history of poor health on reservations and the role the environment plays in traditional Indian cultures, a role much different from the one it plays in Western culture. Many examples exist of the negative effects environmental damage has on Indians, especially those on reservations. These examples are explored in a later chapter.

Chapter Two

Review of the Literature

To understand the environmental problems facing our world, how they affect Indian reservations, and the programs and policies used on reservation land and in the country in general, many topics must be researched. Sources that discuss environmental issues in general and environmental issues facing American Indians in particular should be studied first. A look into the beliefs many American Indian cultures have towards nature is also needed. Finally, the specific environmental programs of the United States and Indian tribes can be studied.

One of the most important ideas in the environmental field is humanity's impact on the global environment. Walter K. Dodds, a professor of biology at Kansas State University, has written extensively on environmental topics. Leader of the Kansas Ecological Forecasting Initiative and member of the Konza Prairie Biological Station, Dodd's recent book, *Humanity's Footprint*, outlines the effect people have had on the global environment. In it he discusses air and water pollution, species extinctions, and the greenhouse effect, and provides a suggestion for a sustainable future through "sociological, ecological, economic, and other societal...tools" (Dodds 190). Dodds is an excellent source for information regarding environmental issues and humanity's impact on the environment on a global scale.

Andrew Goudie, Master of St. Cross College and a professor of geography at the University of Oxford, has also written extensively on humanity's impact on the natural world. His book, *The Human Impact on the Environment*, examines pollution, sea level changes, species extinctions or declines, climate change, and other environmental

problems, focusing on how people have contributed to these events. This is another excellent source for global environmental issues and humanity's involvement in bringing them about.

Gaia's Revenge: Climate Change and Humanity's Loss is another book that focuses on the broad impact humanity has had on this planet, focusing specifically on our contributions to climate change. P.H. Liotta, Executive Director of the Pell Center for International Relations and Public Policy and Professor of Humanities at Salve Regina University, and Allan W. Shearer, Assistant Professor of Landscape Architecture at the School of Environmental and Biological Sciences at Rutgers University, outline the history of climate change and demonstrate how human activities have sped up what was once a very gradual natural process and turned it into a global environmental problem.

William P. Cunningham, professor of many environmental subjects at the University of Minnesota; and Mary Ann Cunningham, Assistant Professor of Geography and professor of environmental science and natural resource conservation at Vassar College; along with Barbara Woodworth Saigo, are the authors of *Environmental Science: A Global Concern*. This book is a valuable resource for a number of environmental topics such as pollution and water scarcity, and the book's environmental policy section gives an overview of the history of environmental thought and the laws and regulations in the United States that deal with environmental issues.

After researching those scholars who discuss environmental issues broadly, the scholars who focus more specifically on instances where American Indians are affected by environmental problems must be studied in more depth. One such environmental problem is pollution. Eban S. Goodstein—economist, creator of the Green House

Network and the National Teach-In on Global Warming Solutions, and director for the Center for Environmental Policy and Bard College—discusses air and water pollution in his book *Economics and the Environment*. He details the effects of air and water pollution in the United States in the economic, social, and environmental spheres.

One of the biggest issues facing Indians in the Southwestern United States is the continued desertification of the area. David Sheridan, a writer and consultant who has written extensively about natural resources and environmental issues, discusses the impact excessive grazing throughout the centuries has had on the Navajo reservation in his article “Overgrazed and Undermanaged.” This overgrazing, along with the removal of a significant amount of plant life for firewood and other purposes, has caused the land to erode and the soil to turn to sand, making the area more inhospitable (Sheridan 17).

The desertification of the Southwest has been occurring for centuries. Michael Allen, a professor of middle grades and secondary education at Georgia Southern University, and Robert Stevens, also a professor of middle grades and secondary education at the same university, discuss the strained resources and desertification facing the Anasazi of Mesa Verde around 1300 AD. Stevens, who serves on several state and national social studies committees and has taught middle school, high school, and university social studies for twenty-three years; and Allen examine the effect overpopulation and a changing environment had on the Anasazi settlement. Their article, “People and Their Environment: Searching the Historical Record,” serves as an example both of the long history of the impact of human activity on the environment and of the dependence humans have on that environment for survival.

Another very serious environmental problem facing anyone living in the Southwest is water scarcity. Dr. Sandra Davis, an associate professor in the Department of Political Science at Colorado State University, discusses water scarcity in the Southwest and the convoluted world of water policy in her article “The Politics of Water Scarcity in the Western States.” With a background in United States environmental politics and policy, Davis discusses the four types of water policy—distributive, allocative, redistributive, and cooperative; the conflicts between state prior appropriation laws and federal reserve rights; and the competing water needs of economic development and wildlife protection (Davis 527). These policies are important to understand when examining the challenges reservations face in their efforts to secure an adequate supply of water in an increasingly dry region.

Valerie Taliman also discusses the threat of water scarcity in her article “Reading the Clouds.” Taliman is the Communications Director for the Indian Law Resource Center, a former reporter for *Indian Country Today*, and an associate producer for the talk-radio program *Native America Calling*. Her article looks at the effects of climate change on the already scarce water resources of the Southwestern United States, particularly in regards to the Navajo. Increasing world temperatures will lead to hotter and drier days, increasing water demand from human activities and from natural ecosystems, and evaporation will take place more rapidly than ever before (Taliman 365). Taliman also looks at the Navajo view of the natural world and discusses the need to combine traditional and modern views and practices to better protect the environment and combat environmental issues. This article serves as an example both of the water problems facing the Navajo and other tribes in the Southwest, and of the need to

understand the cultural beliefs behind a group's approach to solving environmental problems.

Florence Shipek, an anthropologist who worked closely with Indian tribes in Southern California and published two books involving Indian land and water rights, also wrote about the effects of climate change on already scarce resources in the Southwest in her article "Rethinking Native American Ecological Assumptions and Myths." As the title suggests, Shipek discusses the inaccuracy of the myth that all American Indians have access to stable environments and plentiful food resources. Her research shows that in a region suffering from scarce rainfall and a hot climate, and getting drier and hotter each year, plentiful food sources are hard to sustain. This makes survival even harder for the Indians of the region.

Winona LaDuke also discusses the effect of climate change in her book *Recovering the Sacred*. LaDuke is an American Indian activist, environmentalist, economist, author, and director of Honor the Earth and the White Earth Land Recovery Project. She received the Reebok Human Rights Award in 1988, was named woman of the year by Ms. Magazine in 1997, and ran as the Vice Presidential Candidate for the Green Party in 1996 and 2000. Her book discusses the effects of many environmental problems on Indian life and cultures.

LaDuke wrote another book, *All Our Relations*, which also contains relevant information regarding the environmental hazards Indians face in this country. She discusses the effects nuclear waste sites have had on reservations, highlighting specific reservations that have had to deal with nuclear waste.

In addition to environmental degradation, water scarcity, and climate change, American Indians are faced with a series of environmental pollutants that affect their health. Doug Brugge, with the Department of Family Medicine and Community Health at Tufts University School of Medicine, and Rob Goble, with the Center for Technology, Environment, and Development at Clark University, discuss the negative health effects uranium mining had on the Navajo people. The mining was linked to cancer and many respiratory diseases. Although one could argue that the Navajo miners took the jobs willingly, there was little other choice in jobs when the mines first opened. The federal government also delayed addressing the negative health issues associated with uranium mining. Brugge and Goble describe one example of the health hazards many Indians face.

Another example is illustrated in a study done by Syni-An Hwang and Edward Fitzgerald, both with the New York State Department of Health and the University at Albany; Bao-Zhu Yang, with the New York State Department of Health; Brian Bush, with the University at Albany; and Katsi Cook, with the First Environment Project, Akwesasne Task Force on the Environment, Mohawk Nation at Akwesasne. This study focused on the affects of hazardous waste—dumped along the St. Lawrence River—on the Indians of the Mohawk reservation. The authors found concentrations of polychlorinated biphenyls (PCBs) in the breast milk of American Indian mothers who consumed fish caught near the source of contamination. PCBs are chemicals that have been correlated with negative health issues. This study shows how PCBs can be passed from one organism to another through consumption. PCB-pollution can take decades to eradicate, all the while negatively affecting the health of those who depend on that environment to survive.

Edward F. Fitzgerald, Syni-An Hwang, Bao-Zhu Yang, and Brian Bush were involved in another study of the effects of PCBs on Mohawk men in the same region. Marta Gomez, with the New York State Department of Health and the Center for Environmental Health; and Alice Tarbell, with the Akwesasne Task Force on the Environment, Mohawk Nation at Akwesasne, were also involved in the study. They discovered that higher levels of PCBs were found in the blood of American Indian men who ate more contaminated fish from the river and who had occupations that exposed them to PCBs; and gathered some evidence to suggest that even men who ate relatively few fish could have high levels of PCBs in their blood if they lived close to the waste site, an area with high levels of PCBs in the air itself

Neculai Codru, with the Department of Epidemiology and Statistics and School of Public Health at the University at Albany; Maria J. Schymura and Serban Negoita, of the same and of the New York State Department of Health; Robert Rej, with the Wadsworth Center in the New York State Department of Health; and David O. Carpenter, with the Institute for Health and the Environment, University at Albany, partnered with the Akwesasne Task Force on the Environment for a third study involving the affects of PCBs in the Mohawk area. This study showed that, even though diabetes is not usually attributed to external environmental factors, high exposure to PCBs and other toxins could be linked to an increased rate of the disease occurring in a population.

These negative environmental issues often make worse and are made worse by poor health on reservations. R. Turner Goins, associate professor in the Department of Community Medicine and associate director for research at the Center on Aging and West Virginia University; along with doctoral candidate Melinda Spencer, also of West

Virginia University, discuss the standard of living on American Indian reservations, which is far below the national average in their article “Public Health Issues among Older American Indians and Alaska Natives.” They state that unemployment rates and poverty levels are high, while higher education levels are low on many reservations.

In their article, “Changing Patterns in Health Behaviors and Risk Factors Related to Cardiovascular Disease Among American Indians and Alaska Natives,” Valarie Blue Bird Jernigan, David Ahn, and Marilyn Winkleby, with the Stanford Prevention Research Center, Stanford School of Medicine; and Bonnie Duran, with the University of Washington School of Public Health and the Indigenous Wellness Research Institute, also discuss poor health on reservations. They state that chronic diseases are a problem on reservations, where the rate of cardiovascular disease—and associated heart disease, stroke, and diabetes— can be double the national average.

When discussing such environmental hazards present on reservations, the concept of environmental injustice begins to appear. Inequities in the distribution of environmental hazards can show an environmental injustice is taking place. Mary Northridge, Gabriel Stover, Donna Sherard—all with the Harlem Health Promotion Center, Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University—and Joyce Rosenthal, with the Department of Environmental Health Sciences, Mailman School of Public Health, look at that distribution in their article “Environmental Equity and Health: Understanding Complexity and Moving Forward.” The authors analyzed the distribution of environmental hazards across different categories such as race and found that minority communities, including Indian reservations, often contain more hazards than white communities. Exposure to such

hazards in greater numbers negatively affects the health of Indians at a higher rate than is seen in the wider community—a perfect example of environmental injustice.

George Tinker, author of many books on American Indian theology and professor of American Indian cultures and religious traditions at Iliff School of Technology in Denver, Colorado, also discusses environmental injustice among Indians in his article “An American Indian Theological Response to Ecojustice.” Tinker examines the ecojustice concerns among American Indians, ranging from resource scarcity issues to health hazards. He states that minority groups, including Indians, feel the negative effects of environmental problems much more acutely than the general white American population, a problem created by a flawed world system intent on maximizing profits at the expense of the environment and supported by prevailing Western cultural beliefs and practices (Tinker 87).

This environmental injustice is a result of the structural violence against American Indians inherent within our society. Paul Farmer, Presley Professor of Medical Anthropology in the Department of Social Medicine of Harvard Medical School, chief of the Division of Social Medicine and Health Inequalities at Brigham and Women’s Hospital in Boston, and medical director of the Clinique Bon Sauveur in rural Haiti, defines structural violence and its effects on a society in his article “An Anthropology of Structural Violence.”

The differences between Western and Indian cultural beliefs are at the root of the differences between Western and Indian approaches to the environment and environmental programs. Barry Lopez, an American author known for his extensive writings on environmental and social concerns, discusses the history of how Western

thought views the wilderness as subservient to humanity. He details the possible religious and cultural reasons behind such views, allowing one to form a better understanding of Western thought regarding the environment and how it differs from American Indian thought.

David N. Bengston, social scientist with the United States Department of Agriculture's Forest Service, discusses American Indian perspectives regarding the environment in his article, "Listening to Neglected Voices: American Indian Perspectives on Natural Resource Management." He looks at American Indian news articles and summarizes the views regarding natural resource management expressed there, including the importance of traditional knowledge and the spiritual values placed on the natural resources being discussed.

David Rich Lewis, a professor at Utah State University teaching courses in history, American Indian history, and environmental history, and editor of *Western Historical Quarterly*; also discusses some American Indian beliefs in his article "Native Americans and the Environment: A Survey of Twentieth-Century Issues." Lewis shows that Indians viewed themselves as part of the natural world, rather than lords over it as Westerners thought themselves to be. He states that "land...exploitation of land, and changing Indian needs, attitudes, and religious demands define the issues facing modern Indians and their environments" (Lewis 424). He discusses issues of agriculture, ranching, forests, watersheds, hunting and fishing, water rights, natural resource mining, and pollution that face Indians today, and explores each in terms of its connection to the land. If everything can be connected to land, understanding the different views Indians and Western thinkers have regarding land is key.

Tarrell Portman, professor at the University of Iowa College of Education and director of the Office of Graduate Ethnic Inclusion, and Michael Garrett, former professor and chairman of the counselor education department at the University of Florida's College of Education, also look at American Indian relationships with the natural world in their article "Native American Healing Traditions." This article discusses healing practices among American Indians, stating that these traditions take place within the relationship between spirituality, the community, the environment, and the self (Portman and Garrett 453). Here again the natural world plays an important role in Indian beliefs, nurturing, healing, always connected. These cultural beliefs must be incorporated into environmental programs, especially in the case of health care on reservations, where the federal government and Western traditions clearly fall short in their ability to adequately protect Indians from sickness.

Not all protection programs are ineffectual. Thomas Davis discusses a shining example of a sustainable forest management program implemented by the Menominee tribe of Wisconsin. President of the Lac Courte Oreilles Ojibwa Community College in Wisconsin, Davis outlines the forest management program implemented by the tribe. This program has allowed the 230,000 acre Menominee forest to be a sustainable source of production. Davis examines Menominee culture, spirituality, politics, and history to better understand the forces behind the program, and analyzes it as a model of sustainable development that can be followed by others.

As this research shows, environmental problems threaten the health and survival of American Indians and of the world in general. The laws and policies regarding Indians in this country often hinder Indians' abilities to fight such environmental problems, as in

the case of poor health care on reservations. The largest environmental problem facing the world today, climate change, threatens to destroy the very cultures of tribes in Alaska and dry up the last stores of water for a large segment of the country. The environmental crisis we now face is very serious. Although tribes like the Menominee have begun to heal their piece of the natural world, there is much work left to be done.

Chapter Three

Explanation of Current Methodology and Goals

Research Methods

The research for this paper centered on instances of environmental damage affecting reservation Indians and what programs reservations have instituted to combat such issues. The general environmental problems themselves were researched to gain a clearer understanding of how they were affecting American Indians, and general environmental programs of the United States were also researched. A look at the differences between how Western thought and American Indian thought view the environment was also necessary in order to understand the differences between Indian environmental programs and United States environmental programs.

A review of the scholarly literature surrounding these topics was the primary method used in the research for this paper. The sources used in this paper include scholarly journal articles and published books, collected over the course of several months, and work to create a comprehensive look at the environmental issues plaguing reservations and the country and the differences apparent in how Indians and the United States approach those issues. No field research was conducted for this paper because this is a capstone manuscript. Field research could be conducted in the future to expand upon the concepts discussed in this paper.

Purposes of the Paper

This paper looks specifically at the negative effects of pollution, desertification, resource scarcity, and climate change and how they impact American Indian health and cultures. It also explores specific instances of environmental protection among American

Indians and compares those programs to ones used by the United States as a whole. The ultimate goal of this paper is to explore whether or not the protection programs used by Indians could be adapted to work for the United States on a larger scale.

Chapter Four

Differing Cultural Beliefs Surrounding the Environment

Cultural Differences

“Cultural differences” is a phrase often used in this country today. We must understand that not every culture thinks the way we do and strive to be more understanding and accepting of those who may view the world differently. However, many people in the United States ignore the cultural traditions and beliefs of American Indians. This is illustrated by the continued difficulty many Indians have in getting access to their native or sacred lands for religious worship or traditional practices.

American Indian cultural beliefs place on the environment a sacredness that is foreign to the prevailing Western view-point of the United States. Understanding the differences between the American Indian and Western beliefs regarding nature is essential to understanding why environmental problems damage American Indians more than the average American, and provides insight into the different approaches Indians and the United States take in protecting the environment.

Traditional Western Thought

Underlying traditional Western culture are views of nature as wilderness, something to be suppressed and conquered, bent to the will of man. The prevailing attitude views the natural world as existing for humanity’s benefit, to use however mankind sees fit. Long histories of religious and political beliefs and actions have placed nature beneath humanity in the hierarchy of inherent importance (Lopez 140).

The wilderness contains dangers, such as wolves and other wild animals, which have to be eradicated in order for man to survive (Lopez 140). An example of this idea is

illustrated by the mass executions of wolves by settlers in North America throughout the nineteenth and twentieth centuries, and the near eradication of the Great Plains buffalo after the railroad system was established and settlers began moving west (Lopez 139).

These negative images of a dangerous wilderness—coupled with the arrogant belief that humans have a divine right to possess the world—meant that when the Industrial Revolution marked the beginning of the rapid acceleration of pollution and other environmental problems in this hemisphere, the dominant Western-thinking society for centuries felt no moral obligation to ease the environmental destruction (Dodds 38).

Traditional American Indian Thought

Traditional American Indian beliefs often view humanity as equal, rather than superior, to the rest of nature. The environment is honored and protected in Indian cultures because its wellbeing is directly linked to their own. The natural world is not some dead and lifeless element over which humanity has complete dominion. Instead, it is a living, breathing network, a flow of life and energy of which humanity is only a small part. Many Indians believe that because they understand how to do so, they have a duty to protect the natural world, to ensure that its beauty and wonder survive for generations to come. Nature is greater than humanity, and deserves the highest respect and care.

When researching American Indian newspapers, several themes regarding the management of natural resources emerge (Bengston 48). Traditional knowledge regarding natural resources and its importance in natural resource management is emphasized in these articles (49), as well as the need to combine traditional knowledge with modern scientific approaches (50). The spiritual values American Indians place on natural resources being used both for subsistence and commercial reasons are also

discussed in these articles, illustrating the depth of the community's connection with the environment (50). Even when the articles being analyzed discussed the economic benefits of tribal management of natural resources, the authors of those articles made sure to remind their readers to keep in mind their spiritual connection to the environment (50).

Traditional American Indian healing practices involve the natural world as well. These traditions take place within the relationship between spirituality, the environment, the community, and the self (Portman and Garrett 453). One cannot understand traditional healing practices without placing them within that context (455). Spirituality refers to the Creator, Mother Earth, and the Great Father; the environment to one's daily life, nature, and balance; community to one's family and tribe; and the self to one's inner passions, thoughts, and values (455).

Seven basic American Indian traditional beliefs affect these traditions (Portman and Garrett 456). First, there is a higher power known by many names, such as the Creator or the Great Spirit, and there are other lesser spirit beings. Second, the spirit world and the physical world exist together, and all living creatures are part of the spirit world. Third, humans consist of a mind, a body, and a spirit, which are all connected. Fourth, if there is harmony between the mind, body, and spirit, one will be well; if there is disharmony, one will be unwell. Fifth, violating a sacred natural or social law can cause natural sickness. Sixth, receiving "witchcraft" or "conjuring" from someone with harmful intentions can cause unnatural sickness. And finally, everyone is responsible for his or her own health by staying in tune with the environment, the universe, the community, and the self (456). This overview illustrates how everything in the world is

connected, according to traditional Indian thought, even within one's own body. If you are physically unwell, your mind and spirit will also be unwell.

When looking at American Indian thoughts specifically regarding the environment, the idea of land appears at the heart of their beliefs. To many Western-thinking Americans, the word "land" simply conjures up images of property: the spaces where our houses or businesses or schools sit. For some, the word brings up images of fields or forests, but usually only in connection with digging up those fields or tearing down those forests to make way for more houses or businesses or schools. To American Indians, however, land is sacred: sheltering, nurturing, and providing for all creatures. They have an "immediate relationship" with their environment (Lewis 423). Land is the heart of many issues facing American Indians today.

Agriculture, ranching, forests, watersheds, hunting and fishing, water rights, natural resource mining, and pollution can all be explored in terms of their connections to the land. Changing agriculture methods and overgrazing in the western United States have led to less fertile and less productive lands over the centuries (Lewis 424-425). Forests and watersheds have suffered from clear-cutting practices (426). Even though tribes have hunting and fishing rights on their reservations and sometimes on their ancestral land, Indian hunting and fishing practices have been impacted by commercial hunting and fishing enterprises (428). Water rights are a contentious issue in the western United States, where water is a resource becoming scarcer each year, and tribes often have to fight to receive the water they are entitled to receive (430). Finally, some tribes have participated in natural resource mining on their reservations, which may have helped their economies, but usually also created an increase in pollution on the

reservation the tribe now has to deal with (431). Each of these topics revolve around the use of land, something Indians feel spiritually connected to. Yet each of these topics also points to environmental issues Indians now have to deal with, causing both physical illness and spiritual damage through that spiritual connection to the land.

The following quote by Danny Blackgoat, a Navajo Indian, describes this spiritual connection to the land and the environment. Blackgoat uses moving language and imagery to create a beautiful picture of the peace and harmony he and other Indians feel in the natural world:

I am a Navajo and I belong to the Earth. The Earth is my mother, my provider, my caretaker. I am her child. She nourishes me from her body and her soul. I belong to the land. I am rooted in my Mother Earth. Her deserts, canyons and mesas encircle me. Her mountains, fields and forests are a part of me. I belong to my people, the Dine. Our clans live between the Four Sacred Mountains. These mountains protect us. On this land between these mountains, we strive for unity and balance. When all is in balance with our Earth Mother, our Sky Father, and the People, then there is hozho, or harmony (qtd. in Taliman 359).

This quote beautifully describes what is at the heart, the very soul, of the connection between American Indians and their world. Everything is connected, every creature, plant, rock, body of water. Indians believe they are part of the earth and the earth is part of them, creating a deep bond between them and the natural world and entrusting their people with the responsibility of caring for the natural world in return for all it has done for them.

Chapter Summary

This chapter discussed the differences between Western thought and American Indian thought regarding the environment and the natural world. Western thought places little to no spiritual importance on the environment. The natural world is something to be used by humanity to make life better or more profitable. Traditionally, nature was viewed with a negative connotation, a wild place that needed to be tamed. Because of this historical negative connotation, Western societies tend to place human needs over those of the environment, making environmental protection efforts difficult.

American Indian thought, however, views the environment as spiritually sacred. Everything is connected to the environment, making humanity just one small part of a much larger and greater whole. Healing traditions are practiced in connection with the environment. Agriculture, ranching, forests, watersheds, hunting and fishing, water rights, and natural resources are all connected to the land. Danny Blackgoat summarizes his feelings toward nature in his quote that begins, “I am a Navajo and I belong to the Earth” (qtd. in Taliman 359).

Traditional Western and American Indian thoughts regarding the environment could hardly be more different. It is important to keep this in mind when comparing environmental programs from American Indians and the United States.

Chapter Five

An Overview of Environmental Concerns

Nothing Exists in a Vacuum

Environmental damage affects everyone. It may be more concentrated on reservations, but the country as a whole has been experiencing increasing rates of environmental problems for decades. Before looking at specific instances of environmental damage on reservations, the various environmental problems apparent in this country should be examined and understood.

Pollution, desertification, resource scarcity, climate change—these are ominous phrases capable of evoking powerful emotions: from the conviction to find solutions, to the fear any solutions would be too little, too late. Environmental issues like these threaten the wellbeing of our lives and our world. The first step in combating these problems is to learn about them and how they affect the communities in which they are present.

Air and Water Pollution

The first and most recognizable category of environmental degradation is pollution. Garbage strewn across fields, oil spills in the waters, thick smog hanging over cities, mutated fish and wildlife in rivers and streams: at least one of these images is familiar to every person in this country. Children today are taught at a young age that playing in the fields and drinking the water can be dangerous, and many parents would never dream of letting their families eat fish that came from anywhere other than a restaurant or grocery store. For a long time, the environment was viewed by the majority

of people in this country as a glorified trash can, and many companies and individuals still contribute to that stream of pollution.

Although they may not be exposed to “nature” such as forests, lakes, and fields very often, even city-dwellers are familiar with pollution. Air pollution is a constant companion in most urban and industrial settings. Carbon monoxide, nitrogen oxides, sulfur dioxide, lead, particulate matter, and ground-level ozone—smog—are the six common, or criteria, air pollutants regulated by the Clean Air Act in the United States. The act also regulates rarer, more dangerous pollutants, called hazardous air pollutants or air toxics, which are held to be responsible for an increase in mortality or illness rates in the affected areas (Goodstein 253).

Many health risks are associated with criteria pollutants, including respiratory, heart, immune, reproductive, and neurological problems. The longer people are exposed to such pollutants, the higher the risk they face of becoming sick because of them. Prolonged exposure to air toxics can affect one’s health even more negatively, increasing the severity of reproductive, immune, and neurological problems. Scientists are also studying the connection these pollutants may to cancer (Goodstein 253).

Water pollution is another environmental issue that affects the majority of this country’s population. It causes many problems, including poor water quality, even after treatment; the poisoning of people and animals; the spread of disease; and the damaging of economic endeavors that depend on water, such as fishing. There are seven main categories of water pollution: sewage and other wastes, infectious agents, organic chemicals, other chemicals and mineral substances, sediments, radioactive substances,

and heat (Goudie 235). Each of these pollution categories causes many problems for the communities in which the pollution is taking place.

There are different methods of water pollution as well. Divided into point and non-point categories, water pollution sources range from specific activities such as industrial waste dumping—a point source—to broader activities such as general agricultural waste or urban runoff—non-point sources. Point source pollution originates from a specific, identifiable place, while non-point source pollution is the collective effect of large scale activities like agriculture on a water source (Goudie 236).

These pollutants have many negative effects, both on the water ecosystem itself and on the humans relying on that water source. Metals and industrial or agricultural chemicals, like polychlorinated biphenyls (PCBs), or pesticides, such as dichlorodiphenyltrichloroethane (DDT), can be toxic to the wildlife that live in and survive off of the water and to any humans that use the water for recreational or fishing purposes. Such chemicals also contribute to acid rain, a non-point source of pollution, which spreads to other areas when the polluted water evaporates and precipitates elsewhere, creating a damaging cycle (Goudie 238-239).

Even high levels of wastes or even nutrients in a small area of water can be damaging to the ecosystem of the area. Known as eutrophication, an increase in the chemical nutrient levels in a body of water, even if the increase is merely of organic minerals or phosphates, can lead to a decrease in the oxygen level of the water, making it impossible for many plant and animal species to survive there. These hypoxic areas can also contain high levels of dangerous or deadly organisms that prevent other organisms from surviving there (Cunningham, Cunningham, and Saigo 400). Subsistence and

commercial fishing endeavors are hurt by decreases in fish and shellfish populations and the ecosystems of the affected areas are greatly damaged.

Man's increased use of metals contributes to this growing problem of eutrophication. Sources of such pollution include domestic waste-water effluents, coal-burning power stations, non-ferrous metal smelters, iron and steel plants, and sewage dumping in bodies of water (Goudie 238-239).

No one is immune to the negative effects pollution can have on a community's health and economy. The health risks are evident, and pollution can often damage industries such as fishing, and can cost a lot to clean up.

Desertification of the Southwest

Other environmental problems are damaging to health and industry. The continued desertification of the Southwestern United States is one example of how a changing landscape can effect a population.

Desertification refers to the process of non-desert land becoming desert land. It is characterized by a loss of topsoil and a depletion of plant life on the edges of existing deserts and in semi-arid regions. Changing agriculture methods throughout the centuries coupled with a history of overgrazing in the western United States have lead a decrease in the fertility and productivity in those lands (Lewis 424-425). Poor agricultural practices sapped the soil of its nutrients, and continued grazing in the same areas led to a decrease in plant life. With less roots to hold it in place, the topsoil was eroded away, and the soil underneath could not produce the nutrients needed to grow crops efficiently.

Being a semi-arid region with less than nineteen inches of rainfall a year, the Southwest was never a perfect place for human settlements, but with modest numbers

people were able to survive. However, as more and more settlers moved west, the population increase pushed the already strained resources of the area to the limit. This increase in population meant an increase in the demand for water and food resources, which in turn lead to an increase in farming and ranching and a decrease in the fertility and plant life of the region (Allen and Stevens).

Resource Scarcity

The desertification of the Southwest brings up another environmental problem the country must face: resource scarcity. We are depleting many resources needed to survive at rapidly increasing and unsustainable rates. Oil, lumber, fertile soil, and water are potent examples of resources that are being used up faster than they can be replaced.

Water scarcity is of particular concern for a large portion of the country. Only 2.4% of water on earth is fresh water and roughly 87% of that fresh water is locked in ice and snow, with the remaining 13% made up of mostly groundwater and some fresh surface water (Cunningham , Cunningham, and Saigo 375). Fresh surface water makes up less than 0.02% of all water on earth, yet it is this water on which terrestrial life depends (375). In the United States, water is unevenly distributed. Although the water supply in the eastern half of the country seems adequate at the moment, increasing water pollution levels put the clean water supply of the east at risk.

The arid Southwest, however, faces a drastically different and more alarming reality than that of the east. For centuries, water has been diverted from major rivers to support agriculture and economic development miles away. Increases in population, industrial activities, and agricultural activities have led to increases in water demands,

and water sources are being used up faster than nature can replenish them (S. Davis 527-528).

One potential solution the Southwest has tried to help collect and distribute its limited water resources is the building of dams. Dams have traditionally been used to create large reservoirs from which water can be diverted to areas lacking water sources of their own. Yet the heat of the region and the large surface area of the reservoirs cause higher evaporation rates than those that occur when water is free-flowing (Cunningham, Cunningham, and Saigo 386). The evaporated water then travels to less arid regions where it rains, taking the water out of the Southwest completely. Dams also fill up with sediment and interrupt the natural flow of rivers. Increasing sedimentation harms the ecosystems of dam lakes, and obstructs the flow of the water from the dams to its allotted destinations (386). Interruptions to natural river flows usually end up harming ecosystems downstream. Dams perhaps do more harm than good in their efforts to preserve scarce water resources.

These scarce water resources are governed by a convoluted world of Southwestern water policies. There are many competing values surrounding water issues in the area: economic development needs water to support its activities; efficiency in water use; the traditional use of water in the area; how equitable water distribution is; the importance of water to the ecology of the Southwest; and the spiritual values placed on water by the American Indian populations of the region (S. Davis 528-529). The importance the authorities of the region place on these values determine how the scarce water resources will be used and inevitably create disputes among the population as to which values are more important.

There are four types of water policy—distributive, allocative, redistributive, and cooperative (S. Davis 527). Distributive water policy means a small group of people receive water from a project usually funded by the federal government—a few receive benefits paid for by many, the taxpayers (531). Allocative water policy also deals with a smaller group of people receiving water paid for by a larger group, but in this case the small group is given the right to use the water, and the larger group pays for it by losing the opportunity costs of using the water in another venture (532). Redistributive water policy theoretically calls for water to be used in the most efficient way possible, moving water to an area where will be the most useful, yet this process is in danger of looking at only economic benefits of water use rather than social benefits (534). Finally, Cooperative water policy strives to create a more cooperative water use system, with nongovernmental people allowed to contribute to policymaking efforts (538). These four types of water policy often compete with each other in the Southwest, social values warring with economic concerns.

Global Warming and Climate Change

Perhaps the scariest environmental issue facing the world today is the looming threat of global warming. More accurately known as global climate change, this phenomenon refers to the rising temperature of the earth and the effects it has on different climates. Although the earth naturally goes through periods of warm and cold average temperatures, the rate at which global temperature has been increasing since the industrial Revolution is much higher than any other period in earth's history.

Indeed, the world has not seen carbon dioxide levels as high as they are today for three and a half million years (Liotta and Shearer 1). Greenhouse gases such as carbon

dioxide, methane, ozone, and nitrous oxide help clouds and water vapor trap radiation from the sun within the earth's atmosphere, allowing our planet to maintain a temperature that will sustain life (Cunningham, Cunningham, and Saigo 323-324). Too many greenhouse gases, however, will trap too much radiation within our atmosphere, causing the earth's temperature to increase and leading to what is often called the greenhouse effect. Many human industrial and agricultural activities emit greenhouse gases and contribute to increases in the levels of these gases in the atmosphere (333-334).

Rising temperatures cause traditional climates to change: arid regions become drier and colder regions get warmer. Melting glacial and polar ice causes arctic environments to change, and rising world sea levels contribute to receding coastlines (Cunningham, Cunningham, and Saigo 334-335). Global warming resembles a row of dominos, that first domino under siege, waiting for the level of gas emissions to become too much.

The average citizen's awareness of climate change increased dramatically during the 1980s, from 38 percent in 1981 to 79 percent in 1989 (Liotta and Shearer 3). This was due to a growing awareness of environmental concerns in general and to the testimony of government scientist James Hansen before the United States Senate Energy and Natural Resources Committee in 1988. Hansen's testimony, which was widely publicized, held that carbon dioxide emissions were warming the atmosphere. A simple message, one that had been stated before as early as the nineteenth century, yet Hansen's testimony was delivered with such certainty and conviction that it set off a wave of alarm across the country. During the same year, the Intergovernmental Panel on Climate Change was established, recognizing that climate change was an international problem and spreading

awareness of greenhouse gases and their harmful effects across the world (Liotta and Shearer 3).

Humanity's Collective Footprint

The idea that environmental issues like global warming are international problems raises questions of the collective effect the human race has on this planet. With billions of people living in this world, what is the combined effect of their efforts to simply survive, let alone prosper?

The rapid population growth of the human race throughout the last few centuries has inevitably put a strain on the world's resources. In the last two centuries alone, the world population has grown from roughly one billion people in the 1800s to over 6.5 billion today (Dodds 12). Most of that growth occurred in the last sixty years, increasing by 4 billion between 1950, when the world held 2.5 billion people, and 2010, when the world is home to over 6.5 billion people (215-216). With such a rapid increase in population, the demand for resources, natural and otherwise, skyrocketed at a rate that is proving difficult with which to keep up.

Our large human population has caused great environmental damage at the global level: an increased amount of carbon dioxide in the atmosphere that contributes to the greenhouse effect; ozone depletion leading to an increase in ultraviolet radiation from the sun; water contamination caused from agricultural and industrial chemicals, urban runoff, and other forms of water pollution; the harmful effects introducing exotic species to an area have had on the native wildlife; and the effects habitat loss and environmental degradation has on species extinction and the ability of the environment to support life,

including human life (Dodds 36). This level of environmental impact from a single species has never before occurred in the history of this planet.

The damage and loss the earth has suffered at the hands of the human race is captured in the following, moving paragraph from Walter Dodds' *Humanity's Footprint*:

A fire from the burning remains of slashed rainforest so large it can be seen from space, sheets of ice the size of small countries breaking off Antarctica, fish in remote Arctic lakes too contaminated with toxic chemicals to be safely eaten, and precipitous declines of every major ocean fishery—these are just a few signs of the pervasive influence of humans on our world. Plastic waste from humans can be found in every ocean and on every beach on Earth. Global impacts of humans on their environment...are reality (3).

This quote speaks to the overwhelming destruction the natural world has faced and the continuing environmental problems affecting the world on a global scale.

Chapter Summary

This chapter highlighted some of the environmental problems facing our world today. Pollution, desertification, resource scarcity, climate change, and the overall impact of the human race on the environment were discussed in detail.

Pollution generally takes on one of two forms: air pollution or water pollution. Air pollution is prevalent in cities and is made up of harmful substances concentrated in the air. Common, or critical, pollutants can cause many diverse health problems. Hazardous air pollutants or air toxics also contribute to air pollution and are thought to be

responsible for an increase in mortality or illness rates in the affected areas, contributing to health general health problems and possibly cancer.

Water pollution can be caused by a number of human activities, including sewage and other wastes, infectious agents, organic chemicals, other chemicals and mineral substances, sediments, radioactive substances, and heat. Point sources for water pollution are specific, identifiable sources such as a specific instance of waste dumping; while non-point sources of pollution are the collective effects of general human activities such as agriculture or urban run-off. Eutrophication can also occur in bodies of water when there is an increase in the chemical nutrient levels. This phenomenon can lead to a decrease in the oxygen level in the water, making it hard for plant and animal species to survive. The chemical nutrient levels can be made up of organic minerals or phosphates, but are also affected by human activities such as domestic waste-water effluents, coal-burning power stations, non-ferrous metal smelters, iron and steel plants, and sewage dumping in bodies of water.

Desertification is another environmental problem that threatens this country, particularly in the Southwest. Poor agricultural practices and overgrazing throughout the centuries have led to a decrease in fertile soil and plant life in the area. With fewer roots to hold the soil in place, the land erodes, turning into desert. As the population of the Southwest increased, more farming and grazing occurred to meet the needs of the higher population, speeding up the desertification process and putting a greater strain on other scarce resources of the area.

Resource scarcity, then, is a third environmental problem the country must face. Water scarcity is particularly problematic in the Southwest, where little rain falls

annually and the population is too large for the natural resources of the area to support.

Dams, although they allow water to be diverted to areas with little water resources, add to the water scarcity problem because the large surface area of reservoirs makes evaporation easier and sediment builds up in the reservoirs, effecting ecosystems downstream.

Water struggles are made more difficult due to the different values and needs that surround water use: economic development needs water to support its activities; efficiency in water use; the traditional use of water in the area; how equitable water distribution is; the importance of water to the ecology of the Southwest; and the spiritual values placed on water by the American Indian populations of the region. Differing water policies also exist in the Southwest—distributive, allocative, redistributive, and cooperative—and debates revolving water policy add to the headache that is water scarcity.

Climate change is a global issue facing every person on this planet. Increases in greenhouse gases begin a cascade of events that could result in a drastically changed world climate. The greenhouse effect causes the earth's temperature to heat up, which in turn cause changes in traditional climates: cold places get warmer, dry places drier. Melting glacial and polar ice causes arctic environments to change, and rising world sea levels contribute to receding coastlines.

Awareness of global warming and climate change, both nationally and globally, increased during the 1980s, with the average American's awareness of the greenhouse effect growing by roughly 40% between 1981 and 1989. The testimony of government scientist James Hansen before the United States Senate Energy and Natural Resources

Committee in 1988 contributed to this increased awareness, as did the creation of the Intergovernmental Panel on Climate Change that same year.

Each of these environmental problems can in large part be contributed to human actions. Walter Dodds discusses the idea of an ecological footprint of the human race, studying the combined effect humanity has had on the natural world. He paints a grim picture of population expansion causing an increase in general pollution and a strain on the world's resources. These negative activities contribute to global environmental problems including climate change.

This chapter illustrates environmental damage at a national and even global level. The next chapter will narrow the scope to look at specific instances of environmental problems that affect American Indians in the United States.

Chapter Six

Instances of Environmental Threats Effecting American Indians

A Collection of Environmental Damage

More examples of environmental damage effecting American Indians exist than this paper can illustrate. Every reservation and Indian community faces environmental problems that have a negative impact on their health and culture. There are thousands of instances of pollution, resource scarcity, environmental degradation, and climate change impacting Indian communities. The examples that follow are a sampling of the environmental problems Indians have to deal with today.

The Mohawk and PCB Pollution

Instances of water pollution near reservations are among the easiest examples to find of environmental damage affecting Indians. One example of such hazardous waste pollution occurs along the St. Lawrence River on the Mohawk Indian reservation, home to one of the worst PCB sites in America (Goodstein 79).

Polychlorinated biphenyls (PCBs) are simply man-made toxic chemicals. They have no natural sources. PCBs possess properties such as resistance to acids, oxidation, and hydrolysis; thermal stability; and low vapor pressure, making them good coolants and insulating agents (Hwang et al. 184). They had a variety of uses: as lubricants, fluids for transformers, paper coatings, inks, and paints, to name a few (Goodstein 143). PCBs can be passed from one organism to another through consumption, and PCB-pollution can take decades to eradicate, all the while negatively affecting the health of those who depend on that environment to survive. Once it became clear that PCBs were harmful to

both humans and the environment, PCB manufacturing was banned in the United States in the 1970s (Cunningham, Cunningham, and Saigo 411).

The Mohawk reservation is located along the St. Lawrence River in New York, Ontario, and Quebec. The company responsible for the pollution, a General Motors division, is located nearby and spent the years between 1959 and 1974 using PCB-based hydraulic fluids in its manufacture of automotive parts. The PCBs leaking into the wastewater treatment system and from there were dumped into the neighboring streams and ponds (Hwang et al. 184).

Numerous studies show the negative health effects PCB contamination has had on the population of the Mohawk reservation. One study focused on the affects of the hazardous waste—dumped along the St. Lawrence River—on the Indians of the Mohawk reservation. The authors found concentrations PCBs in the breast milk of American Indian mothers who consumed fish caught near the source of contamination (Hwang et al.).

Another study stated that higher levels of PCBs were found in the blood of American Indian men who ate more contaminated fish from the river and who had occupations that exposed them to PCBs; and gathered some evidence to suggest that even men who ate relatively few fish could have high levels of PCBs in their blood if they lived close to the waste site, an area with high levels of PCBs in the air itself (Fitzgerald et al.). A third study showed that, even though diabetes is not usually attributed to external environmental factors, high exposure to PCBs and other toxins could be linked to an increased rate of the disease occurring in a population (Codru et al.).

These studies serve as testimony to the harm environmental pollution can cause to a community. The Mohawk are just one example of the countless instances of pollution found within this country, both on reservations and off.

The Penobscot and the Pollution of Their River

Another example of water pollution effecting a reservation can be found in Maine. The Penobscot nation resides on a series of small islands on the Penobscot River, only one of which, Indian Island, is large enough for people to live on. The river is spiritually and culturally important to the Penobscot, who have always relied on it for transportation, food, and water (*Homeland*).

Yet upstream, a paper company regularly polluted the river with chemicals and other industrial discharge, such as dioxin, from its operations with no regard to the significance the river had to the tribe. Dioxin is absorbed by fish and becomes more concentrated, increasing the negative effects of its consumption. Dioxin has been linked to many negative health effects, including cancer, and the cancer rate within the Indian Island community is twice as high as the average rate for Maine (*Homeland*).

Some would advocate a simple answer for the Penobscot: stop using the river. However, the river is a huge part of Penobscot culture. Giving up the river would mean giving up their culture, something no group of people should be forced to do. The following quote comes from Barry Dana, Chief of the Penobscot tribe, and expresses depth of feeling his people have for their river:

When you see a stream coming out of the mountain, directly out of the mountain, there just isn't any place better. The water that we're seeing right here, flowing through the reservation, literally comes from Katahdin

[Great Mountain], the most sacred place on the planet. Yet here, the water's not viewed as sacred by industry, it's viewed as a pipe to the ocean...a sewer (*Homeland*).

Dana's words depict very different views regarding the river and highlight on a broader scale the differing views toward the environment that compete for favor in this country.

The Navajo and Uranium Mining

Another example of the negative effects of pollution on American Indians can be found on the Navajo reservation in relation to uranium mining. Between World War II and the early 1970s, the federal government set up uranium mines in the Southwestern United States. These mines offered many jobs to area residents. Navajo Indians in particular took up these mining jobs because the mines were close to their homes, and they had few alternatives (Brugge and Goble 1411).

Uranium mining offered the Navajo jobs, but those jobs often negatively affected their health. When the Navajo first began working in the mines, they knew little of the possible health risks involved with the mining, for they were separated from the general population on the reservation, had low formal Western education rates, and spoke a different language, one that had no word for "radiation" (Brugge and Goble 1411). They were at a disadvantage from the start.

Uranium mining has been linked to lung cancer and other respiratory diseases (Brugge and Goble 1412). Although one could argue that the Navajo miners took the jobs willingly, there was little other choice in jobs when the mines first opened (1411). The federal government also delayed addressing the negative health issues associated with

uranium mining (1417). The Navajo illustrate another example of the pollution hazards many Indians face.

The Navajo and Desertification

Pollution, however, is not the only problem the Navajo face. The tribe has long suffered the negative effects of desertification on their reservation in the Southwestern United States. As previously discussed, desertification refers to the creation of desert land from what was once non-desert land. Many factors contribute to the process of desertification, including a loss of topsoil and plant life from agriculture and ranching.

This “Navajo land crisis” has been caused by familiar concepts (Sheridan 16). The Navajo population over the last century increased significantly, which the size of the tribe’s reservation increased only modestly, leaving the tribe fewer resources per member than they had possessed in the past (16).

The large population of sheep and cattle the Navajo graze on their land has also contributed to the desertification of the area (Sheridan 16). Grazing can lead to desertification if the animals consume the grasses and other plants native to the area at a faster rate than the plants can grow back. Overgrazing is a problem on the reservation because the large domestic animal population they have is at, perhaps even over, the capacity which their land can support (16). Reducing their herd numbers, however, is difficult because of the increasing population that relies on the animals and the money the ranching industry brings in for support.

Federal restrictions on land use make it difficult for reservation tribes to economically develop their non-agricultural land. The laws that established Indian reservations did not entrust the land title to the tribes. Instead, the federal government

holds the deeds for the land, keeping it in trust for the tribes and allowing them beneficial use of that land. However, there are many rules governing that use, and tribes must get approval before they can institute most projects involving reservation land. Because of these legal issues, it is harder for tribes like the Navajo to develop their land economically than it would be for a citizen to develop their own private property, and make it hard for the Navajo to decrease the side of their ranching industry when there is little to replace it (Sheridan 16).

These factors contribute to the continuing desertification of the Southwest and make it difficult for tribes like the Navajo to live there. Other tribes, too, face the threat of desertification in the Southwest just like the Navajo.

Water Scarcity and American Indians of the Southwest

The Navajo and other Indian tribes living in the Southwest must also deal with the increasing strain being placed on natural resources in the area. The myth that all American Indians have access to stable environments and plentiful food resources is simply that: a myth. Research shows that in a region suffering from scarce rainfall and a hot climate, and getting drier and hotter each year, plentiful food sources are hard to sustain (Shipek 293).

Overpopulation in the arid Southwest continues to stretch the water resources of that part of the country to their limits—perhaps even beyond them. For centuries water has been diverted from major rivers to support agriculture and economic development miles away. Increases in industrial, agricultural, and urban activities need increases in their water supplies to be successful, yet the environment simply cannot continue to support the increase in water demands such activities produce.

The two largest sources of water in the Southwest are the Colorado River and the Rio Grande. The Colorado River, stretching 1,450 miles across the Southwest, supplies half of the water used by major cities such as Los Angeles and Phoenix, powers the lights of Las Vegas and other urban areas with hydroelectricity produced by the Hoover Dam, and is a major source of water for Arizona, California, Colorado, Nevada, New Mexico, Utah, and any reservations that are located within those states, including the Navajo (Taliman 364).

The Rio Grande, stretching 1,900 miles from Colorado to the Gulf of Mexico, provides less water than the Colorado, but is no less important to those who depend on the river. Pueblo Indians as well as 80 percent of New Mexico's population depend on the Rio Grande for water (Taliman 364).

Considering how important these rivers are to life in the Southwest, one would think they would have been taken care of a little better. However, all of the problems facing water sources in this country affect the Colorado and the Rio Grande: water pollution, damming that leads to higher levels of evaporation, silt build up, and the strain of demands that the rivers simply do not have enough water to fill.

This high demand for water makes it more valuable than gold in arid regions and the scarcity of water poses a continued threat to American Indian reservations. When the federal government relocated many American Indian tribes to the Southwest, it could not have foreseen the vast population increases and water shortages the area would face today. It simply moved tribes to the least desirable places in the country.

However, this did give most reservation tribes senior water rights, both because the reservations were federally established and because few others inhabited those areas

before the tribes. Senior water rights give the possessor the ability to take needed water before anyone else (S. Davis 530). Therefore, senior water rights should, in theory, allow the tribes access to as much water as they need before other interests get any.

Of course, few policies work out the way they should, and water is often diverted before it even reaches reservations. Less water means the tribes have a harder time in agricultural and industrial endeavors, which in turn contribute to less economic income. Decreases in farming and fishing can lead to poorer dietary options and an increase in health problems. The Navajo and other tribes in the Southwest face grim prospects in the future with everyone claiming the same patch of water as their own.

The Gwich'in and Climate Change

Seventy-five miles north of the Arctic Circle, in the northeastern corner of Alaska, Arctic Village lies 100 miles away from the nearest road. Arctic Village is home to the Gwich'in Athabascan Indians and has been for over 10,000 years (*Homeland*).

The Gwich'in depend upon the Porcupine Caribou for their way of life and for decades the caribou have been protected by the Arctic National Wildlife Refuge. Every proposal to open the refuge up to oil drilling, however, threatens to disrupt the caribou's migration and calving grounds and thus threatens Gwich'in culture. The Gwich'in are dedicated to fighting these proposals and protecting the caribou and their culture, learning about Western political processes and raising awareness for the problem (*Homeland*).

Yet drilling is not the only threat to the caribou and the Gwich'in. As the world's temperature increases, the climate of the arctic has begun to change. Since the 1960s, snow cover on earth has decreased by 10%, and the thickness of Arctic sea ice has decreased by 40% since 1990 (LaDuke, "Recovering" 244). This melt in turn causes a

rise in sea level, flooding low coastal areas (244). Because the caribou only have a small strip of coastline that they use for giving birth, any interruption to that coast, be it from oil drilling or flooding from climate change, could alter the caribou's migratory patterns and effect its population, impacting Gwich'in culture and practices.

The quote that follows is from Evon Peter, Chief of Arctic Village, and illustrates the powerful bond the Gwich'in people feel with the caribou:

My ancestors are the oldest inhabitants of the Americas. If the caribou go away, our whole tradition and our culture would change, and the next generation would be lost....In Gwich'in creation stories, the caribou has a piece of man's heart in his heart and man has a piece of caribou's heart in his, so that each will always know what the other is doing (*Homeland*).

If the caribou disappear, the Gwich'in will lose that connection and with it their culture.

Many threats face the Gwich'in people, some harder to fight than others. These threats represent more examples of the negative effects of environmental problems.

Chapter Summary

This chapter looked at specific instances of environmental damage and how they affected American Indians, particularly tribes on reservations. The evidence for environmental damage on reservations is overwhelming to the point of despair. The examples listed in this chapter are but a small sampling of the cases that exist in this country.

Examples of pollution can be found on the Mohawk and Penobscot reservations. The Mohawk suffer from continued PCB contamination in their water sources from industrial activities decades ago, exhibiting negative consequences to their health.

Similarly, the Penobscot suffer from water pollution in the river on which they live, which also stems from industrial activities.

Uranium mining in the Southwest is another form of pollution that has negatively affected the health of many Navajo Indians. With little knowledge of the possible long-term health effects when the mining began seventy years ago, many Navajo took up jobs in the mines when there were no others available, realizing too late how the jobs impacted their health.

Desertification of the Southwest and strained water resources also negatively affect the Navajo reservation and other Indian communities in the area. As the land becomes more and more arid, activities like agriculture become more and more difficult. More land is needed to find fertile soil and rotate crops and more water is needed to irrigate those crops.

However, with water resources as strained as they are, even slight increases in water demands have much greater negative impacts than they once did. Overpopulation demands more water for cities, industries, and other economic development efforts. Water is diverted from miles away to supply these endeavors, leaving less water for everyone else.

Although reservations should, under the law, have primary water rights in the Southwest—having been set up before most settlers appeared there—many tribes still have to fight to have access to the water they need to survive the region. Water is often diverted or polluted upstream, allowing little clean water to reach the reservations.

Even when a tribe is actively fighting one environmental threat, they can be at risk from another. Such is the case with the Gwich'in in Alaska, who have been fighting

the expansion of arctic drilling into the habitat of the caribou on which the tribe survives for decades, but who face similar threats to the caribou and tribal culture from global climate change.

The examples highlighted in this chapter discuss actual instances of environmental damage to American Indians. The overall consequences of problems like pollution, resource scarcity, and climate change on American Indian health and cultures will be discussed in a later chapter. The next chapter addresses policies and programs used to address environmental problems by the country as a whole and by specific tribes.

Chapter Seven

Environmental Policy and Programs

The Beginning of an Era

What has become known as the environmentalism movement began in the 1960s, when a growing awareness of the harm pollutants such as pesticides can have on human beings was brought to the nation's attention with the publication of Rachel Carson's *Silent Spring* in 1962 (Cunningham, Cunningham, and Saigo 20). The institution of the National Environmental Policy Act of 1969 (542), the first Earth Day celebration in April 1970 (21), and the creation of the Environmental Protection Agency in December 1970 (550), added to the public's knowledge and awareness of the movement and the issues it strove fix. These growing concerns sparked an environmentalism movement in this country that strives to ease or reverse the damage caused by environmental problems with various laws and policies.

United States Environmental Policy

Environmental law began with the National Environmental Policy Act of 1969 (NEPA) and the creation of the Environmental Protection Agency in 1970 (EPA). NEPA requires Environmental Impact Statements to be filed for any federal project detailing how the project might affect the environment and created the Council on Environmental Quality, which oversees general environmental concerns in the United States (Cunningham, Cunningham, and Saigo 544); while the EPA is responsible for protecting environmental quality (550).

The 1970s then saw more than 27 major environmental laws and hundreds of environmental administrative regulations established (Cunningham, Cunningham, and

Saigo 543). More have followed in the decades since. Although not all of these laws and regulations can be mentioned here, the following laws deal directly with the problems this paper has discussed so far.

The Clean Air Act of 1970 and Clean Water Act of 1972 regulate air and water quality by setting air and water quality standards and creating pollution discharge permits companies must obtain. The Safe Drinking Water Act of 1974 created standards for the safety of public drinking water and groundwater. The Toxic Substances Control Act of 1976 authorized the EPA to regulate or ban chemicals deemed a risk to public health or the environment. The Resource Conservation and Recovery Act of 1976 regulates hazardous waste storage, treatment, transportation, and disposal. Finally, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and the Superfund Amendment and Reauthorization Act of 1994 created the Superfund—initially worth \$1.6 billion and then increased to \$8.5 billion—for the purpose of funding emergency response efforts, spill prevention, and site remediation for toxic wastes (Cunningham, Cunningham, and Saigo 545).

These laws have contributed greatly to the environmental cleanup and protection of the United States. The country's environment today is much cleaner and healthier than it was when NEPA was passed in 1969. However, many of these laws and regulations focus on very specific problems and ignore related problems. The Endangered Species Act of 1973, for example, calls for a recovery plan to be created for each endangered or threatened species, sometimes allocating large amounts of funds to save only a few animals (Cunningham, Cunningham, and Saigo 545). If those funds instead were used to protect the ecosystem as a whole in which the species lived, many more animals would

benefit, as would the surrounding environment. Similarly, the Superfund, although a worthy idea, was depleted rapidly and had no real source of replenishment.

Many of these laws were reactions to a polluted environment, aimed at cleaning up the current mess and stopping the perpetrators from adding to it. This was a good place to start when deciding how to address the environmental issues the country faced at the time. Yet the health of the environment is very complicated and is affected by many factors within the economic, political, and social spheres of this country and the larger world (Cunningham, Cunningham, and Saigo 554).

There are no simple answers to environmental problems and the larger the scale of the problem, the harder it is to come up with a solution. Some tribes, however, have instituted programs that have helped heal their environments.

Environmental Programs on Reservations

Many tribes have instituted programs to improve and protect the environments in which they live and many more examples exist than can be discussed here. The following three examples are used to represent the many tribes striving for a safer and healthier environment.

The Penobscot Nation of Maine, as discussed before, was faced with a highly polluted river. The Penobscot River Restoration Project is now working to combat the negative effects of that pollution and is searching for a larger solution to balancing the needs of hydropower, ecological protection, and the needs of migratory fish. The project's goals include cleaning up the river and removing dams that inhibit the natural habitats of fish species in the river, while allowing hydropower output at other dams

along the river to increase so the total amount of hydropower produced by the river is not impeded (*Penobscot*).

The benefits of this project are great. It will provide access for many upper and lower river fish to their historic habitats, including Atlantic salmon; restore the natural ecological functions of the river to the benefit of native plant and animal species; improve the water health and quality not just of the river, but also of the Gulf of Maine; and protect the culture and traditions of the Penobscot Nation; all while maintaining the economic and energy benefits of hydropower through other existing dams (*Penobscot*).

The project is hailed as one of the country's most innovative restoration projects and is the result of unprecedented collaboration between the dam owner, PPL Corporation; federal, state, and tribal governments; and a number of conservation groups. The cooperation evident in this project will have a positive effect not just in the environmental sphere of the area, but in the economic and social spheres as well. By looking at the larger network of intersecting needs and values associated with the Penobscot River, the tribe and the other members of the project are working toward a solution that benefits everyone and avoids future disagreements (*Penobscot*).

The Menominee tribe of Wisconsin has also implemented a program that both protects its environment and utilizes its natural resources. The tribe has sustainably managed its forest for over 150 years: it has increased the commercial productivity of the forest while maintaining its health and abundance. Similarly, its water quality is high, with no high concentrations of chemicals or other harmful substances despite heavy use of the water for consumption, fishing, and rafting today and for transportation and power generation historically as well (T. Davis 20-21).

The Menominee Tribal Enterprise Forest Management Plan outlines how the tribe approaches and implements sustainable forestry (T. Davis 156). The plan states that the forest must be sustainable for future generations, must sustain the tribe's economy, and must maintain biodiversity. It also calls for the Continuous Forestry Inventory, which collects data from the forest to monitor the forest's diversity and health (156). This will allow the tribe to modify their practices quickly in response to changes in the forest.

This forest management plan was formulated by the cooperative efforts of the Bureau of Indian Affairs, the Wisconsin Department of Natural Resources, and the Menominee tribal government (T. Davis 155). Here again is another example of diverse, often adversarial, groups working together to create outcomes that benefit everyone.

The last example explored here of a tribal program that protects the environment is also the largest. The Navajo have developed their own environmental protection agency, the Navajo Nation Environmental Protection Agency (NNEPA), which works to protect, preserve, and enhance public health, welfare, and the environment. The agency does this both for the present generation and for generations to come, using environmental laws, public awareness, and education (*Navajo*).

The NNEPA has many departments focusing on different aspects of environmental protection, such as criminal enforcement, air and toxins regulation, waste regulation and compliance, and surface groundwater protection. Many of the laws implemented by the NNEPA are similar in their purposes to environmental laws of the United States, including laws regarding pollution, safe drinking water, pesticides, air quality, and waste disposal (*Navajo*).

The NNEPA is involved in environmental protection and improvement in many ways. Annual NNEPA conferences, hosted through the General Assistance Program of the NNEPA, make it easier for community members to gain access to NNEPA programs and benefits. These conferences and other outreach efforts allow for a more direct response to specific community problems. Operation Green Day activities work to enhance waste management in individual communities, and NNEPA is also involved in Abandoned Uranium Mine Collaborative projects (*Navajo*).

These programs show the dedication these tribes have to their environments and represent only a small portion of the collective efforts of Indian tribes to protect their homes.

American Indian Environmental Programs as a Model for the United States

The general laws regulating environmental protection in the United States have each contributed to the improvement of the environment in this country, but they often fail to go far enough in their protection efforts, whether due to vagueness, lack of funds, or lack of enforcement. As the interconnectedness of environmental issues becomes clearer, new solutions are needed that strive to solve a number of problems at once.

The examples of Indian environmental protection efforts discussed here have certain qualities that make them particularly effective. Programs like the Penobscot River Restoration Project and the Menominee Forest Management Plan work to improve the environment by finding larger solutions for many related environmental problems in sustainable ways. Organizations like the Navajo Nation Environmental Protection Agency are able to directly address local problems quickly because they are involved with the communities in which they are present.

Finding solutions that have benefits within many spheres of life; targeting all of the reasons behind a problem rather than just one; and working on a local level to identify individual problems effecting communities and find creative ways to solve those problems: these qualities can be found within successful environmental protection efforts such as those of the Penobscot, Menominee, and Navajo. Applying these qualities to protection efforts in other communities across the country would help increase the effectiveness of the general environmental policy of the United States.

Chapter Summary

This chapter outlined the general environmental policy of the United States, including major environmental laws and organizations such as the National Environmental Policy Act and the Environmental Protection Agency. These laws were effective in heightening the quality of the environment in many parts of the country, but often do not go far enough in their protection efforts. The health of the environment is very complicated and is affected by many factors within the economic, political, and social spheres of this country and the larger

There are many tribes who have implemented their own environmental protection programs across the country. The Penobscot in Maine have developed the Penobscot River Restoration Project to increase the health and productivity of their river. The Menominee in Wisconsin manage a highly productive forest in a very sustainable way, ensuring its continued profitability in generations to come. The Navajo Nation has its own Environmental Protection Agency that is able to address environmental problems directly at local levels.

The qualities found within these programs—finding solutions that have benefits within many spheres of life; targeting all of the reasons behind a problem rather than just one; and working on a local level to identify individual problems effecting communities and find creative ways to solve those problems—can be applied to other communities, improving the quality of environmental health and protection across the country.

The next chapter looks at the overall effect environmental problems have on the health and cultures of American Indians.

Chapter Eight

Impact of Environmental Threats on American Indian Health and Cultures

The Effects of Environmental Threats

Environmental problems negatively affect the health and cultures of many Indians, especially those on reservations. Health on reservations is often poor to begin with, increasing the potency of the negative affects that environmental problems impose on reservation populations. Native cultures are also damaged when pollution, resource scarcity, climate change, or other environmental problems interrupt traditional practices. This chapter provides a brief overview of how these problems effect health and cultures on reservations.

American Indian Health

The standard of living on American Indian reservations is far below the national average. Unemployment rates soar, poverty levels are high, and higher education levels are low (Goins and Spencer). The health care provided to reservations by the federal government is far from adequate, with few resources per person. Chronic diseases plague reservations: the rates of heart disease, stroke, diabetes, and other cardiovascular diseases were double the national average in a recent study of three areas with high Indian populations (Jernigan et al.). With poor health and the depression that often follows come compromised immune systems and an increased risk of more health problems.

Everyone exposed to air and water pollution faces health threats, but those threats increase for American Indians on reservations. The health of many American Indians on reservations is already compromised. When our bodies are fighting a health problem, our immune systems are preoccupied, leaving us more vulnerable to other health threats,

including the risks posed by pollution. Weakened by diabetes or other diseases and with poor healthcare systems busy with larger problems, respiratory and other problems associated with air and water pollutants would meet little resistance.

The overrepresentation of reservations as hazardous waste storage and disposal sites also creates an increased risk of pollution-related health problems for Indians on those reservations. Termed environmental racism in most contexts, this inequality has been found in many minority communities and will be discussed in detail in the next chapter.

Pollution is not the only environmental problem affecting the health of American Indians. Water scarcity and climate change also negatively affect Indian health. Less water means the tribes have a harder time in agricultural and industrial endeavors, which in turn contribute to less economic income. Decreases in farming and fishing can lead to poorer dietary options and an increase in health problems. Climate change can increase these problems because dry climates will become drier as the world's temperature increases. This will increase the strain on scarce water resources and the negative health risks that accompany that strain.

American Indian Cultures

In addition to health risks, environmental problems threaten the very cultures of American Indians. The fundamental difference between Western and Indian views of the environment inevitably means that any environmental damage will hurt native cultures more because of the respect and honor they place on the natural world.

Seen through traditional Indian thought, any damage to the environment, it could be argued, is a violation of the responsibility we have to protect and respect nature.

Pollution in any form can potentially harm ecosystems beyond repair and damage culturally sacred environments. The Penobscot, with the pollution of their river, were faced with the choice of abandoning their cultural practices surrounding the river, or living with the health consequences (*Homeland*).

Water scarcity, too, can damage the natural balance of ecosystems; and climate change disrupts every environment it touches, sometimes causing minimal damage the ecosystem can adapt to, other times drastically altering the balance on which the environment rests.

The restrictions environmental problems like water scarcity and climate change place on traditional practices can damage Native cultures as well. Many American Indians have been or will be forced to abandon traditions their tribes have practiced for centuries, and if the traditions cannot be reinstated in the next generation or so, the wisdom and knowledge may be lost forever. The Gwich'in face this grim prospect as oil companies and climate changes threaten the caribou herds that are an integral part of Gwich'in culture (*Homeland*). Cultures can only adapt to a point before they lose what kept them together in the first place.

Chapter Summary

This chapter discussed the negative effects environmental threats have on Indian health and cultures. Reservation Indians often start out in an environment of poor health and poverty. This initial disadvantage is caused by a long history of oppression and increases the negative effects environmental problems have on the health of reservation populations.

Native cultures can also be negatively impacted by environmental problems. Many tribes, such as the Penobscot and Gwich'in, face damage to their traditional practices due to pollution, resource scarcity, and climate change.

The next chapter discusses how these negative impacts in many cases are augmented by cases of environmental injustice in the distribution of environmental hazards on reservations and how that injustice is a result of structural violence in the United States.

Chapter Nine

Environmental Injustice Against American Indians

Hidden Violence

Before now this paper has discussed specific environmental problems that affect reservations and how these problems are damaging to Indian health and cultures, but it has not addressed the underlying oppression Indians still have to face in the United States. This chapter will address this underlying oppression and the environmental injustice it often leads to.

The environmental threats Indians have to deal with are often made worse by an uneven distribution of environmental hazards on reservations. Many reservations are home to a higher than average number of hazardous waste sites (Cunningham, Cunningham, and Saigo 47). This uneven distribution of environmental hazards leads to thoughts of environmental injustice, even racism. This injustice can be seen as a result of the structural violence perpetuated against American Indians in the United States.

Environmental Injustice on Reservations

Environmental racism involves an unequal distribution of environmental hazards based on race (Cunningham, Cunningham, and Saigo 48). The distribution of environmental hazards across different races shows that minority communities, including Indian reservations, often contain more hazards than white communities (Northridge et al. 209). Almost half of all American Indians in the United States live in communities that contain one or more incinerators, major landfills, or uncontrolled toxic waste sites (Cunningham, Cunningham, and Saigo 47). Exposure to such hazards in greater numbers

negatively affects the health of Indians at a higher rate than is seen in the wider community—a perfect example of environmental injustice.

Many reservations are threatened by these environmental hazards. The Navajo reservation has over a thousand abandoned uranium mines, the Spokane and Yakama reservations in Washington state are contaminated with wastes from mines and nuclear experiments, and many other reservations have been exposed to similar toxic wastes (LaDuke, “All” 97-98). By the end of the twentieth century, the United States had generated more than 30,000 metric tons of nuclear waste, much of which is stored on or near Native lands (97).

Because we have little knowledge about how to neutralize these hazardous substances, most industries rely on the earth to break down toxic wastes naturally (LaDuke 97). However, these substances often have long lives, some requiring isolation for over 100,000 years before they are safe, so this practice often creates more harm in the communities in which they are placed (97).

Environmental injustice concerns among American Indians range from resource scarcity issues to health hazards. Minority groups, including Indians, feel the negative effects of environmental problems much more acutely than the general white American population, a problem created by a flawed world system intent on maximizing profits at the expense of the environment and supported by prevailing Western cultural beliefs and practices (Tinker 87). This prevailing Western belief system in the United States can also explain why Indian cultures is affected by environmental problems more than mainstream culture.

Environmental Injustice as a Form of Structural Violence

This environmental injustice is a result of the prejudice against American Indians, the structural violence, inherent in our society. Structural violence is an indirect form of violence—not physical but institutional, exerted by a society against a smaller portion of that society (Farmer 307). This violence is often hidden within social norms, making it more difficult for individuals within a society to recognize the continued discrimination the violence facilitates (309).

The long history of oppression Indians have faced at the hands of the federal government—land seizures, removal to reservations, forced boarding school education—has become ingrained in the laws and practices of American society, which often continue to take power away from tribes. Many Americans, when confronted with this idea, are surprised or confused by these claims, finding it difficult to see the inherent violence because it is a normal part of our society (Farmer 309).

The environmental racism evident by an overabundance of hazardous sites on reservations compared to other communities can be linked to the structural violence against Indians within American society. The poverty and social problems found on reservations make it easier to exploit these communities when searching for landfill or hazardous waste sites and the continued use of reservations for such sites reinforces the idea that they are acceptable places to house environmental hazards.

Structural violence has long aided the oppression of Indians. Its role in the unjust practices of environmental racism that Indians now face is just one more example of the damage structural violence can have on a group of people.

Chapter Summary

This chapter looked more closely at the inequalities found within the distribution of environmental hazards in this country, noting that almost half of the Indian communities in this country have hazardous waste sites, landfills, or incinerators. This inequality is the result of environmental racism, which in turn can be attributed to the structural violence inherent in the laws and practices of the United States. This structural violence is a hidden form of violence because it is built into the social norms of a society.

Chapter Ten

Conclusions and Looking Forward

There's a prophecy. It's called Voice from the North. There's going to come a time when a voice from the north is going to rise. When that Voice from the North rises, it signifies a time for human kind to change their ways (*Homeland*).

The preceding quote illustrates a Gwich'in cultural belief mentioned by Faith Gemmill, member of the Gwich'in Steering Committee, in the movie *Homeland: Four Portraits of Native Action*. This documentary portrays some of the environmental and social problems tribes face throughout this country. Her words ring with power, a power greater than her own: the power of her culture and the traditions and beliefs passed down by her people for thousands of years.

Faith represents that Voice from the North. The Gwich'in, along with tribes across the country, are striving to protect their environments and cultures, standing up to Western traditions that have controlled this country for centuries. They are implementing programs that focus on local environmental problems and work to fix many of the reasons behind those problems all at once in a sustainable way that benefits everyone.

These programs represent a new way of thinking about environmental issues, one that is more direct and creative than the general programs the United States currently employs. This new way of thinking, if expanded to include other communities under environmental siege, has the potential to increase the environmental health and quality of those communities.

As more and more communities benefit from programs like these, the positive changes these programs create will grow, affecting the entire country. These positive changes will not only include environmental improvements and health benefits, but could provide economic improvements in certain areas. They could also help to empower communities that have long felt they had little power of their own, for those communities would be responsible for programs in their area.

Reservations have experienced the worst of the negative effects associated with environmental problems and face other social problems such as poverty, poor health and education, and unemployment, as well. However, as we have seen, everything is connected. Solve one problem, improve one social crisis, and the positive effects will begin to work their way into other areas of life, for reservation Indians and eventually for the country as a whole.

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