Assisting Congress to Better Understand Environmental Justice

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WE ACT FOR ENVIRONMENTAL JUSTICE

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Project Team

Faculty Advisor Professor Gail Suchman

Project Manager Sara Rummel
Deputy Manager Kimberley Rain Miner

Team Members
Magdalena Dewane
Alfonso Galarce
Karin Kaechele
Jeffrey Irvine
Krystal Lin
Blair Cameron-Beavers Matthews
Monica Pham, Esq.
Kendall Singleton
Katharine Targett

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Executive Summary

People of color and low-income residents are more likely to live and work in the nation's most polluted communities than those who are white or more affluent. The fact that low-income, high-minority communities lack social and political capital is related to their communities housing polluting facilities such as landfills, power plants and waste water treatment plants, as well as lacking parks, recreation and open space. As a result, residents in these neighborhoods often bear disproportionate environmental and public health burdens, and they are frequently deprived access to environmental benefits.

The community-based non-profit, WE ACT for Environmental Justice, was founded in 1988 as a result of local community struggles against environmental burdens. Since then, WE ACT has become a national leader in promoting environmental justice and, in the last year, opened a Washington, D.C., office to enhance WE ACT's ability to focus federal attention on its priorities. Our project is to assist WE ACT in its work to educate members of the House of Representatives and their staffs about environmental justice by researching and creating a set of educational materials.

The research team completed three main products for WE ACT. First, the team developed a model for preparing case studies on communities facing significant environmental justice issues. The research team used an initial working model to screen 13 states, identify several potential communities for further study, and hone in on three target communities. By working through the research process and utilizing trial and error, the team refined the working model. The proposed model provides WE ACT with a framework to create additional environmental justice community case studies in the future. Second, the team further researched and prepared a set of three environmental justice community case studies. The communities included are the Manchester neighborhood of Houston, Texas, which is surrounded by industrial air pollution; the Elyria-Swansea and Globeville communities in Denver, Colorado, which bear the cumulative burdens of nearby industry, intensive highway traffic at close proximity and the historic pollution left by former smelters, now federal Superfund sites; and communities in the San Juan Basin in Northwestern New Mexico, which have been subjected to extractive mining of uranium, coal and now hydraulic fracturing for natural gas. Finally, the case studies were distilled down to one-page fact sheets. WE ACT will be able to use both the case studies and the fact sheets as educational tools when lobbying on environmental justice issues on Capitol Hill.

This project is significant because it not only provides WE ACT with educational tools that will help the organization to better educate members of the House of Representatives and their staffs about environmental justice issues, but it may also help residents to better understand environmental conditions in their own neighborhoods. It is our hope that increasing public awareness in these affected communities will help empower local residents, develop grassroots action, and bring issues of environmental justice to the legislative forefront, creating a regulatory framework that could mitigate these conditions and address environmental justice issues in the community.

Introduction

WE ACT For Environmental Justice

WE ACT, a community-based non-profit located in Harlem, New York, is a leading voice on environmental justice. It was founded in 1988 as West Harlem Environmental Action, a small organization fighting for the opportunity to participate in public decision-making about the location of the North River Sewage Treatment Plant. Since then, it has become a national leader on environmental justice. The organization participates in and leads several national campaigns, including the Environmental Justice Leadership Forum on Climate Change. WE ACT continues to have a strong voice in the local community and in New York City politics.

WE ACT's first campaign against the North River Sewage Treatment Plant led to one of the organization's early victories when the City of New York was required to retrofit the North River Sewage Treatment plant in Harlem. The plant was built in the neighborhood after bypassing more affluent neighborhoods. Many West Harlem residents experienced negative health effects from the toxic air emissions produced by the plant. WE ACT filed a lawsuit and, in 1993, the plant's operations were found to be non-compliant with air quality standards. In addition to a $55 million retrofit, the New York City Department of Environmental Protection settled for $1.1 million for environmental mitigation within the community.[1]

Emissions from the North River Sewage Treatment Plant in Harlem, NY. July 2011. (Source: NYC.gov)

> ***"To build healthy communities by assuring that people of color and/or low-income participate meaningfully in the creation of sound and fair environmental health and protection policies and practices."***
>
> *-- WE ACT's Mission*

WE ACT has played an important role in catalyzing the environmental justice movement. It is important to recognize what the organization has accomplished. WE ACT's success stems from its ability to build networks of environmental justice leaders across the country, bring the issues of racial and poverty justice to the environmental movement, and organize neighborhoods around campaigns to address environmental justice concerns.

In recognition of WE ACT's efforts, in 2001 WE ACT Executive Director, Peggy Shepard, was elected Chair of the National Environmental Justice Advisory Council (NEJAC), which advises the U.S. Environmental Protection Agency (EPA) on issues relating to environmental justice and makes recommendations to integrate environmental justice concerns into the EPA's program goals. [2] [3]

WE ACT Co-Founders Peggy Shepard and the late Chuck Sutton raising awareness about poor air quality in Northern Manhattan. (Source: WE ACT)

The organization focuses its work on the eight indicators of a healthy community, which include:

- Clean Air;
- Affordable, Equitable Transit;
- Waste, Pests, and Pesticides Reduction;
- Toxic Free Products;
- Good Food in Schools;
- Sustainable Land Use;
- Open and Green Space; and
- Healthy Indoor Environments.

In July 2012, WE ACT opened an office in Washington D.C. to work with Congress and federal agencies. Up until that point, lobbying on environmental justice issues had occurred from afar. This will enhance WE ACT's ability to focus federal attention on its priorities.

Introduction to Environmental Justice Principles

During the early 1980s, Warren County in North Carolina garnered attention when 6,000 truckloads of soil containing toxic PCBs were slated to be disposed of in a newly constructed hazardous waste landfill. A largely poor, rural and black community nearby opposed the disposal of this waste, directing their outrage at the local authorities. Local authorities dismissed their concerns about the potential of PCBs leaching into drinking water and the public health issues that would ensue. Even though the community could not stop the process, according to Skelton and Miller from the

Natural Resources Defense Council, “the street protests and legal challenges mounted by the people of Warren County to fight the landfill are considered by many to be the first major milestone in the national movement for environmental justice.”[4]

Moreover, in the late 1980s and through the 1990s, several studies highlighted a correlation between the location of polluting facilities and low-income and minority communities. Walter Fauntroy, who served as the Congressional Delegate from the District of Columbia from 1971-1991, requested one such study. This study, conducted by Congress's General Accounting Office, considered whether communities of color suffered from disproportionate negative impacts from the siting of hazardous facilities. The study concluded that three-quarters of the hazardous waste landfill sites in eight southeastern states were located in primarily poor, African-American and Latino communities.[5]

In 1987, the “Toxic Wastes and Race in the United States” report was fundamental in demonstrating how race was a principal factor in the siting of hazardous waste facilities. [6] The United Church of Christ’s Commission for Racial Justice (CRJ) commissioned this report under the leadership of Reverend Benjamin Chavis. The study used statistical analysis to determine the correlation between race and the location of environmental hazards. It concluded that, "race was the most potent variable in predicting where commercial hazardous waste facilities were located in the United States, more powerful than household income, the values of homes and the estimated amount of hazardous waste generated by industry."[7]

During this period, community-based organizations started pressuring traditional environmental institutions to incorporate environmental justice issues in their policies and programs. In particular, they focused on

The First National People of Color Environmental Leadership Summit held in 1991 in Washington, DC. (Source: Clark University)

the main problems affecting low-income and minority communities including: hazardous waste landfills, waste transfer stations, incinerators, garbage dumps, diesel bus and truck garages, auto body shops, industrial hog and chicken processors, oil refineries, chemical manufacturers, and radioactive waste storage areas.

The increasing awareness of environmental justice issues in minority and low-income communities throughout the country led to the first National People of Color Environmental Leadership Summit, which took place in Washington, D.C. in 1991. Environmental justice movement leaders from across the country and around the world together drafted the Principles of Environmental Justice. These lofty principles are based on the recognition of the interdependence of all species, that is, the actions that each of us undertake will affect the overall ecosystem.[8] According to these principles, there is a fundamental right to clean air, land, water, and food for all peoples, free from any form of discrimination and bias, allowing the participation of the community as equal partners at every level of decision-making to clean up and rebuild urban and rural areas in balance with nature, and providing fair access for all to the full range of natural resources.

The First National People of Color Environmental Leadership Summit held in 1991 in Washington, DC. (Source: Clark University)

During the Clinton Administration, the EPA institutionalized the concept of environmental justice defining it as, "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[9] This suggests that no group, regardless of their race, ethnicity or socio-economic condition should bear disproportionate environmental burdens caused by either private or public actions. According to Dr. Robert D. Bullard,[10] former Director of the Environmental Justice Resource Center at Clark Atlanta University, this means that everyone is entitled to equal protection and equal enforcement of environmental, health, housing, land use, transportation, energy, and civil rights laws and regulations.

Poverty, Race, and Environmental Health

Even though there has been significant progress in advancing environmental protections throughout the United States, there are still many Americans that live in an unhealthy and unsafe physical environment.[11] Many economically impoverished communities suffer from the unequal burdens of environmental hazards, which they judge as unjust, unfair and illegal.

According to Bullard,[12] the most common conditions that different communities have to confront across the nation are:

- Unequal enforcement of environmental, civil rights, and public health laws;
- Differential exposure of some populations to harmful chemicals, pesticides and other toxins in the home, school, neighborhood, and workplace;
- Faulty assumptions in calculating, assessing and managing risks;
- Discriminatory zoning and land use practices; and
- Exclusionary practices that prevent some individuals and groups from participation in decision-making or limit the extent of their participation.

Poor communities are more likely to have less political power and influence over land use decisions in their neighborhoods. Consequently, the political imbalance may lead to an increase in exposure to significant environmental hazards and the unequal distribution of these environmental externalities.[13]

Policy response to Environmental Justice

In February 1994, President Clinton introduced an executive order that directed federal attention to the issue of environmental justice in the United States. This was a strategic move, as many of the constituents who supported his 1992 election campaign were part of an emerging grassroots environmental justice movement. Several of them had attended the First National People of Color Environmental Leadership Summit in October 1991 and went on to present an Environmental Justice Transition Paper containing specific policy recommendations to Clinton's environmental transition team shortly after his election.[14]

President Bill Clinton signs the Executive Order, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" in 1994. (Source: Clark University)

Clinton's Executive Order, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" states that, "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."[15]

The Executive Order was interpreted differently by each of the affected agencies, in order to minimize the impact to their ongoing operations. In response, for example, the Council on Environmental Quality (CEQ) published a report concerning the implementation of the National Environmental Policy Act (NEPA).[16] The report, one of the more progressive reports in the administration on this subject, laid out specific steps by which environmental justice issues should be considered throughout the implementation of NEPA. This included analyzing public health and environmental risk assessment data to determine whether minority or low-income populations may be disproportionately affected by a proposed action, and conducting thorough outreach to ensure public participation from residents of potentially vulnerable and affected communities.

Even with this strong directive, the CEQ introduced ambiguity into the implementation by conceding that:

> *"Agencies should apply, and comply with, this guidance prospectively. If an agency has made substantial investments in NEPA compliance, or public participation with respect to a particular agency action, prior to issuance of this guidance, the agency should ensure that application of this guidance does not result in additional delays or costs of compliance."*[17]

Clinton's Executive Order also intended that federal agencies adopt a strategy to increase participation in agency decision-making and improve agency communication with low-income and minority communities.[18] The main critique of the Executive Order is that it created more bureaucratic procedures and working groups, rather than creating an avenue for truly meaningful change. In 2005, the Associated Press (AP) published a compilation of data showing that African Americans were still 79 percent more likely than White Americans to live in "heavily polluted" communities. The AP's analysis was considered, "an implicit indictment of the EPA's performance in carrying out the order."[19]

In 1992, the EPA established the Office of Environmental Justice to oversee the Agency's work on the issue.[20] A year later the national Environmental Justice Advisory Council was created to convene representatives from academia, business, environmental, and social justice organizations, and indigenous communities to advise and make recommendations to the EPA.[21] A second taskforce was formed within the EPA to review the environmental justice implication of the Superfund program and storage of hazardous waste.[22]

Congress has not been silent on environmental justice, but it has not succeeded in enacting significant legislation either. Then Senator Al Gore and Representative John Lewis first introduced the Environmental Justice Act in 1992. One of the provisions in the proposed-legislation would have required the EPA to identify the one hundred most polluted counties in the country, and perform a health assessment of each one. The late Senator Paul Wellstone introduced legislation to bar discrimination in federal funding intended to prevent public exposure to toxic chemicals.[23]

Ultimately, Clinton's Executive Order performed an important function of giving the issue of environmental justice national attention, and the high-level dialogue has continued over the past two decades. In 2011, President Obama issued a follow-up Memorandum of Understanding (MOU) to the original Executive Order 12898. This MOU was prompted by President Obama's reactivation of the then-defunct "Cabinet-level" Interagency Working Group on Environmental Justice.[24] In it, he acknowledged the "continued importance of identifying and addressing environmental justice considerations in agency programs, policies, and activities."[25] It also requires that federal agencies identify specific areas of focus to be addressed in their environmental justice strategies.

Lisa Jackson, President Obama's appointed EPA Administrator, made "Expanding the Conversation on Environmentalism and Working for Environmental Justice" an official EPA priority [26] and assigned her newly appointed Associate Assistant Administrator for Environmental Justice, Lisa Garcia, the job of integrating the priority throughout the agency.[27] Their goal was two-fold: to acknowledge past environmental problems in low-income and communities of color and address them, but also to reduce or prevent future harm by way of educating and empowering local communities.

Administrator Jackson succinctly summed up her view of the definition of environmental justice by saying "when we talk about environmental justice, we're talking about Americans' basic rights to have equal access to being healthy."[28] She also drew an explicit connection between pervasive poverty and exposure to environmental hazards. In an EPA blog post, Administrator Jackson wrote "dirty air, polluted water and contaminated lands not only put families at higher risks of serious and potentially costly diseases – they also discourage new developments and new jobs….Limiting the economic possibilities of low-income and minority communities only makes it harder to break the cycle of poverty."[29]

With that guidance, EPA developed Plan EJ 2014, which lays out "a roadmap that will help EPA integrate environmental justice into the Agency's programs, policies, and activities."[30] There are no enforceable components to Plan EJ 2014 however; it is a strategy for the EPA to renew its focus on environmental justice. The success of Plan EJ 2014 in promoting changes in the EPA and, consequently, in communities will be judged after full implementation of the plan in 2014.

Areas of Environmental Concern

There are several areas of particular concern to environmental justice communities, which may be examined alone or as a part of a larger set of issues. These include: air pollution, water pollution, waste disposal, and climate change. Individually, these problems may cause significant environmental and human health issues; and where more than one of the problems exists, the effects may be cumulative.

Air Pollution

Air pollution is a complex issue to address within the framework of environmental justice. This problem is often cumulative and the direct pollution source is difficult to determine.[31] For this reason, the party responsible for mitigation is also difficult to figure out. In situations where a polluter is identifiable and can be traced to the pollution of a specific area, it is possible to address the source polluter directly. Air pollution has been traced to specific health concerns in a variety of populations including those most vulnerable, e.g., the elderly and children.[32] Two of the main air pollutants of concern are fine particulates or PM2.5 (particulate matter of a size of 2.5 microns or less), and ozone. It has been demonstrated that long and short-term exposures to PM2.5 can cause premature death as well as adverse cardiovascular effects, including increased hospitalizations and emergency room visits for heart attacks and strokes.[33] Similarly, ozone pollution (smog) can cause a wide range of health effects, even at relatively low levels, including: difficulty breathing deeply and vigorously; shortness of breath and pain when taking a deep breath; coughing and sore or scratchy throat; inflamed and damaged airways; aggravation of lung problems such as emphysema and chronic bronchitis; and the increase in the frequency of asthma attacks, among others.[34]

Water Pollution

Similar to air pollution, water pollution can be difficult to trace to a source. However, water is more easily traceable than air, and source pollutants can often be traced using geographical cues such as elevation. One of the main concerns with water pollution is that there is a finite amount of freshwater available worldwide, and the quantity can vary greatly based on the geography and climate of an area. For example, water pollution in a desert setting is a distinctly more challenging concern than water pollution in a climate with plentiful water. The three main environmental concerns associated with water are water use, aquifer contamination and disposal of the toxic wastewater.

Waste Disposal

Historically, solid waste disposal and hazardous waste disposal have become relevant issues in communities with less social and political capital, primarily poor communities of color with little opportunity for participation in decision-making processes. Solid waste disposal can take the form of illegal dumping or building landfills in impoverished communities that have not been consulted.[35] Some of the waste may be removed by natural ecosystem services such as decomposition, but some of the waste is not biodegradable so it can be present in a location for generations. Additionally, wastes that do decompose can migrate through the soil and groundwater, contaminating more than one location.[36] On the federal level, hazardous waste sites are governed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and are called Superfund sites.[37] Superfund sites are contaminated hazardous waste sites. Low-income, minority communities bear a disproportionate amount of the negative environmental and health impacts resulting from contamination caused by this waste disposal.[38]

Climate Change

Climate change is beginning to affect ecosystems throughout the world through changes in precipitation and temperature patterns, sea level rise and increased frequency of storms. Research has shown that these changes will likely be felt unequally and thus could further exacerbate social and economic inequalities.[39] In the United States and throughout the world, low-income and minority populations will likely suffer from higher mortality rates due to polluted air, heat

waves and water shortages.[40] Additionally, these populations will also likely be affected by increased food and electricity prices as well as by possible economic changes and potential job losses.[41] It is also important to note that it is harder for low-income and minority populations to adapt or move in response to the impacts of climate change. It is important, therefore, to view climate policy as having an environmental justice component. As Angela Park, the founder and director of Diversity Matters states in the report Everybody's Movement: Environmental Justice and Climate Change, "To view climate policy solely as an environmental issue with universal impact is to exclude social and economic issues and an analysis that integrates race, class, and gender. It [sic] also misses a significant opportunity to create substantial shifts in society and ameliorate disparate impacts and current vulnerabilities among groups."[42]

Environmental Justice at the State Level

When considering how federal legislation can address a problem like environmental justice, it is helpful to look at state policies and regulations for effective ways to address issues at a broad level. California and New York have been the foci of strong environmental justice advocacy and, consequently, have received more attention to these issues by government than in many other states. Approaches taken by California and New York generally fall into one of three categories: formalizing environmental justice as a state priority, environmental justice assessments in planning and permitting, and addressing environmental problems of particular concern to low-income and minority communities.

Formalizing Environmental Justice as a State Priority

Both California and New York have taken steps to formally incorporate environmental justice as a priority within state administrative functions by codifying a definition of environmental justice, creating an office dedicated to environmental justice and allocating funding to community initiatives.

California state legislation enacted in 1999 directed the California Environmental Protection Agency (Cal EPA) to develop a model environmental justice mission statement, and codified the definition of environmental justice.[43] A year later, another law passed that required the agency to set up a working group with the task of developing an agency-wide environmental justice strategy.[44] After a four-year strategic planning process, the Inter-Agency Environmental Justice Strategy and the Environmental Justice Action Plan were completed. The Inter-Agency strategy is a vision document that identified four goals: improving public participation in environmental policy decisions, incorporating environmental justice into environmental policies, establishing environmental justice indicators in research and data collection, and enhancing cooperation between agencies and collaboration with community stakeholders.[45] The Action Plan outlines a specific set of objectives, actions and an implementation timeframe involving five phases, of which the first two have been completed.[46] The objectives include developing guidance on precautionary approaches and cumulative impact analysis, and improving public participation tools.[47]

In New York, the Department of Environmental Conservation (DEC) established the Office of Environmental Justice, also in 1999, in response to the growing concern over perceived environmental inequalities throughout the state.[48] The DEC's Office of Environmental Justice is responsible for integrating

environmental justice into permitting, and managing an interagency task force dedicated to coordinating collaboration between agencies on environmental justice strategies.[49]

Both states have initiated modest grant programs. California's Environmental Justice Small Grants Program resulted from legislation passed in 2002. This program awards grants of up to $20,000 to projects led by community organizations to address environmental justice issues in their communities.[50] The New York DEC Office of Environmental Justice's Community Impact Grant Program was established in 2006.[51] In addition, New York has launched a new grants program known as Green Gem Grants, to fund innovative projects focused on education, stewardship, monitoring activities related to parks, community gardens, and green infrastructure.[52] This new grant program will award its first recipients in the 2012-2013 grant cycle.[53] These grants were not created to target specific communities, but do require applicants to be community-based organizations, or a partnership of community organizations, with its primary office located in a city or town of known-environmental hazards.[54]

In addition to funding projects specifically addressing environmental justice, two programs within Cal EPA have been required by state law to allocate specific amounts of money to disadvantaged communities. A law enacted in 2001 requires that 50 percent of funding for diesel emissions reduction programs be directed to environmental justice communities.[55] More recently, legislation passed in 2012 requires the allocation of 35 percent of the Greenhouse Gas Reduction Fund to projects benefitting disadvantaged communities.[56]

Environmental Justice Impact Assessments

Assessments of the potential environmental justice impacts of proposed projects is a significant step forward, because it requires specific information to be gathered which gives minority and low-income communities a stronger footing to make their case to public policy decision makers.

In the 1970s, New York passed the State Environmental Quality Review Act (SEQRA), which was revised most recently in 1996.[57] This law "requires all state and local agencies to consider environmental impacts equally with social and economic factors during discretionary decision-making."[58] When properly executed, the SEQRA process can promote environmental justice by connecting government agencies with the surrounding public, encouraging the public to participate in the Environmental Impact Statement (EIS) and SEQRA hearings on a given project.[59] To further ensure that environmental justice concerns are adequately addressed, in 2012, the DEC revised its Environmental Assessment Forms to "better accommodate emerging environmental issues not contemplated when the forms were created (for example, climate change, energy conservation, environmental justice ("EJ"), pollution prevention, and smart growth concepts)."[60]

California legislation passed in 2001 directed the Office of Planning and Research to implement guidelines, which were published in 2003 for local governments to effectively consider environmental justice concerns in their planning process.[61,62] Furthermore, the California Attorney General's Office has sued to make sure that environmental justice impacts are included in the overall assessment of environmental, health and community impacts required under the California Environmental Quality Act (CEQA).[63]

In 2003, New York established a policy (Commissioner Policy CP-29) to include environmental justice into the state's environmental permitting process. It formally called for:

> *"…the fair involvement of all people in the DEC environmental permit process…by training and educating DEC staff on environmental justice; providing public access to DEC permit information; incorporating environmental justice concerns into DEC's permit review process; and pursuing technical assistance grants to enable community groups in potential environmental justice areas to more effectively participate in the environmental permit review process."*[64]

The policy serves as the primary tool for assisting DEC staff, the regulated community and the public in understanding environmental justice standards at the state level. [65] Additionally, the DEC uses a mapping tool, known as the Environmental Resource Mapper, to further delineate impacts that certain actions or policies could have on the environment.[66] This tool, similar to geographic information systems like ArcGIS, can distinguish particular demographics or physical layout on a map and overlay that information with other cartography and statistical analysis information.[67] By using this tool, the DEC can learn more about a region before approving proposed actions by agencies.

Recently, and importantly, in 2011, Governor Andrew Cuomo of New York signed the Power NY Act, which, among other things, increased opportunities for public participation in the siting of electric generation facilities, and directed the DEC to promulgate such regulations on environmental justice analysis to be included in the overall environmental review process. [68] DEC promulgated the regulations, the first in the state to formally require an environmental justice analysis, which became effective on July 12, 2012 for the siting of all power plants over 25 megawatts.[69]

Addressing Environmental Problems of Concern to Environmental Justice Communities

Beyond incorporating specific laws and regulations into an environmental justice framework, addressing environmental health risks of particular concern to low-income and minority communities and reducing community exposure to hazards is most important, even if they do not specifically name environmental justice in the policy language.

In 2003, the California Legislature passed legislation requiring proposed farm operations that would emit significant amounts of air pollution to acquire pollution permits, and imposed more stringent regulations on existing operations.[70] Agricultural operations, including large animal feedlots, were previously exempted from state air pollution regulations. [71] Pollution from large dairies (milking tens of thousands of cows) is the most significant source of ozone forming pollutants (volatile organic compounds, or VOCs).[72] Rural and agricultural regions are often characterized by high rates of poverty and increasingly diverse populations, and addressing environmental health concerns posed by the agricultural industry is of particular interest for these communities.

An initiative of the New York Office of Environmental Justice is the Community Air Screening Program. This neighborhood-based project engages volunteers to measure toxic air pollutants within their region. The federal EPA provides funding for the equipment and training. Data that is collected by volunteers is sent to the DEC for state-level analysis and interpretation.[73]

In 2008, the New York DEC Office of Environmental Justice launched the Stop Smoking Trucks and Idling Vehicles Program.

As part of the initial campaign, diesel trucks were pulled over in overburdened communities and rerouted, as well as ticketed for excessive idling. The program also encouraged community members to remain involved and aware of environmental health issues, keeping watch of potential risks or hazards. The I-Watch for Cleaner Air Toolkit, for example, provides guidance, information and tools for raising awareness on a healthier environment.[74] Because of the campaign's success in 2008, the program expanded statewide in 2009. Truck pullover operations and Toolkit distribution continue in overburdened communities throughout the state.[75]

Another program-policy created by the Office of Environmental Justice is Operation ECO-Quality. This program is a partnership between several NY state agencies with the purpose of preventing violations of environmental law, which may affect the environmental health and the quality of life in environmental justice communities.[76] Launched in 2012, the partnership consists of the Office of Environmental Justice and DEC's Division of Law Enforcement, and conducts outreach and enforcement of environmental regulations at the community level.[77] After a pilot program in the state proved successful, the DEC took ECO-Quality statewide to ensure sound community policy and promote environmental justice.[78]

The federal EPA has taken some of the same actions as California and New York, including: establishing an environmental justice office, creating an advisory task force, as well as completing an environmental justice strategic plan. However, insights gained by California, New York, and other states may prove valuable in understanding how Congress may act to incorporate environmental justice into permitting and planning processes; as well as highlighting the urgency of addressing broad environmental problems, to reduce the health burdens of environmental hazards for environmental justice communities.

Methodology

The Project

Our client, WE ACT, requested educational tools to facilitate the education of Members of the House of Representatives on environmental justice issues. After considering the specific needs of the client, and the constraints of the project, we proposed three products: a model to identify communities facing disproportionate risk from environmental health hazards, a set of six community case studies, and corresponding fact sheets. Developing the model, and completing the necessary research to do so, proved to be more time consuming than first anticipated. Therefore, the team was able to complete only three community case studies, utilizing the model and corresponding fact sheets for WE ACT.

Overall, the project progressed through five project phases as follows:

1. Assessing the client's needs and team capacities in order to propose a solution.
2. Conducting research of primary and secondary sources to better understand the concept of environmental justice and its implications for communities.
3. Designing a basic model or template for the identification of environmental justice communities in the United States, based on specific functions and restrictions.
4. Using the model to produce community case studies and fact sheets to assist the client in their efforts to better inform Congress about environmental justice concerns.
5. Preparing the supporting research report.

Identifying the Problem and Proposing a Solution

The first step of the project was to identify the client's needs, and possible solutions. WE ACT had recently opened an office in Washington, D.C. and hired a federal policy analyst to strengthen the organization's ability to influence federal policy. Though the concept of environmental justice is not new, and federal action was first taken almost twenty years ago, many congressional staff members are not familiar with the issue. With this in mind, WE ACT requires compelling communication tools to help inform the Members of the House of Representatives and their staffs about environmental justice in an effective and efficient way.

Our constraints were mainly limited time and resources required for high-level analysis. Time was the most significant constraint because it was limited to a three-month semester. Our capacities included an 11-member team with significant and varied experience and expertise, including research skills, data analysis and communication skills.

The proposed solution, as described above, also considered the particular audience, Members of the House of Representatives and their staffs, with whom the client works. Since the client relayed to us that most congressional staff have minimal understanding of environmental justice, we determined that the best approach was to develop case studies

based on a compelling community story that illustrates the significant environmental harm facing the communities. This decision was based on the belief that human stories are more persuasive methods of communicating complex issues, rather than an overwhelming report filled with an extensive amount of data (although demographic and environmental data were critical to our analysis as discussed further below).

Literature Review

In order to have a clear sense of the concept and implications of environmental justice, as well as its nature and evolution, the team conducted a literature review including more than thirty titles on general and specific topics related to environmental justice. These readings were separate from the specifics readings for each of the case studies. On a weekly basis, each team member presented a summary of their readings to the rest of the group, identifying potential areas of concern that could be relevant for the project. The topics covered in the readings included:

i. The history of the environmental justice movement;

ii. Race and income as key elements of environmental justice communities;

iii. Environmental hazards that threaten communities including air pollution, industrial activity, toxic waste, water pollution, nuclear waste, climate change, and hydraulic fracturing;

iv. The economics behind environmental justice dynamics;

v. Policy and institutional responses from federal and state authorities to increasing awareness of disproportionate burdens of environmental hazards on minority and low-income communities.

The literature review served as the basis for the environmental justice discussion presented above, and provided the theoretical framework for the project.

Designing the Model

After the literature review and the theoretical framework were complete, the process to design a basic model to identify environmental justice communities began. To be effective, the model had to:

i. Reliably predict, using census tract and other readily available demographic data, the location of environmental justice communities within specific geographic regions, starting at the state level and narrowing down to smaller areas and even neighborhoods;

ii. Use accurate environmental data to identify unequal environmental burdens experienced in specific low-income and/or minority communities;

iii. Give preference to communities experiencing environmental hazards related to the environmental federal policy priorities of the client in congressional districts represented by Members of the House of Representatives most likely to support the client's policy goals.

To achieve these functions, the basic model considers three of the key factors in environmental justice: poverty, race, and environmental hazards, as requested by the client. A thorough analysis of these factors is presented below, followed by our recommended model, which distinguishes the specific steps and tools used to identify and develop the environmental justice case studies. The fourth and fifth phases are the development of the case studies and fact sheets and the completion of this report, which contains the case studies.

Key Environmental Justice Factors

Poverty

Communities with the highest rates of poverty are more likely to have the higher concentrations of environmental hazards.[79] Low-income populations are restricted to neighborhoods where they can afford to live. This immobility effectively eliminates the opportunity to leave neighborhoods that have higher environmental burdens.[80] The health risks associated with environmental pollution are particularly high since most low-income residents do not have access to employee-sponsored health insurance and have limited access to health care generally.

Race

Similar to low-income communities, communities with large minority populations are much more likely to have higher rates of risk posed by environmental burdens.[81] In fact, as the study by Bullard mentioned previously found race was a stronger predictor than income in the siting of hazardous waste facilities.[82]

Environmental Issues

WE ACT indicated that it has five federal policy priorities: clean air, climate change, chemical policy reform, solid waste, and hydraulic fracturing. To align the case studies with the advocacy work of WE ACT, communities facing these specific environmental problems were prioritized.

The Model

We developed a model to identify and prepare environmental justice community case studies. This model provides a step-by-step process for others to research and prepare similar case studies. By providing this tool for others to use, we hope that it will increase awareness and understanding of environmental justice. The model consists of five phases of research: the project lens, state view, city view, neighborhood view and the "compelling story."

Project Lens

The project lens includes the audience and the issue priorities. In our case, the objective of the project was to assist WE ACT in informing Congress (specifically the House of Representatives) about environmental justice. With that in mind, we determined that leading with a compelling story to emphasize the human experience of environmental justice would be the most effective way to draw congressional attention to the issue.

The chosen audience is one of the most important factors that will influence the development of the case studies. The intended audience of our client includes Members of the House of Representatives and their legislative staffs. At the client's direction, the team also focused on Members of the House of Representatives who serve on committees most relevant to WE ACT's federal policy priorities, and who were most likely to be receptive to supporting WE ACT's policy positions. The committees were narrowed to the Energy & Commerce, and Natural Resources committees; and the receptiveness of each Representative was gauged using the League of Conservation Voters' Scorecard.

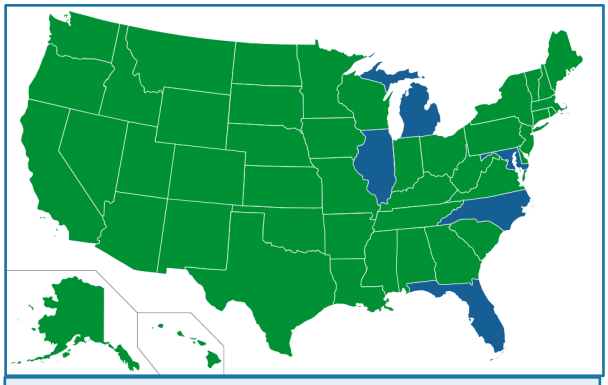
To further focus our attention, we considered the federal policy priorities of WE ACT: clean air, solid waste, climate change, chemical policy reform and hydraulic fracturing. This influenced the mapping (described below) of environmental hazards such as toxic air releases and hazardous waste sites.

State View

In total, we considered locations within thirteen different states. Initially, WE ACT suggested we look at six states (California, Colorado, Nevada, New Mexico, New York and Texas) based on changing populations. As we gathered information about the different states and honed in on specific locations within each, aspects of this first phase of research began to emerge (especially political representation and consideration of the client's federal policy priorities). California and New York were dropped because they are large, and already had made inroads in addressing environmental justice concerns. Therefore, we looked into the regulatory and policy framework these two states have established over the years to address environmental justice (see discussion above). This left four states in the southwestern part of the United States, and the group wanted to pursue states across the whole country. Since significant research had already been completed on Colorado, New Mexico and Texas, the team decided to drop Nevada.

To identify other target case studies, at the request of the client, the team deviated from the state view and considered where organizational members of the Environmental Justice Leadership Forum on Climate Change (a coalition run by WE ACT) were located including Michigan and Mississippi. Communities with strong environmental justice indicators were found in both states, but the location of these communities did not align with political representation that was likely to be relevant to WE ACT's federal policy work. Namely, the representatives did not serve on key committees.

The team then considered the membership of the House Energy & Commerce, and Natural Resources committees to identify Members of the House of Representatives who were likely to be potential allies of WE ACT. In addition to committee membership, the following



We examined Florida, Illinois, Maryland, Michigan, and North Carolina because of their political profiles.

factors were considered: sub-committee membership, issue caucuses (Black, Hispanic, Sustainable Energy and Environment, etc.), League of Conservation Voters score, among others. Information was gathered for 35 Representatives that serve on either the Energy & Commerce or Natural Resources committees. The websites of the two committees, the Representatives (official House and campaign sites), and caucus websites provided most of the needed data. The 2012 Congressional Scorecard from the League of Conservation Voters provided information on the voting record of each Representative. Based on this information, the list was narrowed to eight congressional districts in six different states including: MD-3, IL-1, MI-12, IL-9, FL-26, FL-14, VA-1 and NC-1.

Political Analysis

Maryland

Representative Sarbanes (MD-3) is on the Energy and Commerce Committee. He is serving in his 4th term, is a member of the Sustainability Energy and Environment Coalition Caucus, and his 2012 League of Conservation Voters score was 97 percent. The maps from EJView showed a concentration of environmental hazards in south-central Baltimore, which is also a part of the city that has higher rates of poverty and minority populations. One such environmental hazard in Baltimore is watershed contamination. According to Eliza Smith Steinmeier, who works for Baltimore Harbor Waterkeeper, an environmental non-profit, "…it's not safe to recreate in the harbor….you run the risk of infection, anything from your basic gastrointestinal infection to far worse things."[83]

Illinois

Representative Rush (IL-1) is on the Energy and Commerce Committee. He is in his 11th term, is a member of the Green Jobs Caucus, and his 2012 League of Conservation Voters score was 91 percent. One of the organizational members of the Environmental Justice Leadership Forum, Little Village Environmental Justice Network, which is based in this district. Representative Rush's district is home to the town of Robbins, which has a well-known history as an environmental justice community.

Representative Shakowsky (IL-9) serves on the Energy and Commerce Committee. She is serving in her 8th term, is a member of the Sustainable Energy and Environment Coalition Caucus, and her 2012 League of Conservation Voters score was 97 percent. Most of the district has relatively low levels of poverty. The EJView mapping tool showed that where there are pockets of higher rates of poverty, the areas did not have a concentration of environmental hazards in this case.

Michigan

Representative Dingell (MI-12) serves on the Energy and Commerce Committee and he is serving in his 30th term. He represents parts of Detroit, which is where Detroiters Working for Environmental Justice, one of the organizational members of the Environmental Justice Leadership Forum, is located. Although the EJView maps show an overlap between poverty, race, and location of environmental hazards in several neighborhoods worthy of further research, they are all just outside the district boundary.

Florida

Representative Garcia (FL-26) is serving in his 1st term (and therefore did not have a voting record to consider). He was assigned to the Natural Resources Committee. Before his election to Congress, he served as the Director of the Office of Minority Economic Impact for the United States Department of Energy. Florida District 26 overlaps with two counties in southern Florida: Monroe County and Miami-Dade County. Monroe County is fairly white and wealthy. Miami-Dade County, on the other hand, does have a higher percentage of low-income and minority residents.

Representative Castor (FL-14) is serving in her 4th term. She serves on the Energy and Commerce Committee, is a co-chair of the Gulf Coast Caucus, and is a member of the Children's Health Care Caucus.

Virginia

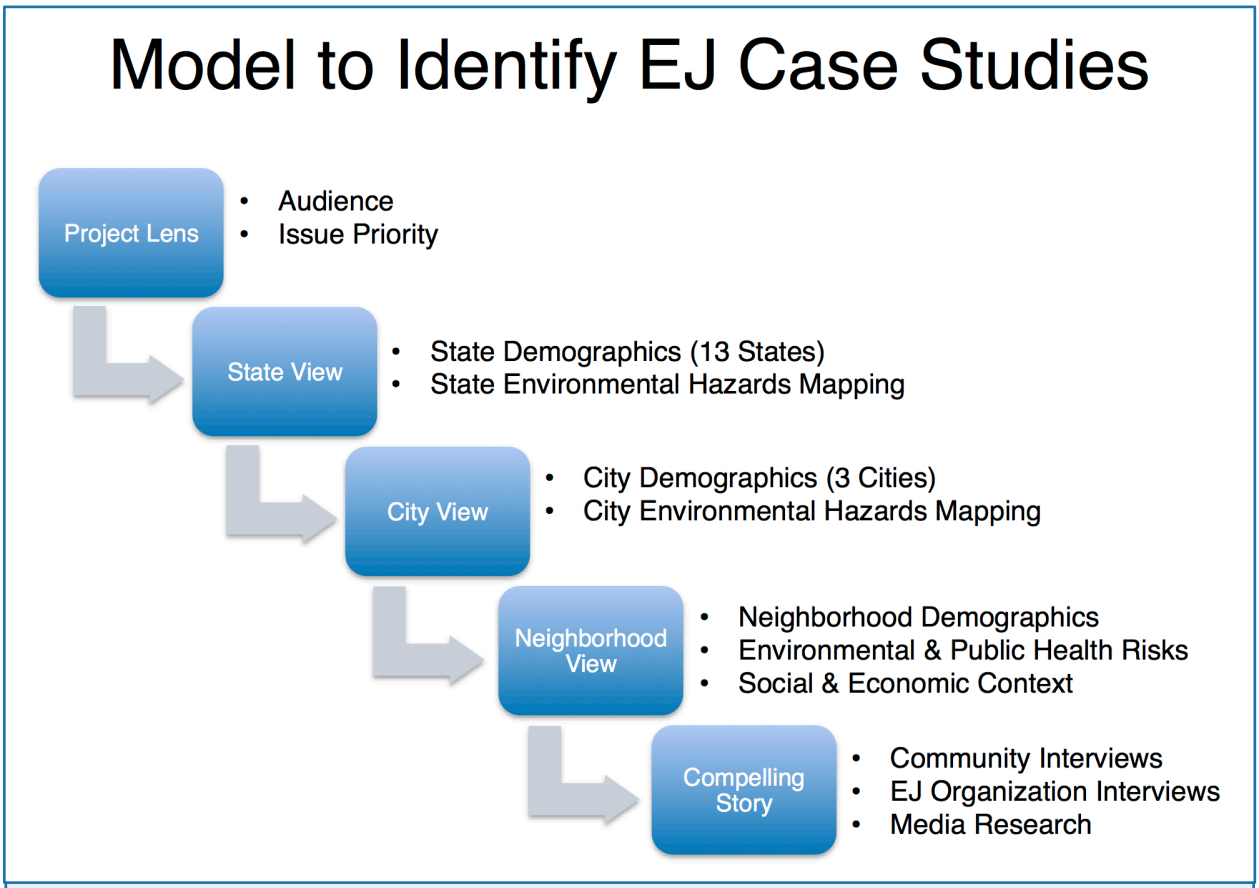
Representative Wittman (VA-1) serves on the Natural Resources committee and is serving in his 4th term. He authored legislation to address clean up for the Chesapeake Bay, though his 2012 League of Conservation Voters score was 14 percent. While there are areas in the district with higher minority populations, the poverty levels are fairly low at 5.6 percent in Prince William County.

The political analysis proved to be more difficult than looking at the statewide view to identify likely environmental justice community case studies. One reason is that some congressional districts have been re-drawn such that they have fewer instances of concentrated low-income or minority communities.

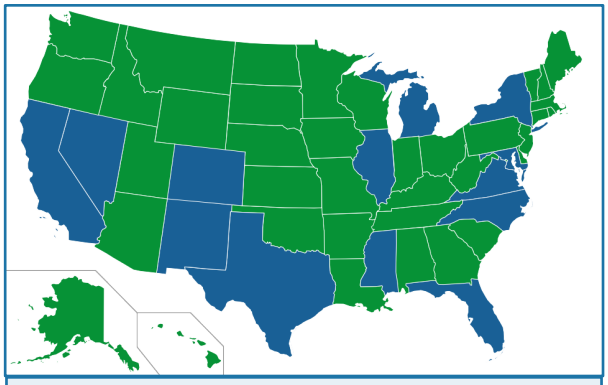
The first step in identifying environmental justice communities is to analyze state level poverty rates and populations of people of color by using demographic data provided by the U.S. Census Bureau, as well as state databases. Then, the cities with the highest rates of low-income and minority populations, as compared to the state began to emerge and signal potential environmental justice communities.

City View

Once the cities were chosen, we researched for potential neighborhoods of environmental justice concern, using race and poverty indicators. In order to identify possible communities, we compared the city rates of minority and low-income populations, looking for the highest concentration of both factors; and combined these statistics with the location of environmental hazards. For this purpose, we used the EPA's EJView mapping tool, which provides GIS maps that spatially depict the locations of environmental hazards combined with the poverty and race indicators. These include the specific locations of Superfund sites, hazardous waste sites, facilities that release toxic air emissions, and brownfield sites. This allowed us to hone in on target neighborhoods for the case studies.



Model for performing community case studies.



This map displays all of the states our project examined in blue.

Neighborhood View

At the neighborhood level, we also had to research demographic statistics and compare the rates of people of color and low-income populations, at the census tract level to confirm the proper identification of the neighborhood as a target case study. We compared this data with the city and state averages, which in some cases presented significant differences. Then, we identified an issue priority that constitutes an environmental or social problem of interest for the community. To do this, we used studies conducted by universities, foundations, non-profit organizations, and local newspaper stories. Additionally, we searched for environmental health risks that could affect the community using the studies. This information was fundamental to relate environmental hazards and the impact that they could have in the community. The sources of pollution were part of our study. Finally, we researched social and economic indicators specific to the community, including the percentage of the population below the poverty level and the percentage of minorities.

Data Sources:

- U.S. EPA EJ View
  http://epamap14.epa.gov/ejmap/entry.html
- U.S. Census Data Fact Finder
  http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml
- City-Data.com
  http://www.city-data.com/
- Good Guide
  http://scorecard.goodguide.com/

Compelling Story

To further develop the specific community case study, we did additional research to find a compelling community story. To better understand the experience of unequal health risks posed by environmental hazards for each community, we conducted interviews with staff members of local environmental justice advocacy organizations, local elected leaders, and local agency staff. We conducted specific research by examining reports by universities, foundations and local health department on public health issues in the community. Lastly, we conducted media research by finding newspaper articles, which helped us to better understand which environmental problems are gaining attention in the community. By conducting this additional community-level research, it helped us to focus on the human dimension of environmental justice, an essential component of communicating the urgency of the issue.

Summary

In providing this model for WE ACT and other organizations to use, the research team hopes that it will help these organizations identify and develop additional environmental justice community case studies to increase awareness and understanding of the issues of environmental justice.

Case Studies

While the objective of this project is to influence federal-level solutions to environmental justice problems, the best and most compelling way to communicate these problems is to focus on the community level by the presentation of environmental justice community case studies. Below, we present three such environmental justice case studies at this community level, from the inner cities of Houston and Denver to the rural landscape of the Navajo Reservation in New Mexico. The environmental justice concerns are equally diverse, ranging from carcinogenic air pollution to toxic waste disposal to the cumulative impact of several different environmental hazards. While these case studies appear to examine disparate issues in vastly different communities, they are comparable by the human impact of significant environmental burdens on low-income communities and communities of color, and the need for government attention to alleviate them.

Surrounded by Industry:
Environmental Justice in Houston's East End

JR Harris Elementary School sits in the shadow of the Valero Energy refinery. The school children call the refinery's smokestack "the cloud maker."[84] This smokestack, along with those of more than 30 other facilities, pollute the air in Manchester where the school is located.[85] This neighborhood is one of the poorest in the city of Houston and has one of the highest percentages of minority residents (Figure 1, Appendix A).

Thirty-one percent of the residents in the Manchester neighborhood live below the poverty line.[86] In 2009, the median household income was $31,758, nearly $10,000 lower than the Houston average at $42,945.[87] Eighty-nine percent of the residents are Hispanic, and another six percent are Black.[88] The residents in this neighborhood face significant health risks from industrial pollution.[89]

Although air pollution is the most visible environmental threat to the neighborhood of Manchester, which is in Harris County, pollution from local industry also contaminates the water and soil. The

Elementary school children practice sports in their schoolyard located three blocks from Valero Energy's smokestack. (Source: TEJAS)

community sits along the Houston Ship Channel in Houston's East End. In addition to the Port of Houston, which is one of the busiest ports in the country, more than thirty refineries and chemical plants are located in the East End as well as two federal Superfund sites, which are abandoned and contaminated with hazardous waste.[90] Exposure to the variety of toxins in Manchester's air and environment can cause cumulative health effects that are worse than the sum of the effects of individual toxins.[91]

Health Risk

One example of a significant health risk is exemplified by the siting of Cesar Chavez High School in 2000.[92] Nearly 83 percent of the school's student body is Hispanic and 11.5 percent is African American.

Although Cesar Chavez High School has a state-of-the-art building, the school is within a quarter mile of three large petrochemical plants that emit tens of thousands of pounds of pollutants into the air each year.[93] A

"Some residents don't let their kids out to play because they'll get asthma attacks right away."

-- Juan Parras, Texas Environmental Justice Advocacy Services (TEJAS)

homerun hit by the Cesar Chavez High School baseball team could reach the fence of the neighboring Texas Petrochemicals plant, one of the oldest and dirtiest facilities in Harris County.[94] The other two plants are the Goodyear Tire & Rubber plant, and a refinery owned by ExxonMobil. Together these plants emit tens of thousands of pounds of air pollutants each year.[95] At the same time that Cesar Chavez High School was built, a similar high school was constructed in the affluent west side of town.[96] Westside High School sits a half-mile from one of the largest city parks in the country and does not have the same health burden from industrial pollution.[97]

Local resident Juan Parras has worked extensively to relocate Cesar Chavez High School and he cites child safety laws as the main issue for relocation.[98] He has been an active voice in the community on environmental justice issues and founded the non-profit organization Texas Environmental Justice Advocacy Services (TEJAS), which focuses on environment issues concerning the Houston Ship Channel.[99]

Cumulative Air Pollution Problem

The 10 largest producers of gasoline, rubber and chemicals surround Manchester and collectively release 1.9 million pounds of air pollution each year. Jim Tarr, a former engineer at the Texas Air Control Board, told the Houston Chronicle, "No matter what direction the wind is blowing, Manchester is downwind of something that ain't good for you, I don't know of another place in the country where that is true."[100]

Within one mile of the Manchester neighborhood, there are:

- 21 facilities that report to the EPA's Toxic Release Inventory
- 11 Large Quantity Generators of hazardous waste
- 4 facilities that treat, store, or dispose of hazardous waste
- 9 major dischargers of air pollutants
- 8 major storm water discharging facilities[101]

Manchester is the only neighborhood in Houston to have seven toxic air pollutants at levels classified by the 2005 Mayor's Task Force on the Health Effects of Air Pollution as posing definite risks to public health.[102] The list includes five known carcinogens (chromium VI, diesel particulate matter, formaldehyde, benzene, and 1,3-butadiene) and two respiratory system irritants (acrolein, also known as ethylene aldehyde, and chlorine).[103][104] In comparison, 80 percent of communities in Houston overall registered three or fewer air pollutants that reached these hazardous levels.[105]

The neighborhood is surrounded by more than 30 industrial facilities, including:

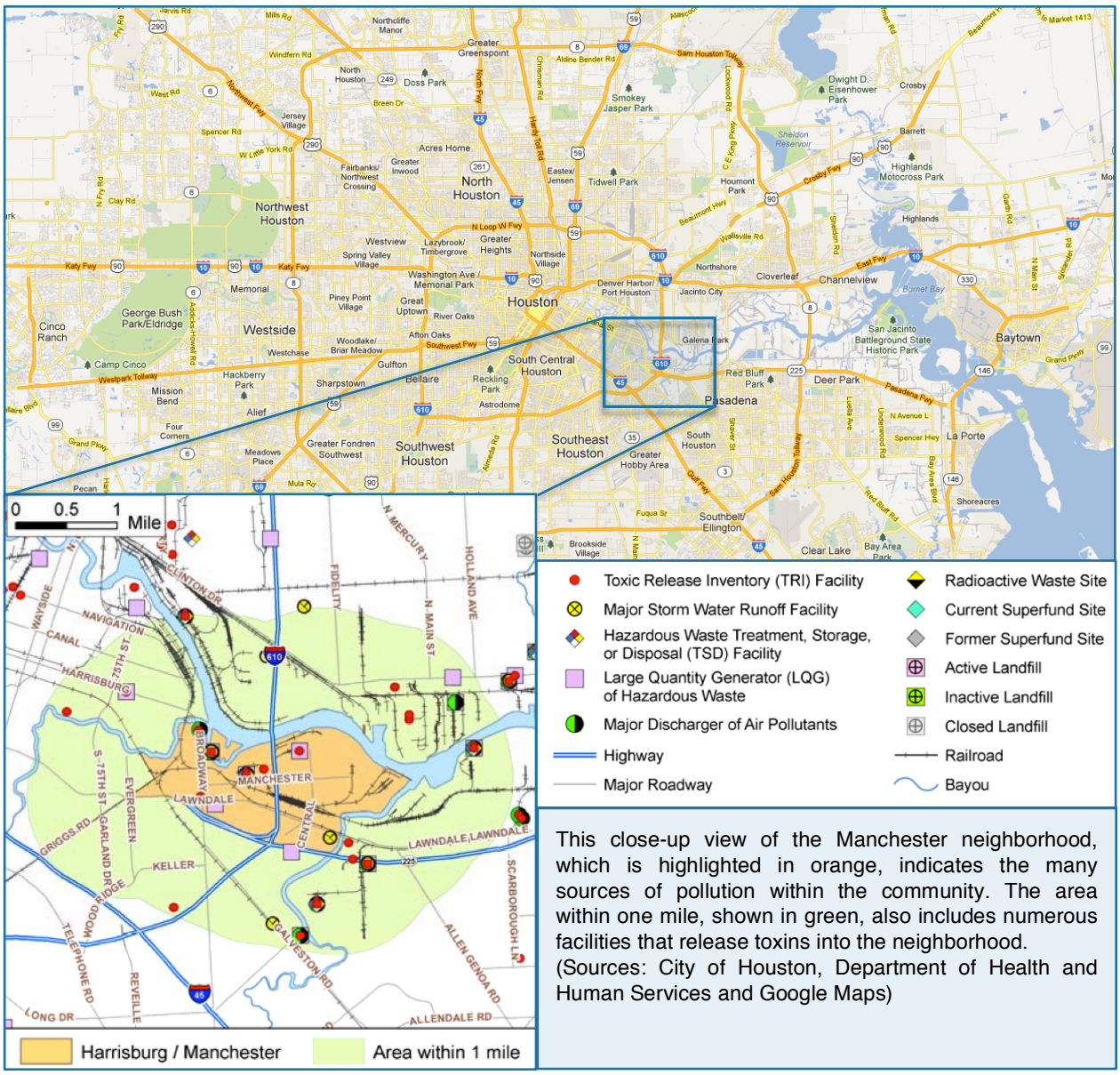
- Goodyear Tire
- Texas Petrochemicals Inc.
- Valero Energy Corp.
- Texas Port Recycling
- A Wastewater treatment plant
- A Rail yard

The Houston Ship Channel, which stretches 50 miles from the Gulf of Mexico through Houston's East Side, contains the largest petrochemical complex in the United States. As a result, Eastern Houston contains roughly half of the point sources of air pollution and more than twenty of the largest industrial

sources in the greater metropolitan area.[106] Additionally, four major highways intersect the area.[107,108]

Texas Petrochemicals is a large emitter of 1,3-butadiene, which is a known carcinogen. Additionally, Texas Petrochemicals was, until recently, one of the country's largest producers of the fuel additive MTBE, which has been shown to contaminate water supplies nationwide.[109] The other two plants, located nearby, emit tens of thousands of pounds of benzene and 1,3-butadiene into the air every year.[110] The chemical butadiene contributes to ground-level ozone and is also connected with leukemia and infertility.[111]

The problems of point sources of air pollution are the main concern in the community, but the area along the Ship Channel also has two of the 17 Superfund sites in Harris County.[112] The closest Superfund site to Manchester is a former oil processor and wastewater treatment plant that processed numerous types of hazardous waste.[113] Waste barrels holding dangerous compounds, including volatile organics, metals, and mercury, remain on site and continue to leak their contents.[114,115]



This close-up view of the Manchester neighborhood, which is highlighted in orange, indicates the many sources of pollution within the community. The area within one mile, shown in green, also includes numerous facilities that release toxins into the neighborhood.
(Sources: City of Houston, Department of Health and Human Services and Google Maps)

Correlated Health Impacts

All of these sources of hazardous air pollutants threaten the health of Manchester residents and neighboring communities.[116] In January 2007, the University of Texas School of Public Health released an 18-month study that found children living within two miles of the Ship Channel had a 56 percent greater risk of contracting acute lymphocytic leukemia than children living more than 10 miles from the channel.[117]

Two years earlier, the Houston Chronicle conducted a study that specifically examined Manchester and three other communities that border Houston's industrial hubs.[118] The study measured such high levels of the carcinogen benzene in Manchester's air that one of the scientists equated living there to "sitting in traffic 24-7." The carcinogen 1,3-butadiene was detected at air levels as much as 20 times higher than federal guidelines used for toxic waste dumps. Overall, 84 of the readings were high enough that they would trigger a full-scale federal investigation if these communities were hazardous waste sites.

The dark area in the center left of the photo shows the trees of Manchester neighborhood, which is surrounded by industrial facilities. (Source: TEJAS)

Multiple studies have linked Manchester's polluted air to cancer, kidney and liver damage, and other chronic effects.[119] Parras says: "Most of the residents, they will tell you they know of all the existing problems. They know they have a lot of cancer, asthma, headaches, rashes, and it stinks all the time. It's a way of life that they have accepted because they don't feel they can do anything about it."[120]

Poverty and Health

Manchester is in Texas's 29th Congressional District, which has the highest percentage of non-elderly uninsured people in the country—43 percent in 2008.[121] Without health insurance, and facing high rates of poverty, the residents of this community are particularly vulnerable to the health effects of toxic air pollution.

Additionally, a growing body of scientific research suggests that exposure to multiple pollutants combined with other factors that often accompany poverty such as stress, noise and poor diet can result in cumulative health effects.[122,123] Scientists are currently working to learn more about these interactions among air pollutants to determine

Income (2009) and Race (2010)

	Manchester	Houston
% below poverty level	31.3%	19.2%
Median household income	$31,758	$42,945
Black or African American	3.1%	24.5%
Hispanic or Latino	93.5%	43.8%

(Sources: CityData.com and U.S. Census)

appropriate models for risk assessment.[124] Similar synergistic effects have been found to increase the risk of lung cancer from cigarette smoke combined with exposure to asbestos or radon more than the simple addition of their individual risks.[125] During 1999-2003, the residents of Manchester had a higher annual average mortality rate than those of Houston as a whole.[126]

"There are studies that document how unsafe the area is, but there's been very little done to either relocate people or to drastically reduce the amount of toxins in the air for those communities."

-- Juan Parras, (TEJAS)

Houston as a Whole

The Houston metro area is home to more than 260 oil refineries, chemical plants, and other large industrial facilities.[127] The emissions from these facilities have given Houston some of the worst air quality in the nation, measured by ozone, particulate matter, and the known carcinogens benzene and 1,3-butadiene.[128, 129] Multiple studies using advanced pollutant measurement tools have recorded emission levels much higher than those reported by the government.[130]

The community of Manchester has significant environmental justice concerns. The community is poorer and has a higher percentage of racial minorities than Houston overall, and it faces disproportionately higher exposure to the toxins and environmental hazards created by the city's industries.

Manchester is not an aberration in Houston; rather, it is one of the worst examples of a pattern of environmental justice problems throughout the city. The city government and private industry are recognized as having targeted black neighborhoods for landfills, incinerators, and garbage dumps over the last 50 years.[131] This pattern resulted in the landmark environmental justice case *Bean v. Southwestern Waste Management, Inc.*, which was the first lawsuit to challenge the siting of a waste facility under civil rights law.[132] The case was ultimately settled in favor of the waste facility because the plaintiff could not establish intentional discrimination.[133] The consequences of disproportionate siting of waste facilities continue to this day. A 2007 study found that Houston had the second largest percentage of minorities living in neighborhoods containing hazardous waste facilities.[134]

Policy and Regulatory Action

Many of the petrochemical facilities surrounding Houston's Ship Channel were built in the World War II era and the companies that own those facilities assert that they did not intentionally target poor neighborhoods for their site location.[135] Regardless of who moved to the neighborhood first, many Manchester residents believe more stringent pollution regulations would protect their health. Local resident Rosalinda Davila told

"Up until now, the EPA has relied on rough estimates, and the companies themselves have done the estimates."

-- Former Houston Mavor Bill White

the Houston Chronicle: “They [the government] are the ones that should be protecting me."[136]

Texas Commission on Environmental Quality (TCEQ) implements the federal Clean Air Act within the state, including issuing permits for facilities that emit pollution. [137] Many representatives of Houston’s industrial facilities claim that the pollutants emitting from facilities are at permissible levels. [138] This claim suggests that Texas’s emission standards are inadequate. A 2003 study commissioned by the EPA found the state’s laws meant to protect the public from air toxins were “handicapped” because they did not clearly define when toxic air pollution becomes a problem.[139]

In 2006, Houston Mayor Bill White formed a task force of regional scientists to evaluate and prioritize regional air pollutants. The task force developed an action plan on the carcinogen benzene and called for continued air monitoring and tougher standards for emission permits.[140] Later, White pressured the EPA to require the industry to verify the accuracy of their emission estimates. One of the mayor’s concerns was that the EPA relied on rough estimates from the companies and did not do their own testing to verify the accuracy of the companies’ numbers.[141]

White also attempted to use city nuisance ordinances to regulate Houston’s air pollution sources beyond the standards of TCEQ. His decision drew legal challenges from surrounding municipalities and industry, and the city has yet to file a nuisance suit.[142]

The Houston Ship Channel is the largest petrochemical complex in the United States, and Manchester is at its center. (Source: TEJAS)

Mayor Annise Parker, who succeeded White, was praised by environmentalists for her stance on air pollution.[143] In 2011, she wrote a letter to the U.S. Army Corps of Engineers requesting that they require project developers of the proposed White Stallion coal plant to produce an Environmental Impact Statement.[144] Although the statement was never required, the project developers eventually dropped plans to build the plant for economic reasons.[145]

At the state level, Texas has not shown the same level of support for environmental regulations. In 2013, the state government filed lawsuits to block new EPA regulations issued under the Clean Air Act. The EPA found that several air pollution permits issued by the TCEQ did not meet federal guidelines.

Environmental Justice in Texas

Air and water pollution, Superfund and Brownfield sites, and toxic chemical releases are Texas’s main environmental hazard concerns. The state is 45.3 percent white, 37.6 percent Hispanic, and 11.5 percent black, and it has a median household income of $48,259. [146] , [147] There are several communities within Texas that have high concentrations of minority residents and people in poverty. These communities experience unequal burdens of cancer risks from hazardous air pollutants, releases of toxic chemicals, Superfund sites, and facilities emitting smog and particulates.[148]

Texas's energy profile reveals why the state has such significant air pollution problems, contributing to concerns over environmental health and climate change. In 2011, Texas produced the most crude oil of any state in the United States.[149] Additionally, Texas's petroleum refineries accounted for 27 percent of total U.S. refining capacity, and the state was also the country's leading natural gas producer in 2011.[150,151] Air pollutants emitted from the manufacturing industry and massive oil refineries off the Gulf Coast include ozone, carbon monoxide, nitrogen dioxide, particulate matter, and lead.[152] Texas is also the largest carbon emitter in the United States.[153] Most of these pollutants contribute to climate change, which models project will likely result in stronger hurricanes, harsher droughts, and sea level rise. All of these effects would disproportionately affect Texas's most vulnerable citizens, including its poor.

Case Study: In Port Arthur, which is a city in eastern Texas where 35 percent of the population lives below the poverty line, 40 percent of the population is black, and 30 percent of the population is Hispanic, there are major environmental concerns stemming from the city's proximity to the largest oil refinery network in the world. In particular, the Westside community, which is located in southwestern Port Arthur, is situated near several refineries and chemical plants as well as a hazardous waste incinerator. This community, which has a significant amount of air pollution resulting from the industrial activity, was chosen by the Environmental Protection Agency for their Region 6 Environmental Justice Showcase Community. The means that the community will take part in in the EPA's national initiative to address environmental justice challenges throughout the United States.
Citations: 154-156

Case Study: In Brownsville, which is located in southern Texas along the Mexican border, 42 percent of residents are below the poverty level and 93 percent of residents are Hispanic. There are major environmental justice issues in the city resulting from *maquiladoras*. *Maquiladoras* are massive factories located on the Mexican side of the border that produce a significant amount of air and water pollution. Loosely enforced Mexican environmental laws have put the health of residents in border cities at risk. Residents in Brownsville are exposed to high levels of carbon monoxide daily, and the water quality in the Rio Grande has deteriorated because of the pollution from the *maquiladoras*. This pollution has caused birth defects on both sides of the border. In Brownsville, anencephaly rates—a condition where babies are born with undeveloped brains—are four times the national average. Many affected families have filed lawsuits against the *maquiladoras* for exposing the community to xylene, a cleaning solvent that can cause lung and kidney damage, as well as brain hemorrhages. International treaties often prevent success in these lawsuits.
Citations: 157-160

In El Paso, which is located in western Texas, 31 percent of residents are below the poverty level and 81 percent of residents are Hispanic. The American Smelting and Refining Company's lead and copper smelter causes significant air pollution in the city.[161,162,163] Driving into the city, it is difficult to miss the facility's massive smokestack.[164] From 1887-1999, this facility emitted hundreds of tons of air pollutants, such as lead, cadmium, and arsenic, into the nearby community, which includes schools, homes, and businesses.[165] This air pollution has made many of the children in El Paso sick with lead poisoning. Although this smelter is currently closed, it may reopen and release more toxins into the community.[166]

Conclusion

The “cloud maker” smokestacks of the Valero Energy Corporation Refinery in Manchester are a vivid reminder that the community faces some of the highest risk from pollution in the city of Houston. More than 30 refineries and chemical plants are located around the community, an area where 31 percent of residents, mostly black and Hispanic, are below the median income level. The vast environmental problems include air pollutants, waste-discharging facilities, hazardous waste, and toxic releases in the Manchester neighborhood. These issues correlate with numerous health impacts, such as increased risk of childhood leukemia.

Manchester is a clear example of a community struggling with environmental health risks. It is poorer and has a higher percentage of racial minorities than Houston overall, and it faces disproportionately higher exposure to toxins and environmental problems.

Environmental justice issues are not restricted to Houston in the state of Texas. There are numerous other communities across the state, from Brownsville to Port Arthur (See boxes), whose minorities and people living in poverty bear disproportionate risks and burdens from industrial pollution. Moving forward, there is much work to be done, from informing and educating the community to requiring stricter emission standards for industrial facilities.

The Children's Corridor:
Environmental Justice in Downtown Denver

The Elyria-Swansea and adjacent Globeville neighborhoods are some of the oldest communities in the greater Denver metro area.[167] Their histories include environmental problems, which, combined with the current cumulative effects of pollution from highways and industry, raise environmental justice concerns.

These communities are located in northeastern Denver and are encircled by three highways, I-70, I-25, and I-270. [168] People historically populated this area when gold ore was found in the Colorado mountains. An industry arose around processing such precious metals, namely with the establishment of several smelting facilities in once-independent Globeville. [169] Although smelting and gold refining is no longer active, the community's identity is very much tied to its history of natural resource use. Today, the community's identity is also based upon an increasing immigrant population and the significant portion of its residents that are under the age of 18.[170] It has officially been designated as part of the "Denver Children's Corridor," a contiguous stretch of neighborhoods throughout the Denver metro area that are home to children who are more likely to "face the hardships of poverty … poor nutrition, unsafe neighborhoods, or some combination of these."[171]

"Of the more than 54,000 children living in the Corridor in 2010, 95% were in low-income families or were considered to be vulnerable."

-- The Piton Foundation of Denver

Income (2000) and Race (2010)		
	Globeville	**Denver**
Average Household Income	$37,063	$55,129
% Persons in poverty	23.15%	14.29%
% Children (under 18) in Poverty	28.8%	20.82%
% Population Non-Latino White	25.77%	52.15%
% Population African American	3.04%	9.73%
% Population Latino	67.83%	31.82%
% Population Native American	0.98%	0.59%
% Population Asian/Pacific Islander	0.73%	3.32%

Source: "Neighborhood Summary: Globeville". The Piton Foundation. Web. May 2nd, 2013.

Mining in this part of Colorado has degraded soil and groundwater conditions.[172] Additional industrial activity and the growth of a modern transportation network have given rise to stationary and mobile sources of air pollution. [173] This environmental activity has led to a number of cumulative health effects in the community.[174] The Elyria-Swansea and Globeville neighborhoods are particularly vulnerable to these environmental hazards because of the large population of children and the susceptibility of children to pollution exposure.[175] The environmental hazards are also heightened for a lower-income immigrant population that may not have access to certain safeguards—such as employee-sponsored health insurance—to protect against ensuing public health challenges.

Additionally, lack of financial resources makes it a challenge for low-income residents to move away from these environmental problems.

The Elyria-Swansea and Globeville neighborhoods have a large minority population. With a total population of 10,088, 78 percent of the two neighborhoods' populations self-reported as Hispanic, 15 percent as white and five percent as black.[176] In addition, 37.2 percent of the residents fell below the poverty threshold within the past twelve months. As only 18.8 percent of all Denver County residents have an income below the poverty level, according to Figure 2, Appendix B, low-income residents appear to be concentrated at least partly within the Elyria-Swansea and Globeville neighborhoods.[177]

The EPA's national program to clean up "uncontrolled hazardous waste sites" is known as Superfund. This is a national program that works to remediate sites that have been contaminated by industry, mining, or toxic waste, among other things.[178] The immobility of low-income communities combined with the environmental health risks posed by the local Superfund sites, air pollution from highway traffic, and the history of lead poisoning from the smelters makes it clear that this area has significant environmental justice concerns.[179]

Environmental Problems in Elyria-Swansea and Globeville

Existing environmental hazards in these two neighborhoods are the result of an accumulation of industrial activities (Maps 7 and 8, Appendix B). Specifically, the long-term smelting operations in northeast Denver, though now closed, have created lingering toxic conditions. The contaminants the industry produced can still be found in the local soil and groundwater. These contaminants may include lead, arsenic, and mercury.[180]

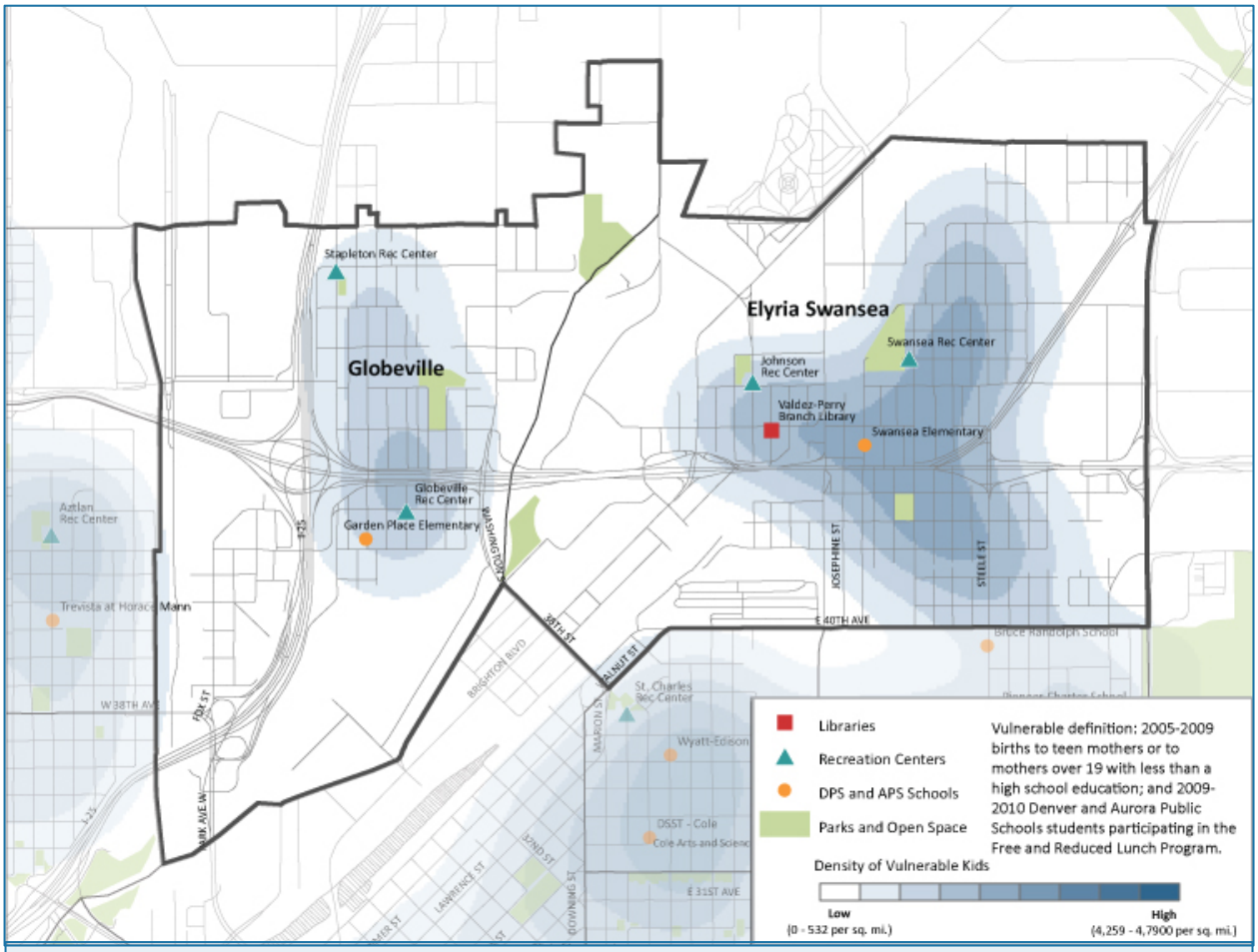
The Colorado Department of Public Health and Environment has divided the state into five multi-county areas in order to monitor air quality, based on the topography. These areas are the Eastern Plains, the Northern Front Range, the Southern Front Range, the Mountains, and the Western Counties. The area of focus for this case study corresponds to the Northern Front Range.

Primary environmental hazards

- Residual pollutants from Superfund sites
- Emissions from vehicles driving through I-25, I-70 and I-270
- Odor emissions from Nestle Purina Petcare Co.

Air Quality

Based on the latest air quality report of the State of Colorado, the overall Northern Front Range, which includes Adams, Arapahoe, Boulder and Denver counties is not violating the National Ambient Air Quality Standards (NAAQS). However, within Globeville and Elyria-Swansea, "the area has been targeted by the EPA as an area of concern due to disproportionate air quality impacts from industrial and mobile source emissions."[181] In other words, this particular area has localized air-quality issues that are specific to Denver. Denver County has a total of eight monitoring stations. The station located within the Elyria-Swansea and Globeville neighborhoods is at the Swansea Elementary School. The stations are shown in the map on the next page.



This image depicts the Elyria-Swansea and Globeville neighborhoods, highlighting the children vulnerable to environmental and economic challenges within the communities. (Source: The Piton Foundation)

The area's compromised air quality comes from both mobile and stationary sources of pollution. The mobile sources are mainly related to the presence of Interstates 25, 70, and 270 that surround the area to the west, south, and north, respectively. Residences in North Denver are located fewer than 100 feet from the I-70 viaduct, which is scheduled for a major expansion over the next decade[182] I-70 carries approximately 175,000 vehicles per day, and I-25 transports over 225,000 vehicles per day. [183] Combined with the proximity to the interstates, the community has expressed concern regarding the nearly 10,000 trucks from local businesses that pass through the neighborhoods and idle in the industrial sites and two nearby truck stops.

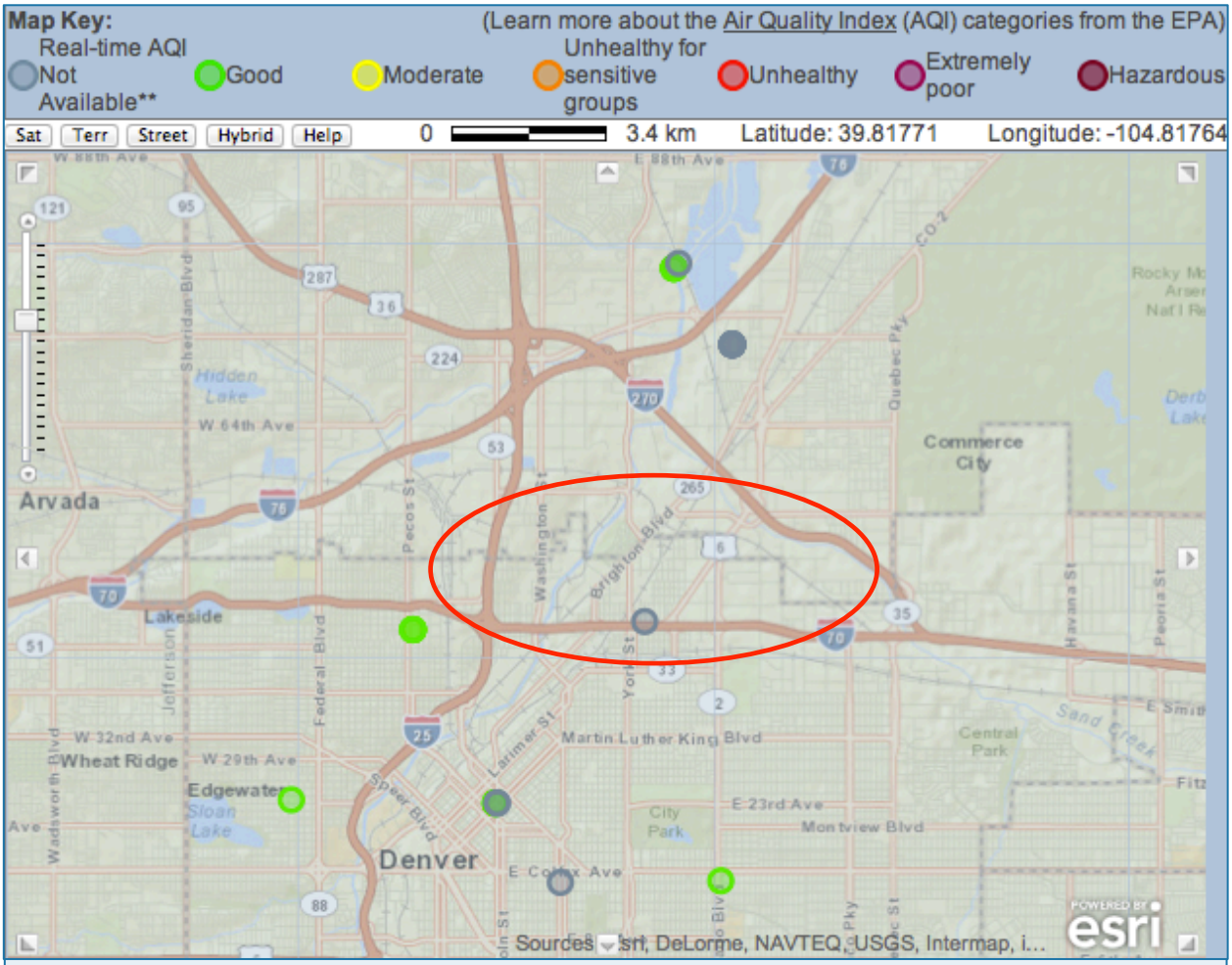
Major sources of stationary emissions include two refineries, a bulk petroleum terminal, a coal-fired power plant, a furniture manufacturer, and many solvent-based industries. One example is the Nestle Purina Petcare manufacturing facility, located in the heart of the Globeville neighborhood. Though it is unknown if any harmful pollutants are being emitted from this factory, a localized report is forthcoming because community members have long complained of the unpleasant odors associated with the facility. [184] Groundwork Denver, who will be producing the report, is a community organization that has collaborated with underserved communities in Denver since 2002. Staff member Tangier Barnes explained in a personal interview that

Groundwork Denver was "conducting a study that includes air samples, in order to identify the potential health impact of the emissions that come from [the Purina facility]."[185]

Toxic Waste Sites

Two Superfund sites are located in the Globeville and Elyria-Swansea neighborhoods. The first is the Vasquez Boulevard & I-70 (VB/I-70) Superfund site, a cluster of former smelter operations that are now closed. The second is the Chemical Sales facility, a former chemical distribution company.

The four-square-mile VB/I-70 site was historically a group of smelting centers where metals such as gold, copper, lead, and zinc were refined from 1870 onward. The main concerns are the contamination of residential soils and groundwater, as well as potential exposure to airborne contaminants by construction workers at redevelopment zones within the site.[186] Lead and arsenic are the contaminants of greatest concern.[187]



Only one of the eight active monitoring sites in Denver is located in the Globeville area.
(Source: Colorado Department of Public Health and Environment, Air Pollution Control Division.)

Superfund sites outlined in yellow within the Elyria-Swansea and Globeville neighborhoods. (Source: Environmental Protection Agency, Vasquez Blvd. and I-70 Superfund sites. 2009.)

Potential Health Impacts

The Elyria-Swansea and Globeville neighborhoods are at increased risk of exposure to environmental contaminants from nearby Superfund sites. Additionally, low birth weights and high cancer rates correlate with these neighborhoods. Although it is difficult to attribute these public health issues to environmental pollution, they are concerning, particularly if their effects are exacerbated by cumulative exposure to other pollution.[188]

The Piton Foundation is a non-profit working in the Globeville and Elyria-Swansea neighborhoods to raise awareness about vulnerable populations. The Piton Foundation classifies vulnerable populations as those

Toxic Emissions

According to the Toxics Release Inventory distributed by the EPA, "80216 is the most polluted zip code in Colorado for toxics emissions to all media. One active and two previous Superfund National Priorities List sites also lie within this area."

with a high density of children born to teenage mothers or to mothers over age 19 with less than a high school education, and as those with a proportion of students in the public school system participating in the free and reduced lunch program. Vulnerable populations are clearly concentrated in both the Elyria-Swansea and Globeville neighborhoods. These clusters of children from poor or underprivileged families are also vulnerable to the environmental hazards that exist in the two neighborhoods.[189]

In 2000, the U.S. Department of Health and Human Services' Health Benchmarking Project identified demographic and public health problems in these communities, including lack of access to adequate health care, and concluded that other public health issues follow.[190,191] The study created a set of goals for the neighborhoods to work toward, including decreasing incidence of "low birth weight rate" and "prevalence of environmental risks."[192] This study demonstrates a relationship between exposures to contaminants and compromised human health. The findings underscore the concern that already-vulnerable populations are at additional risk from their exposure to environmental toxins.[193]

Economic Profile

Public health and environmental health are linked directly to the economic wellbeing of a community. Relative to the rest of the city, the Globeville and Elyria-Swansea neighborhoods are economically disadvantaged, which may explain low rates of employee-sponsored health insurance and other safeguards (Figure 2 and Map 5, Appendix B). The Health Benchmarking Project found that while 56 percent of Denver students in public schools participated in the free lunch program, up to 95 percent of students in the Elyria-Swansea and Globeville neighborhoods participated in it.[194]

The U.S. Census estimates that in 2010 Globeville's median household income was approximately $32,116, which is less than the citywide average household income of $47,499. Additionally, almost one-third of households in the Globeville-Swansea area make less than $25,000 annually, compared with the overall Denver rate of 21 percent of households.[195]

Income Breakdown (2007-2011 5-year estimates)		
	Denver County, CO	**Globeville and Swanson neighborhoods**
Median income (dollars)	$47,499	$32,116
Mean income (dollars)	$71,297	$44,746
Less than $10,000	9.4%	7.3%
$10,000 to $14,999	6.1%	13.0%
$15,000 to $24,999	11.1%	14.8%
$25,000 to $34,999	10.9%	20.5%
$35,000 to $49,999	14.3%	8.8%
$50,000 to $74,999	17.0%	16.7%
$75,000 to $99,999	10.9%	10.4%
$100,000 to $149,999	10.7%	7.2%
$150,000 to $199,999	4.4%	0.9%
$200,000 or more	5.1%	0.4%
Source: American Community Survey		

In 2011, unemployment in these neighborhoods was 11.5 percent, which was significantly higher than the overall Denver County average of 5.9 percent. Such high unemployment may be related to the fact that only 11.3 percent of the residents in Elyria-Swansea and Globeville have obtained a college degree, compared with 41.3 percent of Denver County residents overall.[196]

Although these areas have significant concerns about the VB/I-70 Superfund site, the area is undergoing residential development. This is providing construction workers with employment. There is concern, however, that workers are being exposed to toxic contaminants while on the job from the inhalation of particulate matter. Workers often have to choose between accepting a job they know exposes them to a hazardous environment and having a lower paying job or no job at all.

Broader View

As a mining state, Colorado has widespread residual pollution issues stemming from mine runoff and byproducts of the refining process.[197] Similarly to the northeastern area of Denver, the towns of Pueblo and Leadville also housed smelting operations at the time of the state's mining and resource-processing peak, and the residual effects in these historic towns are evident in the water and soil profiles. [198] Smelting byproducts, such as lead, arsenic and mercury, can be present in local soil and water for long periods of time after the facilities are no longer in operation, particularly because of historic waste disposal practices. If humans ingest the contaminated water or dust, it can lead to poisoning or cancer.[199]

Additionally, Colorado has been home to a number of weapons manufacturing sites including Rocky Flats, a nuclear weapons facility that has since become a remediated Superfund site. [200] While there has been debate about the long-term effects of these weapons sites, the existence of toxic chemicals is not disputed.

Conclusion

The Elyria-Swansea and Globeville neighborhoods have become the focus of significant environmental concern at the local level. The main environmental burdens are poor air quality and potential exposure to toxic hazards from Superfund sites. In these specific low-income neighborhoods of Denver, burdens from environmental hazards are greater than in other parts of the city.

Colorado has long been known for its incredible natural beauty and available resources, but accessing and refining its natural resources has created various toxic byproducts that persist in the environment. It is crucial to the health of the Coloradoans that live and work near these sites that full remediation be accomplished and that these dangers are reduced or eliminated.

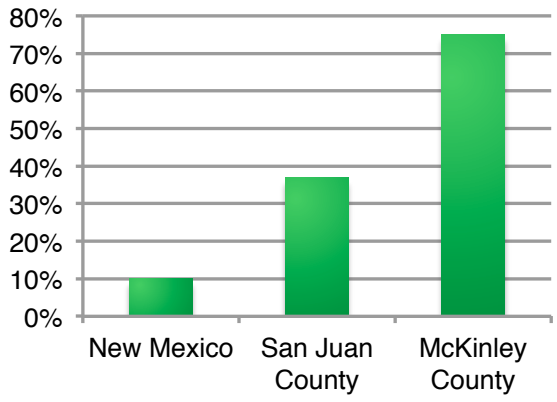
A Legacy of Hazardous Waste:
Environmental Justice in NW New Mexico

The northwest region of New Mexico, which is known as the San Juan Basin, has many environmental concerns. Two of the most significant issues are air and water pollution from uranium, coal and natural gas mining. This area is home to the Navajo, Ute and Zuni communities, which have borne the health risks associated with the mining activities.[201] Currently, hydraulic fracturing, also known as "fracking," is expanding in the San Juan Basin, which straddles both San Juan and McKinley Counties.[202] The most serious potential issues resulting from fracking include depletion of water resources, contamination of aquifers, and accumulation of toxic wastewater. All of these issues would compound the environmental health burdens of the residents of the San Juan Basin.

The Zuni, Ute and Navajo reservations overlap with the area above the Mancos Shale and the environmental consequences threaten both the people in these communities and their livelihoods.[203] The Zuni, who live in McKinley County, need the region's water resources not just for food and daily living, but also for a critical component of their artisanal culture.[204] The tribe fishes in local streams and incorporates water into the ceremonies for pottery making, which they sell at local craft shows; hence, the proceeds from the pottery sales are a major source of income for artisan families.[205] The Ute tribes also incorporate water into their traditions. In the Sundance ceremony, for example, the "tagu-wuni" or "standing thirsty" tradition is a process that requires potable water to drink and to nourish the soul.[206]

"It's like having to play Russian roulette every day and gamble on it and pray."

-- Anna Edwards, a San Juan Pueblo resident



Percentage of Native American Indians in New Mexico State; San Juan and McKinley counties. (Source: Census Bureau)

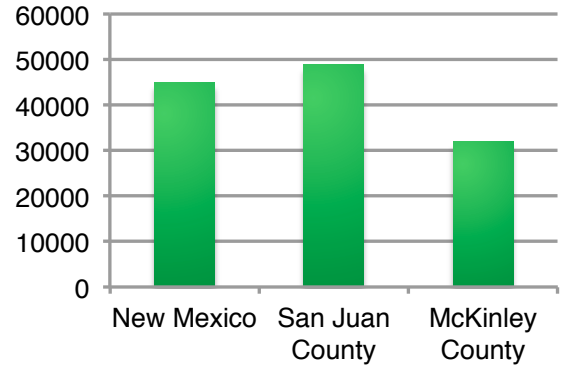
While these Native Americans have been successful in maintaining their traditions and culture, they have had difficulty making a living wage. Over half of the people in these tribes live below the U.S. poverty level, and they would bear a large portion of the environmental burden from fracking, without being assured of its economic benefits. The Navajo Nation Reservation covers a large portion of the San Juan Basin in New Mexico, and fracking activities could affect a large percentage of the tribe.[207]

Demographics and Surrounding Poverty

San Juan County has a total population of 128,529 inhabitants. [208] Native American Indians constitute 37 percent of the population, and 20 percent of county residents live below the poverty line. [209] McKinley County has a total population of 71,492. Native American Indians account for 75 percent of the population, and 30 percent of the county residents live below the median household income of about $32,000.[210]

Despite the economic activity that results from local mining, over half of the indigenous tribes in this area live below the U.S. poverty level. In the U.S., on average, 14.3 percent of individuals live below the poverty level, while in New Mexico, on average, almost 20 percent of the residents live below the poverty level.[211]

In addition to fracking, the local tribes have historically experienced other environmental burdens from mining, which is one of the most common industrial activities affecting low-income and minority communities, especially within the Navajo Nation. [212] Mining companies have extracted the Navajo Nation's abundant natural resources, including gas, coal, water and uranium, for the past 50 years. [213] Today, there are approximately 3,000 abandoned mining sites in New Mexico, and one-third of these mines are situated on Navajo reservation.[214] These sites pose concern because of toxic chemicals that have leached into the land and are affecting surrounding areas.



Percentage of Native American Indians in New Mexico state; San Juan and McKinley counties. (Source: Census Bureau)

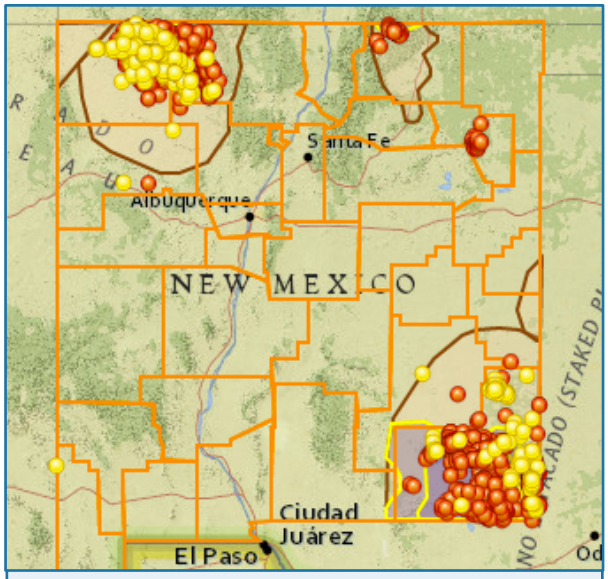
Environmental Problem

Fracking threatens the resource most fundamental to life—water. Many communities in states such as Colorado, Wyoming and Texas, have reported changes in water quality or quantity following fracking activities. [215] The fracking process requires a large quantity of water, ranging from 2.3 millions of gallons to 8.4 millions of gallons, which is typically drawn from local resources, such as local watersheds.[216,217] This puts additional strain on already-scarce water resources in the region. Redirecting water for industrial use will compromise the Zuni, Ute and Navajo tribes' water sources for drinking, cooking or cleaning.

It is clear that water is necessary in everyday activities for the Native American community. However, it is important to keep in mind that fracking fluids injected into the ground as part of the natural gas extraction process contain many chemicals. If the wells and drilling pads are not properly constructed or monitored, these fluids can leech into the ground and contaminate aquifers and other water supplies. When fracking fluids are brought back to the surface, this "flowback" fluid is considered to be highly toxic and can contain heavy metals and, in some cases, radioactive materials like uranium, radium, radon and thorium. [218] Moreover, mishandling flowback

fluid can also contaminate surface and groundwater.

If the groundwater is contaminated, it can pose major problems for humans who consume or have contact with the contaminated water. Fracking can also have indirect impacts on human health. For example, the process can damage the habitat of animals and plants, which can cause contamination and food security problems for the indigenous communities such as the Navajo, Ute and Zuni tribes that live off of the land. Not only are these communities affected by the reduced amount of water used for drinking, cleaning and consuming local produce, but they are also threatened by the lack of safeguards to protect surrounding lakes, streams and other open water sources.



Sites of water contamination in New Mexico.
(Source: Frac Tracker)

Lack of Water Treatment Options

Some of the wastewater from fracking operations is processed by public wastewater treatment plants, which are neither equipped to remove radioactive material nor required to test for chemicals affecting drinking water quality. [219] Communities can potentially be poisoned from the fracking spills or dispersed flowback fluid. Even if public wastewater treatment plants had the technology to clean contaminated water, there is no federal legislation mandating the treatment of this wastewater. Particularly, Native American communities are more likely to lack access to wastewater treatment services than other population groups, which make these communities more vulnerable to the potential health hazards.[220]

Protesters of the coal-fired power plant on the Navajo Reservation.
(Source: Dine CARE- Carlan Tapp)

It can also be problematic when high levels of various hazardous chemicals are released into the rivers due to flowback fluid permeating through the surface. One chemical, bromide, combines with chlorine—which is used to disinfect drinking water at water treatment plants—and forms trihalomethane (THM), which is a known carcinogen.[221]

Community Impact

Energy giant British Petroleum (BP) has been drilling wells as close as 150 yards to people's homes in the San Juan Basin and has been buying mineral rights all around the San Juan Basin.[222] One ranching family in San Juan County noted numerous spills and leaks at well pads on the public land where their cattle graze. After many cows in their herd died, the ranchers tested other sick cattle in the area. Results from the Texas Veterinary Medical Diagnostic Laboratory in 2005 found petroleum in the hair of 54 out of 56 animals tested.[223]

Though the chemicals used in fracking fluids (mentioned above) are less than one percent of the total fluid composition, there are over 600 chemicals used during operations, which are harmful to human health. Approximately 40-50 percent of these chemicals affect the nervous, immune, and cardiovascular systems; 37 percent of chemicals affect the endocrine system; and 25 percent may cause cancer.[224] People living near fracking sites will also be exposed to foul odors and incessant noise, which disturb their daily lives and mental well-being.[225]

Another consequence of fracking is the reduced amount of water available for community consumption, which is exacerbated by the effects of climate change. Climate change will directly affect human health and environmental quality through hotter temperatures and increased frequency of droughts. Climate change will also likely cause decreased groundwater recharge, as well as river-flow reductions and dwindling reservoirs—each exacerbating water scarcity.[226] As water is a vital resource for the Native American tribes' daily personal and cultural activities; any danger to the water sources is a threat to the quality and well-being of their communities.

Native American children protesting uranium mining in the Southwestern U.S. (Source: Westox)

Regulatory Environment

Currently, the only federal laws regulating fracking are air pollution rules. States in which natural gas drilling occurs have implemented laws and regulations at the state level, but there has been no uniformity across the country with regard to regulation requirements or legislative language. The most prominent elements of enacted state legislation are disclosure requirements. Disclosure requirements are notifications to the state by production companies on the impacts that fracking will have on the fresh water supply and potential chemical effects that fracking will have on human and environmental health.[227] This information is then made available to the public.

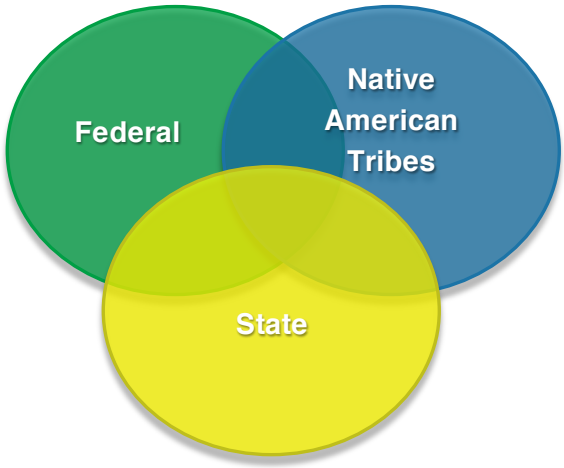
In 2005, Congress passed the Energy Policy Act, which included language that explicitly exempts fracking from falling under the Underground Injection Control program within the Safe Drinking Water Act.[228] This program regulates fluids that are injected beneath the earth's surface. The 111th Congress

considered the Fracking Responsibility and Awareness (FRAC) Act, which would repeal this exemption, but the bill did not pass.[229]

Other federal attempts to regulate the natural gas industry have come from the Departments of Energy and Interior, as well as the EPA. Additionally, President Obama recently endorsed the development of fracking practices in his 2013 State of the Union Address.

Unclear Jurisdiction

The San Juan Basin is controlled by three government entities, all of which have a different role to play if fracking operations are expanded. The community structure in Northwest New Mexico is complicated because of the various governmental structures. While the shale presents an opportunity for economic development as an energy supply, the geography and community structure is very complex – it consists of people who live on Native American reservations, people who live off the reservations, and federal lands regulated by the Bureau of Land Management and the Bureau of Indian Affairs.



The overlap of regulatory authorities in the San Juan Basin, all of which could play a role in regulating fracking in the region.

Desert Rock Energy Project site.
(Source: Dine CARE- Carlan Tapp)

The San Juan Basin is located on federal land, state land and Native American Reservation land. All three of these governmental bodies have jurisdiction within the San Juan Basin, which creates many overlapping political views and a difficult political government and regulatory structure to navigate.

According to Dan Randolph, at the New Mexico Environmental Law Center, there are currently neither adequate federal regulations regarding fracking, nor are there any Native American regulations, and the state of New Mexico requires only minimal information in disclosure requirements.[230] The ability to regulate fracking in this area is complicated because of the Native American governing body on the reservation, the New Mexico state government off the reservation and federal government must all weigh in on these decisions.

Columbia University Law School Professors Thomas W. Merrill and Dean David M. Schizer wrote about the expansion of hydraulic fracturing practices and the need for regulatory frameworks in their paper "The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy." They noted that the most important regulations must be created at the state level:

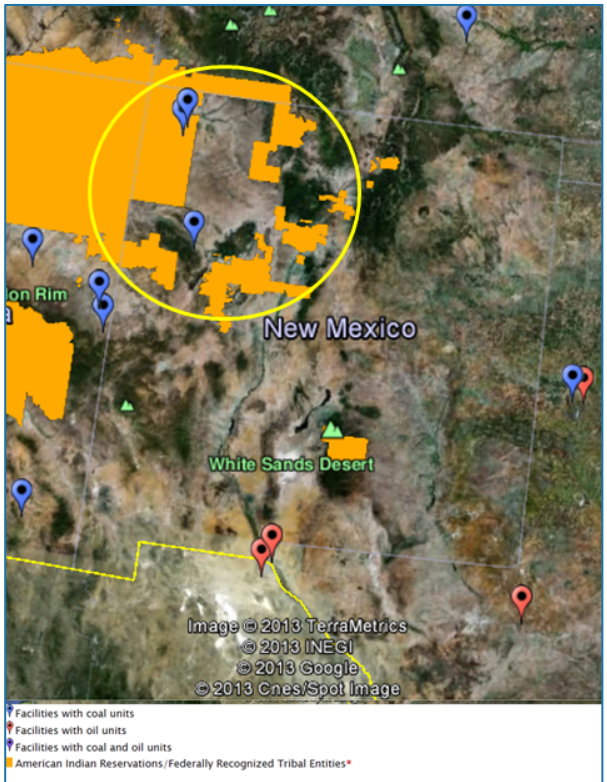
"Although this could take the form of new legislation prescribing all desirable elements of the liability regime, a more realistic option, at least in the near term, is to adapt the existing common law of torts to the unique problems posed by fracturing. In our view, this blended strategy – an evolving body of best practices regulation paired with a well-crafted liability regime – can perform the vital function of protecting our water resources, while also harnessing the substantial economic, national security and environmental advantages of the shale oil and gas revolution."

Varying Regulatory Requirements

As of July 2012, New Mexico state government required only disclosure requirements from natural gas and oil companies once development and operations were underway; however, no advance disclosure was required.[231] Of the chemicals involved in fracking, New Mexico only requires Chemical Abstract Service Number—a specific global standard given to chemicals that have been tested for effects to humans—for a select few chemicals, as opposed to all chemicals used in processing.[232]

While the federal government has not enacted any legislation that would standardize fracking practices throughout the country, New Mexico has attempted to expand the existing regulations in the state. Early in 2013, the EPA identified operations run by energy and petroleum giant ConocoPhillips in New Mexico as the second largest contributor to greenhouse gas emissions in the country.[233] In reaction to these findings, the New Mexico State Senate introduced legislation to prohibit fracking in the state. The bill, however, did not pass, with opposition citing that the state would lose around $48 million each year from reduced royalties and $40 million from bonuses collected by the State Land Office.[234]

In a state committee hearing on the fracking ban legislation, nonprofit Local Energy Director, Mark Sardella, testified that, "What is unfolding in the wake of that deception—[Congress's 2005 Energy Bill]—is arguably the most serious public health threat ever perpetrated by the energy industry."[235] Sardella is the former Technical Director for Rebuild New Mexico, a joint program between the U.S. Department of Energy and New Mexico Energy Office.[236] His testimony in the committee hearing provided five serious risks that continued, unregulated fracking could pose to New Mexico residents, among which were decreased fresh water for consumption, and increased contamination through spills.[237]



Map of American Indian Reservations in Northwestern New Mexico with coal and oil facilities. San Juan Basin distinguished by the yellow circle.

(Source: U.S. Environmental Protection Agency)

Because of New Mexico's large Native American population, the state government has allowed tribes to apply for "state-like" status, which draws from fundamental sovereignty.

According to Governor Dave Freudenthal of Wyoming, the first state to pass hydrofracking regulations, "The Native American peoples must be consulted before any fracking regulations can be done. In WY we were very respectful of that and made every attempt to include their views."

There are many complex layers to the drilling and governing policies in the San Juan Basin. While it is vital to include all stakeholders' views of industrial activity in the area, it is essential to relay the community's sentiments of historical and present environmental burdens. There is little publicity and advocacy for indigenous groups, especially for the Zuni and Ute tribes. Our team made several attempts to contact the Navajo community members, who are represented by local organizations such as the Dine Citizens Against Ruining our Environment (Dine Care) and Eastern Navajo Dine Against Uranium Mining, but were unsuccessful.[238]

One member of the Navajo Nation Administration stated that the Navajo lands do not have their own regulations with fracking, only regulations on traditional extraction of oil and gas. Rather, the processes of fracking are to be regulated by the Department of the Interior, Bureau of Land Management (BLM), who has delayed regulations on these drilling operations. It was also mentioned that BLM frequently interacts with the Bureau of Indian Affairs (BIA)[239] to ensure a level of agreement between the various stakeholders. When asked if there will be any safeguards developed to prevent possible fracking consequences on the Navajo territory, the employee responded, "there is no conflict with the availability of water because the water [injected into the ground] is produced with salt water." Additionally, this member expressed fracking has, "been going on for the 60 years. The only reason why this is such a new controversial item is because this is horizontal fracking of the shale formation. However, [horizontal fracking] hasn't blossomed into anything yet."

"If industry is really moving forward with constructing these frack lakes all over New Mexico, it is incumbent upon the state of New Mexico to have a stakeholder's process on best practices for these huge frack lakes. Otherwise we're going to see such widespread contamination that it's going to be impossible to get ahead of if they start allowing this today."

-- Gwen Lachelt, founder and director of Earthworks Oil and Gas Accountability Project

Conclusion

The three communities in Northwest New Mexico - Navajo, Ute and Zuni tribes - are exposed to various hazards from mining activities including uranium and coal mining, and natural gas extraction. These communities depend on the surrounding land and water resources for their health, spirits and cultural traditions. The Mancos Shale in the San Juan Basin is the next potential hot spot for horizontal hydraulic fracturing, which is located within the Indian Reservation lands. Thus, the economic viability of the Mancos Shale poses potential environmental and health risks.

Should New Mexico permit companies to begin fracking, it will encounter challenges as well as opportunities to develop this economic boom without causing environmental and human health degradation. Wastewater that is not properly treated poses a risk to the communities living near the fracking sites because of chemicals in the fracking fluid. Groundwater contamination may directly threaten the health, livelihoods and environmental quality of communities. Water is scarce in New Mexico, and the risk of contaminating an aquifer could have huge consequences for the local and indigenous population.

To address this challenge, Congress has the opportunity to enact several pieces of legislation that will regulate, manage and oversee fracking as well as the oil and gas activities. With safeguards, hydraulic fracturing practices may serve regional U.S. energy needs and reduce environmental justice concerns.

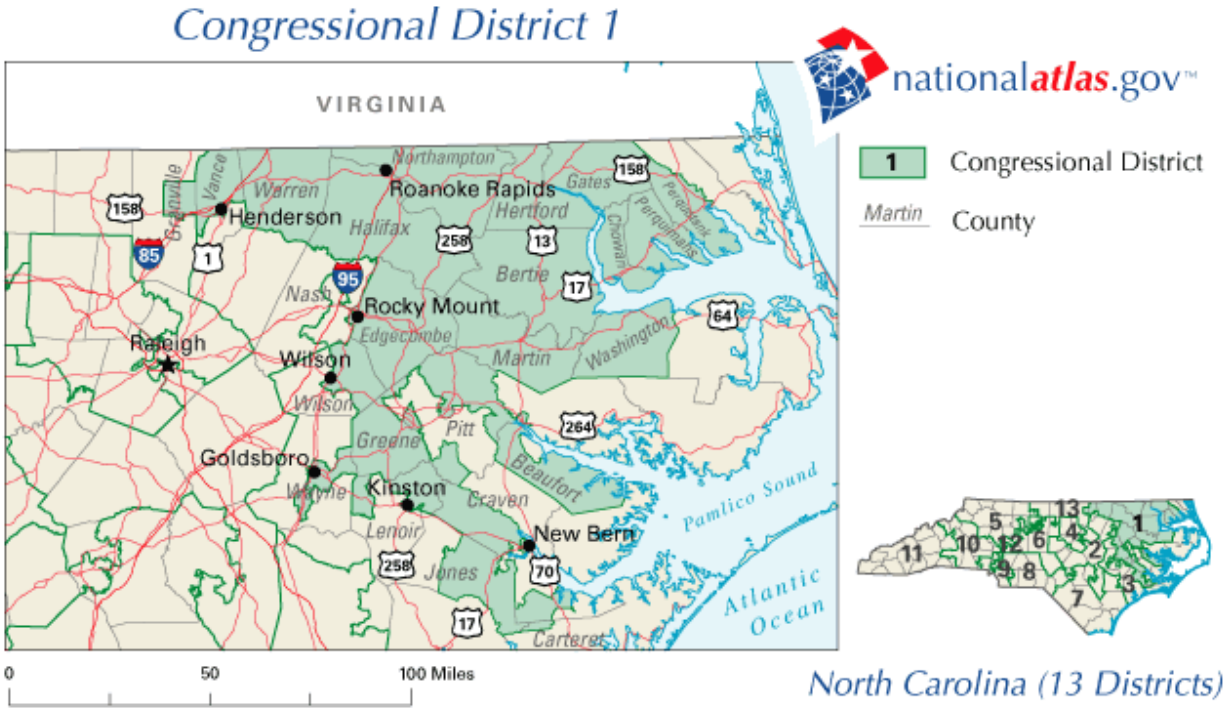
North Carolina: A Quick Look

Violet Branch of Warsaw, North Carolina, lives within walking distance of one of the state's 2,100 hog farms. "Sometimes I wake up at night and smell the odor," she told the Raleigh, NC, newspaper *The News & Observer*. "It stinks. I have big flies all around my door."[240]

Warsaw is similar to many rural towns in Eastern North Carolina where much of the hog industry is concentrated.[241] It has a high poverty rate (28.1 percent compared with 16.1 percent for the state overall), and its residents are predominantly non-white (76.5 percent compared with 27.9 percent for the state overall).[242] [243] The industry's proximity to these communities, located primarily in North Caronlina's 1st, 3rd, 7th, and 13th congressional districts, has raised concerns about environmental justice. [244]

The North Carolina hog industry generates 12 million pounds of waste per day. In 2005, the state's 16 million hogs produced as much raw waste as 32 million people. This waste contains dangerous pathogens, including salmonella, e. coli, cryptosporidium, and fecal coliform, and it can transfer more than 40 diseases to humans.

Despite advances in technology, North Carolina's more than 2,100 hog farms continue to use a waste disposal method that has been relied on for decades: flushing it into open-air "waste lagoons." More than 4,000 of these waste pits dot the whole state and they pose a significant threat to human health and the water supply. In 1995, a waste lagoon in Onslow County collapsed sending 25 million gallons of waste into the New River. [245] In 2012, a Columbus County hog

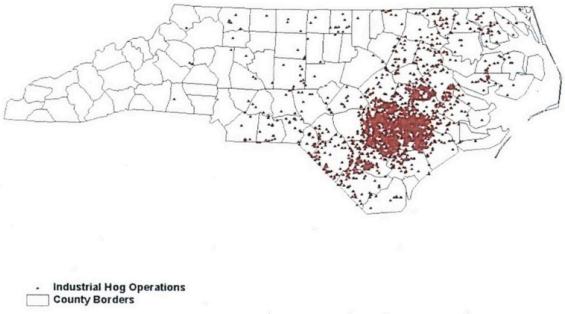


Map of North Carolina's 1st Congressional District, represented by Congressman G.K. Butterfield. The North Carolina hog industry is concentrated in districts in the eastern half of the state. (Source: NationalAtlas.gov)

farmer was convicted of dumping 324,000 gallons of “hot” untreated hog waste from one of his lagoons into a stream that feeds the Lake Waccamaw watershed.[246]

In addition to threatening water supplies, industrial swine operations emit powerful chemicals into the air including ammonia, hydrogen sulfide, volatile organic compounds, and endotoxins. These chemicals are known for negatively impacting the respiratory and cardiovascular systems and can cause flu-like symptoms. Research has also raised concern about harmful neurological effects in children who were exposed to the chemicals.

Local outcry at these dangers led the state legislature to place a moratorium on new waste lagoons in 1997. But 15 years later, North Carolina contains roughly the same number of waste lagoons—4,000—as it did when legislators enacted the moratorium. The legislation allotted funding to research new waste treatment technologies and included provisions for farmers to adopt this new technology. But the law includes “economic feasibility” among its criteria for evaluating new technologies, and environmental advocates claim this has allowed the hog industry to rule out safer technologies that cut into its bottom line.



Map of industrial hog operations in North Carolina. (Source: Honest Meat)

Congressman G.K. Butterfield represents this district and he is currently serving his 5th term. He serves on the House Energy Committee and also sits on the subcommittees of Health, Environment, Economy, Commerce, and Manufacturing. Additionally, he is a member of the Renewable Energy and Energy Efficiency Caucus.

Conclusion

The environmental justice movement began more than thirty years ago, with communities drawing attention to disproportionate environmental health burdens. The movement highlighted a trend where the most polluted areas tend to be concentrated where higher rates of people of color and low-income populations live, work recreate. As a result, these neighborhoods may be more exposed to pollution in their homes, schools and workplaces than white or wealthier populations. Additionally, low-income and minority populations that are subject to unequal enforcement of pollution regulations and being closed out of decisions affecting their neighborhood have often been ignored. The lack of strong social capital makes low-income and minority populations more vulnerable, and, therefore, their capacity to resist the location of pollution facilities in their neighborhoods is impaired. The concentration of environmental hazards over a long period of time exposes environmental justice communities to cumulative health effects. Congress has a key role in the development of legislation and oversight that address the roots of environmental burdens, which persist in many communities throughout the United States.

Through this project, we have developed a model to identify and generate environmental justice community case studies. The goal of the case studies is to inform. WE ACT and others will be able to use our model framework to identify and research additional community case studies throughout the United States.

Using our model, we identified three community case studies that illustrate adverse environmental conditions in low-income or minority communities. For each community, we chose the approach of finding a compelling, human story that clearly illustrates the impact of these environmental hazards.

First, the neighborhood of Manchester in Houston, Texas is an area polluted by active industrial activity. This neighborhood is predominantly low-income and Hispanic in demographic make-up and may have chronic health problems documented in the community that may be attributable to or exacerbated by industrial air emissions exposure.

Second is the story of two neighborhoods, Elyria-Swansea and Globeville in Denver, Colorado, which are located near a former smelting facility that is now a designated Superfund site. In addition, the neighborhoods experience high levels of pollution from traffic from three highways that surround the neighborhoods, as well as pollution from nearby industrial sites. The Elyria-Swansea and Globeville neighborhoods face the particular challenge of a multitude of environmental health risks that have accumulated over time. This is a classic example of cumulative burdens, often experienced by environmental justice communities.

The third community case study considers the impact of toxic waste disposal on the communities living in the San Juan Basin in northwest New Mexico, including the reservation of the Navajo, Ute and Zuni tribes. This area has been the site of uranium and coal mining, which has resulted in an ongoing problem of toxic waste disposal. Now, hydraulic fracturing has begun, and with it there are the potential problems of over-use of limited water supply, contamination of aquifers and disposal of toxic fracking fluids.

California and New York are two states that have taken significant steps in developing a framework of environmental justice policies and regulations. Approaches taken by the two states generally fall into one of three categories: formalizing environmental justice as a state priority, environmental justice assessments in planning and permitting, and addressing environmental problems of particular concern to low-income and minority communities.

On a federal level, similar to the efforts of New York and California, the EPA has taken several steps to formalize environmental justice as a priority. This includes: codifying a definition of environmental justice, creating an office dedicated to environmental justice, completing an environmental justice strategic plan, and allocating funding to community initiatives. But beyond incorporating specific laws and regulations into an environmental justice framework, it is also critical to address directly environmental problems prevalent in low-income and minority communities in order to reduce health risks faced by environmental justice communities.

Moving forward, there is still a lot that needs to be done to address adverse environmental conditions in vulnerable communities. This involves educating lawmakers as well as developing and implementing stronger regulations to reduce environmental hazards in minority and low-income communities. WE ACT, as well as other environmental justice organizations at the grassroots level, will continue to play a significant role in bringing environmental justice issues to light and in driving progress in transforming poor and minority communities into healthy communities. Such grassroots level action and community organizing will be critical to inform Members of Congress and their staff on environmental justice generally as well as in trying to advance legislation through Congress. WE ACT will share our case studies with Members of the House of Representatives and their staffs and it may now more easily identify and research additional community case studies using our model. With expanded knowledge of the concept of environmental justice from grassroots organizations such as WE ACT, we are hopeful that Congress will advance meaningful legislation to reduce environmental health burdens that low-income and minority communities often face.

Appendices

Appendix A. Houston, Texas

1.1 Demographic Information

Figure 1. Population Demographics

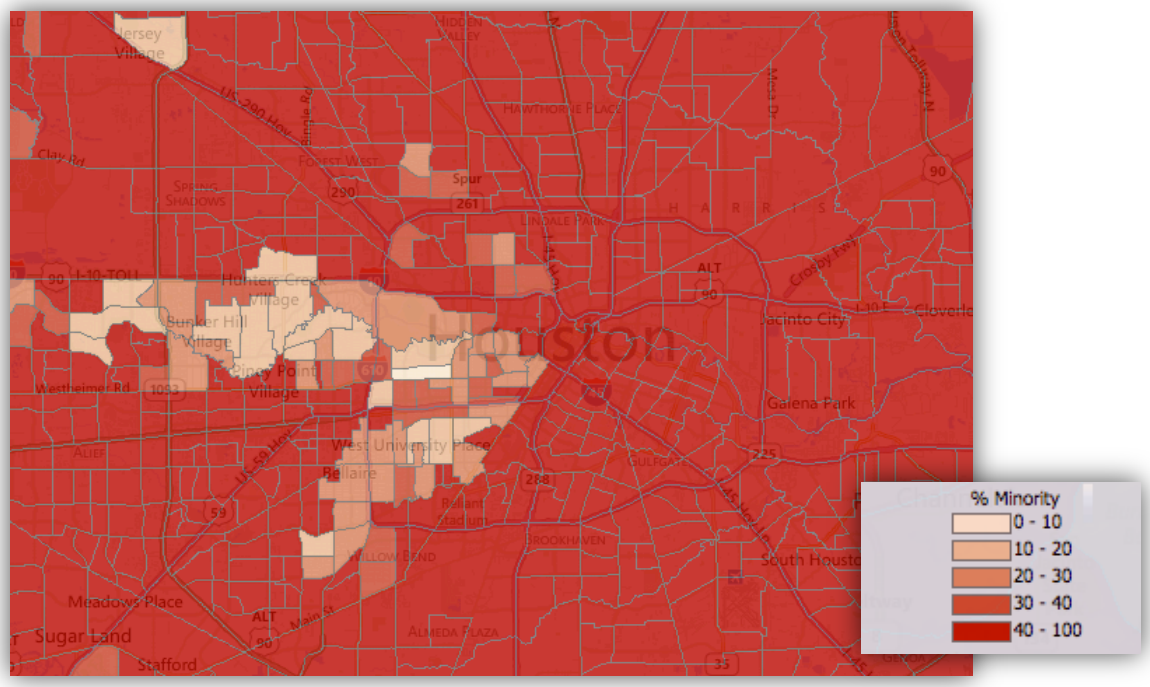
	Population (2010-2011)	Percentage of Population that is Minority* (2011)	Percentage of Population that lives below poverty line (2007-2011)
Texas	25,145,561	53.9%	17.0%
Houston	2,099,430	74.2%	21.5%
Manchester	4,146	96.6%**	31.3%

**In this chart, minority population includes persons who have self-identified as black, American Indian or Alaskan Native, Asian or Hispanic/Latino origin. According to the U.S. Census Bureau, persons who identified themselves as of Hispanic/Latino origin may have also identified as another race in addition.*
***This data comes from the U.S. Census Bureau and includes Hispanic and Black residents.*

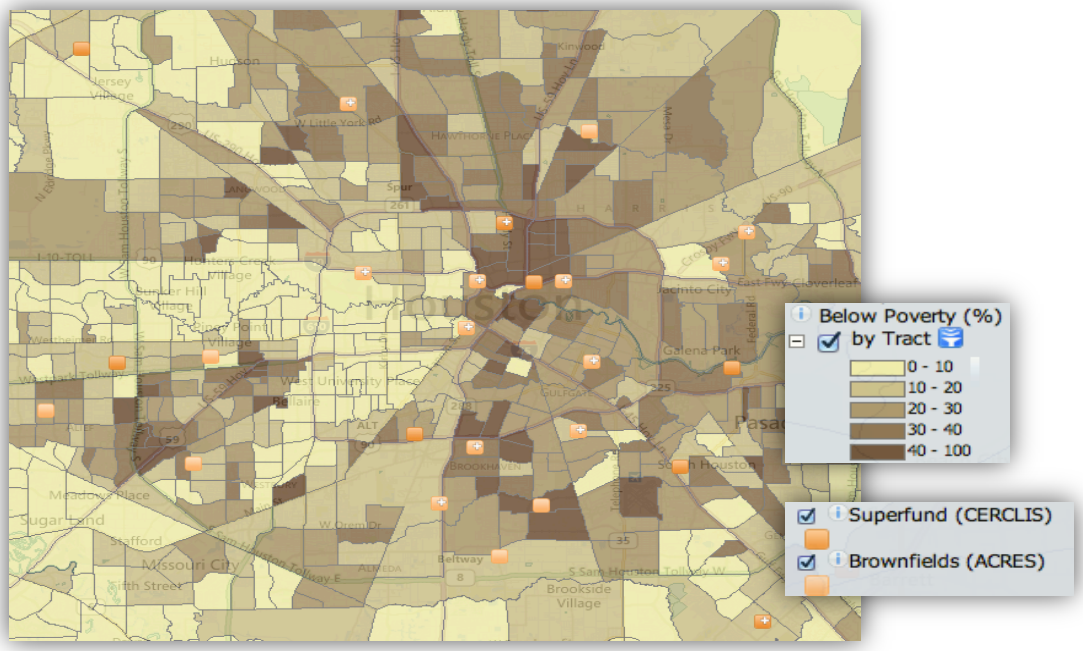
1.2 Poverty, Minority, and Environmental Hazard Maps

Map 1. Poverty Levels by Neighborhood (tract) in Houston, Texas

Map 2. Minority Population by Neighborhood in Houston, Texas

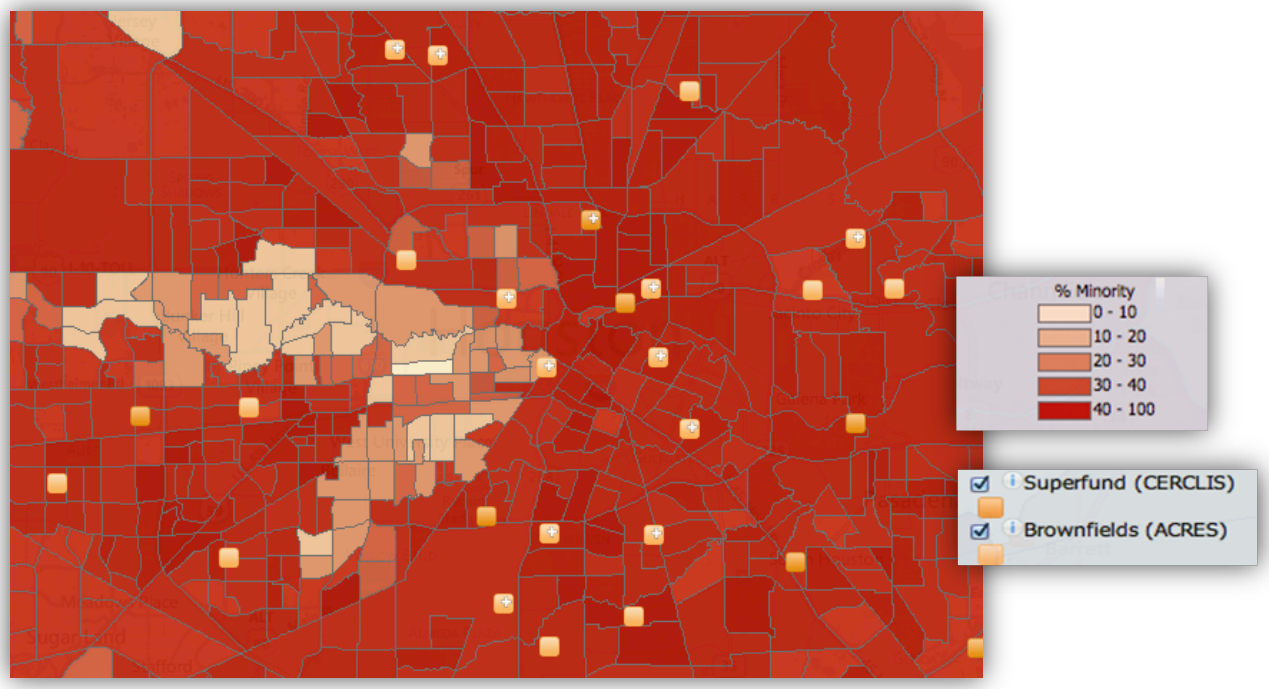


Map 3. Poverty Levels and Environmental Hazard Locations in Houston, Texas



This map depicts poverty levels by neighborhood in Houston, Texas, with an overlay of Superfund and Brownfield sites.

Map 4. Minority Concentration and Environmental Hazard Locations in Houston, Texas



This map depicts minority concentration in Houston, Texas, with an overlay of Superfund and Brownfield sites.

1.3 Political profile

Representative	Raymond Eugene Green
State	Texas
District	29th
Party	Democrat
Number of terms served	12
LCV score (2012 vs. lifetime)	66% / 64%
Committee/Subcommittee assignments	Committee on Energy and Commerce Subcommittee on Health Subcommittee on Energy and Power
Relevant coalitions or caucuses	Congressional Natural Gas Caucus National Wildlife Refuge Caucus Recycling Caucus

Appendix B. Denver, Colorado

2.1 Demographic information

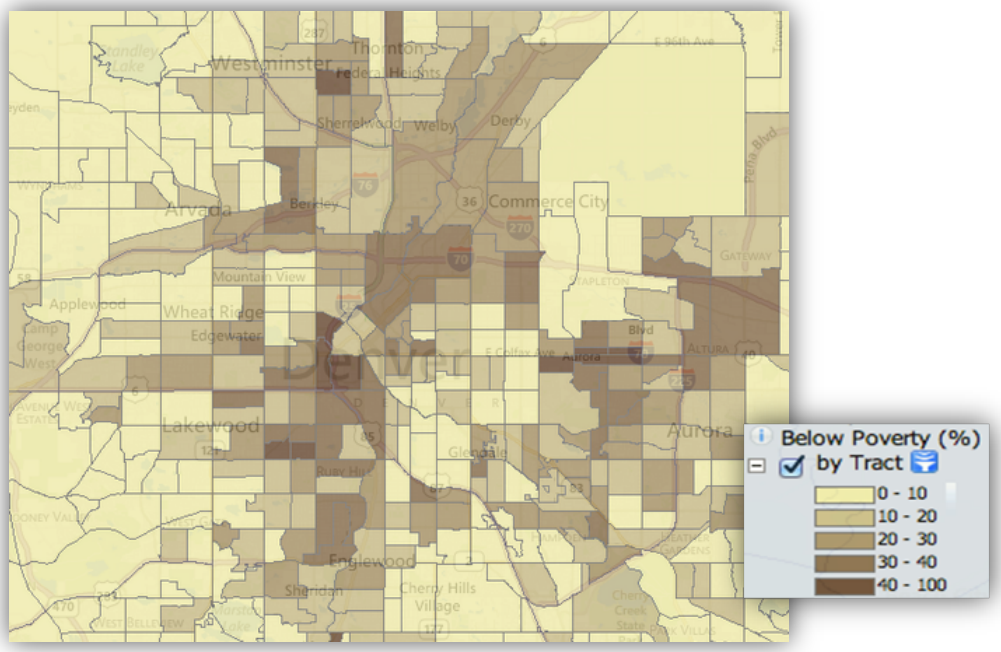
Figure 2. Population Demographics

	Population (2010-2011)	Percentage of Population that is Minority* (2011)	Percentage of Population that lives below poverty line (2007-2011)
Colorado	5,029,196	29.7%	12.5%
Denver	600,008	46.8%	18.8%
Globeville**	1,094	89.4%	33.0%

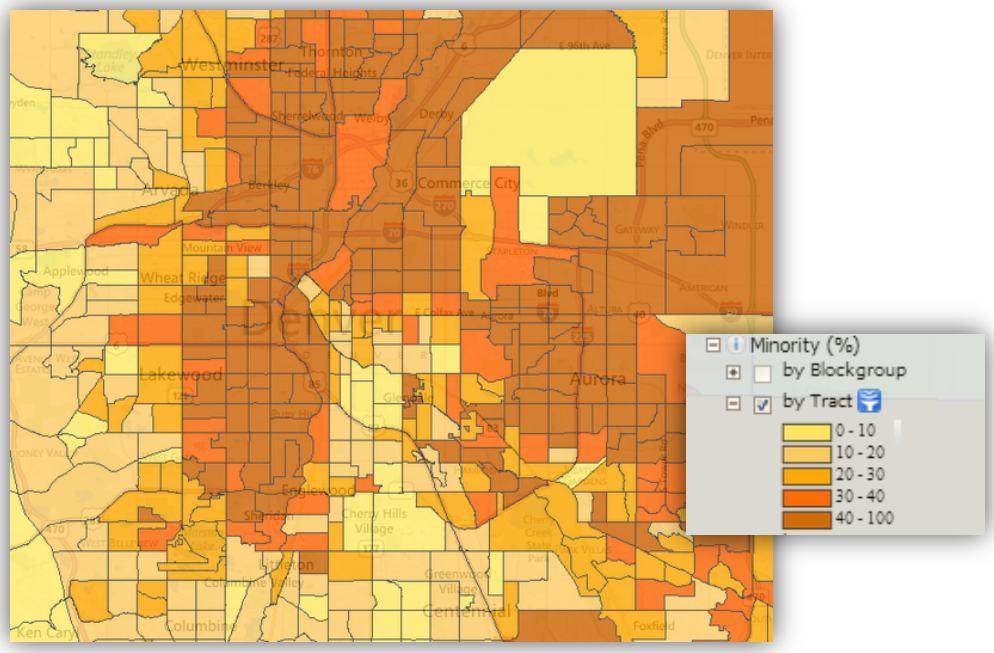
**In this chart, minority population includes persons who have self-identified as black, American Indian or Alaskan Native, or Hispanic/Latino origin. According to the U.S. Census Bureau, persons who identified themselves as of Hispanic/Latino origin may have also identified as another race in addition.*
***Demographic information was not available for the Elyria-Swansea neighborhood in Denver, Colorado*
Statistics for Globeville were retrieved came from city-data.com. Globeville minority population was determined by all populations not identified as white Caucasian. More specific information was not available. All other data were retrieved from the U.S. Census Bureau records online.

2.2 Poverty, Minority, Environmental Hazard Maps

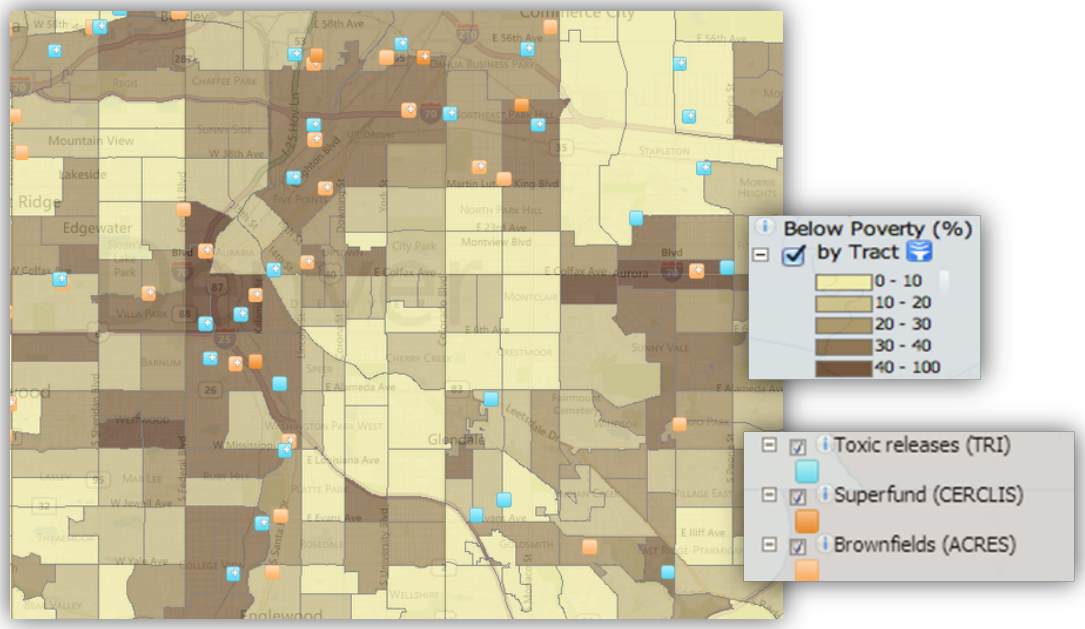
Map 5. Poverty levels by Neighborhood (tract) in Denver, Colorado



Map 6. Minority Population by Neighborhood (tract) in Denver, Colorado

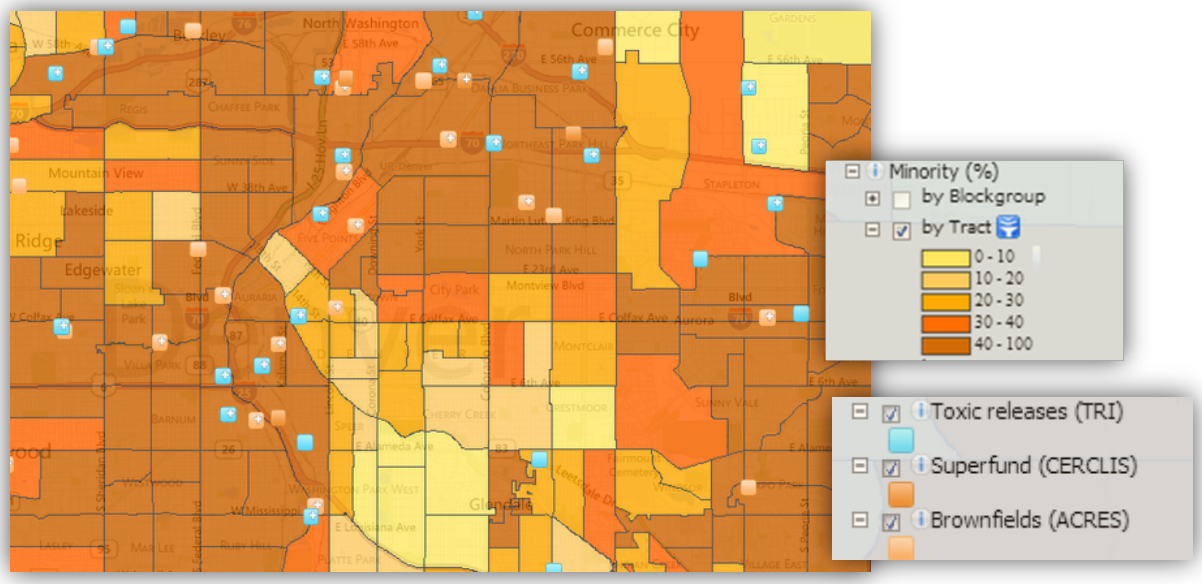


Map 7. Poverty Levels and Environmental Hazard Locations in downtown Denver, Colorado



This map of downtown Denver, Colorado is split into neighborhood blocks, and depicts the concentration of population under the poverty line, with an overlay of known toxic release, Superfund and Brownfields Site locations. It should be noted that neighborhoods with less poverty also have less environmental hazard site locations.

Map 8. Minority Concentration and Environmental Hazard Locations in downtown Denver, Colorado



This map of Denver, Colorado, is split into neighborhood blocks and depicts the concentration of minority population, with an overlay of known toxic release, Superfund and Brownfields Site locations. It should be noted that neighborhoods with less minority populations also have less environmental hazard site locations.

2.3 Political profile

Representative	Diana DeGette
State	Colorado
District	1st
Party	Democrat
Number of terms served	9
LCV score (2012 vs. lifetime)	97% / 97%
Committee/Subcommittee assignments	Committee on Energy and Commerce Subcommittee on Environment and the Economy
Relevant coalitions or caucuses	Renewable Energy and Energy Efficiency Caucus Recycling Caucus Natural Gas Caucus National Landscape Conversation System Caucus Food Safety Caucus Congressional Children's Health Caucus

Appendix C. Northwestern New Mexico

3.1 Demographic information

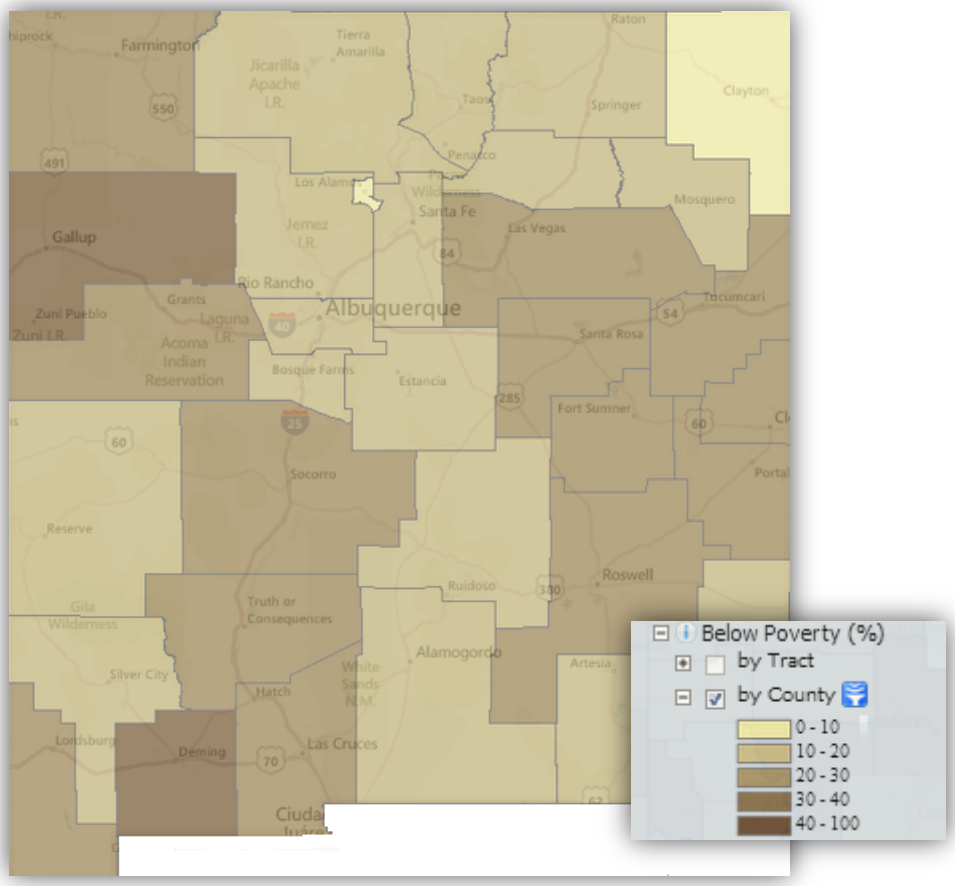
Figure 3. Population Demographics

	Population (2010-2011)	Percentage of Population that is Minority* (2011)	Percentage of Population that lives below poverty line (2007-2011)
New Mexico	2,059,180	59.3%	19.0%
San Juan County	130,044	57.7%	19.7%
McKinley County	71,492	90.5%	30.7%

**In this chart, minority population includes persons who have self-identified as black, American Indian or Alaskan Native, or Hispanic/Latino origin. According to the U.S. Census Bureau, persons who identified themselves as of Hispanic/Latino origin may have also identified as another race in addition.*

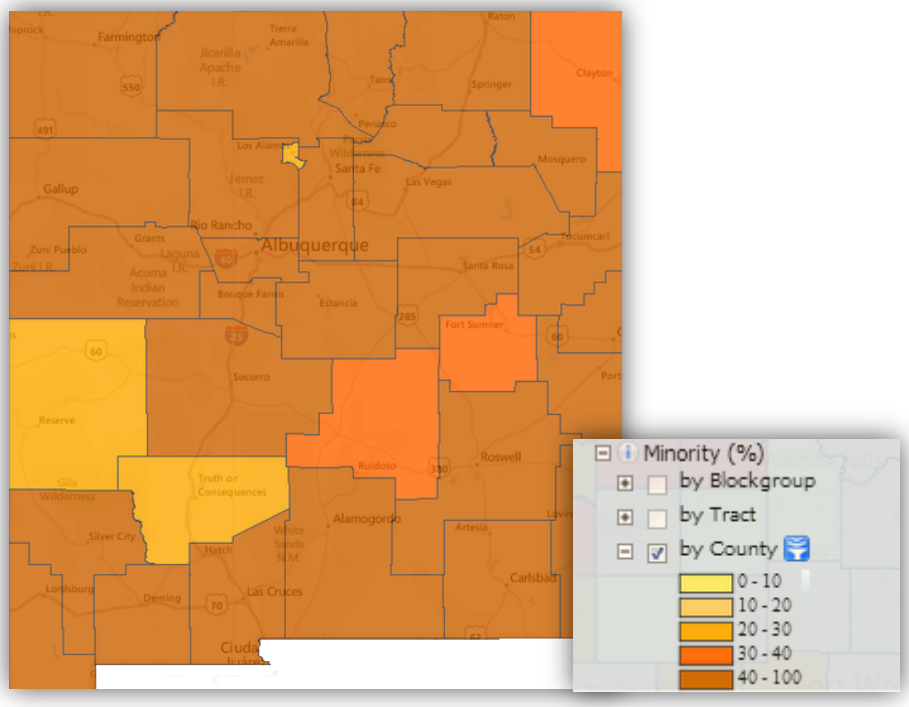
3.2 Poverty, Minority, and Environmental Hazard Maps

Map 9. Poverty Levels in New Mexico



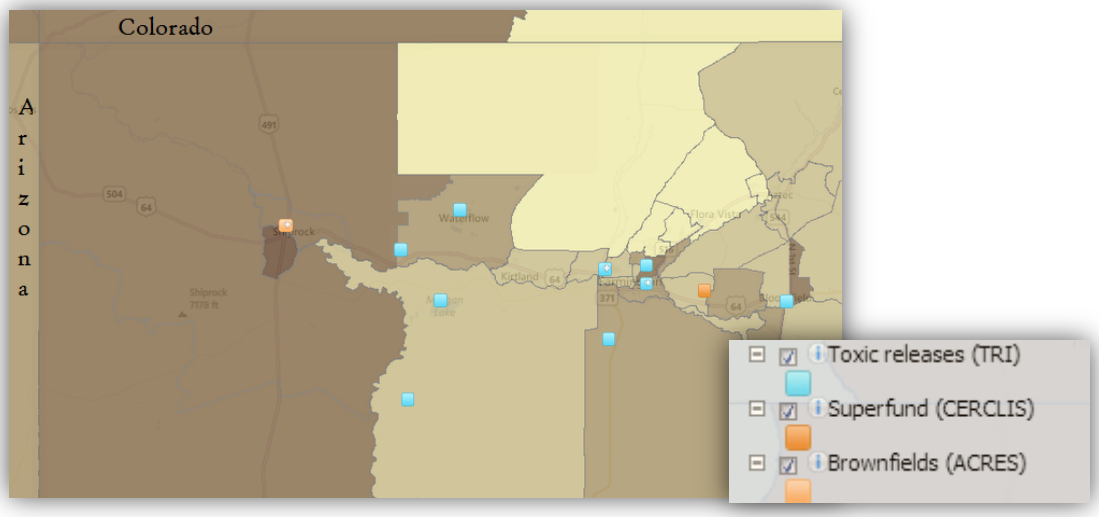
This map of New Mexico depicts poverty levels by county. Those counties with higher levels of poverty are shaded in the darker color.

Map 10. Percentage of Minority Population in New Mexico



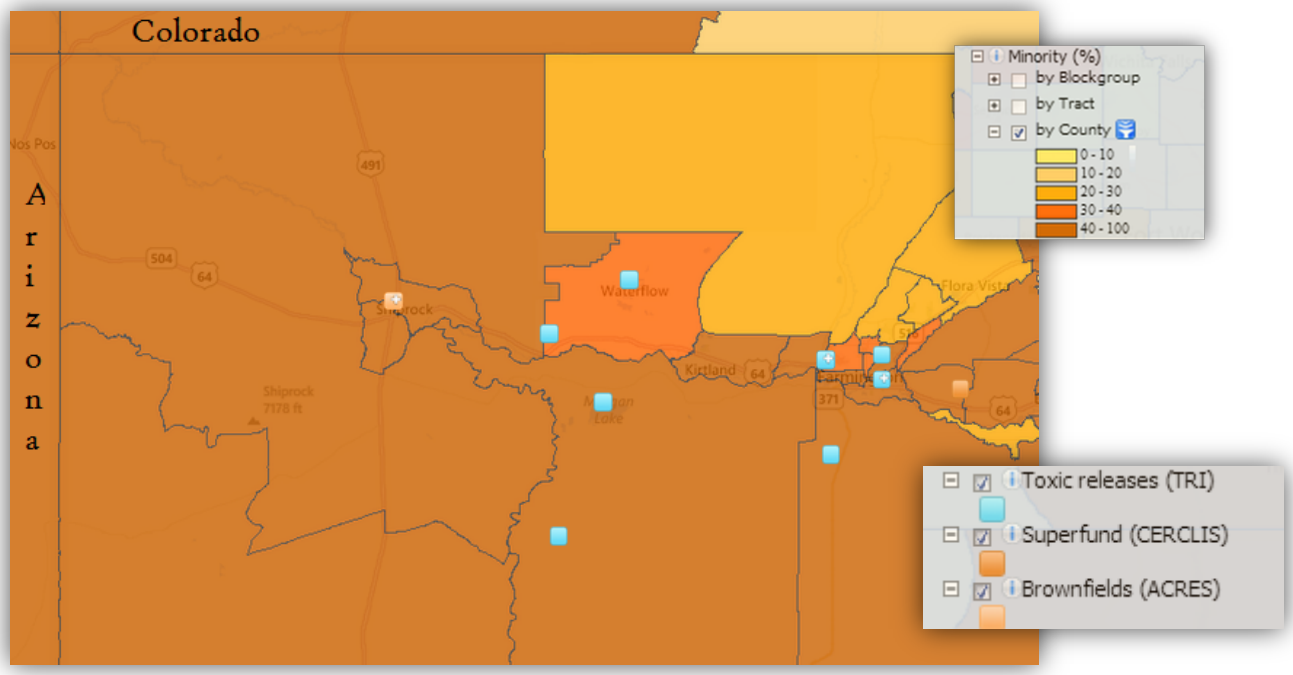
This map of New Mexico depicts minority populations throughout the state by county. Counties with higher minority populations are shaded darker.

Map 11. Poverty Levels and Environmental Hazard Locations in Northwestern New Mexico



This map once again depicts poverty levels by tract in the Northwest corner of New Mexico, superimposed with known locations of environmental hazards, such as toxic release, Superfund, and Brownfield sites. Each site labeled with "+", indicates more than one environmental hazard site in that location.

Map 12. Minority Concentration and Environmental Hazard Locations in Northwestern New Mexico



This map depicts minority levels by tract in the Northwest corner of New Mexico, superimposed with known locations of environmental hazards, such as toxic release, Superfund, and Brownfield sites. Each site labeled with "+", indicates more than one environmental hazard site in that location.

3.3 Political profile

Representative	Ben Ray Luján
State	New Mexico
District	3rd
Party	Democrat
Number of terms served	3
LCV score (2012 vs. lifetime)	97% / 97%
Committee/Subcommittee assignments	Energy and Commerce Committee Subcommittee on Communications and Technology Subcommittee on Oversight and Investigations
Relevant coalitions or caucuses	Congressional Progressive Caucus Natural Gas Caucus Hispanic Caucus

Appendix Sources

All demographic data were retrieved from U.S. Census Bureau records online and City Data.

Maps were created via the U.S. Environmental Protection Agency "EJ" mapping tools.

Political profile information was retrieved from the House of Representatives and individual Member webpages.

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