

**An Assessment of Factors
Contributing to Environmental Racism:
A Case Study of the East Austin Tank Farm**

by

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CHAPTER 1

Introduction and Statement of Research Question

Introduction

The United States produces over 250 million metric tons of hazardous waste each year. This amount is equal to about one ton of waste per person, and is enough to fill the New Orleans Superdome 1,500 times over.¹ If these figures are not impressive enough by themselves, even more shocking is the fact that only about ten percent of this waste gets disposed of in a proper manner.² The remainder of the waste is disposed of in ways that is dangerous to the health and safety of the public. Some of this unregulated waste ends up in municipal landfills not suited for toxic wastes or is illegally dumped. Such was the case in 1978 when oil laced with polychlorinated biphenyls (PCBs) was dumped along the roadways in fourteen North Carolina counties.³

Interestingly, this was not an isolated incident. This particular case launched national attention to a problem that, to this point, had remained a "secret"--the disproportionate amount of noxious facilities and pollutants in minority and poor communities. Since the 1978 incident, most minority communities have slowly begun to take notice of their surroundings and have started to ask questions about polluting facilities in their neighborhoods. Grassroots organizations have organized

¹Robert D. Bullard, "Ecological Inequities and the New South: Black Communities Under Siege," *Journal of Ethnic Studies* 17 (Winter 1990): 103, quoted in Office of Technology Assessment, "Technologies and Management Strategies for Hazardous Waste Control," (U.S. Government Printing Office, 1983), 3.

²*Ibid.*, quoted in Samuel S. Epstein, Lester O. Brown, and Carl Pope, *Hazardous Waste in America* (Sierra Club Books, 1983), 333-9.

³Robert D. Bullard, ed., *Unequal Protection: Environmental Justice and Communities of Color* (San Francisco: Sierra Club Books, 1994), 5.

communities and have initiated education and awareness programs throughout the country. Due, in part, to the number of studies showing that minority communities bear a disproportionate number of polluting facilities, the number of minority communities demanding answers and seeking judicial remedy is on the rise.

Studies have demonstrated that race is the most significant factor associated with the siting of polluting and hazardous waste sites throughout the United States. Other factors associated with race that determine where noxious facilities are placed include: the availability of cheap and accessible land in minority communities, lack of opposition from minority communities, and the lack of mobility of minorities due to poverty and housing discrimination. Zoning and other policies and regulations have contributed to the institutionalization of environmental racism by making it attractive for industries to settle in these already defenseless areas. All these factors combined have made minority communities prime targets for polluting facilities. Minorities have borne the health and economic costs related to polluting facilities for years, while the benefits produced by these industries are enjoyed by all.

Statement of Research Question

The purpose of this study is to assess the factors that contribute to environmental racism using the East Austin tank farm as a case study. The East Austin tank farm had been at the East Austin location since 1948 and had grown to occupy 52 acres by the time it closed its operations in 1992. In December of 1991, a resident of the area saw a notice in the local newspaper in which one of the oil companies was seeking a permit to expand its facilities. This was the beginning of what turned out to be a

thirteen month battle with the oil companies to move the tank farm. Unbeknownst to the surrounding community at the time, contamination of the groundwater, the soil, and the air had already occurred. The regulatory agencies responsible for protecting the community had failed them and had allowed the contamination to continue.

Chapter Summaries

This section is an overview of the chapters included in this paper. Chapter two is a literature review of the subject matter (environmental racism) and systems analysis, the organizing and analyzing component for the research. Included in this chapter is a history of environmental racism and an overview of factors that have contributed to this problem. In the second half of this chapter, systems analysis is discussed. Included is the definition of systems analysis, examples of its various components including models, inputs, outputs, processing, and the environment of a system. Chapter three provides an overview of the available environmental legislation and its impact on environmental racism; precedent setting cases; judicial remedy under federal and Texas law; and pending legislation. Chapter four discusses the research methodology used for this study. This chapter shows how the East Austin community fits into the systems analysis model and the different aspects of this system are analyzed. The hypotheses are also operationalized in this chapter. The findings and results of the study are presented in chapter five. The hypotheses are tested and those results are provided. The paper ends with a brief summary and recommendations for further study.

CHAPTER 2

Literature Review

The purpose of this chapter is to provide insight into the literature reviewed for this research. The literature reviewed was from two distinct areas: 1) literature on the subject area of environmental racism, and 2) literature on systems analysis, which is used as the conceptual framework of this paper. First, by reviewing literature on environmental racism, this chapter attempts to define what this phenomenon is and how it has evolved to its present status. Presented are existing studies that have determined that race is one of the most significant factors in deciding where noxious facilities are located. The second half of this chapter discusses the literature reviewed on systems analysis. Systems analysis is important to this study because it was used as the organizing tool or conceptual framework. By using the systems analysis method, this research provides insight into how a system works within a larger system and how working hypotheses are developed.

Defining the Problem and Its Evolution

During his term as the executive director of the Commission for Racial Justice, Reverend Benjamin Chavis, Jr., coined the term that describes the disproportionate siting of noxious facilities in poor and minority communities as environmental racism. He defined environmental racism as follows:

environmental racism is racial discrimination in environmental policymaking, the enforcement of regulations and laws, the deliberate targeting of communities of color for toxic waste facilities, the official sanctioning of the life

threatening presence of poisons and pollutants in our communities, and the history of excluding people of color from leadership of the environmental movement.⁴

Since Reverend Chavis coined the term, others have added to his definition. Duncan describes environmental racism as,

the creation, construction, and enforcement of environmental laws that have a disproportionate and disparate impact upon a particular race, and that thereby further the subordination and domination of that group.⁵

Gareis-Smith defines it as, "the disproportionate imposition of environmental hazards on minorities."⁶ The definitions of the term go on and on, however, they all seem to emphasize the institutionalization of this disparity.

Environmental racism in some aspects is not a new phenomenon. One of the first reports on the subject was published in 1971 in the annual report of the Council on Environmental Quality. This took place

only one year after the Environmental Protection Agency (EPA) was created, one year after the National Environmental Policy Act (NEPA) was passed, and only one year after the first Earth Day--for many a major turning point in the public awareness about environmental issues.⁷

⁴Ibid., 279.

⁵Pamela Duncan, "Environmental Racism: Recognition, Litigation, and Alleviation," *Tulane Environmental Law Journal* 6 (Summer 1993): 325.

⁶Donna Gareis-Smith, "Environmental Racism: The Failure of Equal Protection to Provide a Judicial Remedy and the Potential of Title VI of the 1964 Civil Rights Act," *Temple Environmental Law and Technology Journal* 13 (Spring 1994): 57, quoted in United Church of Christ Commission for Racial Justice, "Toxic Wastes and Race: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites," (New York: United Church of Christ Commission for Racial Justice, 1987), 9-10.

⁷Paul Mohai and Bunyan Bryant, "Race, Poverty, and the Environment," *EPA Journal* 18 (March/April 1992): 8.

During the next decade nine other studies were published. These reports varied from studies on single urban areas (Washington, D.C., New York, and Houston), to a collection of urban areas, and some national studies.⁸ It was a quarter of a century ago that a warning was issued by the Kerner Commission regarding the policies needed to address the protection of the environment in an equitable manner. This warning came before EPA was established and well before anyone had conceived the notion of environmental injustice. The Kerner Commission warned,

to continue present policies is to make permanent the division of our country into two societies: one largely Negro and poor, located in the central cities, the other affluent, located in the suburbs and outlying areas.⁹

Environmental racism is a fairly new issue to come to the national forefront. The first event to gain national attention was the 1982 Warren County incident. The protest was launched against the proposed siting of a landfill to be used for the disposal of 6000 truckloads of soil laden with polychlorinated biphenyls (PCBs) that were dumped on the roadways and later recovered. The site made no environmental sense since the water table in Afton is only 5-10 feet below the surface, and all the community's drinking water comes from local wells. This was a case clearly described as making more political sense than environmental sense. Although the community's efforts to stop the landfill were unsuccessful, this incident prompted Congressman Walter E. Fauntroy, who had taken part in the demonstrations, to urge the United States General

⁸Ibid.

⁹Ibid.

Accounting Office (GAO) to study the disparities in the siting of hazardous waste facilities.¹⁰

Studies and Supporting Evidence

The 1983 GAO study was launched to determine whether there was a relationship between the siting of hazardous waste sites and the racial makeup of the surrounding communities hosting the sites. The area for this study consisted of the southern states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee) which makeup EPA's Region IV.¹¹ The study was based on four off-site hazardous waste landfills: Chemical Waste Management (Sumter County, Alabama); SCA Services (Sumter County, South Carolina); Industrial Chemical Company (Chester County, South Carolina); and the Warren County Polychlorinated Biphenyls landfill (Warren County, North Carolina).¹² The GAO findings concluded that African- Americans made up the majority of the population in three of the four communities where the four hazardous waste landfills were located.¹³ Although the African American population made up only twelve per cent of the population of the United States, at the time this study was done, the percentage of African-American population surrounding the sites was: 90 percent at Sumter County, AL; 38 percent at Sumter County, SC; 52 percent at Chester County, SC; and 66 percent at Warren County, NC¹⁴

¹⁰Gareis-Smith, 61.

¹¹Ibid., quoted in General Accounting Office, "Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities," (Washington, D.C.: General Accounting Office, 1983), 2-4.

¹²Bullard, *Unequal Protection*, 6.

¹³Gareis-Smith, 61.

¹⁴Ibid., 61-2.

It was four years later that one of the most renown and comprehensive studies was done--the United Church of Christ Commission for Racial Justice', *Toxic Wastes and Race in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites (CRJ)*. This study made a comparison of the racial and socioeconomic status of residents living in zip code areas in proximity to 415 commercial hazardous waste sites and residents living in zip code areas with no such facilities.¹⁵ According to the report, a commercial hazardous waste facility can be either public or private and accepts hazardous waste from a third party for a fee that in turn is used to treat, store, or dispose of the waste.

The report concluded that: 1) race was the most significant factor associated with the location of hazardous waste sites throughout the United States, even above household income and average value of homes; and 2) that areas with a commercial hazardous waste site had almost double the amount of minorities than those without such a facility. And, areas that had two or more facilities, or one of the five largest hazardous waste sites, had triple the amount of minorities than areas without such facilities. An updated version of this study was released in 1994 and the findings were disheartening.¹⁶ The updated version reports that: 1) between 1980 and 1993, the minority population residing in the zip code areas with hazardous waste facilities increased from 25 percent to almost 31 percent of the average population surrounding the facilities; 2) in 1993 minorities were 47 percent more likely to live in proximity to a

¹⁵Ibid., 62, quoted in Commission for Racial Justice 1987, 10.

¹⁶Benjamin A. Goldman and Laura Fitton, "Toxic Wastes and Race Revisited: An Update of the 1987 Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites," (Washington, D.C.: Center for Policy Alternatives, 1994): 1.

hazardous waste site than whites; and 3) as in 1980, the 1993 percentage of minorities concentrated in areas with commercial hazardous waste sites is still three times higher than in areas without such facilities.¹⁷

In another study published in the *National Law Journal* (1992), race was found to be the single most significant variable in determining the amount of environmental risk to which a person is exposed. Other findings were as follows: 1) Penalties at sites surrounded by a majority white population were 500 percent higher than at sites with a predominantly minority population (averaging \$335,566 in white areas as compared to \$55,318 in minority areas); and 2) EPA's response time for action or cleanup at minority Superfund sites begins 12 to 42 percent later than at white sites.¹⁸

The above mentioned studies are only a few of the studies that have concluded that there is a link between race and the siting of hazardous waste facilities. There is limited contradictory evidence that concludes race is not a factor in exposure to environmental risks. In 1990, then administrator of the EPA, William K. Reilly put together the Environmental Equity Workgroup. The workgroup's agenda was to assess the evidence that racial minorities and low-income communities are exposed to higher environmental risks than the population at large.¹⁹ Some of the workgroup's findings are as follows: 1) with the exception of lead contamination, there is little data to substantiate environmental health effects by race and income, however, the analyses did suggest that some

¹⁷Ibid., i.

¹⁸Bullard, *Unequal Protection*, 9-10, quoted in Marianne Lavelle and Marcia Coyle, "Unequal Protection: The Racial Divide in Environmental Law," *National Law Journal* (Sept. 21, 1992), S1-S2.

¹⁹William K. Reilly, "Environmental Equity: EPA's Position," *EPA Journal* 18 (March/April 1992): 19.

poor and minority communities may be exposed to greater amounts of pollutants; and 2) addressing poor, rural communities, and not inner city minority communities, the workgroup concluded that response time to Superfund sites in those areas received about the same attention as other sites nationally. In an attempt to clear the EPA of any lax enforcement of policy and of any responsibility for the amount of pollutants in the inner cities, Reilly noted that the EPA is largely responsible for setting technology standards and that the siting of landfills and incinerators is largely the function of private firms, state regulators, and local zoning boards.²⁰

Another study using census tracts as the units of analysis, instead of zip code areas as in the *GAO* and *CRJ* studies, concluded that: 1) there is no evidence of "consistent prejudicial result" in census tract areas where hazardous waste facilities are located; and 2) according to the researchers, their study provides evidence that previous studies used larger aerial units that incorporated industrial and manufacturing areas with communities which are largely minority and socioeconomically disadvantaged.²¹ This study suggested that:

further longitudinal analysis could help determine whether these results simply reflect known social inequities in residential patterns around existing industrial centers or indicate a prejudicial choice of locations in newly emerging industrial centers.²²

²⁰*Ibid.*, 20.

²¹Douglas L. Anderton, Andy B. Anderson, John Michael Oakes, and Michael R. Fraser, "Environmental Equity: The Demographics of Dumping," *Demography* 31 (May 1994): 243.

²²*Ibid.*

The *GAO* study and the *CRJ* study, along with a number of other reports and studies, have brought attention to environmental equity and have affected national policy. The formation of the Environmental Equity Workgroup was one of EPA's ways of responding to these studies. Rep. Henry Waxman (D-CA--chair of the House Committee on Energy and Commerce) held environmental justice hearings on February 25, 1992, and Rep. John Conyers (D-MI--chair of the House Committee on Government Operations) followed up by announcing his plans to do the same.²³ And, most recently on February 11, 1994, President Clinton signed an Executive Order in which the protection of the poor and minorities from environmental harm was emphasized:

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 lower income populations.²⁴

The studies discussed herein support the fact that race is a major factor in deciding where noxious facilities are located. The literature reviewed, however, also emphasized that there are other political and economic factors that impact these decisions.

²³Ibid., 231-2.

²⁴Amanda Atkinson, "Environmental Equity: An Emerging Concern for Government," *Maryland Journal of Contemporary Legal Issues* 5 (1993-94): 99, quoted in Exec. Order No. 12,898, 59 Fed. Reg. 7629 (1994).

Factors Contributing to Environmental Racism

A consensus emerged within the literature reviewed that there are several factors associated with race that play an important part of siting decisions. Duncan sums up these factors best:

- 1) the availability of cheap land, often located in minority communities and neighborhoods;
- 2) the lack of local opposition to the facility, often resulting from minorities' lack of organization and political resources as well as their need for jobs; and
- 3) the lack of mobility of minorities resulting from poverty and housing discrimination that traps them in neighborhoods where hazardous waste facilities are located.²⁵

One of the major contributors to environmental racism is the not-in-my-backyard (NIMBY) syndrome. Due to this phenomenon, which is costly, time consuming, and mostly afforded to the more affluent, many industries will take the path of least resistance and seek communities with little or no political clout as perspective sites. Other influential factors responsible for the disproportionate effects are of an economic nature. There are those that argue that the pattern of disproportionate impact on minorities and the poor "stems from a profound flaw in the structure of the U.S. economy."²⁶ The argument is that polluters have not been made to share the cost for the environmental degradation they have created and society as a whole is not interested in confronting and solving these problems. Instead the problem is displaced to the poor minority

²⁵Duncan, 333, quoted in Paul Mohai and Bunyan Bryant, eds., *Environmental Racism: Reviewing the Evidence, in Race and the Incidence of Environmental Hazards: A Time for Discourse* (1992), 164.

²⁶John H. Adams, "The Mainstream Environmental Movement," *EPA Journal* 18 (March/April 1992): 25.

communities, which up to this time have been defenseless. It is easier and cheaper for companies to place noxious facilities in eastern St. Louis than in the Upper East Side of Manhattan. It is even cheaper for state governments to ignore poor children with lead poisoning rather than test and treat them as required by federal law.²⁷ It is this disregard by society and the government that has led to the degradation of the poor minority communities. The studies reviewed support that these communities bear the disproportionate burden of pollutants which include toxic waste facilities, air pollution, lead poisoning, pesticide poisoning, and garbage dumps.²⁸

Austin and Schill explain that various development patterns are partly to blame for the disproportionate existence of noxious facilities in poor minority communities: 1) Minority communities were once the homes of whites who worked in the noxious facilities. Whites moved away as their socioeconomic status improved and poor blacks and Latinos, who are not as mobile, moved in. 2) Housing for blacks and Latinos was built on land close to these operations because land was cheap and the people poor. An example of this pattern would be Richmond, CA, which was developed downwind from a Chevron plant as a result of blacks migrating to that area to work in the shipyards during WWII. 3) Noxious facilities were placed in existing minority communities due either to simple discrimination or suitability of the terrain. 4) Already polluted areas tend to attract other sources of pollutants. These preexisting polluted sites are more suitable than others for polluting industries. For example, Chemical Waste Management, Inc. which already has a toxic

²⁷Ibid.

²⁸Gareis-Smith, 59-60, quoted in Mohai and Bryant, 171.

waste landfill in Kettleman City, CA, a predominantly Latino farmworker community, is seeking to build a toxic waste incinerator near the landfill where the toxic ash produced by the incinerator will be disposed.²⁹

Zoning is a mechanism that has contributed to the institutionalization of environmental racism. The economic weakness of poor and minority communities makes it difficult for them to refuse or redress environmental burdens placed on their communities. The more affluent white communities use the planning and zoning process to keep locally undesirable land uses (LULUs) out of their communities. This use of the system combined with the NIMBY syndrome usually deflects environmental burdens to the poor minority areas.³⁰ Bullard describes the implementation of zoning and land use plans as having a political, economic, and racial dimension. He further notes that, competition develops between special interest groups and racial groups (i.e., organized civic clubs, neighborhood associations, developers, environmentalists, etc.) for the more advantageous land uses and those that will serve the "public good".³¹ More often than not, poor minority communities are not able to compete for these more beneficial and advantageous ventures.

The costs to communities that are burdened with noxious facilities are innumerable. One of the highest costs, and one of the most difficult to prove, is the potential risk to the health of the community members. Oftentimes, health problems due to environmental factors are difficult to prove for several reasons: 1) the poor are usually not well informed

²⁹Regina Austin and Michael Schill, "Black, Brown, Poor & Poisoned: Minority Grassroots Environmentalism and the Quest for Eco-Justice," *Kansas Journal of Law and Public Policy* 1 (Summer 1991): 69-70.

³⁰Robert R. Higgins, "Race Pollution, and the Mastery of Nature," *Environmental Ethics* 16 (Fall 1994): 254.

³¹Robert D. Bullard and Beverly Hendrix Wright, "Blacks and the Environment," *Humboldt Journal of Social Relations* 14 (1987): 169.

about environmental health issues; 2) they have inadequate health care; 3) they usually maintain a substandard diet; 4) and they are more likely to maintain stressful and unhealthy lifestyles.³² There is very little data which relates class and/or race to specific environmental pollutants and health effects. The exception to this is lead contamination which is easily proved because lead poisoning can be detected in the blood.

Other costs to minority communities include: 1) possible risks to health and the environment as a result of accidents and the improper operation of the polluting facility; 2) the noise and congestion that results from the transport of hazardous materials through the communities; and 3) the psychological harm that is done to community cohesion.³³ Economically, the communities suffer due to the dropping of property values which in turn reduces the tax base and makes it difficult to sell homes at their previous market values. On a more extreme note, the uprooting of entire neighborhoods takes place due to soil, water, and air contamination which leads to the loss of businesses, homes, and schools.³⁴ The benefits produced by polluting facilities (gasoline, electricity, chemicals, etc.) are shared by all, but the pollution related health and economic costs are borne by the communities surrounding these facilities.³⁵

This concludes the discussion of literature reviewed on environmental racism. Following will be a review of the literature on systems analysis. As stated previously, systems analysis was used as the

³²Ken Sexton, "Cause for Immediate Concern," *EPA Journal* 18 (March/April): 38.

³³Gareis-Smith, 64.

³⁴*Ibid.*

³⁵D.R. Wernette and L.A. Nieves, "Breathing Polluted Air," *EPA Journal* 18 (March/April 1992): 16.

conceptual framework for this study. Environmental racism fits into the systems analysis model because the East Austin community is a system that receives inputs from the environment. These inputs are manipulated by the system, in this case the East Austin community, and in turn are processed into outputs.

Defining Systems Analysis

Since the beginning of time, humans have been facing problems that originate from the operations of the systems of which they themselves are a part.³⁶ It was not until the mid 1930s that studies which started to solve such problems by first understanding the underlying system(s) really began to grow. Through the years, this method of framing and solving problems has acquired many names and has been applied to a myriad of diverse problems. However, for the purpose of this research, this concept will be referred to as systems analysis. After examining the nature of a "system," the component parts will be examined separately.

Systems

A *system*, as defined by Semprevivo, is a series of interrelated elements that perform some activity, function, or operation.³⁷ There are many different kinds of systems in existence today. Systems range from biological systems, namely the human body, to educational systems, social systems, and business systems. These systems are all different from each other, but they have four common elements or characteristics:

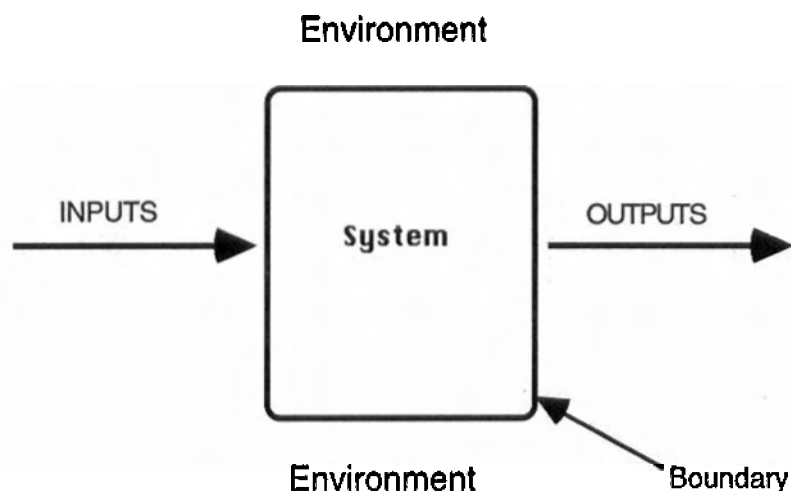
³⁶Hugh J. Miser and Edward S. Quade, *Handbook of Systems Analysis: Overview of Uses, Procedures, and Practice* (New York: John Wiley & Sons Ltd., 1985), xi.

³⁷Philip C. Semprevivo, *Systems Analysis: Definition, Process, and Design* (Chicago: Science Research Associates, Inc., 1982), 2.

- 1) Interaction with the environment
- 2) Purpose
- 3) Self-regulating
- 4) Self-correction³⁸

The systems mentioned, in one or more ways, interact with the world around them, better known as the environment (Figure 2.1). It is this interaction with the environment that will determine whether a system is open or closed. An *open system* means that the system is able to receive inputs from the environment and also able to produce outputs for the environment. The difference between open and closed systems will be discussed in further detail later in this section.

FIGURE 2.1 **Environment of a System** Systems operate within an environment and are separated from the environment by a boundary.



Source: Gerald A. Silver and Myrna L. Silver, *Systems Analysis and Design* (Menlo Park, Ca: Addison Wesley Publishing Co., 1989), 7.

³⁸Ibid., 2-3.

The second characteristic of a system is that it has a purpose, a goal, or an objective. For example, the purpose of the human system is life. A business system's purpose or goal may be to make a profit.³⁹

The third characteristic of a system is that it is self-regulating or it is able to maintain itself in a steady state. Self-regulation takes place through the interaction of the various parts of the system or subsystems. Since this self-regulation happens within the system it is said to be internal. An example of a self-regulating system is the human body. The human body stays alive as a result of the internal interactions of its various subsystems or component parts.⁴⁰

The fourth characteristic of a system is that it is self-correcting or self-adjusting. This means that sometimes the interaction of a system with the environment can lead to conditions which upset the normal self-regulatory process. An example of this would be the symptoms of the common cold as a result of the interaction between the human body and the environment. In this example the body must be able to self-adjust itself by producing antibodies to fight the cold. A system is able to self-adjust itself to new conditions.⁴¹

According to Fitzgerald, systems may be characterized as either *closed* or *open*. A closed system is one which automatically controls or modifies its own operation by responding to data generated by the system itself.⁴² Closed systems are free from environmental influences and are easier to manage than open systems because the outputs can be easily

³⁹*Ibid.*, 3.

⁴⁰*Ibid.*, 3.

⁴¹*Ibid.*, 4.

⁴²Jerry Fitzgerald and Ardra F. Fitzgerald, *Fundamental of Systems Analysis: Using Structured Analysis and Design Techniques* (New York: John Wiley & Sons, 1987), 5.

predicted by measuring the inputs.⁴³ For example, high speed printers used with computer systems usually have a switch that senses whether there is paper in the printer. If the paper runs out, the switch signals the system to stop printing.⁴⁴

An open system is one that does not control or modify its own operation and needs to be supervised or monitored by people. Fitzgerald uses the high speed printer example, but in this case without a sensor switch for the paper. Since there is no switch to monitor the paper level, a person would have to monitor the printer and push the switch to let the system know to stop printing.⁴⁵

Fitzgerald offers the household furnace as another example to help differentiate between a closed system and an open system. The furnace with the closed system (Figure 2.2) is mechanically controlled by a thermostat that automatically turns the furnace on when the temperature drops below a certain point or off when the temperature goes above a certain degree. An open system furnace (Figure 2.3), on the other hand, is a wall heater that has to be switched off or on by an individual, depending on the temperature desired. The closed system is controlled automatically by a mechanical device and the open system is controlled by an individual as circumstances warrant.⁴⁶ According to Ackoff, a closed system is one that has no environment and has no interaction with any

⁴³Gerald A. Silver and Myrna L. Silver, *Systems Analysis and Design* (Menlo Park, Ca: Addison Wesley Publishing Company, 1989), 9.

⁴⁴Fitzgerald, 5.

⁴⁵*Ibid.*

⁴⁶*Ibid.*

element not contained within it. An open system, however, is totally interactive with its environment.⁴⁷

⁴⁷J. Daniel Couger and Robert W. Knapp, eds., *Systems Analysis Techniques* (New York: John Wiley & Sons, 1974), 29, quoted in Russell L. Ackoff, "Towards a System of Systems Concepts," *Management Science* (July 1971), 661-671.

Figure 2.2 Closed System

A closed system with a thermostat that automatically switches the furnace ON and OFF.

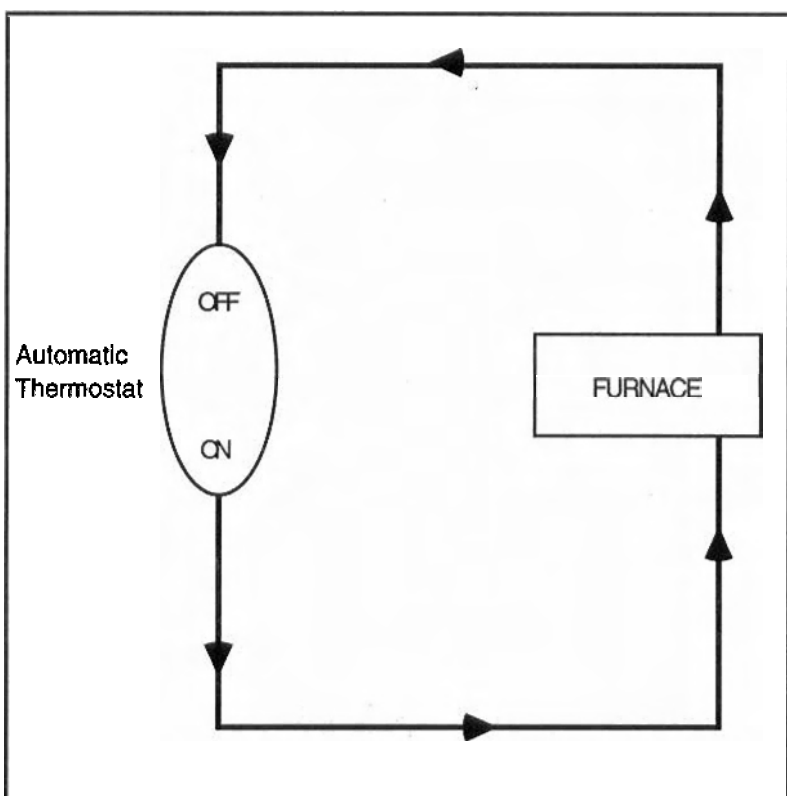
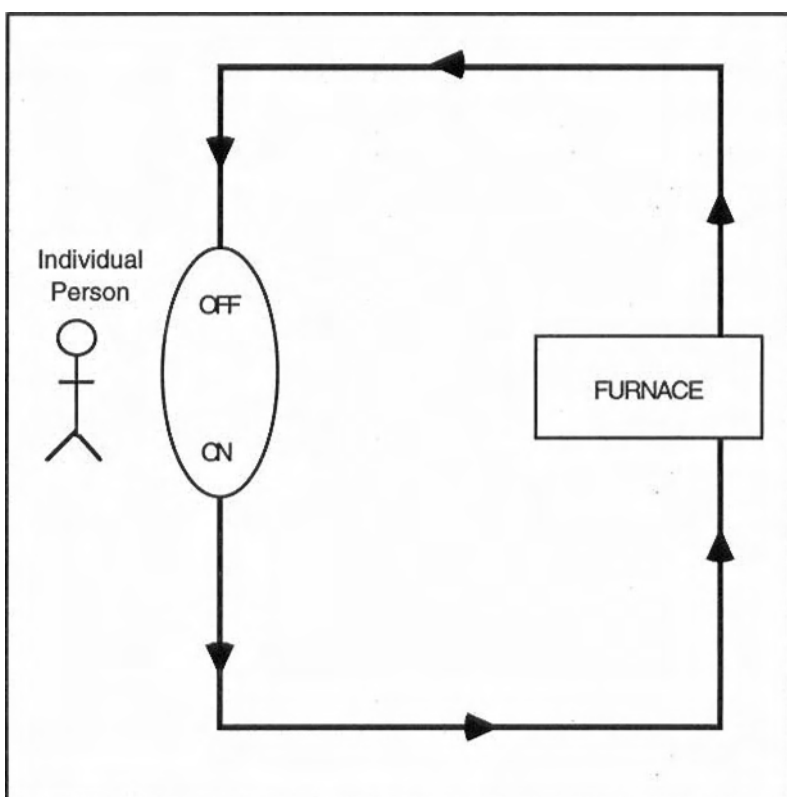


Figure 2.3 Open System

An open system showing a person that switches the furnace ON and OFF.



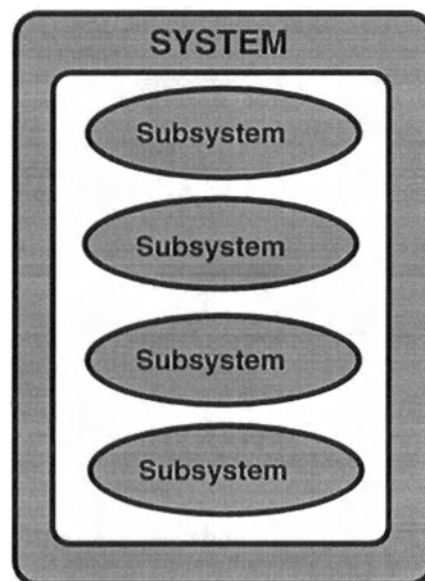
Source: Jerry Fitzgerald and
Ardr F. Fitzgerald,
Fundamentals of Systems:
Using Structured Analysis and
Design Techniques (New York:
John Wiley & Sons, 1987), 6.

Components of a System

As mentioned previously, systems function within an environment, but they are also separated from that environment by a boundary (Figure 2.1). A system's basic components include inputs, a processing element (system), and outputs. A system may be composed of smaller elements called *subsystems* (Figure 2.4). The subsystems perform tasks that are in line with the objectives of the larger system of which they are a part. For example a company's information system would consist of the following subsystems: a communications network, telephones, computers, and the individuals to operate them.⁴⁸

FIGURE 2.4 Subsystems

A system may be composed of many smaller elements known as subsystems.



Source: Gerald A. Silver and Myrna L. Silver, *Systems Analysis and Design* (Menlo Park, Ca: Addison Wesley Publishing Co., 1989), 8.

⁴⁸Silver, 7-8.

The Environment

The *environment* includes everything and everyone that surrounds the system: people, facilities, rules, policies, and regulations. It would be very difficult to analyze a system without considering the environment in which it functions. Because systems do not function in a vacuum, they rely on other systems and the outside world much like humans, animals, and plants that exist in an environment.⁴⁹

There are two types of environments: external and internal. The external environment is composed of all the outside sources that affect the system in one way or another. In a banking system, there must not only be interaction with the customers, but also with other people and systems: federal and state banking regulations; national, state, and local economic trends; and a changing demand for and supply of money.⁵⁰

The internal environment consists of all the sources inside the system that process the inputs to outputs. In a business system this may consist of many departments, each one having its own purpose and problems.⁵¹ Each department processes its own inputs and passes its outputs to other departments. This flow of events insures that the business operates in a smooth manner and achieves its goal(s)--output(s).

Boundaries

A *boundary* is a perimeter, or a line that marks the limits, between the system and the environment. The boundary differentiates between the elements of which the system is composed and the environment with which it interacts. Some boundaries are easier to define than others. In

⁴⁹Ibid., 8.

⁵⁰Ibid., 8.

⁵¹Fitzgerald, 211.

the examples given by Silver and Silver, a city's boundary might be easier to define because there are clearly defined lines that denote where the city system begins. In the other example, a social club, the boundary is not so easily defined since there may be members who pay their dues and are on an official member list; others may be in arrears; and yet others may float in and out of social events without ever having formally joined the club.⁵²

Inputs

According to Silver and Silver, *inputs* are the items or information that enter the boundaries of the system from the environment and are in turn manipulated by the system. All systems have this element because they all gather or receive some form of data or information (Figure 2.5). For example, in an automobile assembly plant a number of inputs are received in the form of labor, materials, money, marketing information, and other goods and services. Without the inputs, this assembly plant could not function or produce outputs.⁵³

Processing

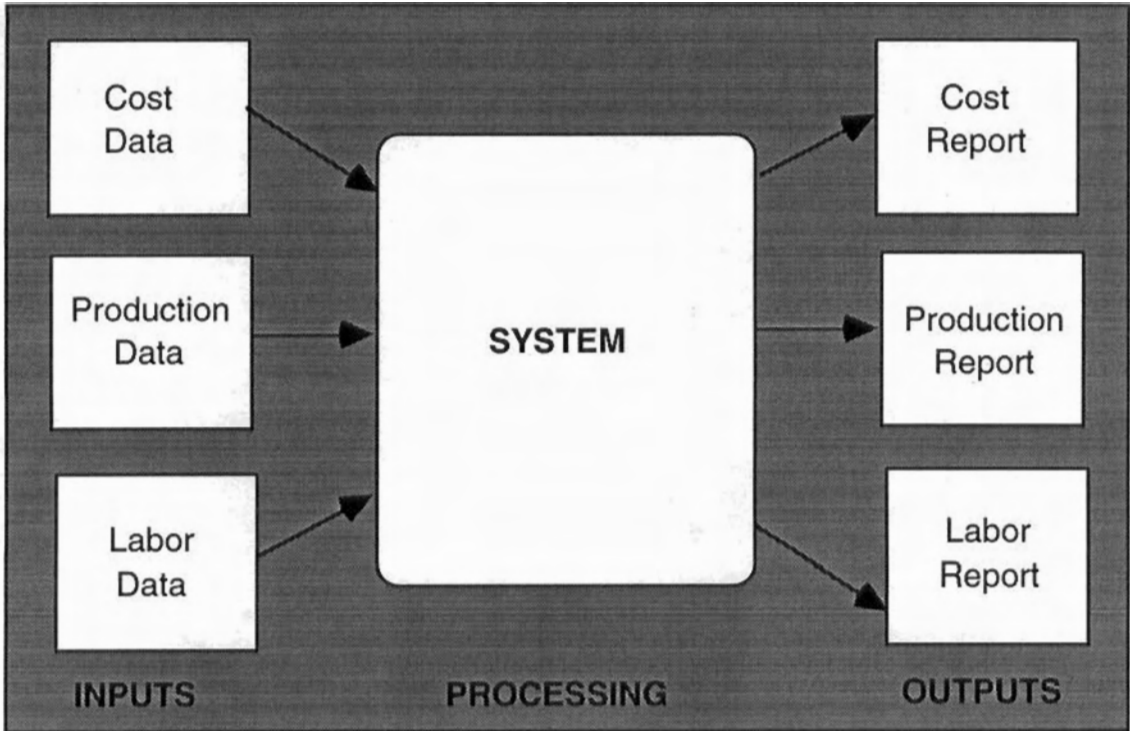
Processing is viewed by Silver and Silver as the conversion of inputs, or raw materials, to outputs, or finished products. A system's existence is based on its ability to process the inputs. In turn, this processing enables an organization to accomplish its goals or objectives. The example provided by Silver and Silver explains the processing function in a bakery. The inputs are described as the labor and the foodstuffs; the

⁵²Silver, 8.

⁵³Ibid.

processing is the mixing, baking, and packaging; and the outputs are the finished baked goods.⁵⁴

Figure 2.5 System Inputs Systems receive information, process it, and generate results or output.



Source: Gerald A. Silver and Myrna L. Silver, *Systems Analysis and Design* (Menlo Park, Ca: Addison Wesley Publishing Co., 1989), 8.

⁵⁴Ibid., 8-9.

Outputs

The *outputs* are described as the product of processing. Outputs are the end product or result of processing the inputs. Outputs in business might include profit. The outputs of an information system may include reports, lists of accounts, or printouts of inventories.⁵⁵

Systems Analysis

Systems analysis has been defined as follows by experts in the field:

- 1) Systems analysis consists of collecting, organizing, and evaluating facts about a system and the environment in which it operates. The objective of systems analysis is to examine all aspects of the system--equipment, personnel, operating conditions, and its internal and external demands--to establish a basis for designing and implementing a better system.⁵⁶
- 2) Systems Analysis is the investigation of business or information systems. It is the scientific study of the systems process, including investigation of inputs and outputs, in order to find better, more economical, and more efficient means of processing.⁵⁷
- 3) Systems analysis is the process of studying the network of interactions within an organization and assisting in the development of new and improved methods for performing necessary work.⁵⁸

It appears that no matter who the author of the definition is, they are all explaining a process of studying and analyzing a system that takes into account every aspect of the system. This scrutiny of a system is done in an effort to improve and to better the operations of the system.

⁵⁵Ibid., 9.

⁵⁶Couger, 43.

⁵⁷Silver, 13.

⁵⁸Semprevivo, 8.

According to Miser and Quade, the central purpose of systems analysis is as described:

to help public and private decision and policymakers to ameliorate the problems and manage the policy issues that they face. It does this by improving the basis for their judgment by generating information and marshaling evidence bearing on their problems and, in particular, on possible actions that may be suggested to alleviate them. Thus, a systems analysis commonly focuses on a problem arising from interactions among elements in society, enterprises, and the environment; considers various responses to this problem; and supplies evidence about the consequences--good, bad, and indifferent-- of these responses.⁵⁹

Miser and Quade further note that systems analysis can be applied to a diversity of areas ranging from problem solving in the education field to problem solving in environmental protection. In concept, systems analysis can be applied in any situation in which decisions are to be made or policy set. Although, in situations where an immediate decision is needed, other approaches are recommended.⁶⁰

Structure of Systems Analysis

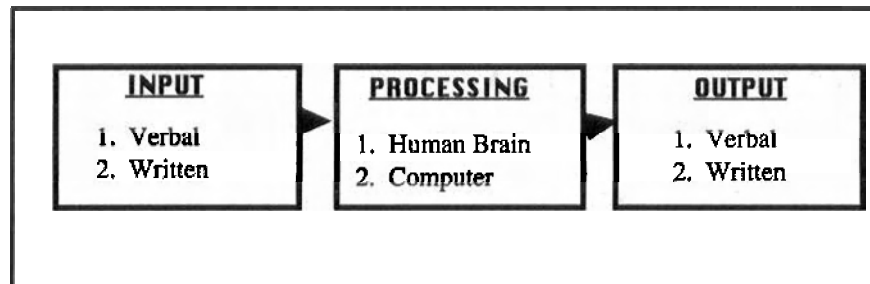
Having defined systems analysis and the different components of which it is composed, it is important to know how all these parts come together. As discussed previously, every system's operation consists of inputs, processing, and outputs. The process in which all these elements come together to produce a product or service for a system is known as the basic *Input/Output Cycle* (Figure 2.6). According to Fitzgerald, a system may be viewed in terms of information flowing between departments. The information is continuously being recorded, processed,

⁵⁹Miser and Quade, 2.

⁶⁰*Ibid.*, 22-3.

summarized, used, stored, and discarded. The information is necessary for making decisions and plans; for initiating and directing actions; as well as for comparing results against plans.⁶¹

Figure 2.6 Basic Input/Output Cycle



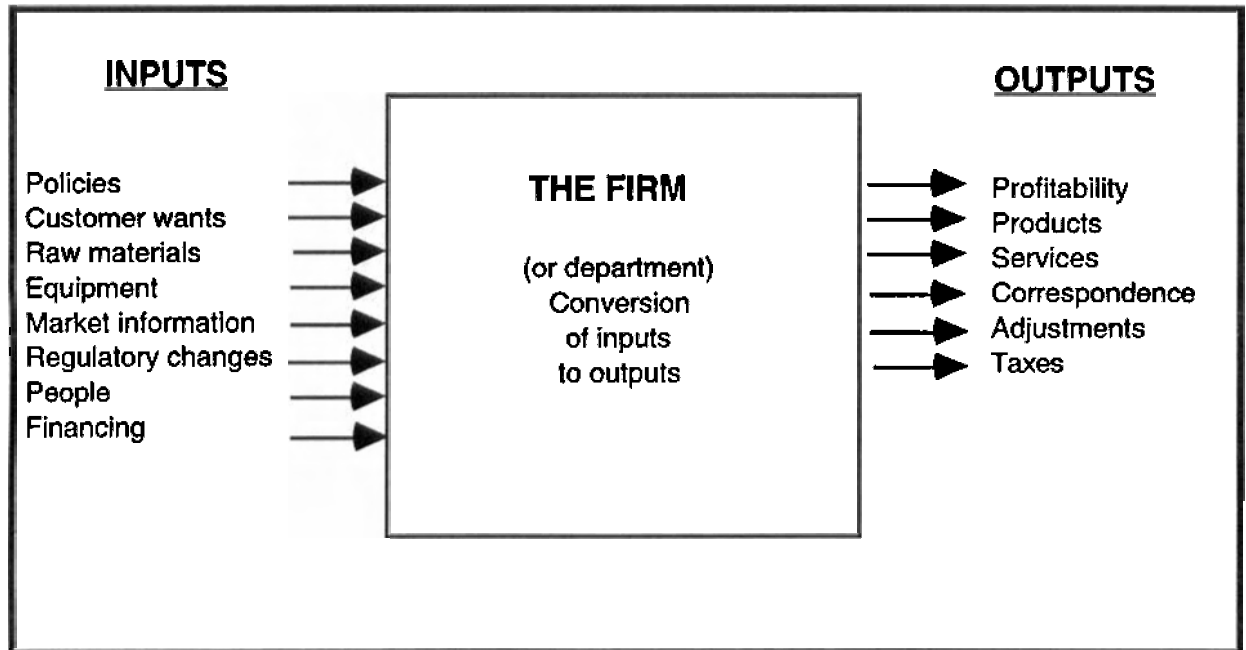
The input/output cycle can be applied to a business as seen in Figure 2.7. The process begins with the inputs from the external environment and follow through the process in order to be transformed into outputs. Inputs to this system may be paperwork for raw material that eventually become new consumer products, customer order, a cancellation, or a complaint. The inputs vary from system to system, but the purpose is the same; it exists in order to produce products or provide services to its members and customers. This work is accomplished through the dynamic interaction of its members to convert inputs to outputs.⁶² The use of visual models is a valuable tool used in systems analysis to bring to life the implicit models that exist only in the mind.⁶³ These models show the process or the progress that takes place in a system from the time the inputs come into the system through their conversion to outputs.

⁶¹Fitzgerald, 20-1.

⁶²Ibid., 210-1

⁶³Miser and Quade, 192.

Figure 2.7 General picture of an organization that yields a product or service to its users.



Source: Fitzgerald, Jerry and Andra Fitzgerald. *Fundamentals of Systems Analysis: Using Structured Analysis and Design Techniques* (New York: John Wiley & Sons, 1987), 21 & 211.

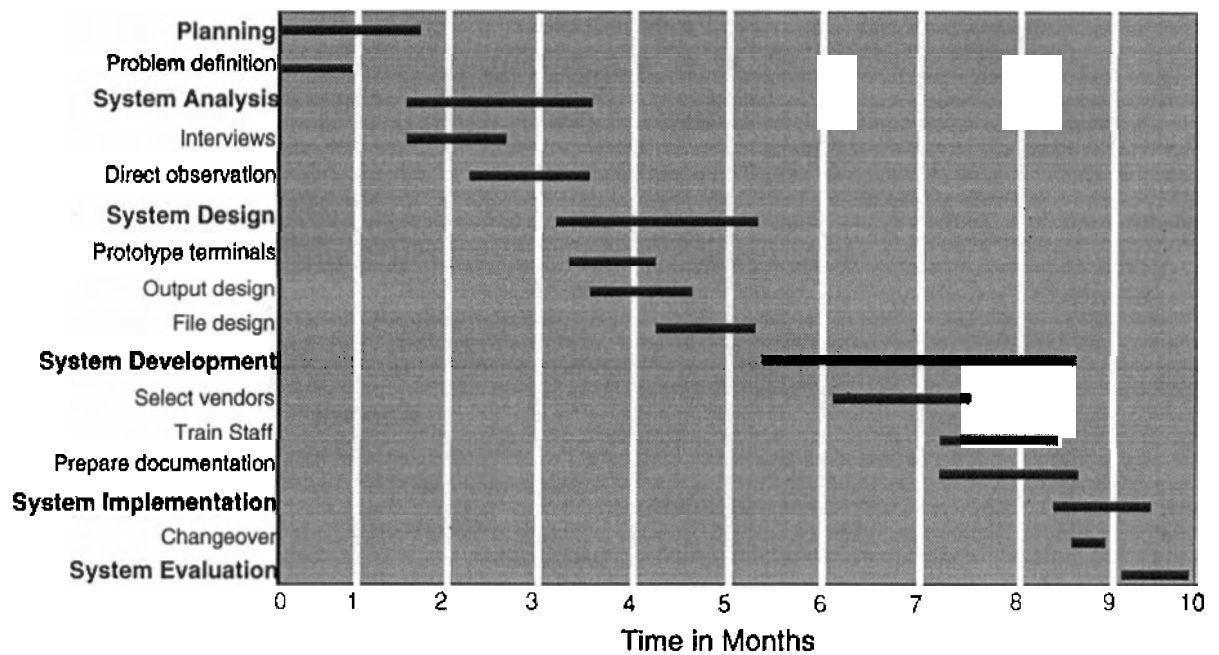
Design Tools or Models

There are many tools used by systems analysts to track the flow of information through a system. Included among these are: Gantt charts, system flowcharts, and decision tables. However, since the Gantt chart appears to be the most suited for the purpose of this research, it will be the model discussed herein.

The Gantt chart was introduced in 1914 by Henry L. Gantt, an efficiency expert seeking to document and diagram systems to improve operations. The Gantt chart has become a basic planning tool for the analyst, because it provides a project overview which is easy to read at a glance by anyone. In the example (Figure 2.8), the horizontal axis provides units of time (hours, days, weeks, months, etc.) that are suited to the

specific project. The left vertical axis lists the project(s) to be completed. If the project is broken down into several subtasks, these can also be shown as seen in Figure 2.8.

Figure 2.8 Gantt Chart The chart shows the beginning and ending of each activity.



Source: Gerald A. Silver and Myrna L. Silver, *Systems Analysis and Design* (Menlo Park, Ca: Addison Wesley Publishing Co., 1989), 65.

Summary

This chapter has provided an overview of the literature reviewed on environmental racism and systems analysis. This chapter was instrumental because it has not only established a history of the subject matter, but also the conceptual framework for this paper. In addition, the working hypotheses used for the study were established as a result of the review of the literature.

- H1 Cheap land, usually available in minority communities and neighborhoods, is attractive to industries that want to cut costs.
- H2 There is less opposition from minority communities because they lack organization, political resources, and there is a need for jobs.
- H3 Minorities are less mobile due to poverty and housing discrimination, these factors trap them in polluted neighborhoods.

Chapter three outlines how the legal system has been used in an effort to combat environmental racism. Although it has failed in the majority of cases, new laws and bills are being introduced, where before there were none. Minority communities are also becoming more aware of their surroundings and are beginning to protest the disproportionate placement of noxious facilities in their neighborhoods. The fact that these communities are demanding to be heard has motivated public officials and agencies to acknowledge and act on this issue as never before.

CHAPTER 3

Legal Aspects of Environmental Racism

This chapter provides an account of the environmental legislation that is available at the federal and the state levels. Included is a discussion on how victims of environmental racism have used the legal system in an effort to seek judicial remedy. This chapter concludes with a progress report on Texas state legislation that, in a way, would de-institutionalize environmental racism, and give minority communities the protection they deserve.

Federal Environmental Legislation

Probably the most important piece of environmental legislation today is the Resource Conservation and Recovery Act (RCRA), enacted in 1976 in an attempt to insure proper disposal of hazardous waste and reduce illegal dumping. RCRA created a tracking system by which hazardous waste can be tracked from "cradle to grave". This tracking system follows the waste through its various stages: production, transport, treatment, and disposal. Under the 1984 amendments to RCRA, certain land formations such as salt bed formations, underground mines, and caves are prohibited as hazardous waste sites unless the Administrator determines that such other placement is "protective of human health and the environment."⁶⁴ However, there is one drawback to RCRA. RCRA leaves siting decisions and the responsibility of translating and interpreting its requirements to the states. In order to gain federal approval for siting waste sites, the states must combine RCRA's

⁶⁴Duncan, 338-9, cited in 42 U.S.C. sec. 6924(b)(1)(A) (1988).

guidelines with EPA's regulations and come up with a workable program for waste disposal sites.⁶⁵

The EPA, under RCRA, has established three requirements for siting programs: 1) the state is required to complete a technical analysis of all the proposed sites before any one site is selected; 2) the public must be allowed to participate fully in the selection process; and 3) the state must protect against blanket local vetoes in the site selection process.⁶⁶ The state programs must allow for governing of permitting, compliance, evaluation, enforcement, public participation, and sharing of information.⁶⁷ The overriding factor in the development must be human health or environmental protection.⁶⁸ After the state has interpreted the EPA and RCRA guidelines, it can develop and administer its own hazardous waste management program. Duncan notes that it is at this point that discrimination is introduced into the system.

In making siting decisions, the states are faced with opposition from those who do not want these types of facilities in their neighborhoods (NIMBY syndrome). Usually in order to avoid opposition states seek the path of least resistance--poor minority communities.⁶⁹ Another point of interest is that the number of hazardous toxic waste sites (530) was not caused by the lack of government regulation, but because RCRA identified toxic chemicals that needed to be disposed of in facilities other than municipal solid waste sites. Originally, the Act was intended to isolate these wastes and reduce illegal dumping. However, it

⁶⁵*Ibid.*, 339.

⁶⁶Rachel D. Godsil, "Remedying Environmental Racism," *Michigan Law Review* 90 (November 1991): 402, cited in 40 C.F.R. sec. 272 (1990).

⁶⁷Duncan, 339, cited in 40 C.F.R. sec 271.1(c) (1990).

⁶⁸*Ibid.*, cited in 40 C.F.R. sec 271.4(b) (1990).

⁶⁹*Ibid.*, 340.

has had an adverse effect, and certain portions of our society are bearing a disproportionate burden of this regulation.⁷⁰

State Level Hazardous Waste Management Programs

Wherever a state designates a site for a hazardous waste landfill, there will always be opposition. States have come up with four programs to overcome hostility or circumvent local opposition. These approaches are super review, site designation, local control, and the incentives approach.

Under the super review approach, the developer chooses the desired site and applies for a permit from the proper authority. The application is reviewed by the agency and once it satisfies the state's requirements it goes to a special siting board intended to quell the community's fears. It should be noted that if the board fails to eliminate local opposition, it can ignore it. This approach does nothing to prevent discriminatory siting. Since the developer chooses the site, chances are it will be one with a lower land value and one where there is little or no opposition, usually minority poor areas. Among the states that use the super review approach are Indiana, Wisconsin, Michigan, Iowa, New York, Ohio, and Connecticut.⁷¹

Under the site designation approach, the state supplies a list of possible sites to be used. This would appear to be a fair approach because the state, unlike the developer, is not motivated by profit. However, there are three drawbacks to this approach: 1) in Maryland where counties are charged with selecting sites in their area, counties may select sites which are unsuitable in order to keep their county's sites from being on

⁷⁰Goldman and Fitton, 1.

⁷¹Godsil, 403-5.

the inventory; 2) politicians may lobby to keep their district off the inventory list; and 3) citizens may litigate or try to use other measures to delay the siting, in which case the agency which is probably harried will choose a site where there is less delay and opposition--the poor minority community. States which use some form of this approach include Massachusetts, Maryland, Minnesota, and Arizona.⁷²

California and Florida are the only two states that still prescribe to the local control approach. Under this approach, a state hazardous waste management plan cannot preempt local land use regulations--the state cannot force a city to accept a hazardous waste site. This approach, however, still condones the NIMBY syndrome because even though a city can establish regulations to keep out undesirable land uses, if a state has to find a site it will go to minority communities and offer incentives.⁷³

In order to eliminate local opposition, states have begun to require compensation to communities hosting the facilities from the developer or the tax payers. This method is known as the incentives approach. The general idea behind this approach is that the community should be compensated for enduring the costs of the hazardous waste site while others enjoy the benefits. This approach sometimes quells opposition, but it has also been known to have an opposite effect.⁷⁴ As seen, none of these programs really help alleviate the problem of discriminatory siting when it comes to polluting facilities. As a result of the loopholes in these programs, many poor minority communities have chosen to seek judicial remedy for these injustices.

⁷²*Ibid.*, 405-6.

⁷³*Ibid.*, 406-7.

⁷⁴*Ibid.*, 407-8.

Judicial Remedy

Minority plaintiffs have been using the equal protection clause of the Fourteenth Amendment to challenge environmental discrimination without much success. The central purpose of the Equal Protection Clause is to prevent official conduct that discriminates on the basis of race.⁷⁵ The Equal Protection Clause was used in *Washington v. Davis*,⁷⁶ and the discriminatory intent requirement was established as a result of the United States Court decision in this case. *Washington v. Davis* came about because of a qualifying test given to all applicants of the Metropolitan Police Department in the District of Columbia. The minority applicants in this case claimed that the test unconstitutionally discriminated against them because minorities had a tendency to receive lower scores than whites.⁷⁷ In the decision, the Supreme Court narrowed the applicability of the equal protection clause, holding that it was not enough that a plaintiff show that the challenged practice had a discriminatory impact, but that the plaintiff must also prove that the practice was motivated by a discriminatory intent.⁷⁸ The decision in *Washington v. Davis* set the legal starting point for the three cases that have set a precedent for environmental racism cases.

⁷⁵Audrey Wright, "Unequal Protection Under the Environmental Laws: Reviewing the Evidence on Environmental Racism and the Inequities of Environmental Legislation," *The Wayne Law Review* 39 (Summer 1993): 1738, cited in *Washington v. Davis*, 426 U.S. 229, 239 (1976).

⁷⁶*Washington v. Davis*, 426 U.S. 229. (1976).

⁷⁷Robert W. Collin, "Environmental Equity: A Law and Planning Approach to Environmental Racism," *Virginia Environmental Law Journal* 11 (Summer 1992): 519.

⁷⁸Gareis-Smith, 66, cited in *Washington v. Davis*, 426 U.S. 229, 242 (1976).

Village of Arlington Heights v. Metropolitan Housing Development Corp.

In *Village of Arlington Heights v. Metropolitan Housing Development Corp.*,⁷⁹ the Metropolitan Housing Development (MHDC) was denied a rezoning request by the Village of Arlington Heights, IL, that would allow the construction of low- and moderate-income housing. MHDC along with other plaintiffs charged that the denial was discriminatory and that it was in violation of the Fourteenth Amendment and the Fair Housing Act of 1968.⁸⁰ As in *Davis*, the plaintiffs in *Arlington Heights* did not have the evidence needed to prove intentional discrimination. However, *Arlington Heights* did go a step further and established in more detail what types of evidence would lead a court to conclude that there had been a discriminatory purpose.⁸¹

The Supreme court established five factors to consider when determining whether discriminatory intent was present in official actions: 1) the impact of the official action and whether it bears more heavily on one race than the other, and it cannot be explained on any other grounds except race; 2) the historical background of the decision, especially if it reveals "a series of official actions taken for invidious purposes"; 3) the sequence of events preceding the decision; 4) any departures, substantive or procedural, from the normal decision making process; and 5) the legislative or administrative history, specifically contemporary statements, minutes of meetings, or reports.⁸² *Davis and*

⁷⁹429 U.S. 252 (1977).

⁸⁰*Ibid.*, 254.

⁸¹Collin, 520.

⁸²Duncan, 342-3, cited in *Village of Arlington Heights v. Metropolitan Housing Development Corp.*, 429 U.S. 266-8.

Arlington Heights have established intent as the sine qua non of racial discrimination creating an onerous burden of proof for the plaintiffs.

This burden has forced the plaintiffs, those with the least access to evidence of probative motive, to produce the evidence.⁸³ It is quite obvious that unless the governmental body demonstrates blatant racism, the evidence that is required to prove intentional discrimination is almost impossible to produce. The following two cases are evidence that the use of the equal protection clause to challenge the siting of noxious facilities has not been successful.

Bean v. Southwestern Waste Management Corp.

One of the first cases in which a community attempted to halt the siting of a solid waste facility was *Bean v. Southwestern Waste Management*.⁸⁴ The plaintiffs in this case contested the decision of the Texas Department of Health (TDH) to permit the operation of a solid waste site in the East Houston-Dyersdale Road area in Harris County. This location would place the facility within 1,700 feet of a high school in a census tract with a sixty percent minority population.⁸⁵

The plaintiffs' argument was two-fold: 1) the state agency's approval of the permit was part of a pattern or practice by [the agency] of discriminating in the placement of solid waste sites;⁸⁶ and 2) the agency's approval of the permit, in the context of the historical placement of the solid waste sites and the events surrounding the application,

⁸³Godsil, 410.

⁸⁴482 F. Supp., 673, 677 (1979).

⁸⁵Wright, 1740, cited in *Bean v. Southwestern Waste Management Corp.*, 482 F. Supp., 677 (S.D. Tex. 1979).

⁸⁶Gareis-Smith, 68, cited in 482 F. Supp., 677.

constituted discrimination.⁸⁷ Although the judge acknowledged that the permitting decision to site the facility near a high school was "insensitive" and "illogical", she also noted that her obligation was to uphold the discriminatory intent precedent established in *Arlington Heights*.⁸⁸ Thus the court's ruling was that the data presented by the plaintiffs was insufficient to establish discriminatory intent.⁸⁹

East Bibb Twiggs Neighborhood Ass'n. v. Macon-Bibb County Planning and Zoning Commission

In *East Bibb Twiggs Neighborhood Ass'n. v. Macon-Bibb County Planning and Zoning Commission*, the case was also rejected due to lack of proof of discriminatory intent. The plaintiffs in this case made two arguments: 1) that the Commission had a history of placing unwanted land uses in minority communities; and 2) the legislative and administrative history of the action demonstrated racial discrimination,⁹⁰ due to the fact that the Commission had at first rejected the permit and then went back and approved it.⁹¹

The court rejected the first argument based on the fact that the Commission had approved one other landfill in a site that was predominantly white; this point was heavily weighted by the court.⁹² The second argument was rejected on the basis that when the permit was denied the first time it was due to some concerns the Commission members had over the location once those concerns were alleviated, the

⁸⁷*Ibid.*, cited in 482 F. Supp. 678.

⁸⁸*Ibid.*, cited in 482 F. Supp. 680.

⁸⁹*Ibid.*, cited in 482 F. Supp. 677.

⁹⁰Duncan, 348-9, cited in *East Bibb Twiggs v. Macon-Bibb County Planning and Zoning Comm'n.*, 706 F. Supp. 886.

⁹¹*Ibid.*

⁹²*Ibid.*

permit was approved.⁹³ Making it almost impossible to prove discriminatory intent in the siting decision, the court further noted that most sites are chosen by private parties, and the Commission in this case merely denies or grants the permit.⁹⁴

As seen by these two cases, the burden of proof required to prove discriminatory intent, as decided in *Davis* and *Arlington Heights*, is indeed a burden that is too difficult to overcome by those with limited resources. In the literature reviewed, some authors suggested other methods that could be used in challenging siting decisions. The consensus focused on the use of Title VI of the 1964 Civil Rights Act.

Title VI of the 1964 Civil Rights Act

Title VI of the 1964 Civil Rights Act provides that:

no person in the United States shall, on the ground of race, color, or national origin, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.⁹⁵

Title VI has been used effectively to challenge other inequities such as the siting of prisons, hospitals, federally funded highways, and other facilities that may either have a substantial beneficial or adverse impact on their communities.⁹⁶

⁹³*Ibid.*, 348-9.

⁹⁴*Ibid.*, 349.

⁹⁵Gareis-Smith, 72, cited in 42 U.S.C. sec. 2000d.

⁹⁶*Ibid.*, 73, cited in *North Carolina Dept. of Transp. v. Crest Street Comm. Council*, 479 U.S. 6 (1986) (highway); *NAACP v. Wilmington Medical Ctr.*, 689 F.2d. 1161 (3d Cir. 1982), *cert. denied*, 460 U.S. 1052 (1983) (hospital).

In using Title VI to challenge environmental racism, the plaintiff must first show the disproportionate impact that the facility would have on the minority community. This, in and of itself, is not enough to prove a violation under Title VI, however, it shifts the burden of showing a legitimate, nondiscriminatory reason for the siting decision to the party receiving the federal funds.⁹⁷ A drawback to Title VI is that the program or activity being challenged must be receiving federal assistance. Even though this limitation is important, it is not of great consequence in challenging environmental inequities. The reason for this is that federal funds are a large part of state budgets for the enforcement of environmental laws such as the Clean Air Act, Clean Water Act, RCRA, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and Toxic Substance Control Act (TOSCA).⁹⁸

Currently, investigation is underway in three test cases (Louisiana, Mississippi, and Alabama) in which plaintiffs are using the Title VI component as the form of redress. In Noxubee County, MS, residents are challenging that their area, which is seventy percent African American, has been chosen for the state's first two hazardous waste treatment plants.⁹⁹ In the St. Gabriel-Carville area in Louisiana, which is already known as "cancer alley," residents are opposing a proposed hazardous fuels blending plant. There the African American populations are fifty and seventy percent, respectively.¹⁰⁰ The third test case is the toxic dump

⁹⁷Ibid., quoted in Richard J. Lazarus, "Pursuing 'Environmental Justice': The Distributional Effects of Environmental Protection, 87 *Nw. U.L. Rev.* 787, 838 (1993).

⁹⁸Ibid., 74.

⁹⁹Ibid., 76-7, quoted in Mary Powers, "Clinton Gives U.S. Agencies One Year to Develop Policies on 'Enviro Racism'," *Hazardous Waste Bus.* (Feb. 23, 1994), 1.

¹⁰⁰Ibid., 78, quoted in Mark Schleifstein, "EPA Investigates Plans for Waste Site," *Times-Picayune* (Oct. 12, 1993), B1.

in Emelle, Alabama, which is the nation's largest and the most controversial. Regardless of the decision, the outcome of these test cases is certain to have an impact on future environmental racism cases. The cases discussed thus far have been challenged based on federal statutes and the United States Constitution. Following is a brief discussion on how environmental racism cases could be challenged based on Texas state law.

Judicial Remedy Under Texas Law

To date there have not been any reported environmental injustice cases brought under Texas Law. However, state law does have constitutional and statutory provisions that could serve as a basis for bringing such cases to Texas courts.¹⁰¹ Following is a brief description of these constitutional and statutory provisions under Texas law.

Texas Constitution Law

Under the Texas Constitution, the Bill of Rights does have an equal rights amendment that was adopted in 1972, it states:

Equality under the law shall not be denied or abridged because of sex, race, color, creed, or national origin.¹⁰²

In *Delgado v. Texas* the state's equal protection clause was used to challenge the Texas worker's compensation system successfully. Based on the Texas Constitution, the judge in this case ruled that the system was unconstitutional on equal protection grounds, because the system failed to provide the same compensation rights as other workers to farmworkers

¹⁰¹Susana R. Almanza, Antonio Diaz, Mary E. Kelly, and Mary Sanger, *Toxics in Texas and Their Impact on Communities of Color*, (Austin, Tx: Texas Center for Policy Studies, March 1993): 49.

¹⁰²*Ibid.*, 49, quoted in Texas Constitution, Bill of Rights Art.1, Section 3a.

who were mostly Latino.¹⁰³ According to the report prepared by the Texas Center for Policy Studies, this case could be a precedent setting case for environmental racism cases in Texas.

Zoning laws have been challenged under the equal protection clause under the Texas Constitution. It may be possible to use this clause to challenge cases of environmental racism if a pattern of environmental discrimination can be shown as a result of zoning laws. This type of case would be costly and would require a considerable amount of expert opinion and testimony.¹⁰⁴ This is yet another example in which the burden of proof has been placed on those with limited resources.

Texas Statutory Law

Under Texas statutes discrimination by government officials based on race, color, or national origin is prohibited. Section 106.001 of the Texas Civil Practice and Remedies Code provides (in part):

- a) An officer or employee of the state or of a political subdivision of the state who is acting or purporting to act in an official capacity may not, because of a person's race, religion, color, sex or national origin:
- b) impose an unreasonable burden on the person.¹⁰⁵

This Code further provides that a person who is "aggrieved by the violation or threatened violation" of Section 106.001 may sue for injunctive relief and, if they prevail, may seek to recover their attorney's

¹⁰³Ibid., 49, *Delgado v. Texas*, No. 356,714 (Dist. Ct. of Travis Co., 147th jud. Dist. of Texas, modified, May 22, 1985).

¹⁰⁴Ibid., 49.

¹⁰⁵Ibid., 50, quoted in Tex. Civ. Prac. and Remed. Code, Section 106.001 (V.A.T.C. 1991).

fees.¹⁰⁶ In certain situations, sections 106.001 and 106.002 may be used to show that a governmental agency's actions concerning the siting of a noxious facility or a particular environmental problem in a minority community "impose an unreasonable burden."¹⁰⁷ However, as in the use of the equal protection clause of the Fourteenth Amendment, this statute also requires that the plaintiffs show intent to discriminate.

As suggested by the Texas Center's for Policy Studies report, this section of Texas law might be used to challenge the failure of an agency to provide notice of proceedings in Spanish, or to translate pertinent documents into Spanish in matters that concern a predominantly Spanish speaking community. Failure to provide this information in Spanish or the dominant language of the community, would place an unreasonable burden on the non-English speakers of that community.¹⁰⁸ Legislation requiring that such material be made available to the community in their dominant language has recently been introduced and will be discussed in more detail in the following section.

Attempts at Legislative Remedy Under Texas Law

During the 1993, 73rd legislative session, and shortly after the East Austin tank farm situation was settled, several house and senate bills were introduced. These bills, had they been introduced and passed years before, may have prevented an episode like the East Austin tank farm from ever happening. Following is a description of some of these bills and their status.

¹⁰⁶*ibid.*, quoted in Section 106.002.

¹⁰⁷*ibid.*, 50.

¹⁰⁸*ibid.*

House bill 442 introduced by Representative Karen Jones-Conley of District 120 deals with the location of facilities storing hazardous wastes, hazardous substances, or bulk fuel. If passed, this bill would restrict the location of "certain storage facilities." It provides:

A person may not construct, within five miles of a school, a place of business, or place of worship in existence at the time construction of the facility begins: 1) a hazardous waste storage facility; or 2) a hazardous substance storage facility.

A person may not construct, within five miles of a school, place of business, or a place of worship in existence at the time construction of the facility begins, a bulk fuel storage facility for storing gasoline, diesel fuel, aviation fuel, or kerosene in one or more aboveground storage tanks the total storage capacity of which is 500,000 gallons or more.¹⁰⁹

This bill was referred to the Environmental Regulations Committee on February 2, 1995, and, as of May 1995 had not been passed.

House bill 2184, introduced by Representative Glen Maxey of District 51, related to action against polluters of groundwater or soil. Unfortunately, this bill did not pass, but it would have provided for remediation of soil and groundwater contamination as follows:

A person who, acting with gross negligence, pollutes groundwater or soil is liable to a person whose property is harmed as a result of the pollution for damages in an amount sufficient to remediate the pollution of the groundwater or soil.¹¹⁰

House bill 2167 co-written by Representatives Patricia Gray and Glen Maxey from Districts 23 and 51, respectively, would provide limited environmental zoning powers to county and municipal governments based on official recommendations of the Texas Natural Resource Conservation

¹⁰⁹Tex. H.B. 442, 73rd Leg., R.S. (1993).

¹¹⁰Tex. H.B. 2184, 73rd Leg., R.S. (1993).

Commission (TNRCC). This bill, which died in committee, would have, in part, provided the following:

grant the TNRCC, before granting or amending a permit, the authority to recommend to a county or municipality that they adopt a zoning ordinance if an emission model or similar model indicates that the facility may cause air or water contamination outside of the facility's boundaries that could produce adverse public health consequences or release outside of the facility's boundaries a substance for which adverse health consequences are known because insufficient health research information is available.¹¹¹

The final bill to be discussed is Senate bill 316 introduced by Senator Gonzalo Barrientos of District 14. This bill addresses the need to provide notices relating to permits for air contaminant sources in the predominant language of the community. To date this bill is still in committee and if passed, and if there are no other changes, would provide as follows:

Requires an applicant for a permit under Section 382.0518 (Preconstruction Permit) or Section 382.054 (Federal Operating Permit) or a permit renewal review for an air contaminant source to publish notice of intent to obtain a permit or permit review at least once in one or more publications circulated in the area in which the facility is located or is proposed to be located if the publications are published in whole or in part in a language other than English, and the elementary or secondary school attended by residents of the area nearest the facility provides bilingual instruction or English as a second language class. Requires notice to be in the language other than English.¹¹²

¹¹¹Tex. H.B. 2167, 73rd Leg., R.S. (1993).

¹¹²Tex. S.B. 316, 73rd Leg., R.S. (1993).

Summary

Although some of these bills are still pending, the idea that this type of legislation is being introduced is a step toward stunting the growth of environmental discrimination. If legislation of this type passes in the near future, minorities will have the grounds needed to dispute the siting of noxious facilities in their communities. These bills, if passed into law, will also allow these communities to provide the proof required to prove discrimination without having to go to extreme measures and expense.

Chapter four discusses the research methodology used in this study. This chapter breaks down every aspect of the East Austin system and shows how the community; the laws and legislation; policies; and the people fit into the systems analysis model.

CHAPTER 4

Research Methodology

The purpose of this study is to assess the factors that contribute to environmental racism. In view of this, the most appropriate research methodology available was a case study used in conjunction with systems analysis to aid in organizing the research. This chapter outlines the methodology used in this study, provides a history of the East Austin tank farm, and shows how systems analysis applies to the topic.

Methodology

The case study method was ideal for this topic because, according to Yin, case studies are the preferred strategy:

- a) when "how" or "why" questions are posed;
- b) when the investigator has little control over events; and
- c) when the focus is on a contemporary phenomenon within some real-life context.¹¹³

The East Austin tank farm case fits into these categories in that this research seeks to find out how and why environmental racism came to play a role in the East Austin community, the researcher has no control over the events, and the topic is definitely a contemporary phenomenon in a real-life context.

Systems analysis was used as the organizing tool for this research. There were a myriad of entities involved in this case that required some organization and classification in order to properly analyze the situation. Among these were rules, regulations and policies, people, grassroots

¹¹³Robert K. Yin, *Case Study Research: Design and Methods* (Thousand Oaks, Ca: Sage Publications, 1994), 1.

organizations, and public officials. Systems analysis was used to put all these players into perspective for easier analysis.

Research Design and Process

Since this research is of an exploratory nature, the main source of information used was document analysis. Among the materials reviewed were newspaper articles detailing the events, the property appraisal records database, city records, zoning maps depicting the proximity of the tank farms to the residential areas, and other materials written about the East Austin tank farm. The documents reviewed are referenced in the footnotes throughout the remainder of the paper. The archival records used appear in the paper as figures 4.1, 4.2, 4.4, 5.1, 5.2, and 5.3. The researcher also visited with one of the city councilmembers involved in the case and attended a zoning meeting held for the citizens of East Austin.

According to Yin, documentary information is likely to be relevant to every case study topic. Document analysis was the main source of evidence used in this research because it provided a broad coverage of the events as they transpired over the thirteen month period of this case. Other sources of documentation, such as zoning policies, tax abatement policies, etc., provided insight into factors that contributed to environmental racism in the case.

Some of the strengths in using document analysis for this research consist of being able to review the data repeatedly; it was unobtrusive--not created as a result of the case study; exact--contained exact names, references, and details of the event; and covered events over a period of

time.¹¹⁴ Yin mentions some weaknesses in using document analysis. Included are problems with retrievability of documents, bias in reporting and selection of material, and accessibility of documents.¹¹⁵ The researcher, however, did not encounter any of these problems. Documents and materials sought were accessible and retrievable. Bias was not considered a problem as the researcher made an extra effort to remain objective and report all findings.

Limitations

Although an effort was made to set up as many interviews with the officials involved, it was not a very successful one. The interview most sought after (with the state representative representing the district) was hampered by a busy legislative session at the time of this research. Time was also a restriction. The researcher discovered that setting up interviews with state representatives and city officials is a process that needs to begin weeks prior to the anticipated interview dates. Another factor, although unsubstantiated, is that this may be a sensitive issue for many officials who had no knowledge of the impact of this situation until the community forced the issue.

¹¹⁴*Ibid.*, 80.

¹¹⁵*Ibid.*

History of the East Austin Tank Farm

The East Austin tank farm, which grew to 52 acres before it was shut down, sprang up in 1948 from farmland after the Texas Pipeline Company opened a line from Beaumont refineries. By 1955, there were six oil terminals on sight and in business (Mobil Oil Company, Star Enterprise-Texaco, Coastal States Crude Gathering Company, Chevron USA Products Company, Citgo Petroleum Corporation, and Exxon Company USA).¹¹⁶ Zoning policies allowed residential areas to spring up around the tank farm creating a situation where industry and residential areas coexisted back to back for several years.

It is uncertain as to how far back the contamination at this site goes. Even though today there are laws that limit the amount of pollution from these types of facilities, it was not until the mid-1970s that these rules appeared. Spills and contamination before this time were not considered an environmental danger, but merely a part of normal operations.¹¹⁷ However, despite the laws on the books limiting pollution, evidence shows that state regulatory agencies were aware of the contamination long before the citizens of the community demanded that action be taken. The chemicals in some of the tanks, which were over thirty-five years old at the time it became an issue in January of 1992, included benzene (a known carcinogen), toluene (known to cause damage to bone marrow, liver, and kidneys, and birth defects), and xylene (can cause brain damage).¹¹⁸

¹¹⁶Mike Ward and Scott W. Wright, "Air of Concern: Austinites Angry That They Weren't Told of Danger," *Austin American Statesman*, 1 March 1992, sec. News, p. A1.

¹¹⁷Ward, A1.

¹¹⁸Aubrey Wallace, *Green Means: Living Gently on the Planet* (San Francisco: KQED Books, 1994), 188.

It was in December of 1991, that Sylvia Herrera, a resident of the community, read a permit notice in the newspaper in which Mobil was seeking to expand their facilities. Also stated in the notice was Mobil's intent to continue to emit gasoline, diesel, benzene, oxides of nitrogen, and carbon monoxide emissions. After an investigation of records by members of People Organized in Defense of Earth and Its Resources (PODER), it was discovered that the Mobil facility had existed since the early 1970s, before emission control regulations clamped down. Emission levels of benzene and other gases were well above that allowed by current regulations. At the time of the permit notice, Mobil was already emitting forty-eight tons per year, the new permit would allow only twenty-eight tons. It was noted that the emissions drifted over a one-mile radius around the facility. Within this one-mile radius were several residential communities and at least six schools, with one being only three thousand feet from the facility.¹¹⁹

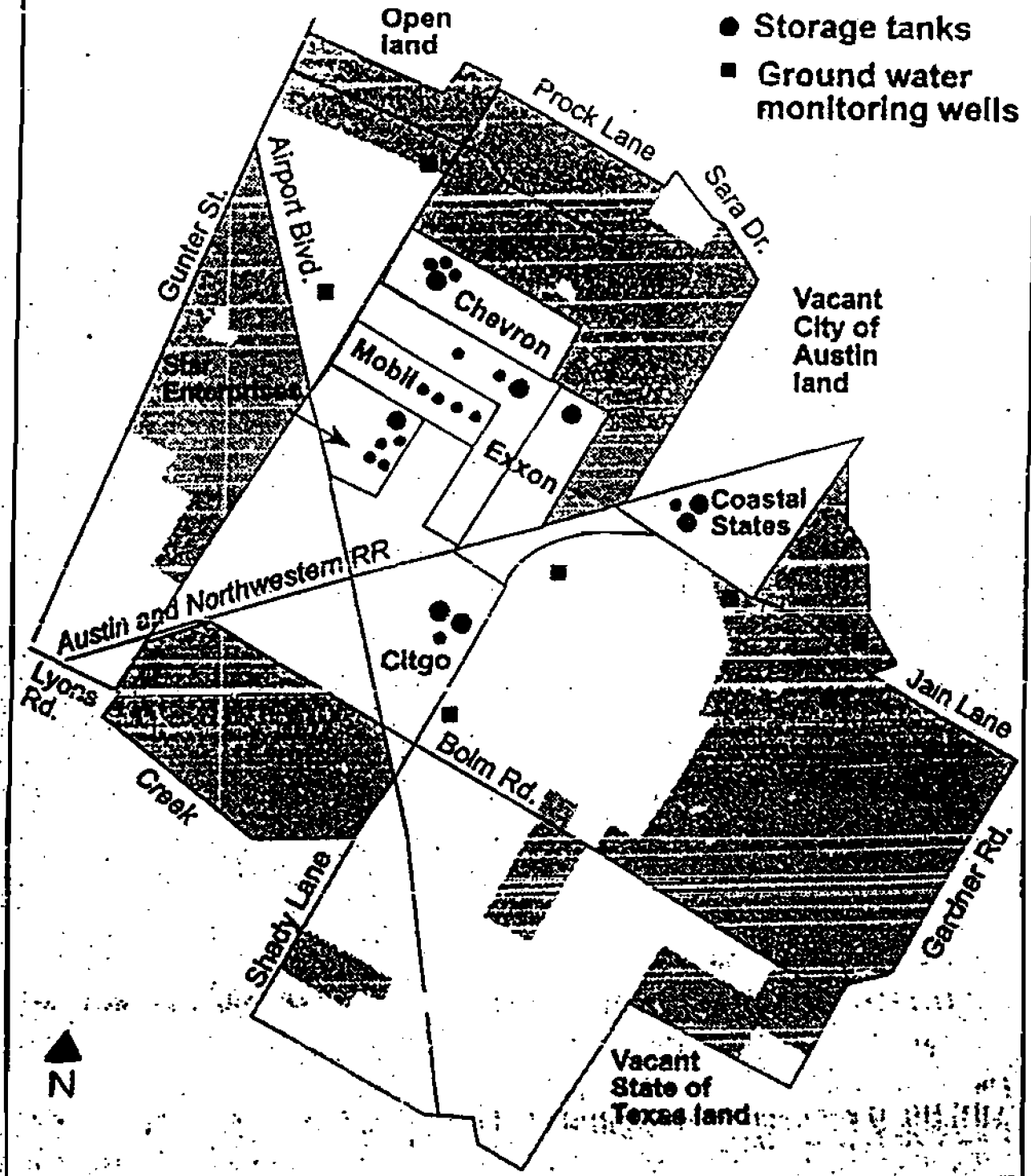
The soil and water contamination in the area was confirmed by the Texas Water Commission, and because of the contamination at the site, and possibly the entire area, property values depreciated by 50 percent in April of 1992 (Figure 4.1).¹²⁰ By early May 1992, six more wells around the area were found to be contaminated where before only four were showing contamination (Figure 4.2). Much of the contamination was attributed to a March 1988 rupture of a gasoline pipeline by a city road construction crew. There was conflicting information from the regulatory agencies as to how much gasoline leaked out. The Texas Water

¹¹⁹Wallace, 188.

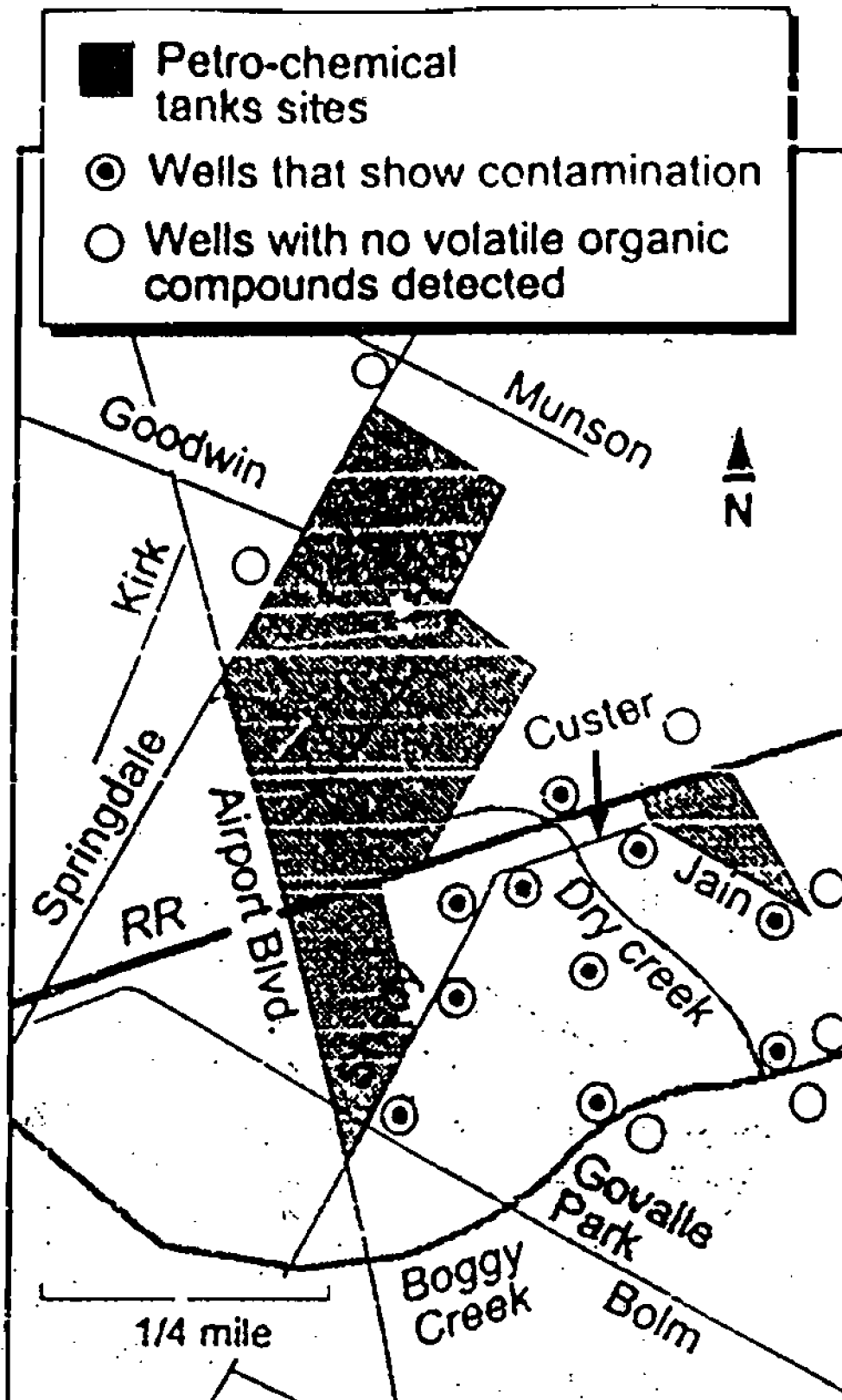
¹²⁰Susana Almanza, *Tanks But No Tanks: PODER's Grassroots Victory*, comp., Robert D. Bullard, *People of Color Environmental Groups: 1994-95 Directory* (Atlanta: Environmental Justice Resource Center, 1994), 19.

Appraisal value drops

Travis Central Appraisal District has lowered the appraised value of homes within the area shown on the map by 50%. The decision was based on information from the Texas Air Control Board and the Texas Water Commission.



Source: Austin American Statesman, April 21, 1992, p. A1



Source: Austin American Statesman, May 2, 1992, p. B1

Commission records showed 400 gallons, but the Texas Railroad Commission documents showed 13,860 gallons spilled with only about 1,050 gallons cleaned up.¹²¹ Earlier Railroad Commission records also showed that 12,100 gallons of jet fuel were spilled from the Coastal pipeline due to "corrosion and rust".¹²² As shown in Figure 4.2 the six contaminated wells lie south of the fuel storage facilities near Airport Boulevard and Springdale Road. One of the wells was reported as containing benzene at 240 times the federally established maximum for human safety.¹²³ It was not until the community members started to question the poor health of the community that reports such as those mentioned began to be made public.

PODER, a grassroots organization formed by a group of Latino activists and community leaders in East Austin, mobilized and was instrumental in organizing the community and forcing public agencies and officials to take action. After a thirteen month battle, and a much concerted effort by all involved, the oil companies were forced to relocate. For a detailed chronology of events as they transpired during the thirteen months see Figure 4.3.

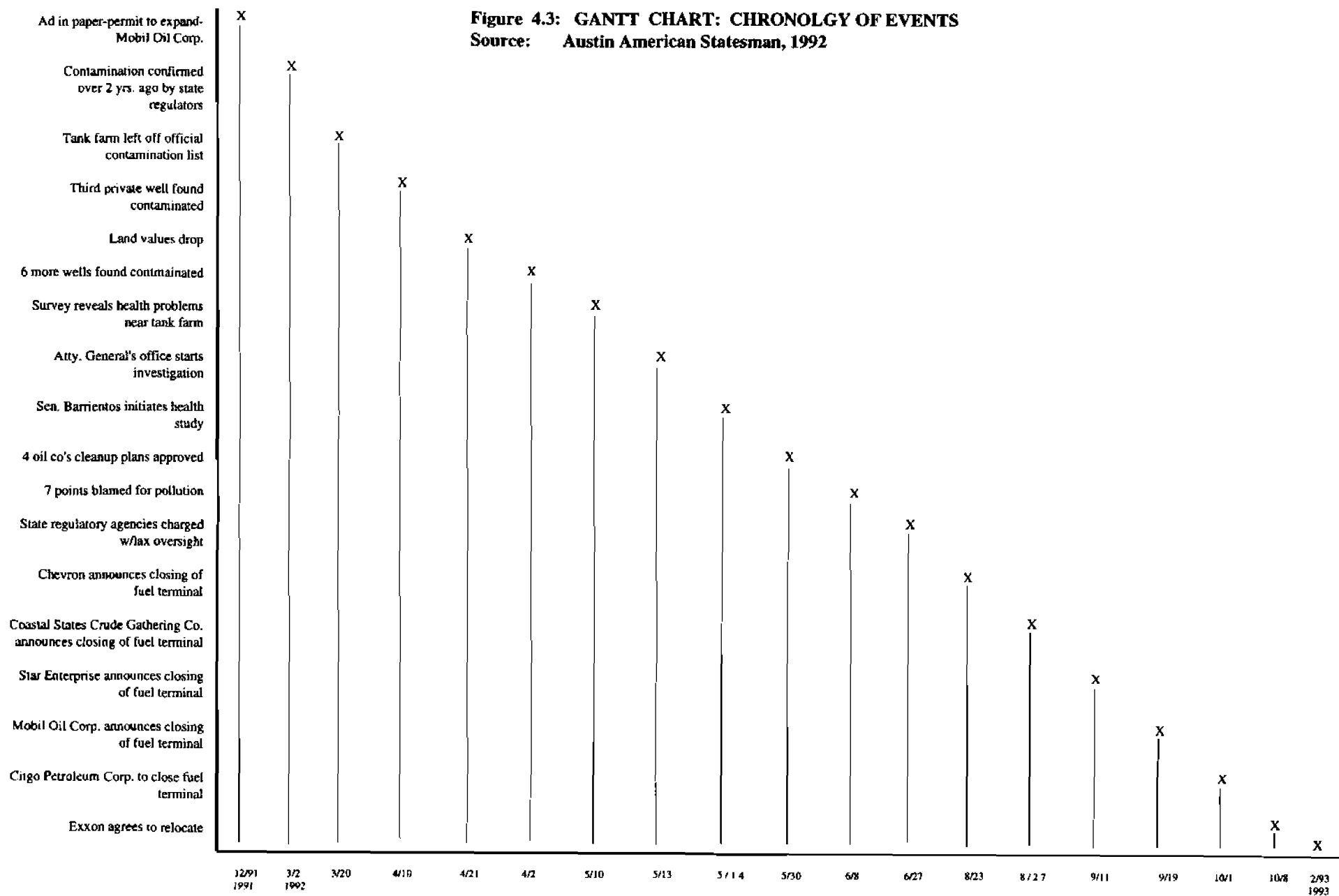
The East Austin Community As A Systems Analysis Model

A system, as defined by Semprevivo in the literature, is a series of interrelated elements that perform some activity, function, or operation. The East Austin community fits the definition of a system because it is composed of several components or subsystems that come together to

¹²¹Mike Ward and Scott W. Wright, "Six More Wells Found Tainted in East Austin," *Austin American Statesman*, 2 May 1992, sec. City/State, p. B1.

¹²²*ibid.*

¹²³*ibid.*



Characteristics of the East Austin System

The objective of this section is to see if the East Austin community has the four characteristics of a system. First, the East Austin community (system) does interact with the environment. Its environment includes everything from the people, to policies and regulations that affect and dictate how it will operate. It receives inputs from the environment and produces outputs for that same environment. This interaction with the environment makes it an open system. As mentioned in the literature review chapter, Fitzgerald defines an open system as one that does not control or modify its own operation, and needs to be supervised or monitored by people. In line with an open system, the East Austin system requires people to guide its operation. There are rules, policies, community leaders and organizations, public officials, and community residents that control and monitor its operation.

Secondly, the East Austin system does have a purpose. Its goal or objective is to provide a habitable environment for its residents. Thirdly, this system is self-regulating as a result of the interaction that takes place among its different subsystems or component parts. This interaction keeps the system operational. And lastly, this system is self-correcting and self-adjusting. According to Semprevivo, the interaction of a system with the environment can sometimes lead to conditions that upset the normal self-regulatory process. For example, the community can be impacted by policies and regulations established by someone or something in the environment. The community can self-adjust to these changes, or the community can take steps to make the changes that would be more beneficial to them.

Components of the East Austin System

In this section the components of a system, and how they fit the East Austin system, are discussed. Provided are examples of subsystems, the environment, boundaries, inputs, and outputs as they apply to this system. Fitzgerald's organization model (Figure 2.7) is used to look at how and why the inputs contributed to environmental racism in the East Austin tank farm case.

Subsystems

Subsystems are described in the literature review, as smaller elements of a system that perform tasks which are in conformity with the objectives of the larger system of which they are a part. The subsystems in the East Austin community include, among other things, neighborhood associations; grassroots organizations, such as PODER and EAST (East Austin Strategy Team); community leaders; and the individuals which comprise the voting population in the community. All these subsystems are part of the larger system that work to achieve the objectives set forth by the community.

The Environment

As mentioned in the literature review, the environment of a system includes everything and everyone that surrounds it. In the East Austin system the environment consists of a number of entities, among them are: the people; the infrastructure; community organizations; rules and regulations (both state and city); policies; and institutions that affect its economy (banks, businesses, etc.). These entities, along with others not mentioned, interact with, and affect the system in one way or another. It

would not be possible to analyze this system without taking all these players into consideration.

Boundaries

The boundaries in a system are not always well established. Silver and Silver note that a city's boundaries are easier to define because of the lines that clearly denote where the city ends or begins. Such is the case as applied to this system. The boundaries of the East Austin system are clearly established by way of Interstate Highway 35 (IH-35). The land east of IH-35 is considered East Austin and is designated as an industrial expansion area. This area is home to Austin's largest poor minority population.

Examples of Inputs to the East Austin System

In the literature review, inputs are defined by Silver and Silver as the items that enter the boundaries of the system from the environment which in turn are manipulated by the system. Inputs are vital to a system, because without these components the system is not capable of producing outputs. The inputs to the East Austin system are analyzed using the inputs in Fitzgerald's organization model (Figure 2.7). These consist of *policies, customer wants, raw material, equipment, market information, regulatory changes, people, and financing*. These inputs are looked at in terms of how and why they contributed to environmental racism in the East Austin tank farm case.

Policy

According to Silver and Silver, a policy is:

a specific course or method of action, selected from among alternatives and in light of given conditions, to guide and determine present and future decisions. A set of rules upon which present and future decisions are made.¹²⁴

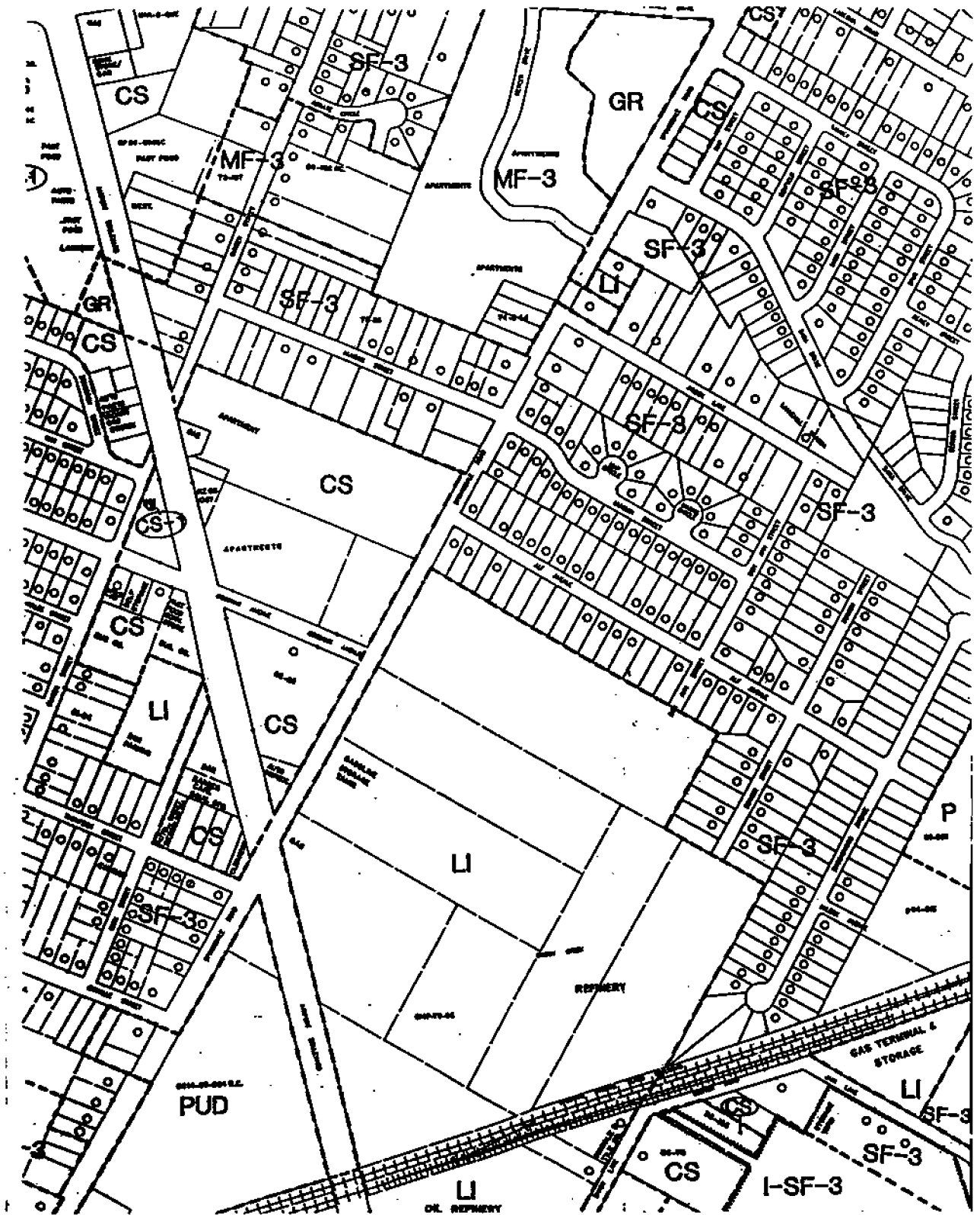
Policy, as an input to East Austin, determined what type of community it would be. The most influential players in determining policy for East Austin were the City Council and the planning and zoning authorities.

Zoning, as it was established for East Austin, has been a detriment to the growth and overall health of the community. The area east of I-35 is zoned for industrial purposes. This means that an industry type business can be established anywhere east of IH-35. As seen in Figure 4.4, the area immediately surrounding the tank farm (marked LI for Limited Industrial Services in the center of map) is designated Single Family Residence (SF-3 and I-SF-3). Residential areas and industrial businesses co-existing as neighbors is not an uncommon site in the East Austin community due to this zoning ordinance.

Another policy of the past that has contributed to the disparity in siting noxious facilities, is the city's tax abatement policies. The last tax abatement policy instituted by the City of Austin expired and has not been renewed. However, tax abatement policies of the past encouraged polluting industries to inhabit East Austin by giving them incentives. For example, the maximum term of abatement for companies locating within

¹²⁴Silver, 417.

Figure 4.4 - Zoning Map



Source: City of Austin
Zoning Use District Map L-22
Dec. 1994

LI - Limited Industrial Services
SF-3 & I-SF-3 - Single Family
Residence

the Industrial Expansion Area (IEA), east of IH-35, was six years. Any company locating outside the IEA, but within the city limits, received three years.¹²⁵ Policies such as these made it cost effective for industries seeking to cut expenses, and at the same time, made it acceptable for them to locate in East Austin.

Customer Wants

The customers in this case are the people of the East Austin community. The customer wants of the people of this community are the same as those of other communities. They want to see their community prosper in a safe and healthy environment. The people in the East Austin community, however, have sacrificed (because of the policies mentioned) their environment and their health in order to stimulate their economy and bring needed jobs to the area.

Raw Materials

Raw materials within the East Austin system include education, development, and planning. The community's lack of awareness of the hazards of polluting facilities and planning decisions have been contributing factors to environmental racism. Community organizations like PODER and EAST are now educating the community about toxic pollution and economic development and the impact these have on the community. These organizations are also recommending to the City Council that public participation is needed in the decision making process concerning policies that affect East Austin.

¹²⁵*City of Austin - Guidelines and Criteria for Tax Abatements* Ordinance No. 911121-C, p. 4 (1991).

contamination since 1990. Records showed that there were no fines levied and the community was not informed of the possible health risks.

People

The people in this system are the community members of the East Austin community. The community is composed of African-Americans and Latinos, and according to census tracts, has the highest poverty rates in the Austin Metropolitan Statistical Area (MSA).¹²⁷

Financing

The financial situation in the East Austin system, especially the area surrounding the tank farm, is a bleak one. In April 1992, the values of more than 600 homes surrounding the tank farm were cut by half. A total of 636 homes valued at \$13 million were devalued to \$5.2 million (\$7.8 million less). The devaluation of property and homes not only decreased the market value of the homes, but also the property taxes.¹²⁸ W.G. Hunt, a 30-year veteran of the real estate business, who specializes in East Austin properties, agreed that buyers rely on appraised values in making offers, bankers rely on them when approving mortgages, and independent appraisers consider them in evaluating values.¹²⁹ In essence, the tank farm has left the homeowners unable to sell their homes for a fair price, and has contributed to an overall lowered tax base for the city of Austin.

¹²⁷Demographics and Forecasting Group, *Census Report 5: Income and Poverty 1970-1980-1990* (Austin: Department of Planning and Development, August 1992).

¹²⁸Mike Ward and Scott W. Wright, "Land Values Drop Near Tank Farm: Some East Austin Homes Devalued by Half," *Austin American Statesman*, 21 April 1992, sec., News, p. A1.

¹²⁹*Ibid.*

Processing

As noted in Chapter two, processing is the conversion of inputs, or raw materials, to outputs, or finished products. Fitzgerald refers to those items that are used in the day to day operations to convert inputs to outputs, as resources. According to Fitzgerald, there are four categories of resources that may require analysis in order to get a clear picture of the interactions between the areas being studied and the rest of the organization: *financial, personnel, inventory, and facilities*.¹³⁰

Financial clout, or the lack thereof, has played a major role in the system's ability to provide a safe healthy environment for the community. In this case, the lack of financial support has contributed to the degradation and pollution of the community. The personnel resources of the East Austin system include the community leaders and community organizations responsible for bringing about changes in the community. These personnel resources have had an impact in converting unfavorable inputs into favorable outputs to this system. The inventory resources that best apply to this case are those described by Fitzgerald as "stock-in-trade."¹³¹ These resources are basically the raw materials referred to in the input section. The raw materials for the East Austin system include education, development, and planning. These tools are used in the processing phase to improve the quality of the outputs. The East Austin facilities resources include land, buildings, and infrastructure. These factors are a detriment to the system because they require physical improvements in order to produce favorable outputs for this system.

¹³⁰Fitzgerald, 213.

¹³¹Fitzgerald, 214.

Examples of Outputs to the East Austin System

The outputs, as described by Silver and Silver in Chapter two, are the end product or result of processing the inputs. As with the input examples, the outputs in this section will also be analyzed using Fitzgerald's organization model (Figure 2.7). However, the outputs for the system analyzed for this study are not as clear cut as the outputs for a business, whose main output is profit; or for an information system, whose outputs are tangible items such as reports, printouts, etc. The outputs in the East Austin system are more connected with human emotion and need.

Profitability

Profit is not only defined as a financial gain, but also as an advantage gained--a benefit.¹³² In analyzing the East Austin system's profit outputs, both the financial and the nonfinancial benefits are taken into account. First, the financial benefits for this system, especially the area surrounding the tank farm, are defunct for many years to come. Whether this situation will improve for this area is very doubtful. As mentioned previously in this study, the tax base has had a negative impact on the city. Even though a community is not necessarily a profit making organization, the city's tax base and the area's property values are the only ways to measure monetary value. The Travis Central Appraisal District slashed property values within a quarter mile of the tank farm by half.¹³³ In an interview with Councilmember Brigid Shea, she noted that, she did not foresee the property values being brought back up, and the area

¹³²*Webster's II New Riverside Dictionary*, 1st ed., (New York: Berkley Books, 1984), 559.

¹³³Ward, 21 April 1992.

being totally revitalized until the tank farms are removed.¹³⁴ The removal of the tanks and the clean up process could take years to complete, and even after this happens, there are no guarantees the water and soil will ever be completely clean again.

Lastly, the physical human benefits as an output to the system are not positive ones. Environmental Protection Agency records, toxicologists, health officials, and gasoline company records confirm that illnesses such as respiratory problems, throat ailments, headaches, rashes, nausea, and nosebleeds can be caused or aggravated by exposure to such gasoline components as benzene, toluene, and xylene.¹³⁵ A survey done by the *Austin American Statesman* in April of 1992 showed that "the closer people are to the terminals, the more acute their complaints." In addition to the survey the *Statesman* also acquired limited access to state Medicaid statistics for Travis County and the neighborhoods surrounding the tank farm. The cases diagnosed in people who lived within a 3,000 foot radius of the tank farm are shown as a percentage of all diagnosed cases billed in Travis County during 1990-91 (Table 4.1).¹³⁶

¹³⁴Councilmember Brigid Shea of Austin, interview by researcher, 20 March 1995.

¹³⁵Mike Ward and Scott W. Wright, "Survey Details Illness Among Austin Families Living Near Tank Farm," *Austin American Statesman*, 10 May 1992, sec., News, p. A1.

¹³⁶*ibid.*

Table 4.1 Illnesses in tank farm area as a percentage of illnesses in Travis County.

Diagnosis	Tank Farm Area	Total In Travis Co.
Acute Pharyngitis (sore throat)	47%	9,777
Acute Upper Respiratory Infection	27%	14,669
Acute Laryngopharyngitis (hoarseness/sore throat)	57%	6,750
Asthma (one type)	37%	9,450
Acute Bronchitis	31%	10,102
Pneumonia	26%	8,666
Non-infectious gastroenteritis (inflammation of stomach/intestines)	24%	9,197
Acute Bronchiolitis (bronchial pneumonia)	64%	1,664
Acute Tonsillitis (inflamed tonsils, sore throat)	23%	4,437

Source: Austin American Statesman--Texas Department of Human Resources.

As shown, the community has not benefited from having the tank farm as a part of this system. Any finances that could have been used to replenish the area are at a minimal. Not only has the community been stripped of its tax base, but the health of the community as a whole has been sacrificed.

Products and Services

Services and products are analyzed in the same category because in this system they are basically the same outputs. The output of an organization in most cases is a tangible product or service. This system differs from that definition in that the product or the service a community is expected to provide is more in the abstract. In this case, a safe and healthy environment for its members. Factors, such as the failure of the regulatory agencies to regulate the pollution and to notify the residents of the possible health risks, have contributed to the

degradation of the community. These factors have made it impossible for this system to provide a safe healthy environment.

Correspondence

This is a clear case in which there was a breakdown in communication between some components of the environment (city and state officials, regulatory agencies, etc.) and the East Austin system. Community involvement was not incited in developing policies and regulations that affected the area. Information regarding the possible health hazards was not released until after the community began to raise questions about the safety of the tank farm. A positive outcome of this "lack of correspondence" is that the community is more organized and is now demanding to be included in the decision-making process in matters pertaining to the community.

Adjustments

The East Austin system, like any community should be prepared to make adjustments based on development, planning policies, economy, changes in its population, and any new regulations or ordinances that may be adopted. As a result of the tank farm, this system must now adjust to the degradation of the community, the city's lowered tax base, the responsibility of seeing the clean up process through, and dealing with the fact that most of the residents are trapped in the neighborhood because of their poverty status and the unmarketability of their homes.

Taxes

The taxes in this system consist of ad valorem property taxes. The amount that this community contributes to the city's tax base has been lowered because of the fallen property values resulting from the tank farm contamination. As mentioned previously, Councilmember Shea noted that she did not foresee the property values being restored until the tank farm is removed and the area cleaned up. There is also the possibility that no new members will be added to the community because of the reluctance to move into a contaminated neighborhood.

Operationalization of Hypotheses

The case specific, or operationalized, hypotheses and the evidence used to substantiate each are described below (Table 4.2). Whether this evidence supports or fails to support the hypotheses is discussed in chapter five.

Table 4.2 Hypotheses and evidence used.

<u>Hypotheses</u>	<u>Evidence Used</u>
H1--Industries are attracted to the East Austin area where property is inexpensive and accessible.	-Review of Tax Abatement Policies -Review of Zoning Policy -Interview with Councilmember Shea
H2--Lack of community opposition led to continued pollution through the years and to environmental regulatory agency unresponsiveness.	-Newspaper articles
H3--The presence of the tank farm has devalued property and trapped the people in the neighborhood.	-Property appraisal records database -Newspaper articles -Census Report 5

CHAPTER 5

Research Analysis

The findings of this study are presented and analyzed in this chapter. In addition, the hypotheses are tested and those results are provided. The results are presented according to the three operationalized hypotheses developed as a part of this study.

Results and Analysis

H1 - Industries are attracted to the East Austin area where property is inexpensive and accessible.

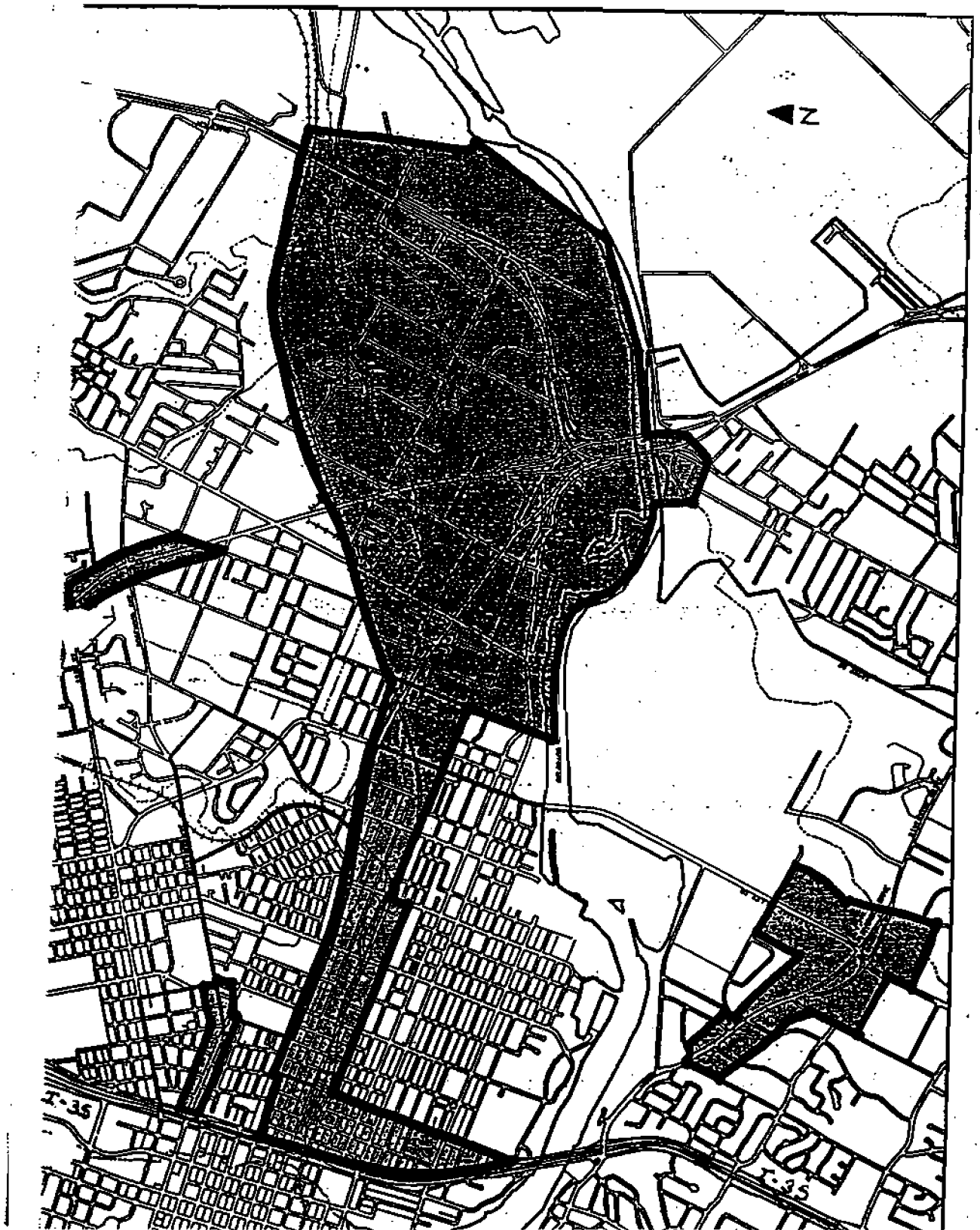
This hypothesis was accepted. The City of Austin Tax Abatement Policies, the zoning policies, and the interview with Councilmember Brigid Shea were used as evidence to support H1. First, a review of Austin's past tax abatement policies revealed that these policies made it attractive for industries to establish in the East Austin area. The abatement terms granted in the past were for six years for those businesses locating within the IEA, and three years for those locating outside the IEA, but within the city limits. Although the tax abatement policy for Austin has expired, this policy made it cost effective and also accessible for industries wanting to locate in East Austin. When asking Councilmember Shea if she felt that this policy had contributed to environmental racism, her response was, "yes, anytime a whole area is designated as an industrial area, that is not careful targeting." She also expressed that tax abatements are a burden on small businesses, and that she felt most industries had not met their goals for hiring minorities as

required by this policy. All these factors made it lucrative for industries to locate in East Austin.

The second piece of evidence used to support this hypothesis was the City of Austin zoning policy regarding East Austin. As seen in Figure 5.1, the shaded area is designated Commercial Redevelopment Area (CRA) and the entire area east of IH-35, including the CRA, is designated industrial. There is no other area of this size designated as such in the city of Austin. Also, nowhere but in East Austin, are industrial facilities of this magnitude placed back to back to residential areas. As shown in Figure 4.4, the area surrounding the tank farm is designated as residential. These types of policies have made it easy for industries to locate in this area and have contributed to the institutionalization of environmental racism.

H2 - Lack of community opposition led to continued pollution through the years and to environmental regulatory agency unresponsiveness.

This hypothesis was accepted on the basis that no actions were taken against the tank farm until the community members began to question the safety of the tank farm. This was despite the fact that the regulatory agencies were aware of the contamination way before the residents began their own investigation. It was only after the residents of the neighborhood began to share information about their health with each other, that they began to investigate and demand answers from the state agencies and officials responsible for the oversight. After this was initiated, there was a snowball effect and officials from various agencies got involved and proceeded to investigate.



Source: City of Austin- Guidelines and Criteria for Tax Abatements
Ordinance No. 911121-C

Records, tests, and new inspections revealed that there was evidence of regulatory violations that were up to 7 years old. The *Austin American Statesman* reviewed thousands of records of one of the agencies responsible for regulating bulk storage fuel tanks (Texas Air Control Board), and found that there had been lax oversight. Some of their findings were as follows:

Failed to license some bulk fuel terminals before they were built, as required by state rules, and allowed others to expand despite rules violations.

Failed to inspect some facilities for more than a decade and given others only the briefest of attention, such as one annual inspection report only stated that: "Station has a complete paint job."

Failed to quickly respond to citizen complaints, in some cases taking days to show up to check for problems, long after troublesome odors had dispersed.

Failed to levy fines or other sanctions for repeated violations, even for things as dramatic as unreported spills and building huge tanks without permission.¹³⁷

H3 - The presence of the tank farm has devalued property and trapped the people in the neighborhood.

This hypothesis was accepted based on information from the *Austin American Statesman*, from randomly selected property appraisal records reviewed by the researcher, and the 1992 Income and Census Report. The newspaper reported on April 21, 1992 that land values in the East Austin tank farm area were devalued by half. A total of 636 properties that were

¹³⁷Mike Ward and Scott W. Wright, "State Files Show Lax Oversight of Tank Farms," *Austin American Statesman*, 23 August 1992, sec., News, p. A1.

once valued at a total of \$13 million were devalued to \$5.2 million. The researcher randomly selected four properties to use in comparing property values before and after the contamination was made public. Table 5.1 shows these examples of the devalued properties, and Figure 5.2 shows where the properties are located in relation to the tank farm.

Table 5.1 Comparison of property values before and after devaluation.

<u>Property and Plat Number</u>	<u>1991 Value</u>	<u>1992 Value</u>
#1 - 20419/04/16	\$12,293	\$6,147
#2 - 20419/04/05	\$56,205	\$20,450
#3 - 20318/01/13	\$21,580	\$10,068
#4 - 20318/01/15	\$57,695	\$24,677

Source: Travis Central Appraisal District

As demonstrated by the properties researched, the appraisal values did indeed drop drastically. The devaluation of property has limited the residents' ability to move out of the area and into cleaner neighborhoods. The area in and around the tank farm is one of four census tracts in East Austin with the highest poverty levels. This census tract (shown as 21.11 in Figure 5.3) has a poverty rate of 42.40 percent (based on 1990 census information). This high poverty rate, coupled with the fact that property values have taken a plunge, has trapped these people in this polluted neighborhood for years to come.

Figure 5.2 - Location of Randomly Selected Devalued Properties

Source: Map - Austin, American Statesman
Property Values - Travis Central Appraisal District

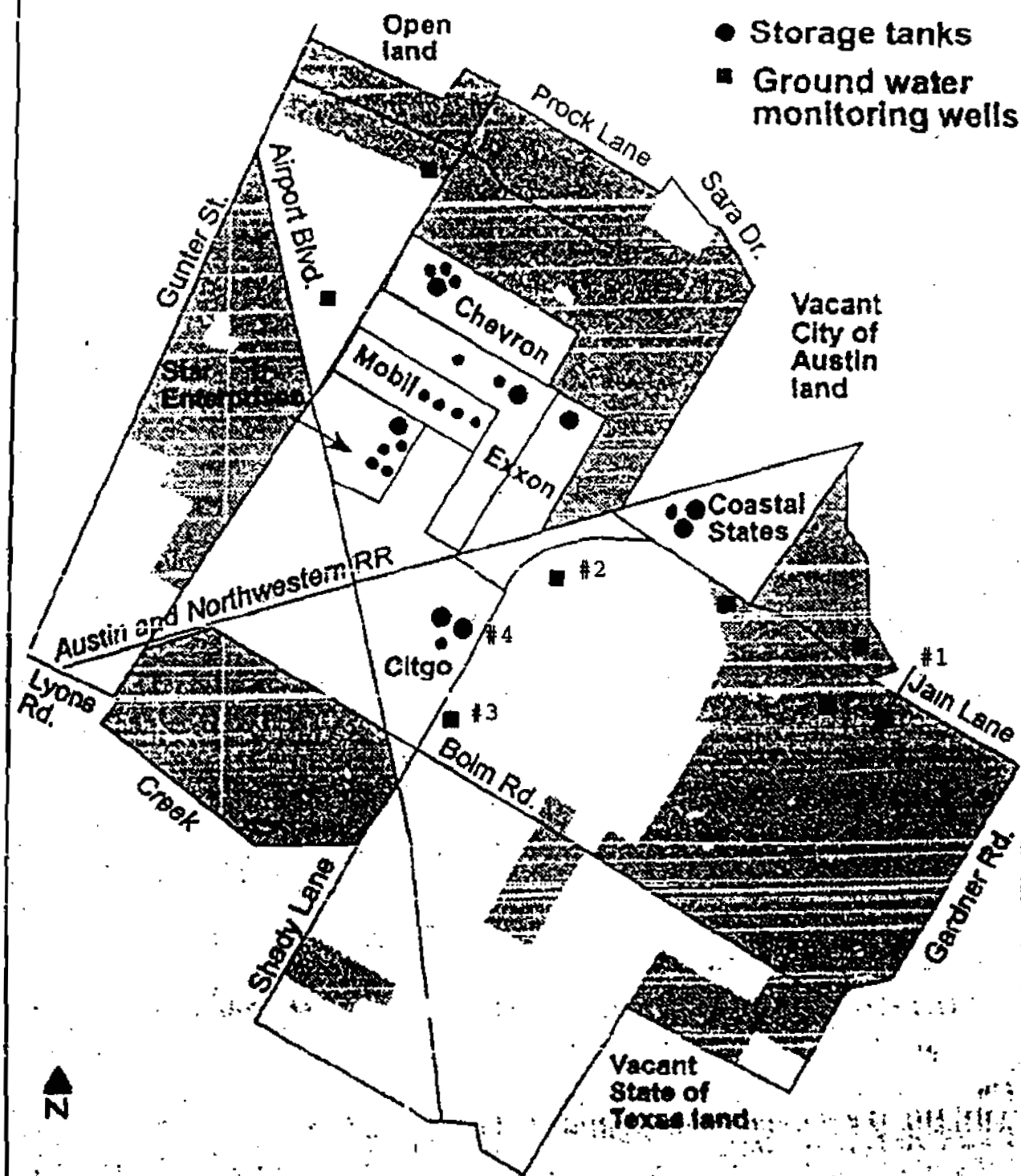
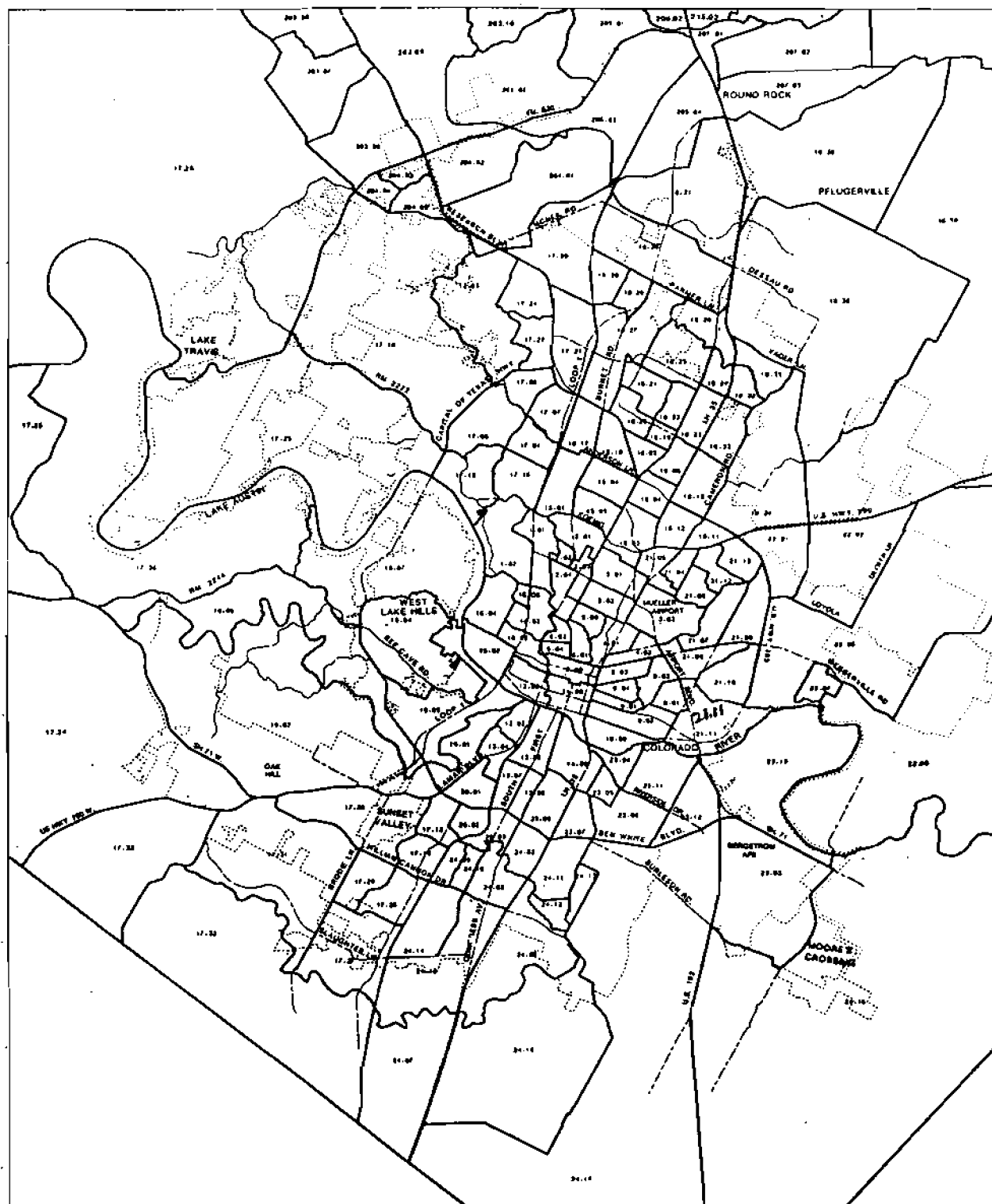


Figure 5.3 - Census Tract Map Showing Tract 21.11



1990 Census Tract Map

plotted 09/20/00



Produced by Development



Source: City of Austin

CHAPTER 6

Summary and Conclusions

In summary, the purpose of this study was to assess the factors that contribute to environmental racism and to determine how and why these factors applied to the East Austin tank farm community. As determined, the factors presented in the literature review did apply to the East Austin tank farm case. After collecting and reviewing all the data, it was determined that this case fit the definition of environmental racism as established by Rev. Chavis in Chapter two:

- 1) The East Austin system, which is predominantly African American and Latino, was left out of the environmental policymaking process.
- 2) Lax enforcement of regulations and laws in this minority community was evident.
- 3) The community was targeted for the siting of noxious facilities via the city's zoning and development processes.
- 4) here was official sanctioning of the life threatening presence of poisons and pollutants in the community.
- 5) Until very recently, this community had been excluded from the environmental movement.

The working hypotheses and the operationalized hypotheses in this research were developed from the literature review. The hypotheses focused on the factors that contribute to environmental racism such as: cheap land, lack of opposition to polluting facilities, and devalued property values. The three hypotheses presented were supported by the data and documentation researched.

The use of systems analysis was instrumental in organizing the information and in developing the hypotheses. Through systems analysis the researcher was able to look at every facet of the East Austin system; areas or components that otherwise could have been overlooked. Fitzgerald's organization model of inputs, processing, and outputs (Figure 2.7) was used to analyze the factors that contributed to environmental racism. This tool was effective for dissecting the system and analyzing how and why each component contributed to the problem.

In conclusion, systems analysis, as an analyzing and organizing tool, used in conjunction with the tank farm case study was an advantage. During the early stages of the research, the researcher was somewhat skeptical as to how all the data and components of the East Austin community would fit the systems analysis model, since it was not a typical business or organization. However, as the research progressed it became clear as to how the different aspects of the East Austin community fit into the systems analysis model for analyzing.

At the time of this research, the Austin City Council had selected a Citizen's Planning Committee to enlist more participation from the communities in Austin. In the future, it would be interesting to look back and see how the community's involvement has progressed in the policy- and decision-making areas. It would also be worthwhile to go back and review the status of all the pending legislation at the time of this research. Since this case is still in litigation, it would be interesting to follow up on the results when, and if, this case is settled.

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