

Environmental Justice and the Siting of SR-85 and North Gateway Transfer Station

by

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ABSTRACT

It is widely recognized that, compared to others, minority and low-income populations are more exposed to environmental burdens and unwanted land uses like waste facilities. To prevent these injustices, cities and industry need to recognize these potential problems in the siting process and work to address them. I studied Phoenix, AZ, which has historically suffered from environmental justice issues. I examined whether Phoenix considered environmental justice concerns when siting their newest landfill (SR-85) and transfer station (North Gateway Transfer Station). Additionally, I assessed current views on sustainability from members of the Phoenix Transportation and Infrastructure Subcommittee and of decision-makers in the Public Works Department and Solid Waste Division. Using a mixed methods approach consisting of interviews, document analysis, and a demographic assessment of census tracts, I addressed two main research questions:

1. Do the distributions and siting processes of environmental burdens from SR-85 and North Gateway Transfer Station constitute a case of environmental injustice according to commonly held definitions?
2. Do current Solid Waste and council members on the Transportation and Infrastructure subcommittee consider environmental justice, defined as stakeholder engagement, to be a part of sustainability?

The results show that the distribution and siting processes of environmental burdens from these facilities may constitute a case of environmental injustice. While city officials do involve stakeholders in siting decisions, the effects of this involvement is unclear. An analysis of long-term demographic data, however, revealed no significant racial, ethnic, or economic effects due to the locations of the SR-85 and North Gateway Transfer Station.

Interviews with current members of the Transportation and Infrastructure Subcommittee, Public Works Department, and Solid Waste Division indicated that Phoenix's decision-makers don't consider environmental justice as part of sustainability. However, they seem to consider stakeholder engagement as important for decision-making.

To help mitigate future injustices, Phoenix needs buffer zone policies for waste facilities and stakeholder engagement policies for decision-making to ensure the public is engaged appropriately in all circumstances. Enacting these policies will help Phoenix become both a more sustainable city and one in which stakeholders have the opportunity to provide feedback and are given decision-making power.

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ACRONYMS

ADEQ- Arizona Department of Environmental Quality

CAC- Citizen's Advisory Council

EJ- Environmental Justice

EJM- Environmental Justice Movement

EJ IWG- Environmental Justice Interagency Working Group

EPA- Environmental Protection Agency

LF- Landfill

LULU- Locally Unwanted Land Use

MRF- Materials Recovery Facility

MSW- Municipal Solid Waste

NIMBY- Not in My Backyard

NEJAC- National Environmental Justice Advisory Council

NGTS- North Gateway Transfer Station

PW- Public Works

RCRA- Resource Conservation Recovery Act

RPOV- Residential Point of View

SE- Stakeholder Engagement

SW- Solid Waste

SWD- Solid Waste Division

SWDM- Solid Waste Decision-Maker

T&I- Transportation and Infrastructure

TSD- Treatment, Storage, and Disposal Facilities

CHAPTER 1: INTRODUCTION

BACKGROUND

Environmental justice (EJ) is an applied field of study that aims to redress the injustices associated with the disproportionate environmental burdens (e.g. polluting facilities) on specific populations, usually minorities and/or low-income groups. The U.S. Environmental Protection Agency (EPA) defines EJ as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, policies...” (2014a). The EPA includes five elements when defining meaningful involvement: providing people with the opportunity to participate in decision-making which may affect their health and/or environment, public participation as an influence on decision-making, public concerns will be considered when making decisions, decision-makers that actively encourage public participation (U.S. EPA, 2014b). Many levels of government now consider EJ issues as awareness about various injustices grows. One major area of concern includes the environmental and public health threats from the siting of unwanted facilities in minority/low-income areas (see General Accounting Office, 1983; Chavis, 1987; Hamilton, 1995; Yandle & Burton, 1996; Stretesky & Hogan, 1998; Boone & Modarres, 1999; Boone, 2002).

South Phoenix, Arizona has been a site of numerous historical justice issues (Bolin et al, 2002; Bolin et al, 2005; Grineski et al, 2006; Luckingham, 1981; Roberts, 1973; Sicotte, 2008), including, industry siting consequences (i.e. the distribution of air pollution) and the placement of major freeways. This thesis will look closely at siting

decisions made in Phoenix with respect to the most recent municipal solid waste landfill and transfer station.

RESEARCH QUESTIONS AND OVERVIEW OF METHODS

It is important to understand whether current industry-siting decisions include the input of residents who will be affected by a new facility in their community; knowing this allows outside observers to determine if Phoenix is moving away from past discriminatory practices, be they intentional or unintentional. Public involvement in siting decisions is important as involving the public helps reduce the possibility of discriminatory siting. Phoenix's newest municipal solid waste (MSW) landfill (LF), SR-85, and newest transfer station (TS), North Gateway Transfer Station (NGTS), offer an opportunity to examine whether the siting decisions were environmentally just. Map X depicts the locations of SR-85, NGTS, Skunk Creek Landfill, 27th Avenue Transfer Station, and the Hudson Baylor Transfer Station. SR-85 replaced Skunk Creek LF, 27th Avenue TS is the other active TS in Phoenix, and NGTS replaced the Hudson Baylor TS.

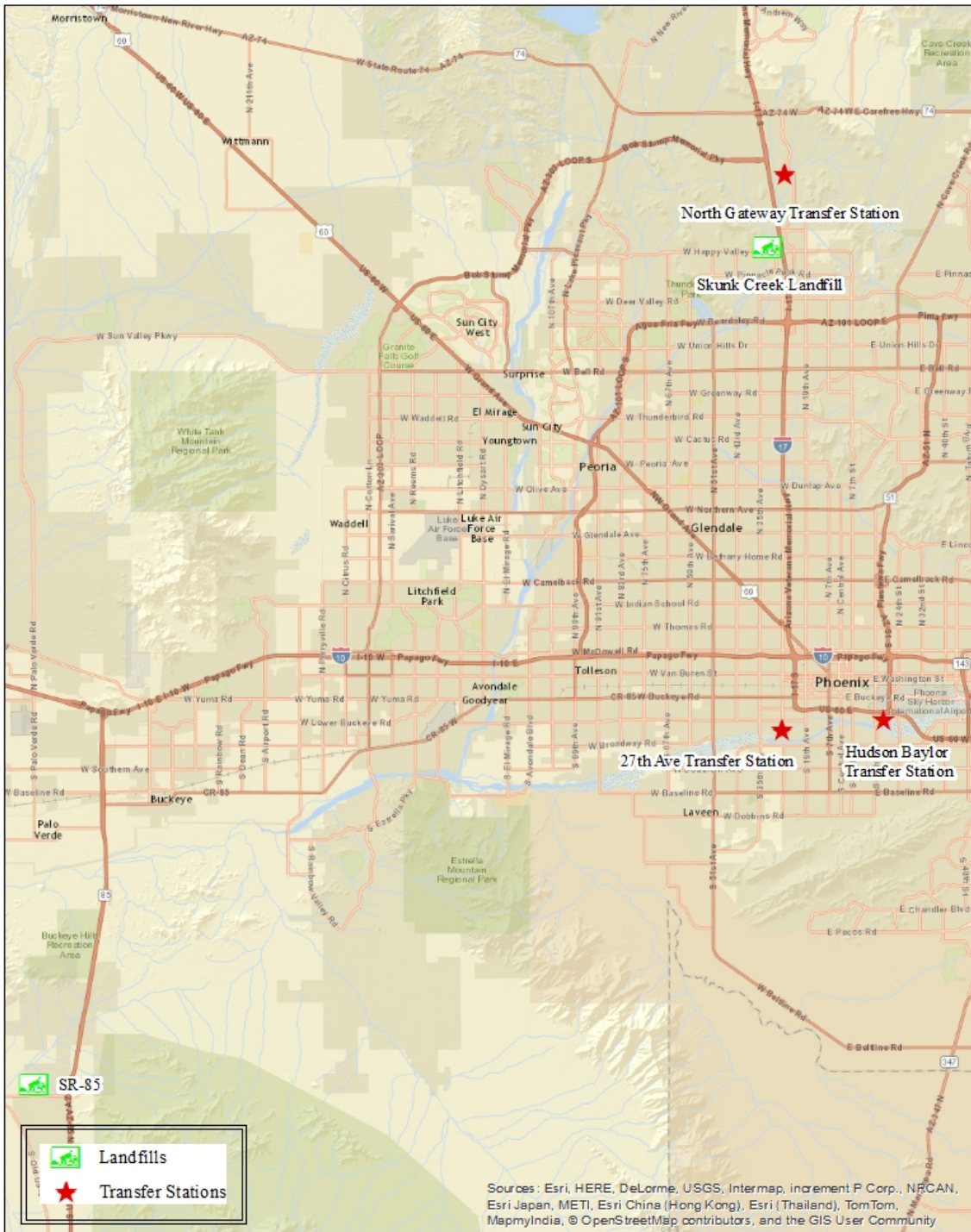


Figure 1. SR-85, North Gateway Transfer Station, Hudson Baylor Transfer Station, and Skunk Creek Landfill.

To address EJ in the siting of these facilities, my study attempted to answer the following research questions:

1. Do the distributions and siting processes of environmental burdens from SR-85 and North Gateway Transfer Station (NGTS) constitute a case of environmental injustice according to commonly held definitions?
 - a. In which steps and stages of the siting processes for SR-85 and North Gateway Transfer Station did decision-makers at Phoenix Solid Waste address environmental justice concerns? What analyses were performed to make the decision about the siting of SR-85 and North Gateway Transfer Station? How do past Solid Waste decision-makers view stakeholder engagement (SE) and the role it plays in the siting of solid waste facilities? Additionally, what is the residential point of view for the inclusion of stakeholder engagement in the siting process?
 - b. At what stage of the siting process did the Natural Resources Subcommittee and Buckeye City Council consider environmental justice when presented information on SR-85 and North Gateway Transfer Station?
 - c. What were the demographics of the communities in which each Phoenix landfill and transfer station were sited? In what way has the siting of Solid Waste Division facilities affected the demographics of communities surrounding them, compared to the larger region?

2. Do current Solid Waste (SW) and council members on the Transportation and Infrastructure (T&I) subcommittee consider environmental justice, defined as stakeholder engagement, to be a part of sustainability?

This thesis used interviews, demographic data, and document analysis to answer these questions. I conducted open-ended interviews with past Solid Waste Division (SWD) and Public Works (PW) managers who participated in the decision-making process of the two facilities. I obtained demographic information for relevant census tracts in the Phoenix area, covering years from before the facilities were open to the present day to examine change over time for the demographics of these communities. The relevant census tracts are those that contain closed and current Phoenix LFs and TSs. I also performed document analysis on: City Council meeting minutes, community meeting minutes, and a study performed by the contractor hired to narrow down the potential sites for the two facilities.

The last research question addresses the potential disconnect experienced between sustainability and EJ and how the combination of the two can provide for better policy solutions to the location of environmental burdens and benefits (see Boone & Fragkias, 2013). The City of Phoenix is attempting to become more sustainable through various initiatives. To achieve this goal, City decision-makers must link justice to sustainability to ensure there is an equitable decision-making process and distribution of environmental benefits to all Phoenix residents. To address this potential disconnect, I interviewed current SWD and PW Department decision-makers about their views on sustainability. These questions were used to assess whether they view SE as a part of sustainability.

THESIS OUTLINE

This thesis is divided into six chapters. Following the introduction, the second chapter reviews the literature on EJ. Chapter 3 describes the study design and the methods used to answer the research questions. Chapter 4 presents a case study on Phoenix's history in regards to EJ. Chapter 5 presents the findings of the study. Chapter 6 discusses the study's implications and limitations. Chapter 7 reviews the study's contributions and suggests avenues for further research.

CHAPTER 2: LITERATURE REVIEW

ENVIRONMENTAL JUSTICE

Definitions of environmental justice. Minorities and low-income populations have long suffered from unfair environmental conditions due to an unequal distribution of environmental burdens. The environmental justice movement (EJM) arose to address these inequities. It is based on the evidence that "... certain groups of people bear a disproportionate burden of environmental problems" (Pojman and Pojman, 2008, p. 643). Therefore, environmental injustices are "unhealthy and unfair environmental conditions (when suffered by any type of community)" (Sicotte, 2008, p. 1140).

Equity and equality differ in meaning in regards to how they are used in law. Equity refers to "freedom from favoritism when referring to a system of law" and equality refers to the uniform treatment of communities (Department of Environmental and Occupational Health Sciences, 2015). There are two types of EJ: distributive and participative/procedural/political justice (Kaswan, 1997; Hollifield, 2001; Sicotte, 2008). Participative justice examines the access that citizens have to the decision-making process to ensure equal participation in siting processes and equal enforcement of environmental laws (Kaswan, 1997; Hollifield, 2001; Sicotte, 2008). Arnstein (1969) assigns eight levels of public participation ranging from barely artificial to citizen control. Public participation, when done correctly, gives the "have-nots" power in decision-making and a redistribution of power (Arnstein, 1969, p. 216). However, in practice, public participation usually works to maintain the "status quo" (Arnstein, 1969, p. 216). Distributive justice is concerned with the equitable distribution of environmental

risks and benefits, which are the outcomes of processes or procedures. To the idea of both participative and distributive justice, Walker (2009) adds the realm of responsibility, indicating that those who experience an injustice may not be responsible for producing it.

Environmental racism, another dimension of EJ, focuses on inequalities based upon race and ethnicity (Pellow, 2000; Sicotte, 2008). Environmental racism can be the result of direct racism, or, through “biases in natural resource policy, the uneven enforcement of environmental regulations, and the exclusionary nature of mainstream environmentalism” (Pulido, 1996, p. 377).

When a city or a company sites a hazardous-waste landfill in a minority neighborhood located in a predominately nonminority area, it may be committing an environmental injustice. EJ concerns increased over the past few decades as environmental risks became better understood and measured and communities have self-organized and protested against unfair environmental burdens. It is important to correct these unfair environmental burdens because when communities face an inequity, they lose out on five forms of capital: productive capital, financial capital, social capital, human capital, and natural capital (Pastor, 2007).

The EJM, as distinct from EJ as a field of study, has grown over the past few decades as environmental risks have become better studied and understood.

Development of the Environmental Justice Movement. The EJM was forged at the intersection of environmentalism and the Civil Rights Movement (Boerner & Lambert, 1995). Many environmental organizations largely ignore EJ and many of the groups “mirror the biases of the larger society” and therefore ignore the issues

surrounding equality (Shrader-Frechette, 2006, p. 13). Zimmerman (1993a) poses a few explanations for this divide between the EJM and the environmental movement. One is that environmentalism has mostly been a white dominated field. A second explanation is that those who are struggling to obtain basic needs are less likely to worry with environmental issues (Zimmerman, 1993a).

Concern over environmental injustices started in the 1970s when “African American scholars and activists began to write and speak about environmental issues...” (Taylor, 2011, p. 286). In 1979, a landmark legal suite brought action against Southwest Management Corps for siting private and city-owned LFs and incinerators in majority black communities in Houston, TX (Bullard, 2005; 482 F. Supp. 673). This lawsuit was the first in the U.S. to use the Civil Rights Act to fight environmental degradation (Bullard, 2005).

The EJM began in 1982 when residents of the predominately African- American Warren County, NC, protested the siting of a polychlorinated biphenyl (PCB) landfill in their community (Pellow, 2002). The residents of the county partnered with Civil Rights activists to stop the siting; however, these protests failed (Gervich, 2011). To appease the residents, the NC Governor promised that the LF would be detoxified as soon as technology was available to do so (Gervich, 2011). The State fulfilled this promise in 2003 (Bullard, 2014).

Then, in 1983, the US General Accounting Office conducted a study that determined that 75% of the hazardous waste in the South was located in predominately African American communities (General Accounting Office, 1983). The United Church of Christ commissioned a study in 1987 called *Toxic Waste and Race in the United States*

that found further evidence that African Americans suffered greater environmental burdens (Chavis, 1987). The study examined the location of hazardous waste disposal facilities and the demographics of those living near disposal sites. Its findings suggested that race, specifically Hispanic and African American, was the strongest determining factor for where hazardous waste sites were located within the United States (Chavis, 1987).

Development of EJ research. EJ research has been categorized in two stages: first wave and second wave studies (Williams, 1999 as cited in Walker, 2009). First-Wave Studies argued that racial discrimination caused environmental injustices. However, many researchers have determined that intent is not necessary for an injustice to occur (Hamilton, 1995; Oakes, Anderton, Anderson, 1996; Been and Gupta, 1997; Pulido, 2000; Mohai, Pellow, & Roberts, 2009).

Second-Wave Studies look at spatial units of analysis, examine whether race or class underlie injustice, and consider the “chicken-or-egg” debate. These last two are debated amongst EJ researchers. The chicken-or-egg debate is over the importance of whether minorities settle in areas where industry already exists or if industry is sited in areas where minorities resided. However, this argument withered over time as researchers realized that the question of “who came first” does not account for the intricacies of how areas develop over time (Walker, 2009), especially since racism may occur in land-use planning (Boone *et al.*, 1999; Boone, 2002). Researchers now perform historical and place-specific analyses to understand how siting of hazardous facilities occurred and how factors other than demographics have influenced the location of toxic landscapes (Yandle

& Burton, 1996; Boone *et al.*, 1999). The *process* that created the racism must be examined, not only the outcome (Pulido, Sidawi, and Vos, 1996). For instance Boone *et al.* (1999) examined the City of Commerce in LA County and found that railroad routes, zoning decisions, and cheap labor were the principle drivers of the injustices in the area.

Environmental racism can stem from intentional discrimination, institutional racism, and market dynamics (Walker, 2009). Many researchers have concluded that intentional discrimination is not usually the fundamental cause of environmental injustices; rather, structural or institutional causes are more influential (Boerner, C. & Lambert, T., 1995; Hamilton, T.J., 1995; Liu, F., 1997; Stretesky, P. & Hogan, M.J., 1998; Pulido, 2000). A number of environmental justice theories have been created. The following section describes some of these theories.

Theories on environmental justice. Institutional racism is “the process through which present-day racial disparities are reproduced by racially neutral processes, when these processes developed in a social and historical context of overt racial discrimination (e.g., land-use zoning)” (Sicotte, 2008, p. 1140). Institutional barriers arise from economics and free market issues. Hamilton (1995) applies three theories to how environmental injustices can occur as a result of institutionalized practices: Pure Discrimination, The Coase Theorem (from Coase, 1960), and the Theory of Collective Action (from Olson, 1965). Pure discrimination occurs when those siting a facility gain some utility, or benefit, by siting it in a minority neighborhood (Hamilton, 1995). In this situation, those who are siting will purposefully locate a LULU, like a LF, in the minority neighborhood, leading to environmental injustices due to racism.

The Coase Theorem holds that those siting a facility will site where the least economic harm will occur (Hamilton, 1995). According to this theorem, facilities will be sited according to various concerns including the community's physical and demographic characteristics. The facility location can cause individuals to "vote with their feet" if they are able and leave the area, leaving minority and low-income individuals. The siting of the facility in the area may not be due to discrimination, but other circumstances that produce the best scenario for the industry according to the various relevant factors. Thus, environmental injustices can occur organically through the process of a siting, regardless of intent.

The Theory of Collective Action focuses on the political process and the ability of people to voice their preferences. "This implies that compensation demands voiced through the political process to a locating firm depend on at least two factors: the value placed on environmental amenities by those threatened by the firm's location, and the ability of this group to voice those demands through the political process" (Hamilton, 1995). If a minority population is not able to mount collective action, then a facility may be located near them due to the façade of no or little opposition.

To address environmental injustices, Bullard (1994) prescribes five principles: the right to protection from environmental degradation, the prevention of harm, a shift of the burden of proof, obviate proof of intent, and the redress existing inequities. Prevention of harm means eliminating harm before it affects people. Currently, burden of proof rests upon those who are harmed by an injustice rather than with those who create or perpetuate an injustice. Burden of proof should be shifted from those who are harmed to those who harm. When environmental injustices occur, the poor or minority areas rarely

have the resources available to them to prove they are being harmed. Therefore, the polluters should have to prove that they are not harming the communities in which they are located (Bullard, 1994). The legal requirement to prove intent to harm makes it nearly impossible to substantiate discrimination in EJ cases; therefore, this requirement should be obviated. To redress existing inequities, resources should be spent on areas that have the greatest health and environmental issues (Bullard, 1994). If enforced, these principles can lower the risk for environmental injustice and can protect communities from discrimination.

Recent developments in the EJM. Scholars have called for research on EJM to be community based and participatory, specifically through universities and communities working together to combine lay and expert knowledge (e.g., Grineski, 2008). Bonorris (2010) states, “Robust community participation in environmental decision-making leads to policy decisions that reflect the whole polity, and contribute to a more vibrant democracy including and beyond the environmental context” (p. viii). This combination of lay and expert knowledge creates a stronger and more effective movement, as both perspectives are needed to create sustainable solutions to community problems (Grineski, 2008).

EJ research has recently begun to examine the distribution of environmental amenities. For instance, Boone *et al.* (2009) look at the distribution of parks, an environmental amenity, in Baltimore, Maryland. The authors argued that studying the distribution of amenities is as important as studying the distribution of disamenities (Boone *et al.*, 2009). Furthermore, in an effort to more fully understand why

environmental injustices, researchers are using agent-based modeling. For instance, to agent-based modeling can be used to examine the connection between residential choice constraints and environmental injustices (Kim, Campbell, & Eckerd, 2013).

Researchers and cities are also beginning to connect sustainability with EJ. As cities are starting to become more sustainable, the combination of EJ and sustainability is also becoming a more researched and discussed topic. Both EJ and sustainability can benefit from each other. Sustainability provides a holistic, systems-thinking, and futuristic view while EJ provides a lens through which decision-makers and researchers can look at the past to create policies that help stop future injustices (Boone & Fragkias, 2013). Cities are beginning to incorporate EJ statements into their sustainability plans. For instance, Los Angeles' sustainability plan includes a section on EJ (Los Angeles, 2015). This section discusses the distribution of environmental burdens in lower income and minority tracts within LA and the push toward rectifying these injustices and working toward a more just future for the city. This plan leans toward distributional EJ, but also includes the importance of creating working groups. El Paso, TX has a community section in their sustainability plan where they state that all residents need to have the same access to amenities. They are trying to strengthen community involvement and pride (El Paso, 2015). Some cities, while not having specific EJ sections, do have sections on equity. These sections often relate to improving air quality, access to environmental amenities, or creating healthier communities (see Philadelphia and Austin). Warner (2002) found that few cities have measureable indicators for EJ in their sustainability plans, but rather have more educational information or policy statements.

Additionally, a core component of sustainability includes society. While this can encompass a broad range of topics, sustainability can help “build social equity” (Warner, 2002). Therefore, including environmental justice within the concept of sustainability can help both concepts grow and can help encourage cities to start considering both more seriously and comprehensively.

Amaritya Sen (2005) describes the role of human rights as capabilities. Justice can be seen as an inherent human right, yet there is a difference between experiencing justice and the capability of individuals to experience justice in their society. For instance, the capability approach examines how an environmental burden may affect a community’s ability to be healthy.

Methods in EJ research. EJ problems fit into four categories: single location/area-specific, multiple areas, non-specific area/population based, non area-specific/economics based (Rhodes, 2002). Rhodes explains that it is important to understand what type of injustice is occurring in order to appropriately find solutions for the injustice. Table 1 below depicts the EJ Categories as described by Rhodes.

Table 1	
Environmental Justice Categories	
Category	Summary
Geographically Specific (Single Location/Area-Specific/Multiple Areas)	Predominately researched and applied; spatial measurement usually applied
Non-Area Specific, Population-Based	Usually reflect lifestyle characteristics; are not location-based; do not always reflect policy decisions, but rather choices made by the relevant populations
Non-Area Specific, Economics-Based	Usually reflect economic decisions based upon economic need; should assess whether or not the

	population is educated on the risks they are choosing to endure and in what way they are exposed to a risk more than other populations
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Adapted from Rhodes (2002).

EJ research most often uses single location/area-specific as these communities and neighborhoods are either overburdened by environmental problems or do not receive a proportional amount of benefits (Rhodes, 2002). The single location/area-specific category almost always includes a spatial measurement (Rhodes, 2002). To make the best assessments, researchers should take many spatial measurements (Rhodes, 2002).

Determining which unit of analysis to use in EJ literature is a debated topic (Zimmerman, 1993b; Mohai, Pellow, & Roberts, 2009). EJ researchers use various units of analyses, which makes comparison across studies difficult as the “results of social and economic data analyses for subpopulations can vary considerably according to the geographic unit chosen for the data” (Zimmerman, 1993b, p. 645). What is especially difficult is the lack of agreement over what constitutes an environmental injustice, so agreement over measurement is hard (Rhodes, 2002). Additionally, an injustice may occur on one level, but not on another, leading to issues in policy formation and implementation as not all policies may be relevant depending upon the scale at which the injustice occurs (Rhodes, 2002; Zimmerman, 1993b). Political jurisdictions, zip codes, census tracts, counties, municipalities, block groups, and blocks are the main types of units of analysis in EJ research (Zimmerman, 1993b). As they are large units of analysis, political jurisdictions are not generally appropriate for analyzing the demographics of a facility’s immediate area (Zimmerman, 1993b). However, they also represent areas

characteristic of a “political identity” and “are managed by public officials who are often directly involved in facility decisions,” which makes them important to analyze if complementary to other geographic areas (Zimmerman, 1993b, p. 647).

In regards to census data units, Zimmerman (1993b) states that they are used because environmental burdens do not know political boundaries. Census data units consist of tracts, block groups, and blocks from largest to smallest. Tracts are subdivisions of a county that usually have between 2400-8000 people (Zimmerman, 1993b; Fahnsbender, 1996). Tracts are permanent and small statistical units that are supposed to be homogenous and comparable (Fahnsbender, 1996; Been & Gupta, 1997), reflect the community’s view of neighborhood boundaries (Been & Gupta, 1997), and are intended to remain stable in order to make comparisons between tracts easier, but may change over time if the population fluctuates (Fahnsbender, 1996). Block groups are a “cluster of blocks within a census tract” and usually contain between 250-550 housing units (Fahnsbender, 1996, p. 131). Blocks are the smallest unit of analysis and are bounded by physical properties such as roads (Fahnsbender, 1996).

Analyzing an area on the tract level may not provide enough detail to accurately describe the area, as the tract may be too large to accurately depict whether or not an injustice is occurring (Fahnsbender, 1996). If the analysis is broken down into a smaller unit, like a block, then the picture is more precise and may reveal heterogeneity that a tract may have concealed (Fahnsbender, 1996). Fahnsbender (1996) states that when heterogeneity is not a problem within a census tract that examining the area on the census tract level is appropriate; however, when the data seems to be affected by heterogeneity,

then block groups are a more appropriate measurement to use (as cited from Goodman, 1977).

Zip codes are another unit of analysis used, however, smaller units are often more appropriate (Zimmerman, 1993b). Many issues occur with using zip codes as they are not uniform in either size or population density (Fahnsbender, 1996), are not always in line with census or political boundaries (Fahnsbender, 1996), and they are less stable than census tracts (Been & Gupta, 1997). EJ issues abound, yet there are issues associated with not only determining what an injustice is, but how to measure injustices. Still, policies, from the local to federal level, have developed to attempt to address inequities with varying degrees of effectiveness.

Environmental justice policies. In 1994 President Clinton signed Executive Order 12898 in an effort to support social movements and prevent future injustices. EO 12898 mandates that "... each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States..." (Exec. Order, 1994). Thus, EO 12898 forces federal agencies to consider the impacts of their actions. The EO charges the head of each agency with the responsibility of compliance. Additionally, the EO created an interagency working group, called the Federal Interagency Working Group (EJ IWG), composed of federal departments and White House offices, whose purpose, among others, is to guide the agencies in creating

EJ strategies (Exec. Order, 1994). The EPA is the head of the EJ IWG (U.S. Environmental Protection Agency, 2014c).

While the EJ IWG was created with the good intentions of providing communities with more political and economic power and to involve communities in the decision-making process, Holifield (2003) found that "... demographics only make a difference in the remedial process if communities take up the EJ banner and actively use their demographic status to mobilize for collective political action." Additionally, there were not sufficient guidelines on how to incorporate EJ in to the decision-making process of the EPA (Holifield, pp. 291).

Even though challenges persist, the EPA is making strides in regards to EJ. The National Environmental Justice Advisory Council (NEJAC) is a federal advisory committee for the EPA, established to advise and make recommendations on EJ issues (U.S. Environmental Protection Agency, 2014d). Plan EJ 2014 outlines the EPA's plan for implementing EJ strategies into rulemaking and permitting. Plan EJ calls for the EPA to "develop and implement tools to 1) enhance the ability of overburdened communities to participate in the permitting process and 2) Assist permitting authorities to meaningfully address environmental justice issues in permitting decisions to the greatest extent possible" (U.S. Environmental Protection Agency, 2014e). This only relates to EPA permits, not to any other federal agency. However, all federal agencies have to develop similar plans.

The Civil Rights Act, Title VI is another tool used for EJ cases. Title VI "... prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance" (Department of Justice, 2014). The *Bean*

vs. Southwestern Waste Management Corps case is an example of the use of the Civil Rights Act (482 F. Supp. 673, 1979). In this case, a Houston neighborhood claimed their civil rights were violated by the decision to place a dump in their neighborhood due to racial discrimination; while they lost the case, it began a precedent for others to utilize courts to fight discrimination (US Commission on Civil Rights, 2003).

Historically, zoning ordinances were used to further discrimination and segregation. While initially used as ways to separate land uses, they evolved and were used as ways to separate whites from blacks (Taylor, 2011). In addition to zoning ordinances, restrictive covenants, which are “property deed clauses that specify and delimit what property owners can do with their land and buildings,” were also used as ways to separate minorities from whites (Taylor, 2011, p. 284). This can be seen in the 1880s when cities banned certain types of businesses, usually run by minorities, from locating in white neighborhoods (Taylor, 2011). Additionally, zoning ordinances tend to permit land uses for compatibility; therefore, if industry is located in a certain area, it is likely that it will continue to be permitted in that area, limiting the spread of industry to other parts of a city (Kaswan, 1997; Boone, 2002). Therefore, without policies or regulations in place to correct this, injustices may continue to occur.

Community engagement is a requirement for many political processes. Kaswan (1997) explores the connection between environmental laws and EJ, concluding that communities need to have the ability to communicate about unfair treatment in order to increase “decisionmakers’ accountability to all” (p. 225). By increasing accountability, confidence is instilled in communities affected by environmental injustices.

Additionally, there are many federal environmental laws that require public participation in permitting. Two of the most important laws are the Resource Conservation and Recovery Act (RCRA) and the National Environmental Protection Act (NEPA). The EPA has a RCRA Public Participation Manual that provides guidelines for effective public participation (U.S. EPA, 1996).

Many states are considering EJ in policies and initiatives. A few new themes include: looking at communities of color and environmental racism, housing, landfills and Treatment, Storage, and Disposal Facilities (TSDFs), Native American issues, pesticides/agricultural chemicals, facility emissions and siting (Bonorris, 2010). Some states are working on ways to identify communities or populations that are suffering from environmental injustices such as: assessing community knowledge and citizen complaints, using indicators, and analyzing data using demographic threshold analysis, community snapshot and indicator analysis, and quantitative ranking analysis (Payne-Sturges *et al.*, 2012). However, there are many flaws associated with these efforts surrounding robust data sets at the correct spatial resolution, funding, and collaboration (Payne-Sturges *et al.*, 2012).

Many polices exist to prevent injustices in regards to various types of facilities. As discussed above, EJ research often studies facility sitings and the associated injustices. The next section looks specifically at the research related to facility sitings and EJ.

EJ and the siting of facilities. Many researchers find that there are inequalities associated with the locations of hazardous and toxic waste facilities (General Accounting Office, 1983; Chavis, 1987; Hamilton, 1995; Yandle & Burton, 1996; Stretesky &

Hogan, 1998; Boone & Modarres, 1999; Boone, 2002) while others find that there are not significant inequities in the siting of these facilities (Anderton *et al.*, 1994; Oaks, Anderton, & Anderson, 1996). For instance, Anderton *et al.* (1994) examined commercial TSDFs and found that when compared to non-TSDF locations, there is "... no significant difference in the percentage of the population that is black" (Anderton *et al.*, 1994, pp. 243). However, other studies show that minorities, low-income, and less-educated neighborhoods are more likely to experience increased burdens from proximity to waste treatment facilities (Martuzzi, Mitis, & Forastiere, 2010) and that minority and low-income areas also suffer more from LFs and MSW facilities (Wenz, P., 2001b; Shrader-Frechette, 2006; Martuzzi *et al.*, 2010; Perkins *et al.*, 2012). Moreover, marginalized and poor areas are less likely to benefit from Superfund cleanups (O'Neill, 2007). Corporations and governments often site facilities in areas that are least able to be informed about potential EJ issues or stop the siting from occurring (Shrader-Frechette, 2006). Conversely, political clout helps to get better and quicker solutions to environmental clean ups and that majority, not minority, areas usually have political clout (Lavelle & Coyle, 1999).

Been (1994) states that on average, areas in which Locally Unwanted Land Uses (LULUs) are located have a higher percentage of minority and low-income residents. However, this does not mean that these areas were majority minority/low-income during the time of the siting; research does not show racism and classism during the siting process, just that environmental injustice occurs *after* the siting (Been, 1994). Yandle and Burton (1996) state that LULUs affect real estate values, how an area is perceived, and how likely an area is to have discriminated populations. Mohai, Pellow, and Roberts

(2009) and Mohai and Saha (2007) supply three additional causes for environmental injustices in regards to industry locations: economic, sociopolitical and racial discrimination. In reference to economic reasons, the researchers state that industries are not purposefully discriminating; instead, they are trying to reduce the cost of business by siting in areas where there is a low cost of land and where labor and materials are located. As minorities and low-income individuals tend to live in these areas, they become disproportionately burdened. In regards to sociopolitical reasons, when siting an industry, both the government and industry want to avoid opposition, therefore they site in areas where there is little political power- this is most often low income and minority communities. Racial discrimination is the least likely reason for siting decisions and discrimination is usually unintentional and may result from previous zoning laws or white flight (Pulido, 2000). Additionally, market dynamics can greatly influence the composition of an area after the siting of a LULU (Been, 1994; Yandle & Burton, 1996). Knowing which of these (economic, sociopolitical, discrimination) is the cause for the injustice is important as the policies, or solutions, will depend upon what is causing the injustice (Been, 1994; Mohai and Saha, 2007; Mohai, Pellow, & Roberts, 2009).

While the EJ movement will make siting hazardous waste sites even more difficult, it will give voice to those whose communities are dumping grounds (Albrecht, 1995). Disposal sites have to be found for these materials, so the question is how this can be accomplished in a world that is changing morally (Albrecht, 1995).

The fight for justice is a struggle that many bear, but is especially strong regarding waste disposal. Waste facilities epitomize environmental injustice as minorities often bear the majority of environmental burdens associated with waste. Even though

waste facilities constitute a societal good, living near them is undesirable and they often incite Not-In-My-Backyard (NIMBY) attitudes as they can, at a minimum, create increased traffic, noise, and air pollution. Additionally, NIMBY arguments are widely utilized by those who have a strong political voice (usually affluent, non-minorities), leading to the placement of facilities in low-income and minority areas (Mohai, Pellow, & Roberts, 2009) and leading to those who have sufficient funds moving away from the area while those without sufficient funds remain (Shrader-Frechete, 2006).

MSW TSs/LFs. Municipal solid waste (MSW) facilities are integral to waste management services for cities, as the collection of municipal waste is vital to public health. However, as shown above, there are disparities associated with their sitings. As David Pellow (2002) states in *Garbage Wars*:

Solid waste is a fact of life. Waste production is an unavoidable function of all living organisms... With the rising world populations, the closure of landfills, and high per capita waste generation (particularly in the global North), garbage disposal practices are becoming more and more problematic. These practices frequently divide public opinion, and they have led to major political conflicts between groups concerned with natural resource conservation and those focused on social justice (p. 1).

Therefore, until solid waste collection is no longer necessary, building MSW facilities will remain essential.

For this research, two types of facilities are examined: transfer stations and landfills. Transfer stations are “facilities where MSW is unloaded from collection

vehicles and briefly held while it is reloaded onto larger long- distance transport vehicles for shipment to landfills or other treatment or disposal facilities” (U.S. Environmental Protection Agency, 2014b). Transfer stations are vital for municipalities as they allow for the more efficient transportation of waste to landfills. However, while transfer stations are useful for decreasing environmental and economic costs associated with waste transportation, they can cause increased traffic in the immediate area, leading to potential problems for nearby residents if not sited properly (U.S. Environmental Protection Agency, 2014f).

MSW landfills are the final resting grounds for MSW. These landfills “must be designed to protect the environment from contaminants which may be present in the solid waste stream” (U.S. Environmental Protection Agency, 2014g). Federal regulations have increased for MSW landfills and now require that landfills are not sited in environmentally sensitive areas and that they have monitoring systems in place to ensure groundwater contamination does not occur and have to monitor landfill gases (U.S. Environmental Protection Agency, 201g). However, even though these facilities are necessary, the placement of them does continue to be a justice issue. Pellow (2002) states that the “burden of managing garbage and pollution” is often not shared equally amongst all humans and that throughout the world, those who produce the most waste are often not those who have to bear the greatest burden of waste disposal (p. 1).

EJ issues associated with MSW are widespread. While they are just one of many different types of EJ problems, they affect all levels of government and all communities. No one should have to bear the burden of other’s waste. The next section examines federal stakeholder engagement requirements for permitting LFs.

SE requirements. Stakeholder engagement (SE) requirements exist at all levels of the siting process for transfer stations and MSW landfills. The two levels at which this research will focus are at the county, state, and federal levels. The requirements are the same for all levels and the county is in charge of enforcing the federal requirements. Maricopa County defers to the federal requirements for the siting of LFs and TSs, and does not add any additional criteria. Public involvement occurs during various permitting stages. The county and federal government have certain requirements that must be met for informing the public about the siting of these facilities and for accepting feedback (see 40 C.F.R. 258 and A.R.S. 49-762 and A.R.S. 49-762). Many permits are required to site a LF, including both environmental and technical permits. Some of the environmental requirements require permits for operation, like air and water quality. The EPA requires MSW LFs to obtain an Aquifer Protection Permit and an Air Quality Permit (Title V). Both these permits include a public comment phase of which ADEQ is in charge. They must publish the draft permit and allow time for public comment and must hold a hearing if necessary (Arizona Department of Environmental Quality, 2015a; Arizona Department of Environmental Quality, 2015a). There are no EJ regulations for siting LFs or TSs. While the EPA provides guidelines on engaging the public, they do not require engagement outside the permitting process. Table 2 below depicts two codes that are relevant to these sitings. The second code requires no public outreach. The first code shows that public outreach is required, but only to a certain extent.

Table 2

Solid Waste Facility Siting Federal and Arizona Laws
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Facility	Code	Summary
Landfill	A.R.S. § 49-767 and 40 C.F.R. 258	<p>As Phoenix is a political subdivision of AZ, they are required to give notification to affected properties. If the facility is in an unincorporated area, then the properties within a three-mile radius of the outer boundaries of the proposed site must be notified. If the radius intersects a municipal corporate boundary, then property owners within 1000 feet of the outer boundary also have to be notified. If the facility is not in an unincorporated area, then property owners within 1000 feet of the outer boundaries must be notified. The notice must be mailed to all property owners.</p> <p>Before a final decision is made on the site, a public hearing must be held for those in the “general vicinity of the proposed permanent site.” Individuals must be allowed to voice their opinions. To properly notify affected parties, notification of the public hearing shall be published in a daily or weekly newspaper starting at least two weeks before the hearing and published each week thereafter, there must be a mailed notice at least two weeks in advance, a posted notification, and local radio station broadcasts.</p>
Transfer Station	A.R.S. §49-762.07	This code states that owners and operators have to submit a notice no later than 30 days before operation to the director. This code does not include public participation requirements but does state that the notification has to include measures to protect public health among other requirements.

The next chapter addresses the methods I used for this research to assess whether Phoenix considered EJ when siting their newest LF and TS.

CHAPTER 3: METHODOLOGY

RESEARCH QUESTIONS AND DESIGN

This section addresses the questions that guide this research and how each question is answered. Each question and subquestion is addressed separately and the methods by which they are assessed are explained.

The following are a list of questions addressed by this research.

1. Do the distributions and siting processes of environmental burdens from SR-85 and North Gateway Transfer Station (NGTS) constitute a case of environmental injustice according to commonly held definitions?
 - a. In what ways were environmental justice concerns considered when decision makers within Phoenix Solid Waste discussed the criteria for siting waste facilities (landfills, transfer stations)? In which steps and stages were environmental justice concerns considered and what analyses were done when siting SR-85 and NGTS? How do past Solid Waste decision-makers view stakeholder engagement and the role it plays in the siting of solid waste facilities? Additionally, what is the residential point of view for the inclusion of stakeholder engagement in the siting process?
 - b. How and at what stage of the siting process did the Natural Resources Subcommittee and Buckeye City Council consider environmental justice when presented information on SR-85 and North Gateway Transfer Station?

- c. What were the demographics of the communities in which each Phoenix landfill and transfer station were sited? In what way has the siting of Solid Waste Division facilities affected the demographics of communities surrounding them, compared to the larger region?
2. Do current Solid Waste (SW) and council members on the Transportation and Infrastructure (T&I) subcommittee consider environmental justice, defined as stakeholder engagement, to be a part of sustainability?

This chapter addresses data collection and analysis. I used a mixed methods approach as neither quantitative nor qualitative analysis alone gives a holistic view of the siting process. These methods include interviews, document analysis, GIS, and census data analysis and comparison.

ASSESSING PROCEDURAL AND DISTRIBUTIONAL JUSTICE

There are many definitions for EJ and for what constitutes an injustice. Research indicates that an injustice can occur through a process, distribution of burdens or amenities, or both. Definitions of EJ include both the consideration of process of stakeholder inclusion in and distribution of environmental burdens. This research examines both process, through stakeholder engagement, and distribution of Phoenix landfills and transfer stations. Questions 1a through 1c assess this research question. Questions 1a and 1b examine process and question 1c examines distribution.

The EPA defines EJ as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the

development, implementation, and enforcement of environmental laws, regulations, policies...” (2014a). Meaningful involvement includes: providing people with the opportunity to participate in decision-making for decisions that may have an affect on their health and/or environment, public participation can influence decision-making, public concerns will be consider when making decisions, decision-makers actively encourage public participation (U.S. EPA, 2014b). I analyzed the process of the sitings for SR-85 and NGTS according to the EPA meaningful involvement definition.

This research works off the assumption that distributive justice is the equitable distribution of environmental risks and benefits, which are the outcomes of processes or procedures. I analyzed the distribution of past and current SW LFs and TSs to see where they are located and compared the tract demographics with surrounding tracts and to the demographics of Maricopa County. I assessed the potential disparity of demographics between and among tracts and to Maricopa County.

Procedural justice. To answer this question, I conducted interviews with past decision-makers and the RPOV interviewee, analyzed subcommittee meeting minutes and community meeting minutes, and analyzed a study performed by URS, the contractor hired to find locations for the facilities.

Interviewee population and recruitment of participants.

Past decision-makers. I selected participants based on their role in the site selection process (those who were integral to and present during the siting process). This

included decision-makers within PW and SW. I gained this list through snowball sampling and through reviewing the Natural Resources Subcommittee meeting minutes to find the names of those who presented about the siting. Since Phoenix sited the LF and TS eight years ago, I did not expect all the employees involved in the process to still be working within the City, so I interviewed any who were accessible and willing to participate. I also had help contacting potential participants from a current Phoenix PW employee. Only two individuals responded to my request to be interviewed. Both were solid waste decision-makers (SWDM). They were both provided with the recruitment letter once I received a response indicating interest (see Appendix B).

Residential point of view. The RPOV interviewee is a local EJ activist. I chose this individual because he is a prominent figure within the Phoenix EJ community and both the local and federal government respect his opinion. Additionally, he was present and working with EJ generally during the siting of these two facilities and knew information relating to facility sitings in Phoenix.

Interview process.

Past decision-makers. One decision-maker still lives and works in Phoenix, so I went to the interviewee's workplace to conduct the interview. The other decision-maker no longer lives in the state, so I conducted the interview over the phone. Appendix D shows the interview questions for past decision-makers. I began the interviews with broad questions to see if a discussion of SE would come up organically and then led the

interviewees into more specific questions about SE. These interviews took place between October and November 2014.

Residential point of view interviewee. I emailed the RPOV interviewee directly with the recruitment letter. He agreed to the interview; we met at a coffee shop in Phoenix. Appendix E gives the interview questions for the RPOV interviewee. I transcribed this interview and coded for fair process and stakeholder engagement (SE) with subcodes throughout. This interview took place in February 2015.

Interview analysis. I coded all the interviews and used Microsoft Excel for organization. I chose categorizing strategies over holistic strategies for the coding because they are best suited for comparing and contrasting between and within categories (Rossman, 2003). The coding for the past decision-makers is based upon SE. Categories for this section include siting criteria/exclusionary factors, stakeholder engagement, change over time, siting process, siting plans, economics, and outreach. Table 3 examines and defines each of these codes.

Table 3
Definitions: Past Decision-Makers
Siting Criteria/Exclusionary Factors: The factors used to determine the locations for the facilities. These include both internal and external criteria. Internal criteria are those criteria that the City imposed upon itself. External criteria are the criteria imposed upon Phoenix through laws, regulations, policies, etc.
Stakeholder Engagement: The efforts gone through to involve all stakeholders in the siting process
Change Over Time: How the siting process has changed
Siting Plans: What good siting plans look like and what they include
Siting Process: How the siting occurred, what was involved within the siting, who was involved, how the siting developed over time
Economics: The role that money plays in the siting process
Outreach: The types of content and media presented to the public for engagement

Document analysis. I analyzed two types of documents: community meeting minutes about the siting obtained from the Phoenix City Clerk’s Website (City of Phoenix, 2015), and a study performed by URS, the contractor Phoenix hired to determine the best locations for these facilities. While this study details the whole siting process, the section that I focus on is the SE portion.

I used the level of SE elicited during the siting process as the measurement for EJ as Guerra (1991) states that public involvement in the process of siting LF is necessary and that the success of a LF siting should be based upon its completion and public participation. Guerra (1991) further mentions that public participation early in the siting process builds trust and makes the process more credible in addition to allowing officials to see the community’s perceived risks.

I based the level of engagement off legal requirements for SE from RCRA and from the ADEQ. These laws include public participation sections for the construction/permitting of MSW LFs. I determined if the City took stakeholder opinions into account and the extent to which they mattered during the siting of the two facilities

by examining when and to what extent the council and other decision-makers considered SE and how they addressed public concerns. I gathered this information through the interviews and through the examination of the URS documentation.

The reports by URS contain the only documentation for the Phoenix SWD's internal criteria for siting LFs and TSs. I use these internal criteria to analyze whether SW considered EJ when siting locations for the two facilities. The URS reports came in two volumes, the second of which explained the siting procedure. I analyzed the second volume to assess the extent to which URS, and by association the City of Phoenix, considered residential and community input.

I compared the responses of the interviews to the analysis of the URS and community meeting minutes to determine if there is a consensus on engagement elicited. Additionally, the information gathered through both methods will give a more robust understanding of the siting process.

Procedural justice and council. To answer this question, I examined meeting minutes for the Natural Resources Subcommittee and meeting minutes for the Buckeye City Council. The Natural Resources Subcommittee was the subcommittee involved during the siting process and therefore was the first point of contact for PW. This documentation indicated at what point PW informed the subcommittee about SE and how the subcommittee addressed it, meaning how concerned they were about public opinion during the siting process. I attempted to contact past city council members, but received no responses. Seeing how higher levels of city government consider issues is important, as they are the ones that ultimately approve the locations of the facilities.

I coded the meeting minutes for four categories: when the meetings took place (both day, month, and year), stakeholder opposition, support, and concerns, if decision-makers addressed concerns, and when the council and subcommittee asked about SE. When the meetings were held is important to examine because the timing and frequency may have an effect on the amount of SE elicited. Who is voicing opposition, support, and concern and what concerns and support are voiced is important to examine to see if the subcommittee and council addressed the issues presented. Assessing when, and if, the subcommittee and council asked about SE is important because it may indicate how important SE was to their decision-making.

Distributional justice. This question assesses if trends exist in the distribution of LFs and TSs in Phoenix. I looked at all the LFs and TSs for the City of Phoenix and examined their change over time for specified demographics. To do this, I used the census tract for the unit of analysis. Although there are downfalls to this decision, due to the constraints of this research, census tracts will supply adequate information.

Tract determination. I used the American Fact Finder to find the census tracts in which each Phoenix past and current LF and TS is located. I obtained the addresses for each from the City of Phoenix. If the facility was on the edge of a tract, I analyzed the adjacent tract for demographic data as the surrounding area may also be affected by the facility (Zimmerman, 1993b; Been and Gupta, 1997). Census tract data for Maricopa County was downloaded from American Fact Finder and used as a layer in ArcGIS. From this layer surrounding tracts were found for comparison. Tracts one tenth of a mile and

one mile out from the facility tracts were used, as these will likely be similar to the tracts in which the facilities are located. Maps for each of the initial tracts with one tenth of a mile and one mile tracts are located in Appendices F-L.

Demographic data was downloaded from the US 2010 Project (Logan et al., 2012). This website standardizes all census tract data from 1970-2010 for every census tract within the U.S. I used this data to compare the change over time of specific demographics in the tracts with the facilities and the surrounding tracts to see if patterns in demographics existed in the siting locations. I used the tracts with no facilities as controls by which to compare the tracts with facilities.

I used this data to analyze race, percent home ownership, housing units, houses rented, median household value, and total households associated with the tracts from the time each facility was built to the present. Median home value is only available for 1980 and 1990. Appendix M shows the specific demographics used for each tract. Racial data for percentage Native American and percentage Hispanic were not available for 1970. I compared the demographics for each of the tracts and the groups of tracts to the city and county levels. If these demographics were below the county values, they were considered below average, which can indicate if these sites disproportionately burden certain populations. Rhodes (2002) states that minority or low-income status should be compared to the next largest areal unit as it will indicate what is minority or low-income for that area specifically.

Tracts 1148 and 1036.09 have facilities built before 1970. For these tracts, I utilized the 1970-2010 data. Without the earlier census tract data, I cannot fully assess the impact of a facility in the tract. However, the analysis of these tracts can still yield

valuable information. Table 4 below shows the facilities, tract numbers, and the year built (some with approximations where more defined dates could not be found).

Table 4		
Facility Census Tracts		
Landfills		
Census Tract #	Year Built	Facility
7233.06	2006	SR 85
1148	~1960	19th Ave Cell A-1
1148	~1960	19th Ave Cell A
1036.09/1036.05	1950	Deer Valley Landfill
6119	1972	Skunk Creek
1153	1971	Del Rio
1173/1147.03	1978	27th Ave
Transfer Stations		
Census Tract #	Year Built	Facility
1173/1147.03	1998	27th Ave
6113	2006	North Gateway Transfer Station

Quantitative Assessment of Tracts. The demographic data was downloaded as Excel spreadsheets and uploaded into Microsoft Access to extract the relevant tracts and demographic information. The resulting spreadsheets were then put back into Excel for analysis. Figure 1 below shows the past and current Phoenix LFs and TSs.

Phoenix Landfills and Transfer Stations

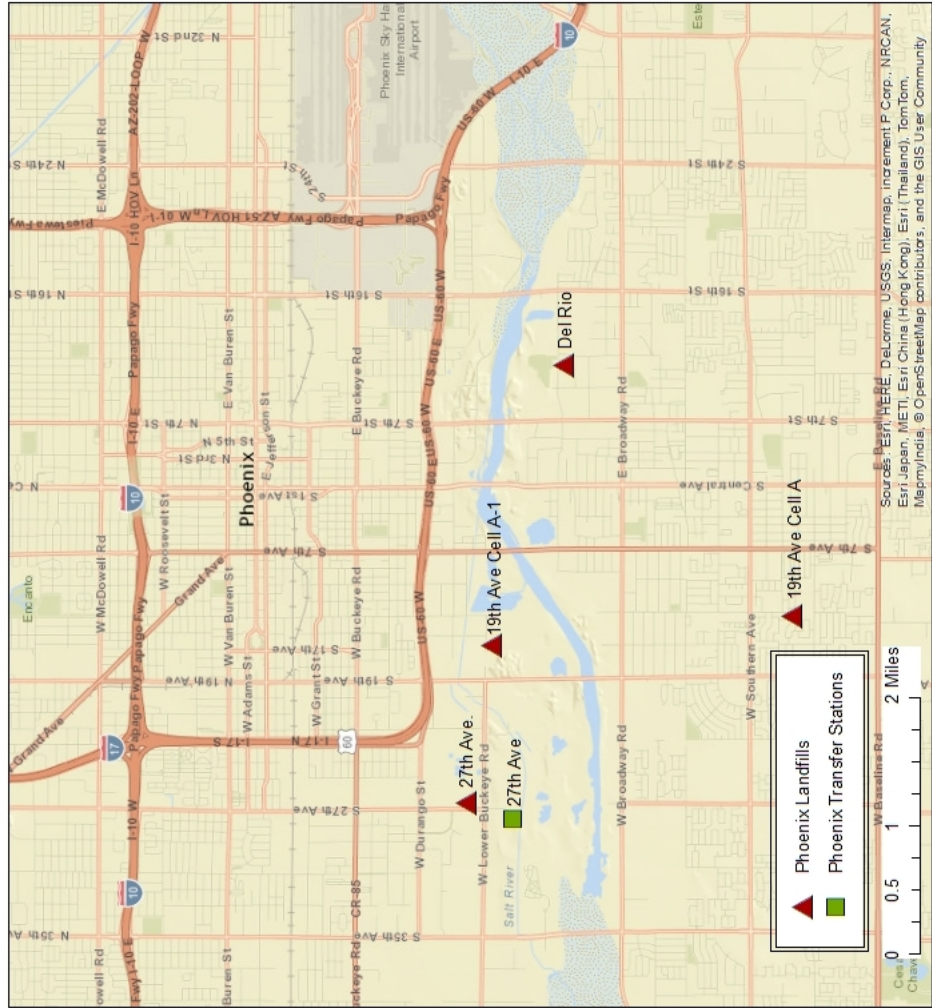


Figure 2. All Phoenix Current Landfills and Transfer Stations.

I synthesized the 1/10 of a mile and one mile demographics and compared these to the Maricopa County demographics. Additionally, I examined the demographics for each of the tracts for the census data closest to when they were constructed. I then looked at the demographics and how they changed within the tract tenth mile and one mile boundaries for each tract. Additionally, I analyzed the tenth mile and one mile tracts over time to see if any trends existed for changes in demographics after facilities were sited in these areas.

This GIS and demographic analysis is a fairly basic method approach. Other approaches, like dasymetric mapping, could have provided more comprehensive and detailed results (see Boone, 2008); however, for the purposes of this research, this more basic method provides an initial understanding of the demographics and layout of current and past facilities. Future research should incorporate more in depth methods.

EJ AND CURRENT DECISION-MAKERS

I was interested in examining perspectives on sustainability from current decision-makers for SW to determine whether or not EJ is considered by them to be a part of sustainability. Phoenix is attempting to move in a sustainable direction, especially in considering SW. Phoenix hired a sustainability coordinator, the SWD has its Reimagine Phoenix campaign, and Mayor Stanton created the 40 by 20 goal (40% diversion by 2020). Through the combination of EJ and sustainability, environmental injustices can be examined more holistically and solutions for the future can be better assessed.

While this question is separate from the first question, as it does not address the LF and TS siting, this question will provide context for the present state of the city in

regards to the T&I Subcommittee, SW, and PW. If decision-makers within the T&I Subcommittee, PW and SW consider EJ to be a part of sustainability, then it is likely that EJ considerations will be considered for future sitings.

Interviewee population for current decision-makers. The interviewee population consisted of individuals within PW, SW, and the T&I Subcommittee. The T&I Subcommittee is the subcommittee that PW works directly with, and so impacts decision-making. I had a personal connection with the individuals in PW and SW and so contacted them directly with a short email introducing them to the research and asking them to participate. This email also contained an attachment with the recruitment letter. One interviewee put me in contact with the subcommittee members. The subcommittee members then contacted me directly if they wanted to participate.

The questions I asked pertained to views on sustainability. I asked questions regarding how interviewees define sustainability, if and how interviewees use sustainability, and how important they believe sustainability is in general.

Interview process for current decision-makers. I conducted six interviews. For five of the interviewees, I met them in their offices. I conducted the sixth interview over the phone. The phone connection for this interview was poor, so the recording did not turn out. The only documentation for this interview is from the notes I took down while interviewing. Therefore, the transcription for this interview could not occur and the majority of the information is lost, only main ideas remain. These interviews took place between October and November 2014.

Interview analysis. Appendix N provides the interview questions for current decision-makers. Like with the first set of interviews, I used Excel to organize the codes and used categorizing strategies over holistic strategies.

For current decision-makers in PW, the SWD and within the T&I Subcommittee, I assessed views on sustainability. The coding categories relate to sustainability and include sustainability, public involvement, outreach, driver of/beginning to sustainability. I examined the codes to determine whether or not EJ is considered a part of sustainability to these individuals, or if their focus is more on environmental, economic, or other concerns. Table 5 below shows the codes and their definitions.

Table 5
Definitions: Current Decision-Makers
Sustainability: Encompasses three ideas: social/society, environment, and economics. Words that portray what individuals consider to be a part of sustainability will be used to code for this topic. Social and society themes relate to any topic that deals with the public. This can be anything from public engagement, to health concerns, to encouraging the growth of business.
Public Involvement: The efforts gone through in order to engage the public in the siting process
Outreach: The types of content and media presented to the public for engagement
Driver of/Beginning to Sustainability: what drove the desire to consider sustainability within Solid Waste and within the City from the perspective of Solid Waste Decision-Makers and T&I Subcommittee Members

INTERVIEW JUSTIFICATION AND DEVELOPMENT

I developed two interviews for the purpose of this research. The first interview addressed past decision-makers within SW/PW and the Natural Resources Subcommittee. The second survey addressed current decision-makers within SW/PW and the T&I Subcommittee. I chose interviews because they are the best method for understanding the

rationale behind facility siting. While a survey can show how decision makers feel about certain topics, it would not as easily garner the nuanced reasoning behind the decisions, and the sample size would be too small to show significant results.

I also considered focus groups. While focus groups are good for facilitating discussion around the topic (Eliot & Associates, 2005), they cannot promise confidentiality (Short, 2006). As the interviewees will potentially discuss sensitive information, for instance, information that may reflect poorly on the City of Phoenix, I wanted to ensure confidentiality. Likewise, the interviewees may be less likely to tell the truth or to be as open if in front of those with whom they work (Grudens- Shuck *et al.*, 2008). Additionally, many of the past decision-makers do not currently work for the city or live within Phoenix, making it difficult for them to attend a focus group.

I used semi-structured interviewing styles for all interviews. Even though structured interviews are easier to analyze, allowing for new themes that can add substance to the information discussed. I also considered unstructured interviews, however, they are inconsistent with the type of interviewing style I wanted to pursue.

I expected the interviews to last between 30 minutes and one hour. I made sure the interviews would not exceed an hour, as I did not want to take additional time out of the interviewee's workdays.

The next section looks more closely at the history of Phoenix, AZ in regards to environmental justice. This case study will provide the context in which this research occurs.

eCHAPTER 4: PHOENIX, AZ CASE STUDY

HISTORY OF PHOENIX RELATED TO EJ

Pioneers who “admired the remains of the canal system of the ancient Hohokam Indian civilization” settled in Phoenix, Arizona in 1867 for its agricultural potential (Roberts, 1973, p. 197). The township of Phoenix was established in 1870; by 1881, Phoenix was incorporated (Roberts, 1973; Luckingham, 1981). Phoenix grew and in 1887, the construction of the Southern Pacific Railroad connected Phoenix to other parts of the country. Two years later, Phoenix became the territorial capital (Roberts, 1973; Luckingham, 1981). Phoenix continued to grow, but not without racial challenges.

The railroad divided Phoenix into northern and southern sections (Bolin, Grineski, & Collins, 2005). The more white affluent individuals resided in the north and the lower-income and minority populations in the South. By the 1890s, various industries established themselves south of the tracks, effectively creating a physical barrier between the northern, affluent population, and the southern minority populations (Bolin, Grineski, & Collins, 2005; Luckingham, 1981). Minority populations could not move out of southern Phoenix due to racial segregation and could not fight the siting of these facilities due to a lack of a political voice (Bolin *et al.*, 2002, p. 333; Bolin *et al.*, 2005). Along with this, Brunk (1996) states that lending institutions further encouraged segregation by not loaning money to individuals who lived south of the railroad (as cited in Sicotte, 2008). National Association of Real Estate Boards policies denied minorities from obtaining loans, making it impossible for residents to move out of southern Phoenix (Bolin *et al.*, 2005).

City officials began booster campaigns to encourage migration into Phoenix. In the late 1880s and 1890s, Phoenix became a hub for tuberculosis health seekers as climatologists recommended desert climates for those with TB, leading to both wealthy and poor migrants moving to Phoenix (Roberts, 1973; Grineski, Bolin, & Agadjanian, 2006). This led to people with TB coming to Phoenix and quickly filling the boarding houses, sanatoriums, and tent cities, creating a health crisis and housing shortage (Roberts, 1973). As TB spread and as health seekers continued to suffer from TB, Phoenix placed blame upon minorities and began efforts for continued segregation.

The city went to lengths to segregate minorities and the poor from the wealthy to create a façade of health. Institutional barriers perpetuated TB exposure for the poor and created barriers for recovery. These barriers included a lack of health services and appropriate housing (Grineski, Bolin, & Agadjanian, 2006). The close living conditions allowed TB to spread easily, amplifying the problem. Additionally, many poor lived in tents within the city limits. To avoid responsibility for these individuals and those with TB, Phoenix passed a “No Tenting Ordinance” in 1903 which forced those camping inside the Phoenix city limits onto county land (Grineski, Bolin, & Agadjanian, 2006), depriving them of municipal services. Additionally, since those living in the tent communities did not meet the welfare requirements of a three-year residency, they could not better their circumstances (Roberts, 1973).

New Deal Programs made some improvements to the conditions suffered by Phoenix minorities. In 1939, Father Emmett McLoughlin, a member of the Phoenix Housing Authority, performed a study on the housing conditions of those who live south of the railroad (Roberts, 1973; Luckingham, 1981). This study showed that of the 1566

Mexican families, 1156 Anglo families, and 912 black families living substandard housing, only two had running water, one had a toilet inside, there was one outside toilet that was shared by 24 families, and seven houses had electric lights (Luckingham, 1981). Additionally, this study showed that the housing was overcrowded and under-furnished (Roberts, 1973). In the 1940s, public housing projects addressed the housing conditions; even though the housing projects had less crime and had improved health conditions compared to the areas that the poor who participated left, they still remained segregated (Roberts, 1973). Starting in the late 1940s, residents opposed federally funded urban renewal projects that would have helped improve the housing conditions (VanderMeer, 2013).

Conditions continued to improve somewhat as, in 1948, the State Supreme Court gave Indians the right to vote and in 1954, an Arizona court ruling established gradual integration of schools just before the Brown vs. Board of Education case (Roberts, 1973). However, Phoenix continues to suffer from segregation (Roberts, 1973).

Minorities still remain south of the railroad and continue to suffer from environmental burdens associated with living near industry. Those forced to live near these LULUs are not the ones employed in the jobs created by them; additionally, zoning laws make it easier to continue siting industry in south Phoenix (Bolin *et al.*, 2005). Furthermore, because south Phoenix is a convenient location for industry due to its proximity to transportation facilities, it is likely that industry will continue to locate in this area "... unless interventions are politically mandated and there are wholesale changes in zoning and land uses" (Bolin *et al.*, 2005, p. 166). South central Phoenix is home to eight abandoned hazardous chemical waste sites, sixteen small quantity

generators of pollutants, most the major Phoenix freeways, and Sky Harbor International Airport (Sicotte, 2008). Additionally, this area experiences high air pollution and high crime rates (Sicotte, 2008). Low-income and minority neighborhoods in Phoenix are more likely to suffer from soil lead pollution than wealthier, non-minority areas likely due to lead based paint peeling off houses due to poor maintenance (Zhuo, Boone, and Shock, 2012). If individuals do not own their houses or have limited funds, then it is difficult for them to afford the upkeep, making it harder for them to mitigate the pollution (Zhuo *et al.*, 2012). Minorities and low-income areas are also more likely to be exposed to air pollution, specifically traffic-related criteria pollutants, in Phoenix (Grineski, Bolin, and Boone, 2007).

Arizona has implemented some strategies for addressing EJ concerns, including community participation and improving public health (Bonorris, 2010). In regards to community participation, Phoenix established community advisory boards that are a part of the Arizona Department of Environmental Quality's (ADEQ) Superfund Program and created Water Quality Assurance Revolving Fund Sites in which Arizona attempts to involve the community in the remediation of these sites (Bonorris, 2010). For community involvement and outreach, ADEQ must create a community involvement plan, form a Community Advisory Board, send out notices, and hold public meetings statewide (Arizona Department of Environmental Quality, 2015c). The Air Quality and Emissions Statute requires that "ADEQ provide notification of any major permit application to municipalities potentially affected by a licensing decision" (Bonorris, 2010, p. 10). Additionally, in 2006, Maricopa County implemented a policy to "... formally make Environmental Justice an integral part of all Maricopa County Air Quality Department

(MCAQD) activities” (Maricopa County, 2006). This policy means that Maricopa County will work with areas within its boundaries that experience high air pollution to create plans for remediation. The Arizona Department of Transportation also considers EJ for transportation projects and has a description of the analysis to be performed for these projects (Arizona Department of Transportation, n.d.). However, for MSW facilities, there are no statutes or policies in place for additional public involvement or outreach past permitting laws.

There are also Environmental Permits and Approvals near Learning Sites. This applies to any major modification or renewal permit that may emit or may emit additional pollutants near a learning site (Bonorris, 2010). Arizona also has the South Phoenix Community Action Council that, in partnership with the EPA and ADEQ, “developed a strategy to help lower toxic emissions and reduce public exposure to toxic pollutants in the community” (Bonorris, 2010, p. 10). The Children’s Health Challenge Grant Project produced a study showing that increased particulate matter correlated with increased asthma events in children and that there is a need for ADEQ to include public involvement in the decision- making process to reduce environmental health risks for children (Bonorris, 2010). The Cargo Truck Retrofit Initiative is the last way in which Arizona is trying to improve public health. This initiative retrofitted 55 cargo trucks that cross the border multiple times everyday with devices that reduce the “particulate matter air pollution from diesel emissions” (Bonorris, 2010, p. 12). While there is still much more Arizona can do to decrease the injustices faced by many in the state, these initiatives are a positive step forward.

As minorities continuously face environmental injustices, it is important to examine if current processes are perpetuating or minimizing environmental injustices within Phoenix. Therefore, studying the current processes Phoenix uses in planning and siting MSW facilities will allow us to understand the extent of inequities and if any policies are needed to address them.

As such, the first purpose of this research is to examine the siting process for the Phoenix's newest LF and TS to see if the siting process was just. While a great deal of literature discusses EJ in regards to municipal solid waste (MSW) (see Bullard, R.D., 2005; Watson, M. & Bulkeley, H., 2005; Yongfen, W. 2009; Flynn, G., 2011; Johnson, R.J. & Scicchitano, M.J., 2012; Perkins, D.G., *et al.*, 2012), there is no research on MSWLFs and TSs and EJ for Phoenix. Thus, this study aims to fill a research gap in regards to MSW and EJ concerns for Phoenix. It is important to fill this gap as Phoenix has long struggled with EJ issues. This is especially important in Phoenix, as it is one of the largest cities in the United States and is continuing to grow. If not addressed now, equity concerns will continue to affect Phoenix's growing population.

A secondary purpose of this study is to examine whether current Phoenix SW decision-makers and Transportation and Infrastructure (T&I) Subcommittee members connect EJ to sustainability. The first part of this research examines EJ in regards to the siting process of SR-85 and NGTS. This question not only looks at current views on EJ, but also on their connection to sustainability. It is important to see how current decision-makers view EJ so that researchers and the city can see if there are any areas in which they can improve when considering the public and the public's involvement within decision-making. While equity is a component of sustainability, EJ is often overlooked.

Boone and Fragkias (2013) explain that incorporating the principles of EJ into sustainability, or vice-versa, strengthens both. In order for Phoenix to become sustainable, justice must be seen as a part of sustainability. While there are rules that relate to EJ and public participation that cities must follow, sustainability principles must be integrated fully into the operations of the city. While Phoenix now has a sustainability plan, it does not include the concept of EJ. EJ is an important concept to consider if Phoenix desires to become a sustainable city. The future will likely show that cities are incorporating EJ principles into sustainability plans. Phoenix therefore needs to begin considering these principles in order to truly become sustainable and to better include EJ concepts in their planning. By incorporating EJ principles into as many facets of city planning as possible, it is more likely that EJ considerations will start molding decision-making and will become more routine rather than a box to be checked off.

While the first research question explores if SW utilized EJ when siting SR-85 and NGTS, this second research question addresses if EJ is a principle considered generally within SW and their opinions on sustainability. If EJ is not considered or is not considered as a part of sustainability, then future MSW sitings may continue to have avoidable justice concerns. Researching the current state is just as important as examining the past as the present will affect Phoenix's future policies and initiatives. However, even though incorporating environmental justice principles into sustainability and city policies may not guarantee a reduction in EJ concerns, it is a step that needs to occur if Phoenix hopes to ever become a sustainable city.

BACKGROUND INFORMATION ON SR-85 AND NGTS

Phoenix predicted that its Skunk Creek Landfill would reach capacity in 2005 (Phoenix City Council, Natural Resources Subcommittee Meeting minutes, November 22, 1999). To prepare for this closure, in the late 1990s, the City of Phoenix began preparation for the construction of a new landfill that would be open for operation in July 2004 (Phoenix City Council, Natural Resources Subcommittee Meeting minutes, November 22, 1999). Furthermore, when the Skunk Creek Landfill closed, there would be an additional need for a new TS and materials recovery facility (MRF) (Phoenix City Council, Natural Resources Subcommittee Meeting minutes, November 22, 1999). Hudson Baylor owned the TS used for the north and west part of Phoenix and the contract with them was ending, creating the need for a new TS to serve the north and central parts of Phoenix (Phoenix City Council, Natural Resources Subcommittee Meeting minutes, November 22, 1999). The City contracted URS Greiner Woodward Clyde (referred to as URS) to conduct a study to select the best locations for the LF and TS (Phoenix City Council, Natural Resources Subcommittee Meeting minutes, November 22, 1999). The final facility for the LF is State Road-85 (SR-85), which is located in the southern outskirts of Buckeye, and the final facility for the TS is North Gateway Transfer Station (NGTS), located in northern Phoenix.

While the Phoenix SWD examined other options for waste disposal (recycling, composting, waste-to-energy, waste-to-ethanol), none negated the need for constructing a new LF and TS (Phoenix City Council, Natural Resources Subcommittee Meeting minutes, April 16-17, 2001). For the purpose of this study, the process component of EJ will refer to SE and addressing the concerns of the public.

CHAPTER 5: RESULTS

ASSESSING PROCEDURAL AND DISTRIBUTIONAL JUSTICE

This research question has three overall sections. All of them together allowed me to assess Phoenix and Buckeye on meaningful involvement of the public as well as distribution.

Procedural justice.

Decision-maker point of view. The purpose of this question is to analyze whether or not SWDMs considered stakeholder engagement (SE) to be an important part of siting a LF/TS. As these individuals were decision-makers during the siting process, their opinions on the matter are important to consider.

Both of these decision-makers have only sited this LF and no others in their careers. Therefore, the only experience they have had is with this siting. It makes their answers harder to assess for bias and objectivity because they have no experience with other sitings.

Steering committee. Both of the interviewees described the steering committee when discussing public outreach and engagement. They described the steering committee as a group of stakeholders put together to help develop criteria for the siting process and to help provide URS and SW with more diverse opinions. When discussing the individuals chosen to be on the steering committee, interviewee 1 stated that they were

looking for people "... who were pretty active within the Phoenix community." When asked if they had to have a steering committee or if they chose to have one, interviewee 2 responded:

Yeah, it wasn't something we had to do, but we thought it was absolutely critical to do it because 1. You want to get stakeholder support, you want to have a basis for the method you are going about selecting a site so that it's not a biased method, so that it is objective, transparent, process that you're going through to identify sites and figure out where these facilities need to be.

This indicates that SW was attempting to be open about the siting process and to engage individuals that had diverse backgrounds and opinions on the siting process.

The interviewees explained that the first step in developing criteria required gaining consensus from both the steering committee and subcommittee, before a site could be selected. Interviewee 1 stated that it was "... really critical for us to lay out the criteria up front and then objectively apply the criteria so that there was no bias to it." Objectivity and transparency seem very important to the interviewees when describing the criteria development process.

Public outreach process. PW hired URS to find locations for the facilities. From the legal requirements for siting a LF and TS, URS developed the "exclusionary factors," or the areas that a LF cannot be located. After discussing these factors, they went to the public for feedback.

... and then we went public and we had public hearings generally on the public process, explained what we were going to do, how these factors were going to be

applied. We had council presentations and the Phoenix City Council were asked to approve and say yes, these are the factors you should use and so it was very public and it was out there and that is absolutely by design. Because you could get buy off on everybody you can before you even start because once you identify areas, then it gets pretty tough. But it helps if you have agreement up front [something in] that these factors make sense. (Interviewee 2)

URS then took a year to place all the criteria on a map to locate all the areas suitable for a LF and TS (Interviewee 2). After this year, the public participation process played a role again in the whittling down of potential sites (Interviewee 2). The city required URS to have a "very significant public outreach process" (Interviewee 2). To handle this outreach, URS hired a public relations firm to help ensure public participation (Interviewee 1; Interviewee 2).

Different "waves," or targeted outreach, of public participation existed depending on the siting phase (Interviewee 2). For instance, one interviewee discussed how, during the process, it was important to make sure the Buckeye decision-makers understood and were involved with the entire process once a potential site was located in the Buckeye area. Furthermore, when the city narrowed down sites, new stakeholders often emerged. Interviewee 1 stated "it is important that they have a voice with you and you listen to their concerns and you mitigate their concerns as well."

Interviewee 1, while acknowledging that it is not possible to know how much SE is necessary, also realized its importance. The interviewee stated that SE is "... the whole crux of the whole project really cause if you don't do that, you're just going to get killed in public meetings..." Interviewee 1 also stated that SE is "crucial to being successful."

These comments suggest an appreciation for the concept and application of SE and the necessity of the engagement process. The interviewee indicated that the ability to rely upon community support is vital to the success of a siting, as location approval is unlikely if the public is opposed.

Importance of outreach. Interviewee 2 stated that even "...if you have a very significant and the best outreach process ever, you still may not be able to do it at the end. But it gives you a better chance and it's the right thing to do." This is an interesting point in that he admitted that effective public outreach is not always enough for achieving a goal.

An important characteristic of a good siting plan is to have outreach. Interviewee 2 stated,

... you have to have outreach, and that's part of it, you're explaining it, but you have to all along the way explain this is what we're gonna do, this is what we've done, this is what, these are all the next steps, this is how you can provide input, this is when we're going to have hearings, this is how you can comment or give us feedback, all this stuff had to happen.

This outreach allowed the public opportunities to provide feedback on the process and to give opinions.

Interviewee 2 stated,

There's um environmental justice concerns that are always an issue, which is another reason you always have objective criteria, so you're not picking a certain community to site something because you don't think you'll get opposition from

them. So that's another reason that the criteria are vitally important- that you're identifying an objective process.

This interviewee brought up EJ unprompted. This is interesting as, while the interviewee knew my research topic was EJ, this indicates that he knew, at least generally, what EJ was. Whether this played a role in his decision-making while siting the facilities is unknown.

Mitigation of concerns. For siting process, the discussion revolved around the need for the process to be public and the importance of mitigating concerns. For instance, the interviewee mentioned that an additional property was purchased in order to make the deal with Buckeye and the closure plan included making the site aesthetically pleasing.

Interviewee 1 discussed how they dealt with opposition to the LF siting in Buckeye. Interviewee 1 provided an example of opposition. A group of residents opposing the LF siting in Buckeye sought to obtain signatures in opposition outside the council meeting. The interviewee explained that PW took the high road,

... We tried to answer questions, we tried to continue to work with them, but the question became, did they represent, you know, how big of the population of Buckeye or of all these sites do these groups represent and how do we get to everybody and make sure that they have the chance to voice their opinions on it and everything.

While they tried to educate and mitigate concerns, there were still groups that were against this siting (Interviewee 1). To assess the weight of the opposition, they asked themselves how important are the concerns brought up by these citizens and whose

concerns do they represent? There were very few people living in the area around the potential site, but to mitigate their concerns, PW worked closely with the property owners to ensure they addressed concerns (Interviewee 1). The immediate area surrounding the LF site does not house many residences. There were some surrounding farms, but not residential development. Additionally, there is a private LF and a state prison located nearby. This development already existed when Phoenix constructed the LF.

Concluding thoughts. Both interviewees seemed very concerned about public involvement in this process. Both discussed SE without prompting. This could be due to many reasons, including knowledge on my study or an actual concern for involving the public.

Both interviewees agreed that the City of Phoenix followed a good siting process. This included public involvement, objective criteria, working with other municipalities/jurisdictions, and having criteria for selecting, evaluating, and eliminating sites.

Neither of them mentioned areas in which they believe improvement could have been made, even when asked. They both viewed the siting process as an objective and successful project. This indicates that PW believed that they obtained and considered public opinion, that the public was well informed, and that the process was transparent.

Residential point of view interview.

Fair Process. The residential point of view (RPOV) interviewee stated that the process was not fair and expressed dissatisfaction with the engagement elicited during this process. He stated that Phoenix did not take stakeholder opinions into account when siting these facilities. While he did not go into more detail in regards to these specific facilities, he did discuss some methods that would have made this a fairer process. These methods included more aggressive outreach through telephone surveys, flyers, calling the public to inform stakeholders about meetings, having dial in options rather than having to attend public meetings, and utilizing new technology to make it easier for people to voice their opinions. The interviewee also discussed the necessity of providing a session on risks involved with the siting. This included having access to those who have technical expertise and obtaining the opinions of environmental groups, which would have provided a more robust understanding of the issue by residents and other stakeholders. However, many of these potential outreach efforts were done by PW and URS during the siting process; specifically, there were options for calling in, emailing, and meetings were arranged for technical assistance for individuals who wanted to understand more about the environmental and technical sides of LFs and TSs. This indicates that the interviewee either did not remember the process or was not involved in the process at all and therefore assumed that these methods were not utilized.

The interviewee discussed that it is difficult for people to understand the siting and the meeting times made it difficult for people to voice opposition. The RPOV interviewee stated that the public did not complain about the TS because of a lack of

understanding about what a TS was and what it meant to live near one. Not only that, but when people did make the meetings, the City did not seriously consider or write down the opinions and complains.

The interviewee further argued that there will never be a good location for LF and TS sites because they are inherently LULUs. The interviewee then discussed how alternatives to these facilities and operations needed to be seriously considered and implemented to avoid siting them in the future. While he believed that the City of Phoenix is moving in the right direction in regards to finding ways to dispose of more materials (e.g., yard waste), they have a long way to go. He believed that with enough political will, the transition from LFs and TSs to alternatives can be complete. He uses Europe as an example due to zero-waste movements.

The interviewee also alluded to corruption, as another way the siting process was not fair. He voiced suspicion about why PW chose these sites, especially the Buckeye site as it is far away from Phoenix, is within Buckeye's planned growth area, and because he believes there were sites within Phoenix that PW could have been utilized.

When the discussion turned to the chicken-and-egg debate, the interviewee discussed how this debate can only work if it is reciprocal. However, the argument is only relevant politically when communities form around industry, not when industry comes into a community. This discussion is in line with EJ literature, which states the issue of which came first, is overly simplistic and does not consider all the processes involved.

The interviewee stated that while there probably were not initial issues with the siting of the TS, he elucidated all the problems that may occur in the future due to the

potential environmental and public harm caused by a TS. He stated that people are not educated as to what a TS is, which can create issues when people buy property next to one. Concern over a lack of education also showed up in the discussion about the LF. The interviewee stated that while LF siting and construction regulations have improved, there are still issues associated with living near a LF that nearby property owners need to know about.

Stakeholder Engagement. The RPOV interviewee described the role of stakeholders as "rubber-stamping" the decisions already made by the city. Therefore he believes the role that stakeholders play is minimal. Rather, the interviewee asserted that the city uses "cheerleaders," or people who they know will support their cause.

He stated that it is very difficult for the public to fight a siting. They have to first learn that the city is discussing a siting; they then have to organize, and then resist it. However, the likelihood of success is low, especially since the public has to be able to understand the risk associated with the siting. The interviewee stated that the public is not educated to the risks, or the risks are sugar coated when discussed, which often leaves the public ambivalent on whether to support or oppose the siting location. The interviewee mentioned the many problems with living near a TS, including vermin, dust, flies, and strong winds that move trash around. Along with these, the interviewee mentioned that "... nothing will be done" if issues do arise for the public in regards to the TS and that it will take a lot of effort like a citizen's suit to make change. The interviewee focused more on the troubles associated with SE rather than what role stakeholders play. This indicates that the interviewee assumes that stakeholder opinions are largely irrelevant in the siting

process. To resist this process, the interviewee stated that it takes lawsuits and concerted efforts. However, EJ communities do not usually have the necessary resources available to engage in protracted legal battles, leading to injustices.

The interviewee discussed the issues associated with siting facilities in rural areas. He stated that with low populations, it becomes difficult to gather a critical mass of residents to voice opposition, thus failing to make a difference in the decision.

The interviewee stated that SE did not occur or did not occur sufficiently and that there are problems that get in the way of appropriate SE. These range from corruption and intimidation to not having enough opposition to make a big enough impact. This implies that the issue is much deeper than just making sure enough SE occurred and delves into the problem of eliciting public opinions at all.

URS Documentation. The URS study contained sections on the public outreach for the selection of both sites. Some of the documentation distinguished between the process for the TS and LF and some considered the process together. The study provided more information on the TS siting than it did just for the LF siting.

The public process for choosing a site was similar for both the LF and TS. Some information for the LF is missing, but through careful analysis of all information, I pieced together as full a picture as possible. Figure 2 below shows the general public involvement process for both facility sitings.



Figure 3. Landfill and Transfer Station Siting Process.
* Indicates that only the TS process had this step.

The first level of public involvement was a public meeting. While the public meeting information is only described in the TS documentation, a public meeting is also described in the LF siting documentation for the same month and year. While the specific date of the public meeting was not identified within the TS material, I assumed that there was either one meeting total or that the process for involving the public within the meeting was the same for both facilities. For the purpose of this research, I assumed that there was only one meeting total and provided the information given under the TS documentation for this section. For the public meeting in September 2000, URS and PW presented information to the public on the exclusionary and ranking criteria. Exclusionary criteria are criteria that are regulated by the federal government. They described scenarios under which a LF or a TS cannot be sited. Table 6 below shows the list of TS regulatory exclusionary criteria and Appendix O describes the LF regulatory exclusionary criteria. URS developed ranking criteria for additional analysis for narrowing down the potential locations. These criteria contained additional criteria that URS considered important, but that were not regulated. The URS documentation indicated that approximately 35 people attended this meeting. This seems like a very low number since all Phoenix residents were invited. Under this section URS described the other methods by which they attempted to contact and inform the public about the siting process. These methods included: a telephone information hotline, website, community open house. Through water bill inserts, articles in minority newspapers, and paid advertisements in the *Arizona Republic*, PW informed Phoenix residents about the communication methods. The public also had the opportunity to pose questions to URS and PW. Many of the questions asked

by the public included technical and clarification questions. Additionally, the public inquired about the cost of the facilities and how LFs are constructed.

Table 6
Transfer Station Regulatory Exclusionary Criteria
Floodplains
Wetlands
Critical habitats for threatened or endangered species

Next PW and URS formed the Citizen’s Advisory Council, or CAC. The City of Phoenix used the CAC to obtain views from multiple stakeholders, including government, business, neighborhood watch groups, and academia. I believe that PW created this group from stakeholders within Phoenix, not outside of Phoenix, as they did not yet know where the facilities would be located.

The third step included PW receiving feedback on the exclusionary and ranking criteria from both the CAC and other city departments. In the documentation, URS only stated that “other departments” were involved, but did not specify if all city departments were involved or just a few. URS presented both groups with these criteria and had each group assess the weights, or emphasis, URS had given to each criterion.

Steps four and five represent when URS and PW went to city departments and the CAC to discuss the potential sites. These are the locations that had been narrowed down through the use of the exclusionary and ranking criteria.

A community open house occurred so that PW and URS could present the top sites to the public and garner feedback. For both the LF and TS, there were multiple

potential sites with a few that PW and URS decided were the best potential locations. These top sites were then actively publicly publicized.

URS and PW attended Village Planning Committees to present information about the potential TS sites and to garner feedback. This step only occurred with the TS siting process. While other public and community meetings occurred during this process, these were the major planned steps. Whenever a neighborhood or community requested a meeting with PW and URS, they would attend meetings to discuss the process.

The below sections describe in greater detail each of the steps for public participation for both the TS and LF.

TS analysis. URS described how they decided upon NGTS as the preferable location for the TS. URS considered public involvement integral to determining the best location. Public involvement included involving key stakeholders who were mostly developers and property owners, a Citizen's Advisory Council (CAC), City Departments, and City Council briefings. URS and PW worked closely with the Planning Department and the Community and Economic Development Department. They stated that the opinions elicited from all these stakeholders informed their decision on NGTS.

Public outreach for the Community Open House included mailing a newsletter and fact sheet out to around 600 people who were on the mailing list, putting door hangers on about 15,000 residences surrounding the study area, placing a paid advertisement in the *Arizona Republic*, putting calendar announcements in community newspapers, posting flyers in community places, and placing articles in minority newspapers. The distribution area for the door hangers was bounded by 51st Ave., Cave

Creek Rd., Beardsley Rd., and Happy Valley Rd. Figure 3 below depicts the distribution area. While URS did not provide information on why this area was chosen, two of the three top potential sites fit into this boundary. The Dixileta site did not fit, but that is likely because it was too far north. However, if the Dixileta site was not included within this area, then it is possible that residents who would have wanted to attend this meeting were not properly notified about the community open house.

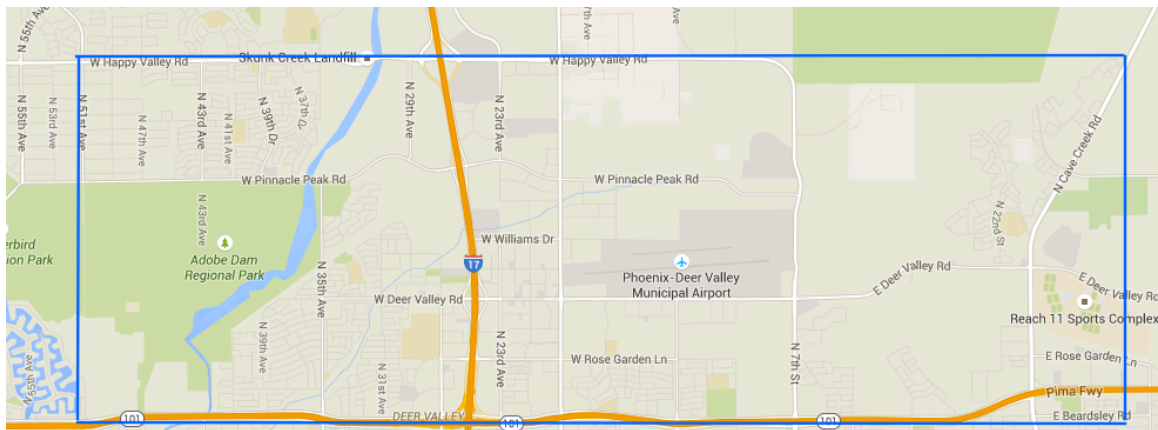


Figure 4. Distribution Area for Community Open House.

After URS applied the exclusionary criteria to the study area, they asked the CAC and City Departments to weigh the ranking criteria (see Table 7 below) to indicate which criteria they deemed as most important. While the City and CAC provided similar rankings, URS utilized the CAC rankings as the CAC consisted of broader stakeholder interests. Once URS applied these criteria, they determined nine potential locations. Once narrowed down, they applied additional ranking criteria (see Table 8 below) and had the council and CAC rank these criteria in importance.

Table 7
Transfer Station Ranking Criteria
Distance to TS/MRF waste centroid *
Distance to other non-City public TSs *
Distance to incompatible developed uses *
Distance to major transportation route
Land ownership
Topographic extremes

*The criteria that the CAC ranked as most important

Table 8
Additional Transfer Station Ranking Criteria
Cultural resource impacts (archaeological and historical considerations) *
Distance to non-City public TSs
Acquisition cost
Available space *
Configuration of available space *
Contaminated sites
Number of owners
Access requirements
Utility easements, pipelines, rights-of-way
Available utilities
Traffic impacts *
Proximity to protected lands *

*The criteria that the CAC ranked as most important

After applying these criteria and working with the Planning Department and the Community and Economic Development Department, the nine potential sites were narrowed down to three. Then, PW took the potential sites to other City departments, the CAC, and opened the potential sites to public comment. This is the first mention of involving the general public in the discussions on locations for these sites.

Once URS narrowed down the potential sites down to three, URS provided information in the documentation on the benefits, the potential concerns, and public opinion for each site. Table 9 shows the sites with their benefits, concerns and public

comments. From the information provided, the Dixileta site seemed to have the most support.

Table 9			
Potential Transfer Station Sites: Benefits, Concerns, and Public Comments			
Potential Site	Benefits	Concerns	Public Comments
Dixileta	<ul style="list-style-type: none"> • City owns most of the land • Multi-facility complex • Near compatible land uses • Road access • Can divert other traffic concerns from residential areas • Near two washes and a floodplain (no development on the west, south, and east) 	<ul style="list-style-type: none"> • Longer hauling distance • Higher operational costs • No utilities currently • Have to provide direct road access • Close to Sonoran Preserve 	<ul style="list-style-type: none"> • Supportive • Far from residential and commercial areas • Located near compatible land uses • Proposed truck traffic routing may reduce impacts on residential development in the area
Pinnacle Peak	<ul style="list-style-type: none"> • Easy road access • Compatible land-uses • Has existing utilities • Far from other public TSs • Close to waste centroid (Reduction in operational costs) 	<ul style="list-style-type: none"> • Near residential areas • Fewer compatible land-uses. Transition to commercial development 	<ul style="list-style-type: none"> • Opposed • Incompatibility to future uses • Adjacent to office space and construction • 15 letters sent in from property owners to oppose this site. Included a list of signatures opposed.
7 th Street	<ul style="list-style-type: none"> • Located near compatible land-uses • Near waste centroid • Easy road access 	<ul style="list-style-type: none"> • Near residential development • Near Sonoran Preserve • Traffic routed through residential areas • Restrict expansion plans for Deer Valley Airport 	<ul style="list-style-type: none"> • Opposition • Incompatible land-uses • Exacerbate residential traffic concerns

URS and PW attended three different Village Planning Committees to discuss the siting process and answer questions and concerns. These three Village Planning Committees were Desert View, Deer Valley, and North Gateway. These were the three committees that were relevant for the areas in which the top three potential sites were located. PW did not attend these committee meetings until there were only three potential sites left. The only concern listed in the URS study was that of traffic. URS also contacted property owners and developers in the surrounding areas to provide them with information about the siting process and the three potential sites.

URS and Public Concerns. Within the documentation for public participation was an email sent from URS to the City of Phoenix. This email stated that they heard the City of Phoenix was considering a site for the TS without going through the criteria based selection method and that they strongly suggested the City of Phoenix inform the public of this as the process had been advertised as transparent and objective. There is no response from the City of Phoenix included within the documentation, but it does point to potential issues concerning the extent to which SE mattered to the City of Phoenix. This site was not chosen and this issue does not seem to occur elsewhere during the siting process.

URS also included another email in their documentation from a resident opposing a TS in Pinnacle Peak. The resident listed problems with a current City of Phoenix operation related to a granite and gravel pit dug out years prior. This individual stated that the pit negatively affected air quality, which had hurt or killed three others in the area, and that to site yet another polluting facility in the area would bring further detriment to

the health of community members. Again, no response to this citizen is included in the documentation, but this points to issues with public involvement and concern that needed to be resolved.

TS concluding thoughts. While URS and PW seemed to provide multiple options for public involvement, they only described two community meetings consisting of an open house, a public meeting, and three CAC meetings. For a process that took about five years, this still seems like a low number of public meetings. Public meetings may provide a different and more interactive platform by which citizens can openly discuss the siting process.

There is an obvious preference for the Dixileta site from both city departments and the CAC. URS recommended this site to the city for various reasons including: water and sewer services available after the development of the North Gateway WRP and limited future land uses in the area due a Sonoran Preserve and washes bordering it. They also recommended constructing a traffic interchange off the I-17 to handle the public concern about increased traffic. If the information provided by URS is accurate in relaying the public's concerns, then the site chosen (NGTS) is the one with the least opposition.

LF analysis. The analysis for SR-85 mimicked the process for NGTS. URS created a map using the regulatory exclusionary criteria to determine the study area. They then created ranking criteria that the CAC and City Departments ranked. The first set of ranking criteria came directly after URS applied the exclusionary criteria. The highest

ranked of these criteria by the CAC included: distance to study area centroid, distance to major transportation route, and time/cost to acquire/permit (land ownership). Through this process, URS located the top two potential sites. To determine the best location, URS conducted site-specific evaluations on the top two sites. URS utilized a second set of ranking criteria, ranked in importance by the CAC, for the site-specific evaluations. This set of ranking criteria involved environmental, public, and technical concerns. The highest ranked criteria by the CAC included: geotechnical study results, jurisdictional waters/wetland delineation, available space, configuration of available space, and water supply wells. None of these highest ranked concerns included human risks or impacts on residents.

As written in the URS documentation, PW formed both a Technical Advisory Council (TAC) and a Citizen's Advisory Council (CAC) for public participation. This is the first and only time the TAC is mentioned in the documentation for public participation. PW and URS created both of these councils to provide feedback on the siting process and to rank the criteria. The URS documentation indicated that public meetings also occurred during the site selection process to include the "most active members of the community" (City of Phoenix, 2000). If the way in which URS worded this statement is accurate, and URS only engaged the most active members of the community, then they could easily be missing individuals who have concerns, but do not have the time to attend these meetings. One objective stated within the documentation was making the LF "publicly acceptable." This included having public input throughout the process and making sure that PW considered public preferences.

LF Public Concerns. During the public meeting at the beginning of the siting process, residents questioned why PW still had done nothing with past LFs after closure as they had promised to do. This question came up multiple times throughout the siting process in various formats. It may point to distrust between City of Phoenix residents and the City over the handling of LFs.

Community meeting minutes. Table 10 below shows date, time, stakeholder concerns discussed, concern, and support from each of the four Village Planning Committees. The table shows that the committees did not ask about many outside stakeholders. The most support existed for the Dixileta site; all other sites had many stakeholder concerns. Most of the meetings consisted of updates by PW on the siting process with some time for feedback from the committees.

Table 10					
Village Planning Committee Meeting Minutes					
Committee	Year	Time of Meeting	Stakeholder Concerns	Concern	Support
Desert View Village Planning Committee	2001	19:25	State Land Department	Near state land; Traffic concerns for 7 th St.	
Deer Valley Village Planning Committee	2001	Around 18:30	N/A	Traffic concerns, adjacent land uses with the airport	Support Dixileta
	2001		N/A	N/A	N/A
Estrella Village Planning Committee	2001	18:00	N/A	Truck traffic through residential areas;	

				concerns about LF closure	
	2001		Local residents	Businesses, families, and local economy; had not received any letters/ notification	
North Gateway Village Planning Committee Minutes	2001	Around 18:30	N/A	N/A	N/A
	2001		Pinal County	Residential development, methane gas	N/A
	2002		N/A	N/A	N/A
	2004		N/A	N/A	Supported the site

There are two interesting occurrences, both for the only Estrella Village Planning Committee meeting discussed. This meeting occurred in 2001. First, residents attended to this meeting to oppose the site and stated that they had not received notification or letters of the potential siting of the LF. If Phoenix did not notify multiple residents, then this is a serious issue associated with engagement. This could hinder a fair process if residents did not receive any information informing them of plans to construct a LF. This is the only meeting where citizens came to openly object to the siting of the LF in an area. The second incident occurred when the Estrella Village Planning Committee discussed some mistrust between community and City. The committee showed concern about the discrepancy on what the City of Phoenix stated they would do with retired LFs and what they are actually doing with them. They did not want this issue to occur near them.

The meeting times for these committee meetings occurred later in the day, usually after regular working hours. This could be because the committees consisted of regular

citizens and not city employees. Meeting minutes were only available for the TS, not for the LF.

The public expressed concern over traffic, proximity to residential areas, and health concerns at these meetings. The Dixileta site received the widest acceptance among the committees at the meetings. According to the minutes, the Estrella Village meeting was the only one where the public came to oppose the siting of the LF near them.

Traffic concerns seem to be the greatest reason for opposition at these meetings. This supports the information provided to the council from PW and the URS documentation stating that residents were most concerned about traffic. This may indicate that there was not enough education as to the environmental or health problems that are often associated with living near these types of facilities, specifically LFs. While PW and URS indicated that they educated the public to these types of issues, the degree of the education and the population that learned about these issues may have been too small.

One issue with these meetings was that there are not very many of them per committee. There are too few meetings to determine any trends and even for the committees that had more than one or two meetings, they were spread out over a few months. The North Gateway Committee, the relevant committee NGTS, was the only committee that had multiple meetings in a year. However, if they were expected to discuss this process and provide public opinion, then having meetings every few months may have lead to forgetfulness on what occurred, how the siting process progressed, and possibly could stifle opposition as it could be difficult to keep people engaged over long periods of time.

Procedural justice and council.

Background information. This research question is divided into five different sections: when were the meetings held, opposition, support, and concern, were concerns addressed, when did the council directly ask about SE and what stakeholders were they concerned about. While SE, specifically public participation, was discussed during these meetings, the PW side, unprompted, often gave it.

When were the meetings held? The date and time of the meetings may have affected the level of SE. Stakeholders include: city departments, other jurisdictions, and the public. This section analyzes the times of day, frequency, and number of meetings the subcommittee and Buckeye Council held.

Over the seven year process, twelve subcommittee meetings occurred in which the council and PW discussed the siting processes. The majority of these meetings occurred in 2001. The Buckeye City Council held fifteen meetings in which they discussed the siting process.

Table 11 below shows when the meetings for both the Natural Resources Subcommittee and Buckeye City Council took place. The meetings for the Natural Resources Subcommittee occurred during regular working hours. This could have prevented some residents from attending meetings and providing feedback on the siting process. The Buckeye Council held their meetings later in the day, after regular work hours. This timing may have allowed for more residents to attend the meetings. Large gaps often occurred between subcommittee meetings. This could easily have made it

more difficult for the council to remember the information that PW presented in previous meetings. This also may have made it harder for the public to make a meeting and oppose the process in front of the subcommittee. As many of the meetings for the Subcommittee discussed both the LF and TS siting process, I did not differentiate between the meetings.

Table 11						
Time of Natural Resource Subcommittee and Buckeye Council Meetings						
	Natural Resources Subcommittee			Buckeye Council		
Year	# of meetings	Time of meetings	Months of meetings	# of meetings	Time of meetings	Months of meetings
1999	2	13:15	Dec.	0		
2000	1	13:10	Nov.	1	19:00	November
2001	4	10:07-10:23	Feb., April, May, Oct.	0		
2002	2	10:00	Jan., May	11	First meeting @ 18:00; all others at 19:00	Jan., June, July, Sep., Oct., Dec.
2003	2	10:05	April, June	0		
2004	1*	16:00	April	3	One meeting @ 18:00; all others at 19:00	Jan., Feb., Aug.
2005	1	10:10	June	0		

*This meeting is from the Phoenix Mayor's Commission on Disability Issues Architectural Accessibility Committee

Except in 2001, there were also often large gaps between meetings. During these gaps, the documentation suggests that URS was developing criteria, determining the possible siting area, and going through the physical siting and construction process. However, these gaps indicated a time when the subcommittee did not hear about the siting process and a time during which citizens could not directly oppose or provide feedback to the subcommittee. It is possible that the subcommittee members may not remember much of the information about the siting process presented to them in previous

meetings. If this is the case, then it is possible that they relied on the information presented to them rather than questioning the process repeatedly.

For the City of Phoenix, at least one meeting every year occurred between 1999 and 2005. However, one meeting may not have allowed for sufficient stakeholder feedback. While four meetings occurred in 2001, the frequency of meetings declined after that year. This is likely because the process was far enough along that PW did not need to go to the subcommittee as often.

For the Buckeye Council, eleven meetings occurred at which the council discussed the siting process in 2002. Before and after 2002, the frequency of meetings declined significantly, which may have also hindered the amount of stakeholder feedback.

Opposition, support, and concerns. This section examines who opposed and who supported the TS and LF sitings during the subcommittee meetings and why they opposed or supported the facilities. This section begins with a discussion of the TS siting process and then on the LF siting process. This section is divided into two sections examining the opposition, support, and concerns voiced by various stakeholders. The first section looks at the TS siting and the second section looks at the LF siting.

Transfer station. From Table 12 below, the concerns and support for each site is shown. In 2001, concerns and support began to occur from multiple stakeholders. This is the first year where the potential sites had been narrowed down enough to start having more specific concerns pertaining to the locations. During these meetings in 2001,

stakeholders voiced traffic concerns for each site. It is important to note that while there are four meetings in 2001, only the first two (in February and April) discuss all three potential sites. At the second meeting in April, PW asked permission to site the TS at the Dixileta site. During the second meeting of 2001, the first tangible opposition came from the public for the Dixileta site. Two residents attended this meeting and opposed the TS mainly primarily due to increased traffic concerns from both the mining and TS traffic. Other stakeholders also voiced traffic concerns as a major driver against the siting of a TS.

Year	Site	Stakeholder	Concern	Support
1999	N/A	N/A	N/A	
2000	N/A	Subcommittee	Siting near current or planned residential development	
2001	Pinnacle Peak	Subcommittee	Increasing land costs (creating a commercial corridor)	Chance to partner with Waste Management
		Subcommittee	Birds/flight path of Deer Valley Airport	
		PW	Sufficient land concerns	Site of other industrial uses
		PW	Mixed public opposition, no information on nature of opposition	Close to I-17
		PW	Most opposition from the public*	Least traffic impact
	Dixileta	PW	Distance	Co-location of facilities
		PW	Traffic impact on interchange	Alleviate traffic concerns with nearby mine traffic
		PW		Natural buffer

		PW		Most public support
		Public		Two citizens representing Alter Group in support
		Public	Residents opposing due to traffic concerns; safety for residents coming and leaving area; properties uninhabitable due to the traffic from mining and TS	
	7 th Street/ Deer Valley	Subcommittee	Hinder third runway plans at Deer Valley Airport	
		PW		Foothills to east=buffer
		PW*	Mostly public opposition, no specifics	
	N/A	Village Planning Committee**		
2002	Dixileta	PW	Aesthetics of building to blend into the environment	
2003	Dixileta	Subcommittee	Traffic concerns/aesthetics/parking	
2004	Dixileta	Subcommittee	Access for handicapped	

*Refers to concerns/support voiced in public during meetings, but told to the subcommittee by PW

** This meeting is from the Phoenix Mayor's Commission on Disability Issues Architectural Accessibility Committee

Landfill. Table 13 below outlines the stakeholders, concerns, and support for the LF siting. Until 2001, there was no opposition or support from any stakeholders. In May 2001, PW mentioned the first stakeholder concern, which came from Luke Air Force Base. Because of this concern, PW took two sites of the potential LF list and added Table

Mesa Road as a new potential site. During this meeting, PW informed the subcommittee that there were nine potential sites.

Table 13				
Landfill Concerns and Support- Natural Resources Subcommittee				
Year	Site	Stakeholder	Concern	Support
1999	N/A	N/A	N/A	
2000	N/A	N/A	N/A	
2001	N/A	Subcommittee	Liability issues pertaining to partnering with the County	
	N/A	Village Planning Committee	Concern for Dixileta site due to increased traffic and mining traffic concerns	Support the Dixileta site; oppose the other two sites
	N/A	Luke Air Force Base	Potential bird hazard for flying aircraft	
	Site near Yavapai County	N/A	Potential environmental concerns (not specified)	
	Three northern sites	N/A		Reduce costs due to proximity to NGTS
2002	North Central	PW	Surrounding communities and the State Land Department expressed concerns*	
	SR-85	PW	Distance from Phoenix → higher hauling costs; but potential partnerships	Fewest community concerns*
				Support from Buckeye
				Exceeds the 50 year life requirement
		Landowner	Buffer	
		Subcommittee	Also landfilling Buckeye's trash?	
Resident	Flooding problems, near a wash; traffic concerns			

	SR-238	PW	Small size; a second LF would also have to be sited	Not as far away as SR-85
			Community concerns*	Already an existing permitted LF
2003	SR-85	Subcommittee	Political/public opposition	

*Refers to concerns/support voiced by public during meetings, but told to the subcommittee by PW

In 2002, PW discussed the public opposition for the three top potential LF sites. During the first meeting in 2002, PW discussed concerns from citizens for the North Central site. The subcommittee asked if these communities were from outside of Phoenix. PW indicated that they were, but also that the State Land Department also voiced concerns. Why the subcommittee was concerned with where the concerned communities were located did not come up during the meeting minutes, but poses an interesting question as to why the subcommittee wanted to know where the communities were located. This may point to the subcommittee not being as concerned about public opinion if outside Phoenix’s jurisdiction. Also interesting is that PW did not go into great detail about what the public was opposing and the subcommittee did not ask.

Table 14 looks at the LF concerns and support for the Buckeye City Council. Buckeye Council held three meetings in 2002 before the public voiced concern about the siting of SR-85. One group opposed the siting due to environmental, health, safety, and property value risks. They wrote a letter to the council stating that they had not been notified of this potential siting and they asked the Buckeye City Council to table the issue until they had the time to look through documentation and research the issue more closely.

Table 14			
Landfill Concerns and Support- Buckeye City Council			
Year	Stakeholder	Concern	Support
1999	N/A		
2000	Allied Waste	The type of waste that would be sent to the Phoenix LF	
2001	N/A		
2002	Staff		Supports/the partnership has benefits
	Landowners	Environmental, health, life-safety, property value	
	Buckeye Council	Groundwater contamination	
	Allied Waste	Buckeye's agreement with Allied Waste	
	Citizens	Voiced concerns	
	3 Citizens	Environmental concerns	

The last three meetings in Buckeye only mentioned that the ADEQ held two public meetings required for the permitting process. During the last meeting, PW informed the council that the AZ Department of Environmental Quality postponed the LF open house from February 19th to February 23rd. This postponement brings up issues pertaining to SE, as it could have been difficult for stakeholders to adapt to the change.

Were concerns addressed? This section looks at the concerns raised in the previous section and examines whether the subcommittee or Buckeye City Council addressed the concerns.

Transfer station. In 2003, in response to the traffic concerns voiced by residents, the subcommittee asked PW how plans with ADOT for an interchange were coming along. Even though PW could not point to a specific time, the subcommittee went ahead and approved the siting of NGTS. However, they did voice their concerns for traffic and indicated to PW the importance of working closely with ADOT to ensure that the site could handle increased traffic. The subcommittee also told PW to keep concerned residents informed of the progress on the construction of an access road and interchange.

Landfill. In 2002, PW recommended that the subcommittee approve SR-85. To address the concerns of a landowner to the east of the site, PW stated that they needed to purchase an additional 900 acres to create a buffer zone. During the first meeting in 2002, a resident voiced concern that the LF would exacerbate an already flood prone area. The subcommittee asked PW if flooding had been taken into consideration. PW responded that they were working with ADOT on this issue. The subcommittee then asked about liability issues pertaining to the potential flooding of the site. The concerned resident also opposed due to traffic concerns in the area. The subcommittee did not address the traffic concerns, but rather told PW to work closely with the landowners to address any additional concerns. The city approved SR-85 in 2002.

Public concern existed regarding the LF and many residents stated that the city had not notified them about the potential siting. During the Buckeye City Council meeting in July, the Buckeye Council addressed the letter but determined that "... the issues raised by the residents of Lakeside Ski Village appear to be more zoning issues and could be addressed at another time" (Buckeye City Council Minutes, July 2002). The

Buckeye Council therefore did not address the concerns voiced by the residents. As these individuals came from areas within the three-mile permit radius, specifically they lived under 1.5 miles away from the proposed site, the lack of concern for their opposition is concerning as these individuals are required by law to receive notification.

Also in 2002, Allied Waste voiced concerns over an agreement they had with Buckeye in which Buckeye stated that they would deliver their waste to whoever provided them with the best deal. Residents voiced opposition to the LF site in the October meeting and stated that they were upset that Buckeye could not stop the siting at this point. The meeting minutes do not point to the Buckeye Council addressing this concern. During the last meeting in 2002, three Buckeye citizens attended to oppose the LF due to various environmental concerns. The minutes do not provide any information that the council addressed these concerns. Another issue surrounding this siting was that there were some residents that came to the Buckeye meetings to protest the siting process, as they had not received notification. If this is true, then the question to ask is whether or not these individuals represent the minority or the majority.

The Buckeye Council minutes did not show them addressing stakeholder concerns. While many stakeholders, ranging from the public to Allied Waste, voiced concerns, the concerns seemed to be pushed aside or not addressed at all by the council. This could indicate that the meeting minutes are not comprehensive, or could point to a lack of responsiveness from the Council. If the latter is true, then the Council did not address EJ concerns and the SE process was not just.

When did the subcommittee and Buckeye City Council directly ask about SE and what stakeholders were they concerned about? Table 15 below shows the stakeholders that the Environment and Natural Resources Subcommittee asked about for both the TS and LF. In 2000, the subcommittee inquired about who attended a public meeting. PW told the subcommittee that 25-30 concerned citizens attended. The subcommittee also asked if PW involved the Planning Department in determining the appropriate sites and emphasized the importance of siting these facilities away from residential areas, both current and planned. PW stated that they were working with the Planning Department. Additionally, the subcommittee asked whether PW worked with other cities. PW told the subcommittee that they had been discussing the siting with other cities. The minutes do not state with which cities specifically PW worked. For 2000, the subcommittee directly mentioned the public, the Planning Department, and other jurisdictions. In 2001, the subcommittee inquired about partnering with other members of the industry and discussed the siting with them.

Table 15		
Transfer Station and Landfill Subcommittee Stakeholder Concerns		
	Transfer Station	Landfill
Year	Relevant Stakeholders	Relevant Stakeholders
1999	N/A	N/A
2000	Public, Planning Department, Other Jurisdictions	Public, Planning Department, Other Jurisdictions
2001	Members of the industry, other departments	Maricopa County (partnership), Yavapai County (potential site near border)
2002	N/A	Communities
2003		Public or political opposition

While the subcommittee seemed to consider SE throughout, they often asked questions about other jurisdictions or departments, and not necessarily about the public. PW often brought up SE voluntarily rather than waiting to be asked. Even when it was discussed, PW did not provide significant details to the council or subcommittee.

The subcommittee members and Buckeye council seemed to have considered SE throughout the siting process. However, the stakeholders they were concerned about vary. They seemed concerned with three types of stakeholders: other jurisdictions, other city departments, and the public. The documentation showed that there might have been inherent flaws associated with the siting process when discussing the involvement of the subcommittee and Buckeye Council. Neither the subcommittee nor the Buckeye Council asked many questions pertaining to SE, and when members asked questions, PW did not give very detailed responses.

The next section looks at current decision-makers in SW, PW, and the T&I Subcommittee and examines their views on sustainability.

Distributional justice. This question is divided into two sections. The first compares the demographics each year for the 1/10 mile and one mile tracts to the Maricopa County demographics. The second section looks at each facility tract and compares how the surrounding tracts changed over time. I do not have median home value information for 1970, 2000, or 2010. The trends analyzed for median home value therefore only refer to 1980 and 1990. Tables 16 and 17 below show the names of the

facilities, tract numbers, and approximate years constructed. Map 5 below depicts the locations of each of the facilities.

Table 16		
Landfill Tract and Year		
Census Tract #	Year Built	Facility
7233.06	2006	SR 85
1148	~1960	19th Ave Cell A-1
1148	~1960	19th Ave Cell A
1036.09/1036.05	1950	Deer Valley Landfill
6119	1972	Skunk Creek
1153	1971	Del Rio
1173/1147.03	1978	27th Ave

Table 17		
Transfer Stations		
Census Tract #	Year Built	Facility
1173/1147.03	1998	27th Ave
6113	2006	North Gateway Transfer Station

Phoenix Landfills and Transfer Stations

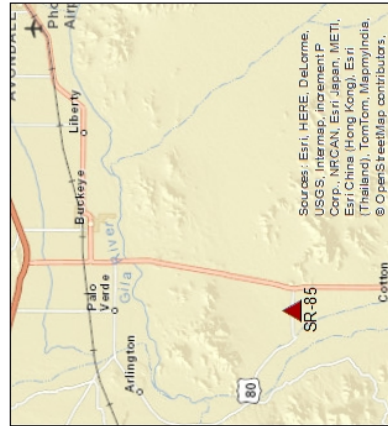
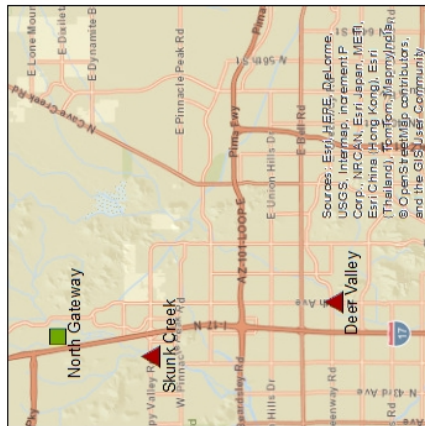
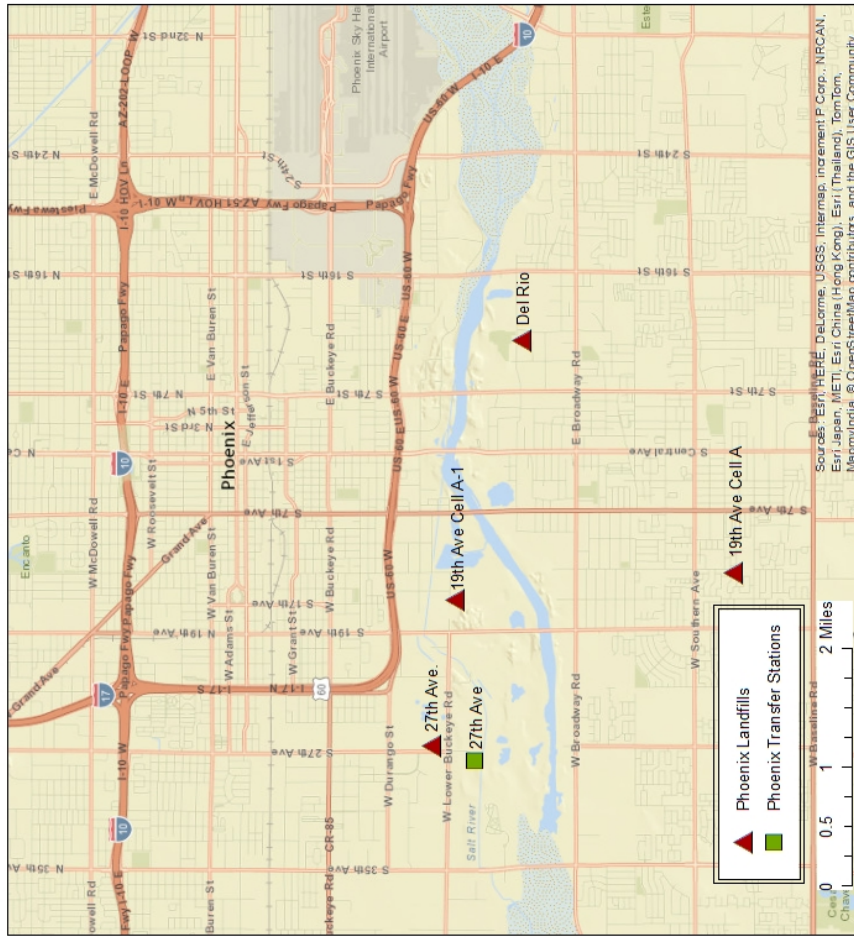


Figure 5. Phoenix Landfills and Transfer Stations.

Tract demographics. For this section, I examined each of the individual tracts with their tenth mile and one mile boundaries and compared their percentages to the Maricopa County percentages. I separated the tracts between the tracts with LFs and those with TSs. Tracts 1173/1147.03 had both a LF and TS, so they were assessed in both categories. Trends were then analyzed.

Landfills. The tenth mile and one mile tracts are the same for tract 7233.06. Percent Hispanic and Native American were above the Maricopa County percentages. Percent white was below the Maricopa County percent. Percent ownership was below Maricopa County for 1970 and 1980 but was above Maricopa County for 1990, 2000, and 2010. Percent Black was below Maricopa County between 1980-2010. See figures 6 and 7 below.

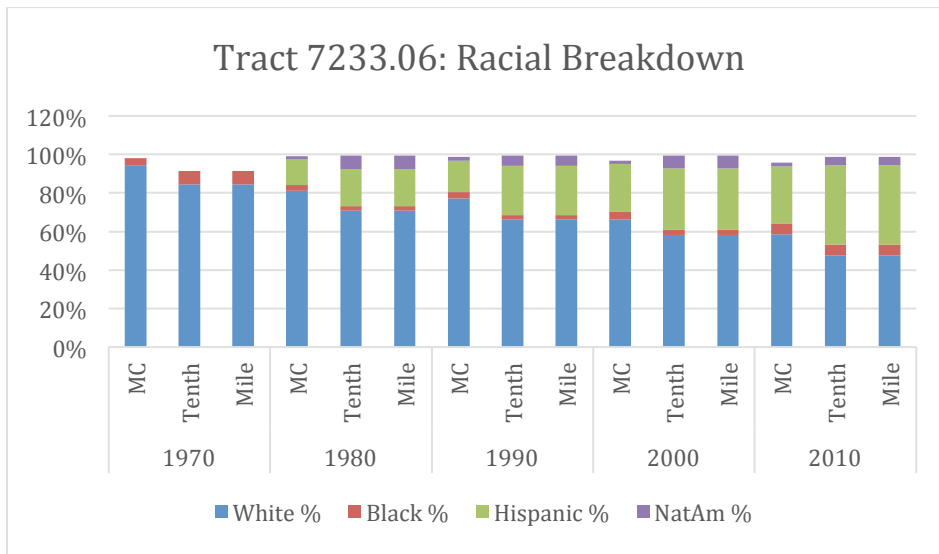


Figure 6. Tract 7233.06: Racial Breakdown.

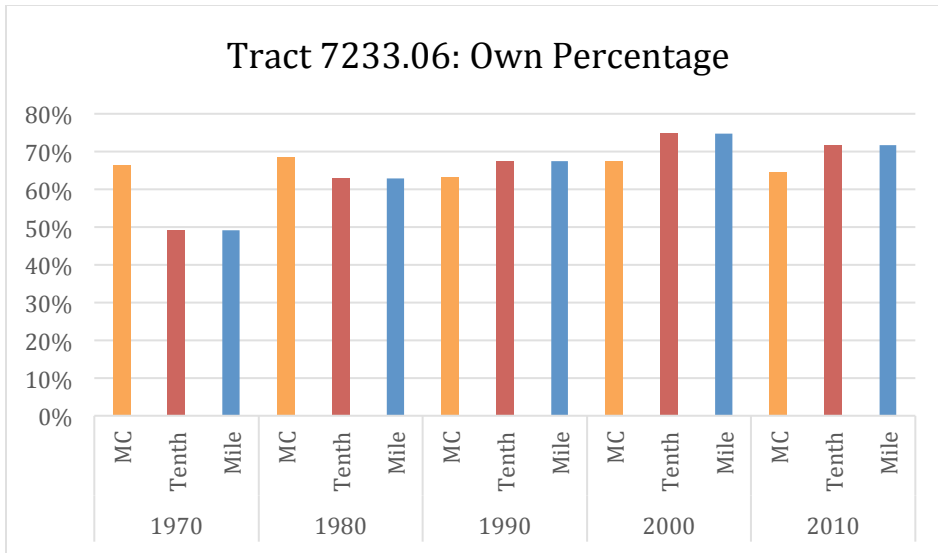


Figure 7. Tract 7233.06: Own Percentage.

In tract 1148 for the tenth mile tracts, the white population decreased by 69% from the 1970 census to the 2010 census. This is with an increase in population in the tract by around 1,000 people. The Hispanic population increased by 24% over this time period. The LF was constructed around 1960, which may explain why this change occurred. The white population was consistently under Maricopa County, as were percent own, percent Black, and the Native American percent for 2010. The median home value is around twenty to forty thousand under the Maricopa County numbers. The Hispanic population is above the Maricopa County numbers. The tracts within a mile had slightly different results than the tenth mile tracts. The percentage Black increased and was above the Maricopa County average. The median home value increased, but was still below Maricopa County. Percent own and percent white were still below Maricopa County. See figures 8 and 9 below.

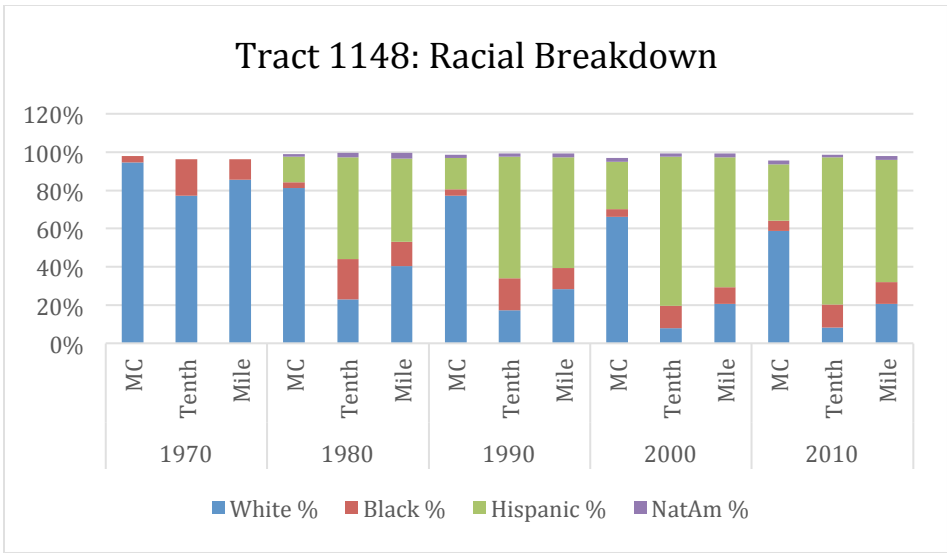


Figure 8. Tract 1148: Racial Breakdown.

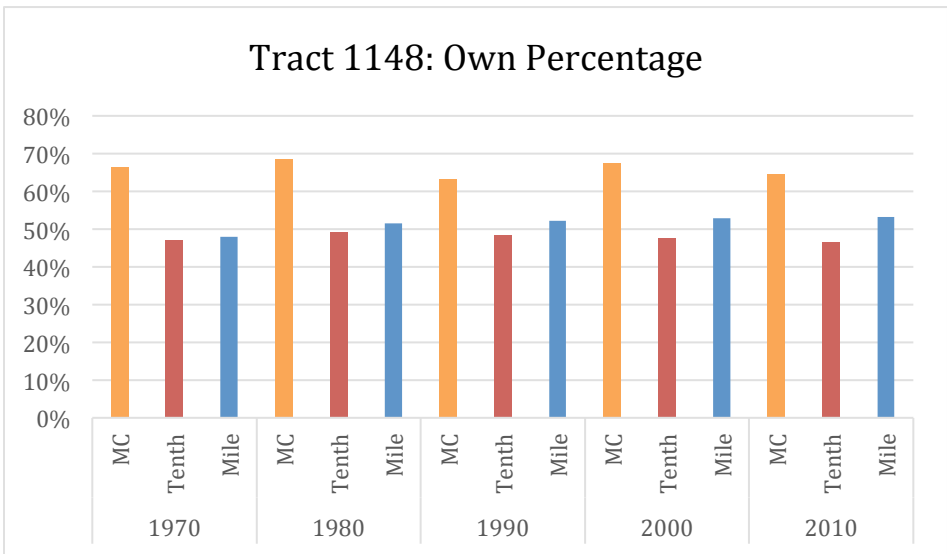


Figure 9. Tract 1148: Own Percentage.

For 1036.09/1036.05 tenth mile, the numbers for Black, Hispanic and Native American percentages were below the Maricopa County percentages. Between 1970 and 1980, home ownership was higher than for Maricopa County; from 1990 to 2010, the percentage was lower. The white percentage was higher than for Maricopa County. For the one-mile tracts, Black, Hispanic, and Native American percentages were below

Maricopa County percentages. Percent ownership, white, and median home value were above Maricopa County percentages. Home ownership was the only demographic that changed between the tenth mile and one mile tracts. Home ownership was only below average for 1990. See figures 10 and 11 below.

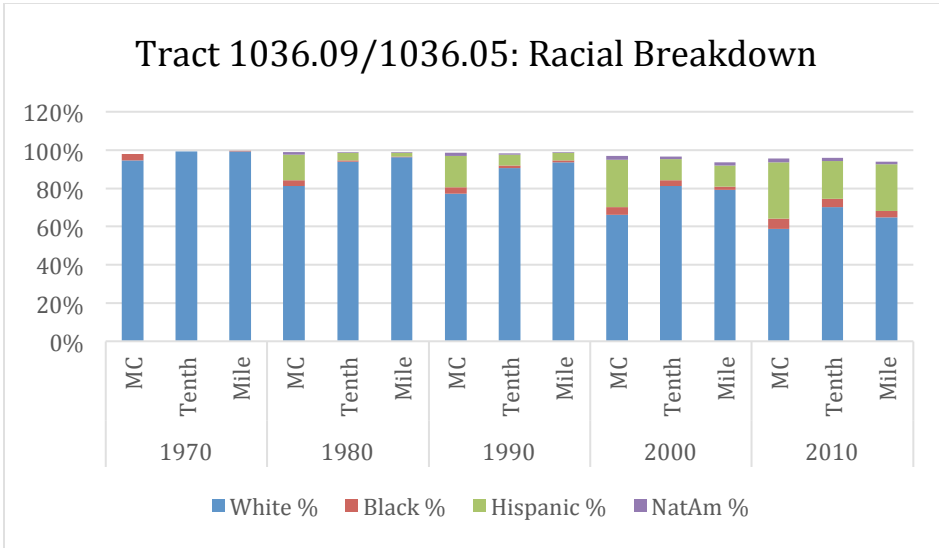


Figure 10. Tract 1036.09/1036.05: Racial Breakdown.

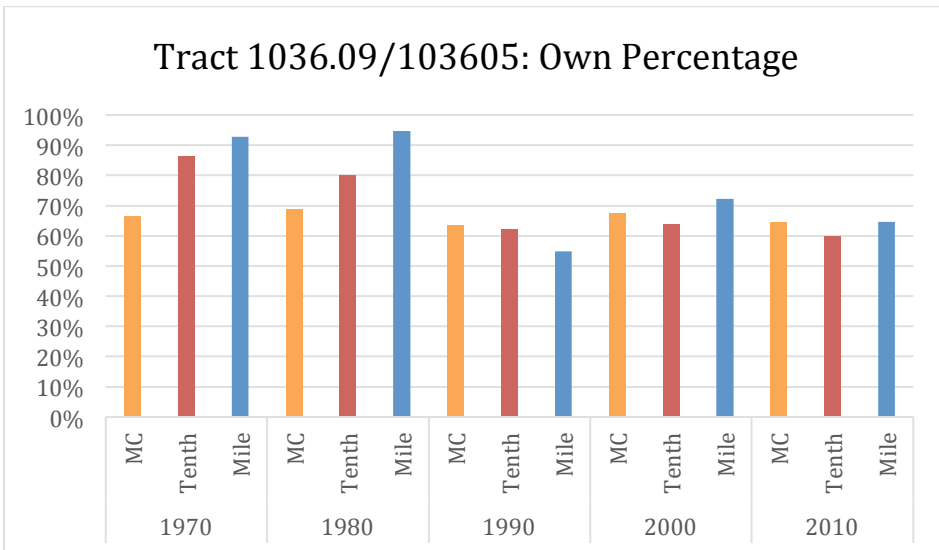


Figure 11. Tract 1036.09/1036.05: Own Percentage.

For tract 6119 tenth mile, percent own and percent white were above the Maricopa County percentages. Percent Black, Hispanic, and Native American were below the Maricopa County percentages. Median home value was higher than Maricopa County for 1980 and lower for 1990. The only change between the tenth mile and one mile tracts for 6119 was that median home value was above Maricopa County for both 1980 and 1990. See figures 10 and 11 below.

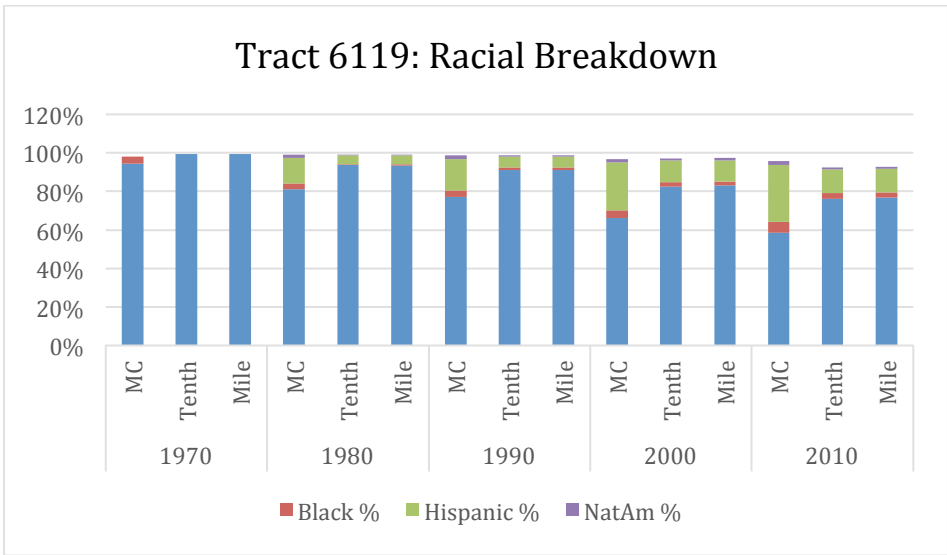


Figure 10. Tract 6119: Racial Breakdown.

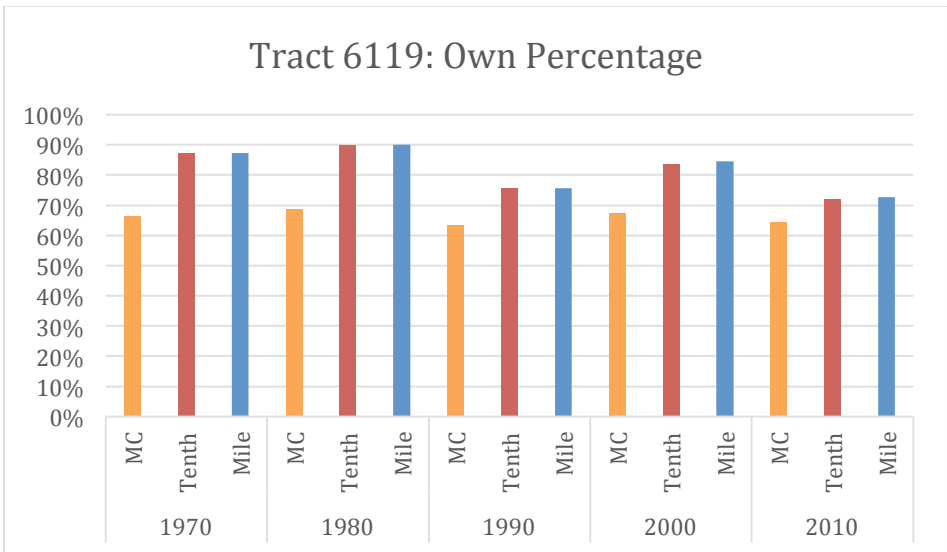


Figure 11. Tract 6119: Own Percentage.

For 1153 tenth mile, the percentages for ownership and white were below the Maricopa County averages. Median home value was below Maricopa County. For Native American, 1980 and 2010 were above the Maricopa County percent and 1990 and 2000 were below. Percentages for Black and Hispanic were above the Maricopa County percent. The only change between the tenth mile tracts and the one-mile tracts was that Native American percentage was below average for all years. See figures 12 and 13 below.

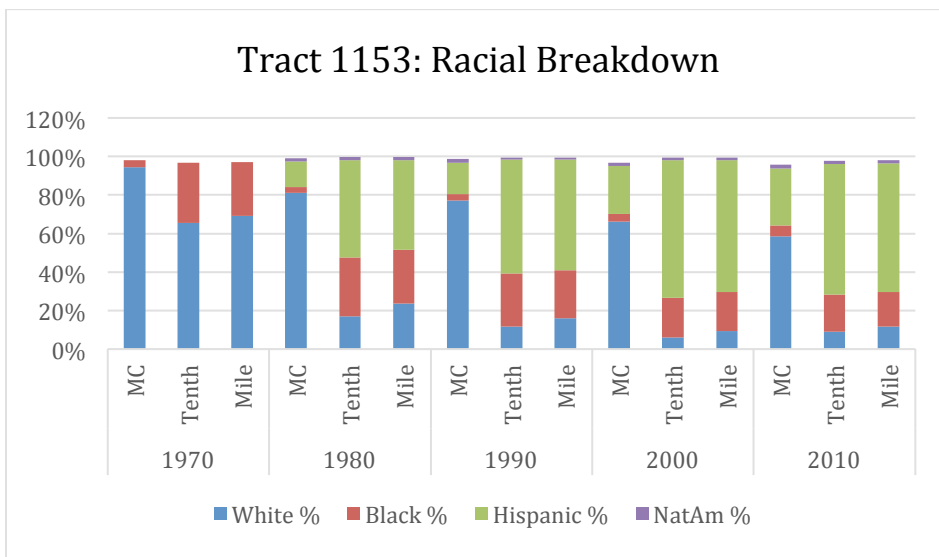


Figure 12. Tract 1153: Racial Breakdown.

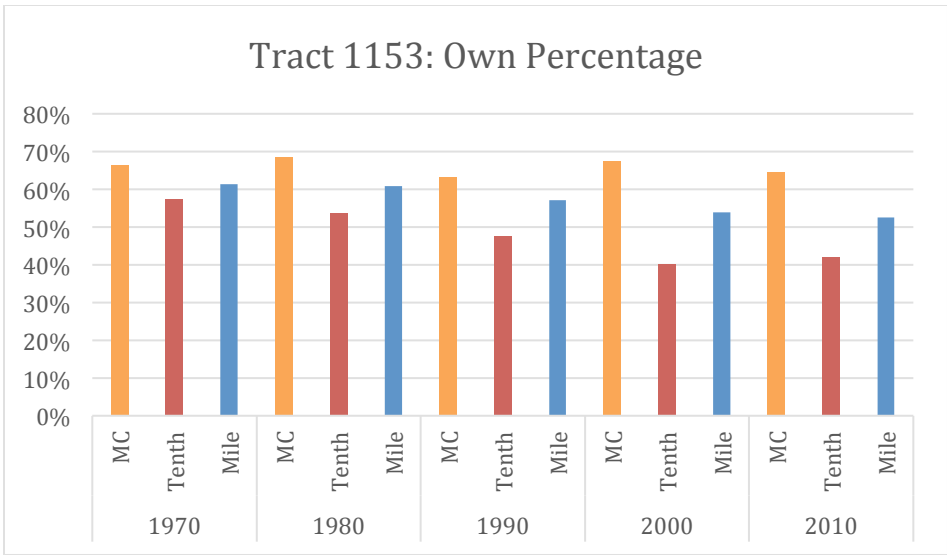


Figure 13. Tract 1153: Own Percentage.

For tracts 1147.03/1173 tenth mile, the percentages for ownership and percent white and median home value were below the Maricopa County percentages. The percentages for Black, Hispanic, and Native American are above the Maricopa County percentages. The one-mile demographics do not change from the tenth mile demographics. See figures 14 and 15 below.

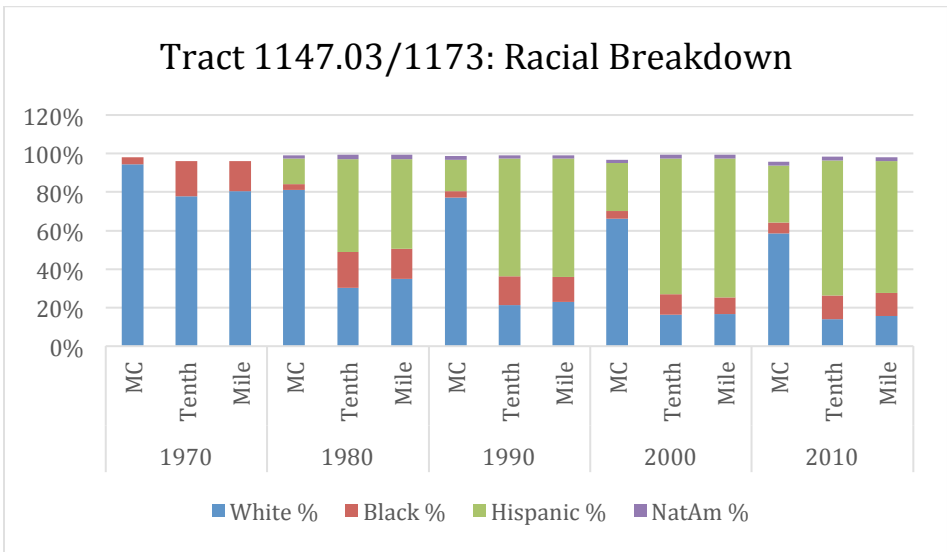


Figure 14. Tract 1147.03/1173: Racial Breakdown.

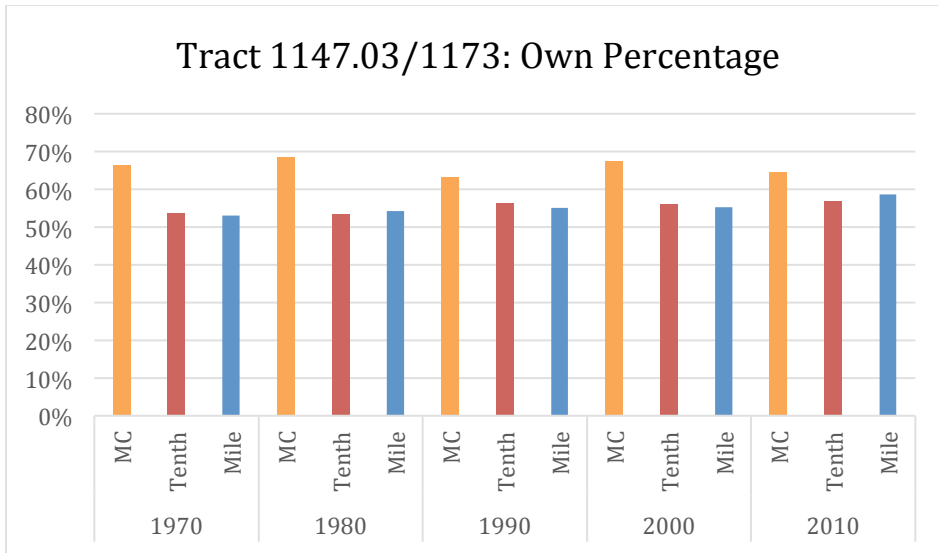


Figure 15. Tract 1147.03/1173: Own Percentage.

Table 18 shows the overall demographics for the LF tracts. The plus signs (+) indicate values higher than Maricopa County values and minus signs (-) indicate values lower than Maricopa County values. If demographics were equal (e.g., if there were two minuses and two plus signs), then an equal sign (=) was assigned. For this table, all years were combined and the majority was indicated. A plus sign means that the majority of the years from when the facility was built to 2010 were above Maricopa County values, a minus sign indicates that the majority of the years were below Maricopa County values, and an equal sign indicates that there was an even distribution.

Table 18							
Landfill Demographic Data							
Tract	Distance	Own %	White %	Black %	Hispanic %	Native American %	Median Home Value
7233.06	.1 mile/1 mile	+	-	-	+	+	-
1148	.1 mile	-	-	+	+	+	-
1148	1 mile	-	-	-	+	+	-
1036.09/ 1036.05	.1 mile	-	+	-	-	-	+
1036.09/ 1036.05	1 mile	+	+	-	-	-	+
6119	.1 mile	+	+	-	-	-	=
6119	1 mile	+	+	-	-	-	+
1153	.1 mile	-	-	+	+	=	-
1153	1 mile	-	-	+	+	-	-
1173/ 1147.03	.1 mile	-	-	+	+	+	-
1173/ 1147.03	1 mile	-	-	+	+	+	-

Plus sign (+) indicates above Maricopa County values, minus sign (-) indicates below Maricopa County values, equal sign (=) indicates same as Maricopa County values.

As is expected, tracts where minority percentages are higher than Maricopa County percentages, the percent ownership and median home value are also below Maricopa County percentages. The reverse is generally true for white percentage and median home value. However, for this data, the presence of a LF does not seem to correlate with higher minority percentages or lower home ownership. However, median home value is lower in these tracts than for Maricopa County as four of the six overall tracts show a lower median home value. This could have many causes, including depressed property values because of the presence of a LF. However, without more information, this cannot be assessed.

When comparing the tenth mile tracts, lower percent own and percent white, and lower median home values occurred. For tenth mile tract, percentage Black was not affected as an equal amount of tract had a higher and lower value than the Maricopa County value. Percentage Hispanic was higher than Maricopa County values. Percentage Native American was mixed, but leans toward majority above.

For one-mile tracts, the majority of percent own, white, Black, and Native American were below Maricopa County values. Percent Hispanic was above Maricopa County values. Median home value was also below the values for Maricopa County.

Between tenth mile and one mile, the demographics were not very different. While Hispanic and Native American values tended to be lower than Maricopa County values, no trends were seen. Hispanic values were the only ones that were above average for Maricopa County for both the tenth and one-mile boundaries. This again indicates that the facility may not play a role in the surrounding demographics. However, there is a trend in location of facilities. Of the six facilities, four of them are located in southern Phoenix. As this is established as having higher minorities than the rest of Phoenix, it may point to an unfair siting process in the past.

Transfer Stations. For tract 6113, the tenth mile tracts are above the Maricopa County numbers for percent white, percent own, and median home value. They are below the Maricopa County values for percentage Black and Hispanic. Native American values are equal. Median home value was above the Maricopa County values. Between the tenth mile and one-mile tracts, very few changes occurred. The only difference was that Native

American percent changed from half above and half below to majority below the Maricopa County values. See figures 16 and 17 below.

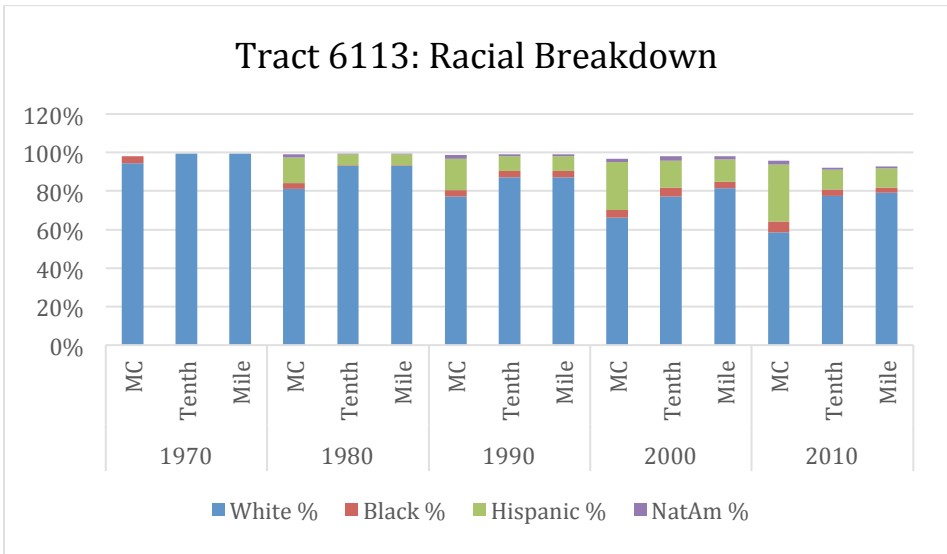


Figure 16. Tract 6113: Racial Breakdown.

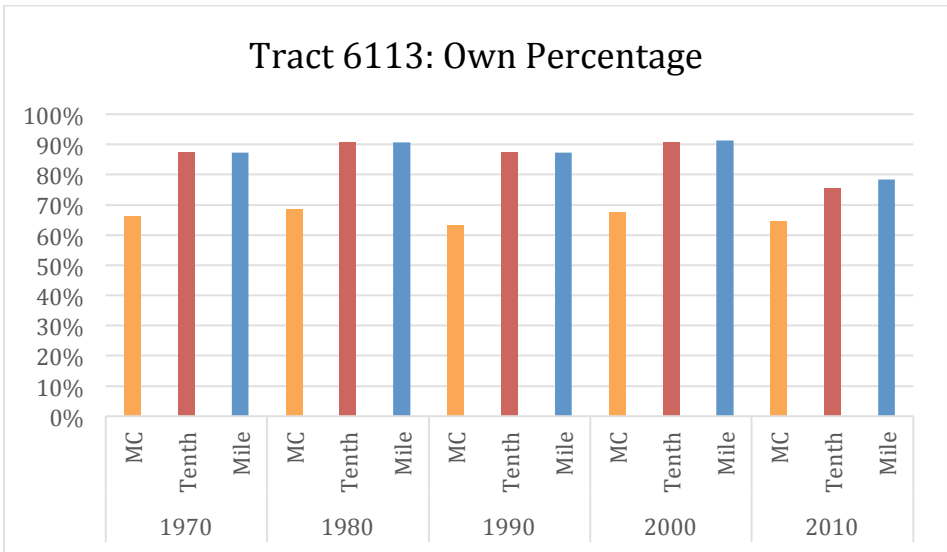


Figure 17. Tract 6113: Own Percentage.

For tracts 1173/1147.03 for both tenth mile and one mile, percentages own and white and median home value were below the Maricopa County values for tenth mile. They were above Maricopa County values for percentage Black, Hispanic, and Native

American. See figures 18 and 19 below. Table 19 depicts the demographics and whether they were above, below, or equal to Maricopa County values.

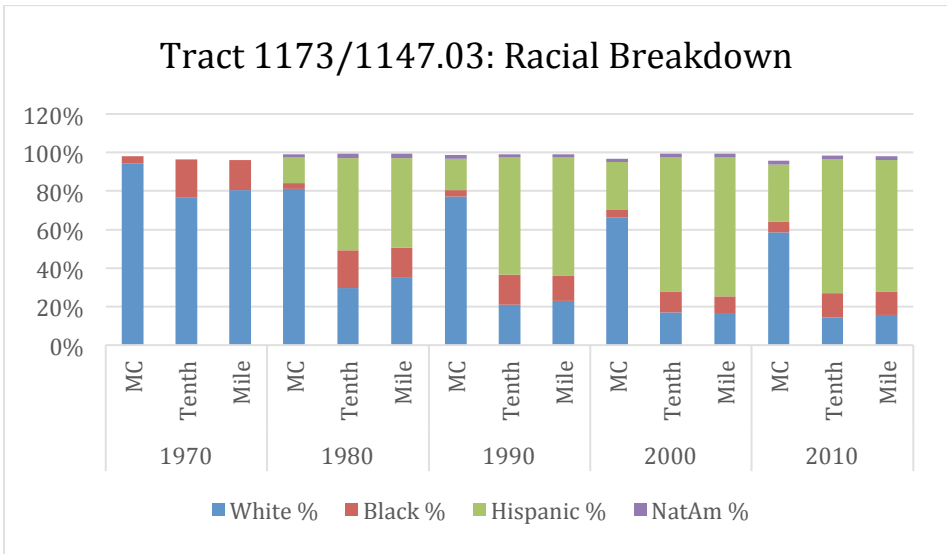


Figure 18. Tract 1173/1147.03: Racial Breakdown.

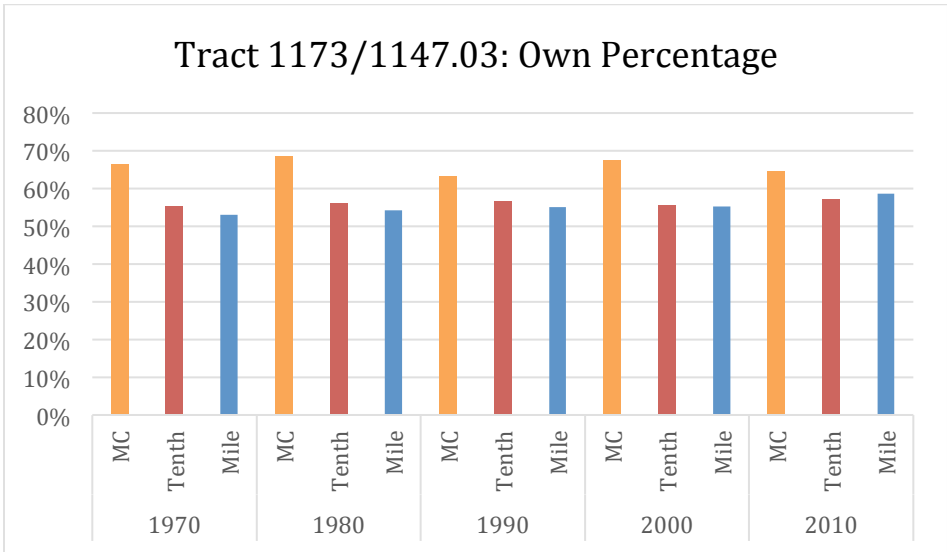


Figure 19. Tract 1173/1147.03: Own Percentage.

Table 19							
Transfer Station Demographic Data							
Tract	Distance	Own %	White %	Black %	Hispanic %	Native American %	Median Home Value
6113	.1 mile	+	+	-	-	=	+
6113	1 mile	+	+	-	-	-	+
1173/ 1147.03	.1 mile	-	-	+	+	+	-
1173/ 1147.03	1 mile	-	-	+	+	+	-

These two tracts show different results, as they are the exact opposite of each other. Tract 6113 is located in northern Phoenix and is in an area that is more affluent; whereas, tracts 1173/1147.03 are located in southern Phoenix. However, as there are only two TSs assessed within this analysis, the sample size is too small to depict any trends.

Change over time. Like the previous section, change over time is separated into a discussion on LFs and a discussion on TSs.

Landfills. As the tracts for 1148 and 1036.09/1036.05 were constructed prior to 1970, change over time for these tracts could not be assessed. For tract 6119, for both tenth mile and one mile, the demographics did not change between 1970 and 2010. The demographics remained above for percent own and percent white and below for Black, Hispanic, and Native American. There was no change for tract 1153. The area remained above for minorities and below for whites and home ownership. Tracts 1173/1147.03 showed the same results as the previous two LFs.

7233.06 contained the only LF with different demographics when compared to the others. 7233.06 had a higher percentage of home ownership as well as higher percentage Hispanic and Native American populations. White, Black, and median home value are below the Maricopa County values. However, it was hard to assess distribution when the demographics of Buckeye are not as well known. While these values were lower than Maricopa County values, it would have been beneficial to compare the values to Buckeye demographics. However, this facility was still located in an area that, overtime, has housed higher minority populations.

Transfer Stations. Tracts 1173/1147.03 showed no change over time. It showed values below the Maricopa County percentages for both white percentage and home ownership and higher than Maricopa County percentages for Black, Hispanic, and Native American percentages. Overall, tract 6113 also showed no change over time. It contained higher percentages for home ownership and white and lower than Maricopa County values for Black, Hispanic, and Native American.

Change over time for both LFs and TSs did not show any differences. The overall values for above or below Maricopa County values remain generally stable. This may indicate that Phoenix has not changed demographically over the past few decades. It is possible that if the analysis analyzed demographics on the block level, different results may occur. However, from the census tract level, no major differences exist.

The next section examines the results of the interviews with current decision-makers within Phoenix Public Works Department, Solid Works Division, and the T&I Subcommittee.

EJ AND CURRENT DECISION-MAKERS

This section is divided by each question asked to the interviewees. Table 20 shows the list of interviewees and their associated identification numbers.

Table 20	
Current Decision-Maker Study Participants	
Participant Number	Participant ID
1	SWDM
2	SWDM
3	SWDM
4	CP
5	CP
6	CP

Question 1: I would like to understand the process of stakeholder engagement from start to end. Can you please talk me through the process? Table 24 below portrays the elements involved in SE from each of the interviewees.

Table 21	
Elements Involved Within Stakeholder Engagement	
Interviewee	Elements
1	Education (Mobile Engagement Team, community meetings, truck engagement, RIS team)
2	SW Call Center, enforcement/engagement, education, specialists, truck drivers, meetings (city council, community/neighborhood, presentations)
3	Public buy-in, specialists, council
4	Task force, public hearings in the districts, and subcommittee and council meetings
5	Public meetings and the presence of legal requirements, electronic communication, earned media/newspapers
6	Convenience for residents, policy sessions, social media, and community meetings

Two themes emerged in interviewee responses to this question. The first theme is mentioned by all interviewees and involves council meetings and other public meetings. The second theme is that of education and outreach. All three SWDMs mentioned their education teams (Mobile Engagement Team, or MET, and RIS Team). All three described the MET team as having both enforcement and education roles. Interviewee 1 stated that they are the “ambassadors to our residents” and that they attended community meetings, educated City of Phoenix residents, and enforced city codes. Interviewees explained that the RIS team goes to schools to engage with students and teach about recycling.

Two council people (CP) mentioned the idea of social/electronic media and the benefits of utilizing this form of communication. These interviewees mentioned the need to utilize electronic communication to further contact and include the public as communication like newspapers are becoming obsolete.

While not a universal theme, the idea of buy-in is mentioned and is important to consider. Interviewee 3 discussed how public and council buy-in is important to gain for changes in service or new programs: public and council. This interviewee stated that there are some

... things that we just have to do because its health and safety related or its efficiency related. We by code can make these decisions, we don't necessarily have to go to the public but we do however work very hard to help them understand, go to them, try to get buy-in even though we know what we have to do, we want to get them on board with it.

This interviewee also discussed the importance of the council people as stakeholders and how gaining their buy-in is vital as they are the "voice of the people that they represent..."

For this question, multiple methods of SE were discussed. Each of the SWDMs mentioned the importance of specialists for communication and outreach. Also discussed are the RIS Team, truck drivers, and the call center. The interviewees discussed how the truck drivers often teach children about the trucks and let them sit inside the trucks.

Another idea that occurred within these interviews was that of the importance of the MET because it serves the dual roles of education and enforcement. The interviewees stated the importance of engaging with CP and gaining their buy-in, often through education and outreach, is important because the CP represent residents.

For the subcommittee members, public meetings were vital to the SE process as they allow a platform for residents and other stakeholders to share and discuss opinions. Also involved in this discussion was that of various techniques utilized to engage the public ranging from public meetings to electronic communication. The interviewees believed that these methods are essential to successful engagement.

Question 2: How do you decide how much stakeholder engagement is necessary?

Table 25 below shows the responses from the decision-makers on how much SE is necessary.

Table 22	
How Much Stakeholder Engagement is Necessary	
Interviewee	Response
1	Financial feasibility, education for understanding a program or message
2	Impossible to know, necessary to take precautions to ensure enough SE
3	Nature of project, impact to resident
4	Majority consensus
5	Type of project, neighborhood-driven, outreach/education
6	Impact of project, city ordinance

The type of project and the impact of the project are important considerations the interviewees discussed when deciding the level of SE. Interviewee 3 stated that the extent of SE depends upon "the nature of what we're looking to do" and the "level of impact to the resident." Interviewees 5 and 6 echoed this response. This indicates that engagement is tailored to the specifics of an individual project. Interviewee 6 stated that city ordinance is a way of determining the appropriate level of engagement. Interviewee 2 mentioned how it is not possible to know how much SE is necessary, but that every precaution should be taken to "do everything you can to engage your stakeholder no matter what."

Education and encouraging public participation also emerged as a common thread in the interviews. For instance, interviewee 5 stated that SE is neighborhood driven and that in some areas there are large networks in place that help get the word out, while in other neighborhoods it will take extra work to engage the residents due to cultural or language barriers. The interviewee stated that PHX works hard to reach out to non-native

speakers by "utilizing diverse media" like the Spanish-language television station, Univision.

Question 3: In what languages does Solid Waste provide translations for materials?

For this section, each interviewee stated that Spanish and English are the languages in which SW/COP provides translations. There was some disagreement about whether all materials are translated into Spanish. Interviewee 2 mentioned that if letters are sent out, then they are often only translated in English; however, if brochures or door hangers are used, then they are almost always translated. Multiple interviewees mentioned that if a resident asks for a translation in a language that is not Spanish or English, then the city could provide those, but that these requests do not often occur. Two interviewees mentioned that the city is trying to broaden the languages that materials are translated into. The responses stating that there are efforts to broaden the languages offered is interesting as it shows a desire to engage with non-English speaking residents more than they already do.

Question 4: Can you describe a few times when you had to include the public in decision making? How did they go? What were the outcomes?

The situations described by the SWDMs and the CP differed for this question. For instance, all three of the SWDMs described a time when SW accidentally removed the incorrect alley containers, which upset residents. Interviewee 1 explained that to rectify the problem, SW put the alley containers back and provided two new programs: a green

organics pilot program and a bulk trash pilot where residents can call in for collection twice a year. In response to this situation, Interviewee 2 reminisced:

So I think the lesson learned from that for us is that we should have gone out, presented to council what we wanted to do, and then at that time, let them know we were going to go out into the public and engage with the public and get feedback based on our findings and based on what we recommend and then go from there.

However, Interviewee 3 began the response with, "Well I don't think we have ever really had to involve them in the actual decision, I think it's again more getting their buy-in to a decision that we have to make." While this interviewee affirms that SW did correct the mistake, this interviewee also discussed that in areas where safety and health concerns existed, they kept the relocation. This interviewee also mentions, "... we did you know kinda change the approach of the department." It is interesting that all three interviewees relayed the same story. The lack of public engagement initially and the epiphany of the necessity of public engagement suggest that the interviewees may view public involvement positively. While they may have intentionally shared stories that indicated positive experiences with public involvement, the experiences indicated that they appreciate and find use in involving stakeholders in decision-making.

Two CP interviewees shared experiences where there was a problem voiced by residents that they helped fix. The third interviewee shared an experience where she saw a problem and went into the community to ensure they knew about the situation, which was a strip club acquiring a liquor license. This showed initiative on the part of the CP to engage the public on issues they may not have noticed.

Interviewee 4 gave the example of an issue involving people standing in medians soliciting. The interviewee described the elements included for mitigating the issue; these included a task force created by the districts and community meetings, subcommittee meetings, and then the council. The public and police officers brought the issue described to the interviewee's attention. This indicates that this individual is considering what the public is concerned about and is trying to handle these issues.

These examples show positive experiences in SE. While it is doubtful that they would outright state that SE is not necessary, the stories they chose to tell may serve to show how they feel about involving the public. As these are all positive experiences, it may show that they believe that positive results can occur when the public is actively engaged. Since some of these stories discuss how the city resolved initial mistakes, it shows that city leaders can admit fault and work toward better public involvement for better solutions.

Question 5: When did Solid Waste/Phoenix begin to consider sustainability?

Four of the six interviewees cited recycling as the jumpstart to sustainability within the City of Phoenix. There was also an emphasis on the last five years, when the City of Phoenix began to really consider sustainability as an important part of urban planning. One interviewee mentioned the creation of renewable energy standards and efforts to reduce greenhouse gas emissions in the early 2000s. Interviewee 6 believed that sustainability has always been a consideration because Phoenix's desert location necessitated future planning and the conservation of critical resources, such as water.

Also mentioned were the Environmental Quality Commission, which is 28 years old, and the newly hired Chief Sustainability Officer.

It is not surprising that most of the interviewees mentioned recycling as the start to sustainability for Phoenix because half of the interviewees work within SW or PW, and all of the CPs are on the T&I Subcommittee. As they all either work directly with trash or make decisions relating to trash, recycling may play a larger role in the way they think about sustainability. These concerns are very economic or environmental in nature. There was no social reason mentioned for when the city decided to consider sustainability.

Question 6: What drove the desire to consider sustainability?

Two main trends became apparent in the interviewee responses to this question. The first trend was economic. Four of the six interviewees mentioned some kind of economic concern for why the city decided to consider sustainability. One of the interviewees mentioned recycling, and so that is included within economic concerns as recycling can often bring in money, even if only extending the life of a LF.

The second trend involved environmental concerns. Five of the six interviewees mentioned environmental concerns to some degree. Again, one interviewee mentioned recycling, which has both environmental and economic benefits. The main concerns for the interviewees included being mindful of the environment, minimizing the impact on natural resources, being a desert city, and water scarcity. The environmental and economic concerns are intertwined as one often drives the other.

Two interviewees, a SWDM and a CP, mentioned the social side of sustainability. The SWDM mentioned that siting of LFs. This interviewee discussed how siting a LF is controversial and no one wants to live near one, so considering sustainability is necessary to prevent future NIMBY concerns. Both the SWDM and CP also expressed concern for future generations.

Question 7: To what extent is sustainability useful for you?

An interesting finding of this section was that 2/3 of the interviewees mentioned the social side of sustainability. For instance, some topics discussed were future generations, generational differences in ideas of sustainability, bringing business to Phoenix, and healthy communities. One interviewee stated, "You know, for me personally, it has helped me not only in what I do here in Phoenix, but what I do at home." In this context, the interviewee discussed volunteering. The interviewee then discussed that he wishes to integrate sustainability principles into PW's operations.

One half of the interviewees discussed environmental topics. Involved in this were the ideas of a clean environment, home applications of gardening/energy use/food, air and water quality, conserving resources in the desert, and solar energy.

One third of the interviewees discussed economic benefits. Included in this conversation were the topics of diversion, saving the city money, and attracting business and industry to the city. Interviewee 5 stated,

So it's a dollars and cents story... it's helping the planet too, that's fine.

Even if you don't believe in it, when we make our buildings more energy efficient, that means we're spending less tax dollars on our utility costs, if

we are putting solar panels on our buildings, then that means we are generating electricity for free, with solar panels as opposed to having to use you know other forms. So we're saving money there.

This approach is not surprising as the city is concerned with costs, and therefore it needs to save money while incorporating sustainability principles into operations. If a new program is not economically feasible, then it is less likely to occur.

Most of the interviewees mentioned the social side of sustainability, which does not mean they associate SE with sustainability, but shows that most are considering the social aspects related to sustainability. Economic considerations were the least frequent mentioned by the interviewees. This is surprising, as economic feasibility would seem like a major concern for these individuals.

Question 8: How important do you think sustainability is? Why?

Mostly environmental and social themes occurred. The environmental theme related to the need for a healthy environment, in Phoenix. For instance, Interviewee 5 mentioned the need for public transportation and solar energy improvements in Phoenix to address air quality concerns. Interviewee 2 mentioned green buildings and energy and recycling programs as ways to help Phoenix become more environmentally sustainable.

Social themes related to the future and future generations, NIMBY, and public health. Concern for the future and future generations were linked to fears about how the world will look if the environment is not protected and how future generations will live if we do not protect resources now. Interviewee 2 voiced NIMBY concerns and how they may grow in the future. This interviewee mentioned that the current LF and TS were

located farther away from the city to avoid NIMBY. Public health concerns related to poor air quality in Phoenix, specifically higher asthma rates.

While only mentioned by Interviewee 2, the importance of balancing the environment, economic, and social sides of sustainability was discussed. Interviewee 2 discussed the need to balance social, economic, and environmental concerns. The interviewee stated, "... You have to look at all three areas. If you just focus on the money side, there's going to be some social issues..." This interviewee recognized that all three sides needed to be analyzed to successfully implement sustainability.

An important question is voiced by Interviewee 1 when he inquired:

... how do we educate our political environment to want to make those changes, make a difference. In some respects, sustainability we can always say it saves money, but in some cases, it costs money. And people don't want to do it because it costs.

This is interesting as it differs from the response of Interviewee 5 in the previous question who stated that economics is a primary concern. This is likely because the two individuals have different opinions on what is important for the city to consider. The interviewee in the previous question was consistently very concerned with economics and believed that sustainability should be "sold" to stakeholders and residents. Conversely, Interviewee 1 seemed to consider sustainability as an end in itself and therefore did not only consider it important for economic reasons.

All interviewees seemed to believe that sustainability was an important consideration not just for the present, but also for the future. This brings in an important social theme of considering future generations and how our actions are going to affect

them. This indicates that the interviewees believe that sustainability is important, especially for future generations and for environmental and health reasons. However, they did not mention it being important for considering current public concerns much past those for health. Sustainability does not seem to be connected to public participation when analyzing the answers to this question.

Question 9: What does sustainability mean to you?

Table 26 below shows the responses to this question by the SWDMs and the CP. It displays the elements that each interviewee considered to be important when discussing what sustainability means to them.

Table 23	
Elements of What Sustainability Means to Current Decision-Makers	
Interviewee	Element
1	Future generations, power and water, reduce, reuse, recycle
2	Minimizing both environmental impact and carbon footprint, increasing handprint, changing residential behavior by educating, incentivizing, and making programs convenient, examining consequences of actions, holistic thinking
3	Thinking of the collective
4	Protecting resources, more recycling
5	Environmental Quality Commission
6	Triple bottom line

Interviewee 5 stated that sustainability "... it's a way of life... it literally has to inform all your decisions you make as a city, all your decisions you make as an elected official, and everything we do as residents..." If this is true, then it may indicate that sustainability is a consideration for this interviewee. As this individual is a CP, he or she

holds decision-making power within the city and can initiate and support sustainability programs. Each of the interviewees said they considered sustainability to be an important consideration. Five out of six interviewees considered the social element of sustainability. While there was no predominant social concern, it shows that it is still considered. SE, however, is not mentioned within any of the answers. Interviewee 2 came the closest to mentioning SE in discussing the importance of educating, incentivizing, and making programs convenient for residents.

Only half of the interviewees mentioned environmental considerations. Since Phoenix is located in a desert and therefore environmental resources and protection are vital to consider, it is odd that only half of them mentioned these concerns. As for economics, only one interviewee mentioned this theme. I find this curious because economic feasibility is important for the initiation of public programs. These responses may point to the interests of the individuals included within PW, SW, and the T&I Subcommittee. The individuals who I chose for these interviews have very specific interests related to transportation and infrastructure and waste. These topics are highly related to both environmental and economic concerns, so it is noteworthy that the responses did not mention these concerns more.

For this question, the responses were broad. No one subject received much depth. Instead, the interviewees tended to view sustainability as an overarching consideration for planning. Thought-provoking comparisons occur when comparing these responses to the responses for question 6. For question 6, the interviewees mentioned economic and environmental concerns for why Phoenix decided to consider sustainability. For this question, the majority of the responses related to the social side. This may indicate a

change in how decision-makers perceive sustainability and its importance. Concerns about involving the public in decision-making have arisen throughout all levels of government and this may indicate why this perceived change has occurred.

CHAPTER 6: DISCUSSION

The discussion is divided into three sections. The first examines participative justice, defined as meaningful involvement, for the siting process. The second discusses distributive justice. The third looks at current decision-makers and their views on sustainability.

MEANINGFUL INVOLVEMENT

This section discusses meaningful involvement for the City of Phoenix and the Buckeye City Council. Table 27 below shows the meaningful involvement criteria with the associated entity. The Buckeye section relates to the engagement for both the City of Phoenix and the Buckeye City Council. The check marks indicate whether the analysis indicates that the entity considered each of the criteria. The minus sign indicates that it was hard to assess whether the entity considered the criterion.

Table 24				
Meaningful Involvement of City of Phoenix and Buckeye City Council				
Entity	Opportunity to Participate	Ability to Influence Decision-Making	Public Concerns Considered	Encourage Public Participation
City of Phoenix	✓	-	✓	-
Buckeye	✓			

Although I assessed the entities, some of these criteria were hard to evaluate as they required more insight into the decision-making process than is provided in the interviews or documentation. For instance, I experienced difficulty in determining if

decision-makers chose the location for NGTS due to more public opposition at the other sites or because of a less obvious criterion. For this siting process, rungs 3-5 (informing, consultation, placation) of Arnstein's typology of citizen participation apply (1969). These levels of participation imply that the "have-nots," or in this case the residents affected by the siting, are able to provide opinions and are educated about the process, but that decision-making still lies with those who are in power (Arnstein, 1969).

For the City of Phoenix, all the sections of meaningful involvement seem to be involved; however, as can be seen by the marks in each box, it is difficult to determine two of them. Additionally, the RPOV interviewee and public opposition played a role in this assessment as they indicated that while on the surface the City of Phoenix may have considered these elements; they may not have truly integrated them. Opposition played a larger role than the RPOV interviewee in this analysis as it gave more tangible evidence of the opposition and more concrete examples.

The Buckeye Council received poor ratings for the landfill as the documentation indicates an unjust process. It is possible that the rating would have improved if I had conducted interviews with residents around the site and/or with the council members themselves. Since I only analyzed meeting minutes, it is possible that they were not comprehensive or were poorly recorded. Residents were not notified, stakeholder concerns were not addressed, and they did not often ask about how stakeholders felt about the siting. The City of Phoenix also played a role in the lack of Buckeye SE. While there are some ways in which the City of Phoenix mitigated concerns, there was no documentation showing how they handled the issues raised during the Buckeye Council meetings. Many concerned Buckeye residents did not seem to have a voice in this

process. This is worrisome as it may point to the City of Phoenix not feeling the need to engage with residents outside of the Phoenix boundaries as fully as they engaged with Phoenix residents. This raises concerns surrounding Phoenix catering to the justice issues of those affected by the city's actions, but not under the city's jurisdiction. Additionally, Buckeye's seemingly lack of interest in citizen concerns may be due to a lack of technical knowledge about the siting process for a landfill, fewer professional staff, fewer available resources, or some other reason. Money concerns may also play a role. It is possible that Buckeye gained some economic return from allowing Phoenix to site the landfill in their boundaries. However, this is only speculation and without concrete evidence, it is hard to assess the real reasons why Buckeye would seem to dismiss citizen concerns.

For public concerns, the documentation suggests that PW did take the public's considerations into account. SWDMs often mentioned the need to mitigate stakeholder concerns. The SWDMs remarked that it is important to work with the opposition to help mitigate their concerns and gain buy-in. For instance, traffic concerns were the prominent reason for residential opposition. PW handled traffic concerns by creating an access road for the TS to relieve traffic. Additionally, to appease Buckeye, PW took responsibility for the part of the road near SR-85 affected by increased traffic.

The extent to which the siting was a public process is contested between the City of Phoenix documentation and interviews, Buckeye meeting minutes, and the RPOV interviewee. According to the SWDMs and the URS study, the whole process of siting the LF and TS was a public process. However, the RPOV interviewee's outlook on this process was entirely different, as he believed that no process for the City of Phoenix is truly public. Therefore, according to this interviewee, in no steps or stages did the City of

Phoenix consider EJ. However, the interviewee rarely mentioned specifics of the siting process. This indicates that he does not remember this siting process and is basing the city's actions off his feelings about Phoenix public involvement generally.

The time at which Phoenix held subcommittee meetings and the frequency of public meetings may support the claims made by the RPOV interviewee. While the public had multiple ways to contact the city and URS, open meetings and discussions during times of the day that are convenient for most residents is vital to successful projects. If stakeholders were not provided the opportunity to voice concerns to the subcommittee due to the timing of subcommittee meetings, then information could have become misconstrued or lost if presented to the subcommittee through PW or URS representatives. Along with this, if citizens did not have easy access to the Internet, they would have found it more difficult to research the issues for themselves or to provide feedback.

Both the TS and the LF were constructed in rural areas with very little residential development surrounding them. The legal requirements show that property owners within 3 miles of the proposed facility must be notified of the permit. As these facilities were built in more rural areas, it is entirely possible that for these two facilities, there were not many property owners in a 3-mile radius. If there were not many property owners, then it could be difficult to mount opposition. The RPOV interviewee states this as an issue with the siting process. He mentioned that oftentimes facilities are located in rural areas, which makes it harder for people oppose because of the presence of few individuals. The RPOV's statement echoes The Theory of Collective Action in that the Theory focuses on the political process and the ability of people to voice their preferences. In the case of

these sitings, it is possible that residents were not able to voice their preferences, leading to Phoenix siting the facilities in these areas. Additionally, the documentation suggests that the decision-making authority for this process lay with Public Works and the subcommittee and councils. Citizens held very little decision-making power.

The disparity between all the analyses may indicate that there are unresolved issues that need to be addressed in order for residents to trust the City of Phoenix. The discrepancy between the documentation and interviews may suggest that new methods of decision-making need to be created, especially for the siting of MSW facilities.

DISTRIBUTIVE JUSTICE

There were no trends for change over time. The demographics for the census tracts show consistency, if anything. This finding supports research showing that Phoenix is still segregated. While most of the facilities are located in southern Phoenix, there are a few located in the north; however, the mix of where the facilities are located is too broad to make many conclusions.

Past SWDM (Interviewee 2) discussed the history of dump sitings in Phoenix and stated that sitings were of convenience and land recovery and that there was no formal process. This reasoning may show why there are more facilities located in southern Phoenix than in the rest of Phoenix. This interviewee discusses how landfill sitings have changed and that environmental regulations are now stricter, meaning that how landfills are sited now is vastly different than the earliest landfill sitings within Phoenix.

Even if the process has improved over the years, it is still not perfect. For instance, the RPOV interviewee mentions three problems associated with process for the City of Phoenix: lack of technical expertise for CP, predetermined decisions, and a lack of environmentalism in the council. CP lack the technical expertise necessary to assess the benefits and consequences of the siting process and therefore they rely on staff that for information. However, because of this dependence, they may overlook pertinent information and make uninformed decisions. The interviewee mentioned predetermined decisions by city staff as the second issue. The interviewee stated that by the time an issue is brought up to the city council, a decision on a path has already been made and that public input is there to "... rubber stamp what they've already decided." A lack of true environmentalism in CP is the third issue mentioned by the interviewee. The interviewee stated that while CP say the environment is important, they do not make decisions based upon protecting it. He ends by stating, "so the city hasn't changed anything..." over the years for public involvement for siting decisions.

The interviews and documentation suggest that there have been major changes in the siting process for Phoenix LFs and TSs. Many past LF and TS sitings in Phoenix were likely the result of market dynamics rather than pure discrimination, political, or land-use policies. The sitings could have been a mix of market dynamics and an inability to raise collective action. If LFs specifically were the product of purchasing land utilized by sand and gravel mining companies, then market dynamics would have played a major role in the siting process as the city would have maximized economic gain by purchasing the land already prepped for garbage. However, early racist policies likely also shaped how cheap the land was. Since industry has historically been located in southern Phoenix,

property values are also probably lower in this area. This perpetuates the cycle of injustices that southern Phoenix experiences.

As federal regulations have changed, sitings can no longer be only the product of market dynamics, but must also consider political elements and land-use policies. For instance, the permitting process for LFs and TSs require public involvement. However, areas that are more politically active may still have the ability to fight the facilities from locating near them, leading to the siting in minority/low-income areas. Furthermore, land-use policies, specifically zoning laws, may affect the location of MSW facilities.

CURRENT DECISION-MAKERS

While the SWDMs mention the social side of sustainability during these interviews, involving the public in decision-making is not mentioned, except for when directly asked. This is an interesting finding as all interviewees stated the importance of SE in the process, but none included SE within their definitions of sustainability. However, since I did not directly ask if they consider EJ to be a part of sustainability, it is possible that the interviewees simply did not provide holistic explanations of their views.

Current decision-makers consider environmental, economic, and social concerns when discussing sustainability; however, they do not mention SE unless asked specifically about it. While this does not mean they do not consider SE as a part of sustainability, it may indicate that SE is not a main part of sustainability for

them. It is possible that these answers would change if they were asked directly if they consider SE as a part of sustainability.

If public participation is already occurring, and the city sees the benefit of including the public, then does public participation have to be included within their views on sustainability? Boone (2013) asserts that EJ and sustainability should combine, as they strengthen each other. If public participation in decision-making is only given lip service, and is not truly considered an important component of decision-making, then including it within the city's view on sustainability may be useful. I do think it is important that an EJ component is included within the definitions and policies on sustainability for the city. While there are some public participation requirements for the city, they are somewhat general. Having a more grounded placement of EJ in policies would help ensure that public participation is gained and considered throughout decision-making processes. Sustainability cannot be accomplished in a vacuum. The thoughts and opinions and experiences of the public are required to create effective policies. Without a close relationship and open communication between decision-makers and the public, this cannot be achieved.

When comparing this research question to that of research question 1, a few more concerns arise. The RPOV interview suggests that SE is not taken seriously within the COP. This conflicts with all the information gained from the interviews with current decision-makers. A disconnect may exist between the level of SE elicited within the city and the amount of weight stakeholder opinions are given.

The next section concludes the paper and gives to Phoenix recommendations based upon the research. Additionally, the next chapter examines the limitations of the research and further research.

CHAPTER 7: CONCLUSION

This section describes recommendations, limitations, and future research. Generally, the research showed that stakeholder engagement was considered during the siting process. However, the extent to which the engagement was sought and the impact it had on decision-making is difficult to assess. Distribution both overtime for Phoenix and for the two facilities did not show any significant results.

Current decision-makers were only asked questions regarding stakeholder engagement. While they seem to consider stakeholder engagement important for decision-making, the city does not always require it for making decisions. These decision-makers also do not seem to include stakeholder engagement in their constructs of sustainability.

RECOMMENDATIONS

Phoenix needs to ensure that there are buffers for LFs and TSs. While buffer discussions occurred for both the LF and TS, there are no policies that enforce the presence of a buffer. To help ensure that future EJ issues do not occur for these or future facilities, Phoenix needs to create these policies.

Additionally, Phoenix needs an EJ statement and policy. This way EJ concerns are more fully incorporated into city practices. This will help ensure that SE is implemented into all city projects. While the level of SE may vary depending on the size of the project, it is still important to create a city where SE is encouraged and public opinions are taken into consideration and can affect decision-making. An EJ section should also be included within Phoenix's sustainability plan. Cities are

beginning to consider EJ and connect it to sustainability. To keep pace, Phoenix should also include EJ in its sustainability plan and include indicators for success.

SE also needs to be incorporated into more than just permitting for the siting of LFs and TSs. SE needs to be included into every part of the siting process. While Phoenix claims they incorporated SE throughout this process, unless policies exist, SE for future sitings is not ensured. In addition to this, subcommittee meetings need to be held during times as which residents can attend. This means having meetings later in the day so they are after working hours. This will begin moving Phoenix toward the sixth level, or partnership, of citizen participation described by Arnstein (1969). However, more will need to occur in order to create a trusting relationship between citizens and the city. Phoenix needs to make a move toward this sixth step if decision-makers hope to truly engage the public. The sixth step is the first in which a redistribution of power occurs and citizens have actual control over some of the decisions made. To help move toward higher and more effective stakeholder engagement, Phoenix needs to start stakeholder engagement before decisions are made. In the case of the landfill and transfer station, stakeholders were only engaged after Phoenix decided these facilities were necessary to construct. Stakeholder engagement needs to occur before that decision is made so that the public has some real control over the process. However, there may be a limit to the level of citizen control for this type of process. It may be that the highest level of stakeholder engagement, complete citizen control, is not feasible for siting MSW facilities as the public may not be educated and knowledgeable about the requirements for siting these facilities.

Additionally distribution of MSW facilities needs to be examined before any new facility is constructed. Southern Phoenix has long been a dumping ground for industry and any future facilities should take this into account. It is possible that southern Phoenix needs to be protected from future facilities so that those living in that area do not have to continue to suffer. It is also important to begin rectifying past harms and better protecting these communities from the environmental burdens that already exist near them.

LIMITATIONS AND FUTURE RESEARCH

There are a few limitations that need to be considered. This section is divided into limitations and future research for question 1 and question 2.

Question 1. Since the siting processes occurred about a decade ago, interviewees could not remember the whole siting process. One example of this is that the RPOV interviewee mentioned many improvements that could have been made to the process that the city had done. For the RPOV interviewee, the city's past and current actions may cloud his opinions of these sitings.

The subcommittee and Buckeye Council meeting minutes are not very thorough or detailed. However, they were the best source of information I had on the subcommittee and Buckeye Council meetings. Examining a siting process that occurred this long ago makes it difficult to obtain a holistic picture, as documents may not be entirely accurate or detailed.

For future research, more RPOV interviews should be conducted. This is a major limitation of the research and having more interviews from the residential perspective

would provide a more holistic understanding of the siting process. This should include interviewing individuals surrounding the sites. Additionally, because only one RPOV interview was conducted, the information obtained from this individual should be considered cautiously. Furthermore, the RPOV interviewee often veered from discussing the siting of these two facilities to an overall discussion of corruption and city processes. Therefore I had to interpret much of what the RPOV interviewee was saying and apply it to the siting of SR-85 and NGTS. Even when the information was not pertinent to the two facilities, it was obvious that the RPOV interviewee believed that the city's previous and current actions indicated that the siting for these two facilities would not have been any different. Because of this bias, the RPOV viewpoint may be tainted.

Additionally, I did not contact Buckeye Council members who were present during the siting. These members could have elaborated on the downfalls that I saw in the documentation relating to addressing stakeholder concerns and opposition. Future research should attempt to contact these individuals.

Vague documentation is another limitation. This caused uncertainty in the analysis in that it is difficult to know whether the information gathered during the meetings for the Environment and Natural Resources Subcommittee and the Buckeye Council was accurate. This could be a flaw in the process of subcommittee meetings in that they are limited by time constraints.

The last limitation is the level at which I analyzed the demographics. It is possible that if I had analyzed at a smaller level (e.g., block, block group), that I would have attained different results. Future research may want to consider utilizing different levels of assessment.

Question 2.

I did not directly ask if the interviewees if they considered EJ as a part of sustainability. This may have influenced the responses. It is possible that had they been directly asked this question, the results would have changed. Additionally, an additional analysis based upon actions and not only the interviews would have given a more complete understanding of how these individuals consider sustainability.

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APPENDIX A
INSTITUTIONAL REVIEW BOARD



EXEMPTION GRANTED

Aaron Golub
Sustainability, School of
480/965-2791
Aaron.Golub@asu.edu

Dear Aaron Golub:

On 9/18/2014 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Environmental Justice and the Siting of SR-85 and North Gateway Transfer Station
Investigator:	Aaron Golub
IRB ID:	STUDY00001554
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none">• HRP-502TEMPLATE CONSENT DOCUMENT-SHORT FORM.pdf, Category: Consent Form;• Human Research Curriculum Completion Report, Category: IRB Protocol;• HRP-503a-Protocol Template Social Behavioral, Category: IRB Protocol;• Recruitment Letter, Category: Recruitment Materials;• Interview Questions, Category: Recruitment Materials;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 9/18/2014.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Patricia Garland
Patricia Garland

APPENDIX B
RECRUITMENT LETTER

Environmental Justice and the Siting of SR-85 and North Gateway Transfer Station

Researcher: Patricia Garland
M.S. Student in Sustainability

You are invited to participate in research pertaining to environmental justice and the siting of the newest transfer station and landfill for the City of Phoenix. This research is intended to assess the methods used for gaining public participation in the siting process for both SR-85 and North Gateway Transfer Station. Public participation is an important aspect of major decision making and so assessing the extent to which it was undertaken will help determine the extent to which environmental justice was taken into account during the siting process. Additionally, this research hopes to gain views on sustainability from current employees within Phoenix Solid Waste Division and City Council members in the Transportation and Infrastructure Subcommittee.

To help with this research, you are asked to participate in an interview lasting between 30 minutes to an hour. Your participation in this research will help increase knowledge on both sustainability and environmental justice for the City of Phoenix.

If you have any questions, please do not hesitate to contact Patricia Garland at pmgarlan@asu.edu.

APPENDIX C
CONSENT FORM

Environmental Justice and the Siting of SR-85 and North Gateway Transfer Station

I am a graduate student under the direction of Dr. Golub in the School of Sustainability at Arizona State University. I am conducting a research study to examine the role of environmental justice in the siting of the City of Phoenix's newest landfill and transfer station and to study views on sustainability within the Solid Waste Division and council members on the Transportation and Infrastructure Subcommittee.

I am inviting your participation, which will involve participating in an interview that will last approximately 30 minutes to an hour. You have the right not to answer any question, and to stop participation at any time.

Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty.

There are no foreseeable risks or discomforts to your participation.

Your name will be confidential. Interviewees will only be referred to as either Solid Waste Division employee or council member or environmental justice advocate. The results of this study may be used in reports, presentations, or publications but your name will not be used. The only identifying information that may be used is whether or not you are a Solid Waste Division decision maker or City Council member or advocate.

I would like to audio record or video record this interview. The interview will not be recorded without your permission. Please let me know if you do not want the interview to be recorded; you also can change your mind after the interview starts, just let me know.

If you have any questions concerning the research study, please contact the research team at: Aaron.Golub@asu.edu or pmgarlan@asu.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. Please let me know if you wish to be part of the study.

APPENDIX D

INTERVIEW QUESTIONS FOR PAST DECISION MAKERS

1. Please describe your role in Solid Waste/ within the City when the siting occurred and how long you held this position.
2. When you are siting a facility, which means either a landfill or a transfer station, what internal criteria are used? (There were criteria that had to be followed by law, for instance those that stated where a landfill/TS cannot be sited, were there internal criteria that further narrowed down the location?)
3. I would like to understand why the city has these criteria. Let's look at the list you just made and go through each criterion. Can you explain the rationale behind each one for me, please?
4. How has the siting of facilities changed over the years?
5. What should a good siting plan look like?
6. What role does stakeholder engagement play in the siting of facilities?
7. I would like to understand the process of stakeholder engagement from start to end. Can you please talk me through the process?
8. How do you decide how much stakeholder engagement is necessary?
9. Can you describe a few times when you had to include the public in decision making?
10. How did they go? What were the outcomes?

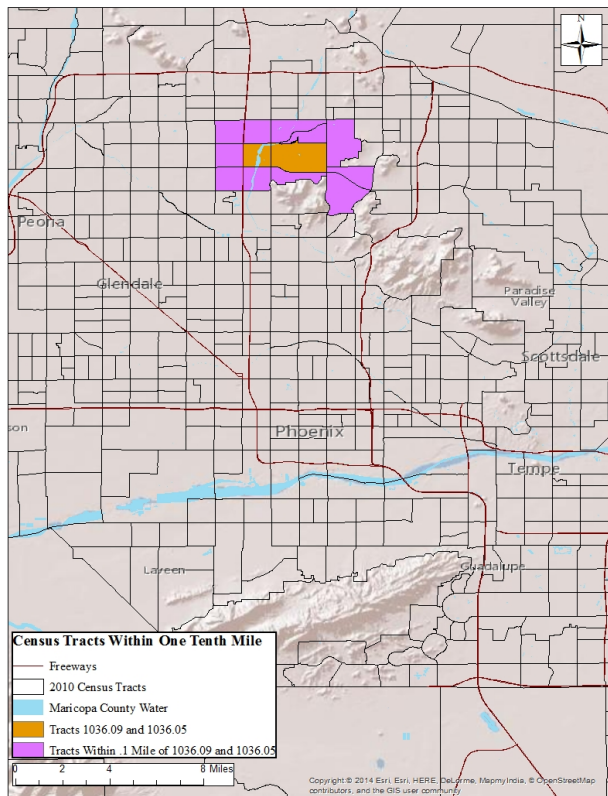
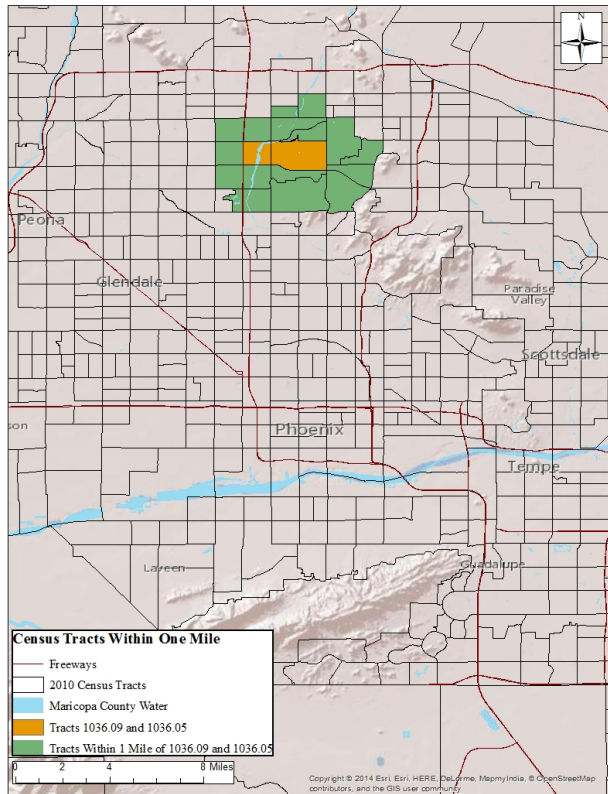
APPENDIX E

INTERVIEW QUESTIONS FOR RESIDENTIAL POINT OF VIEW

1. Please describe your role in environmental justice and Phoenix and how long you have been working on EJ in Phoenix. I have looked into your work and I know you are very active, so this question is just here to be complete
2. How has the siting of landfills/transfer stations changed over the years for Phoenix?
3. What role do stakeholders play in the siting of landfills/transfer stations?
4. In your understanding, how does the city of Phoenix decide how to engage with affected stakeholder in siting a landfill/transfer station in PHOENIX? How do they know when enough stakeholder engagement has occurred (for the siting of landfills and transfer stations/generally if he doesn't know in relation to those types of sitings)
5. Was the siting process fair for the landfill (SR-85) and the transfer station, North Gateway Transfer Station (NGTS)(i.e. were stakeholder opinions and concerns taken into account and were all relevant opinions elicited)? Please explain.
6. Are you satisfied with the stakeholder engagement elicited from the City during the siting process? Please explain.

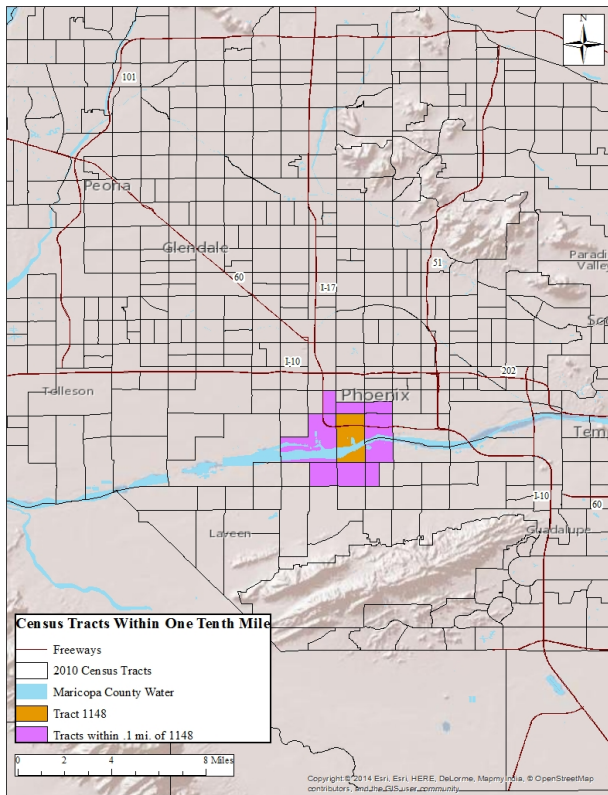
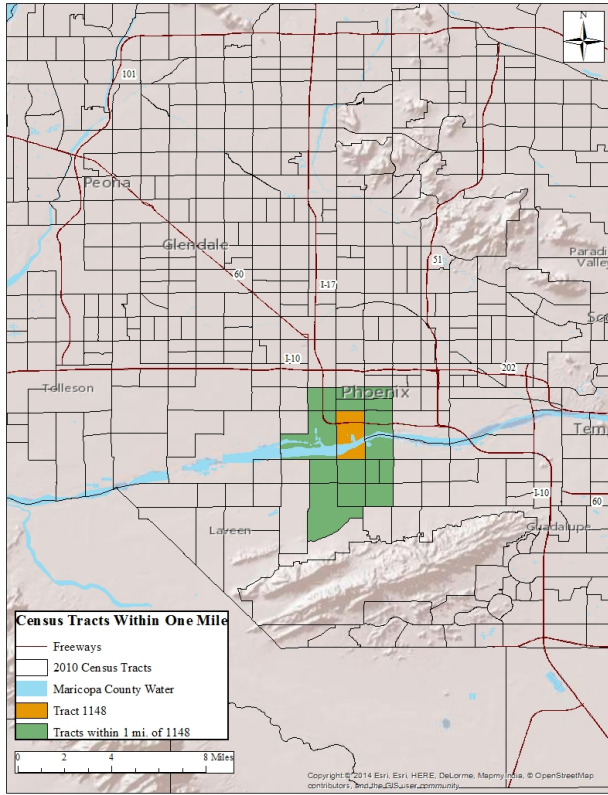
APPENDIX F

CENSUS TRACT MAP FOR TRACTS 1036.09 AND 1036.05



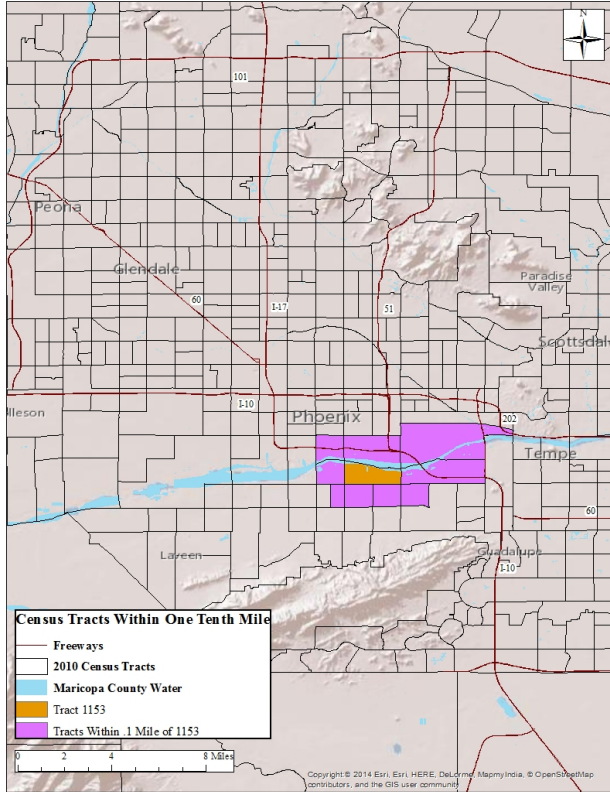
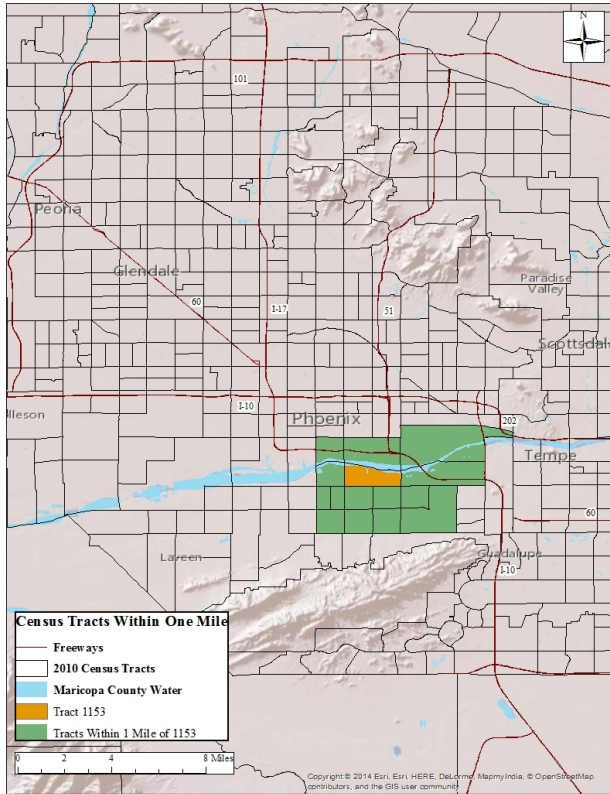
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CENSUS TRACT MAP FOR TRACT 1148



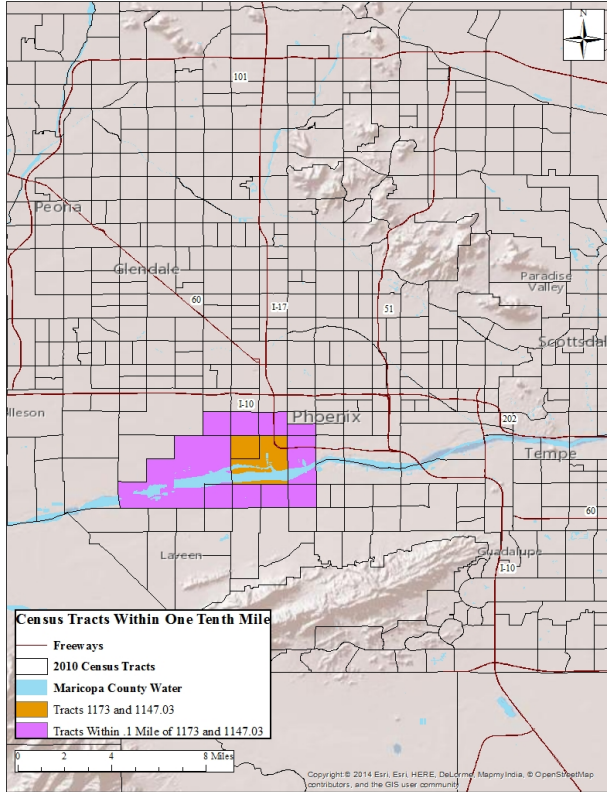
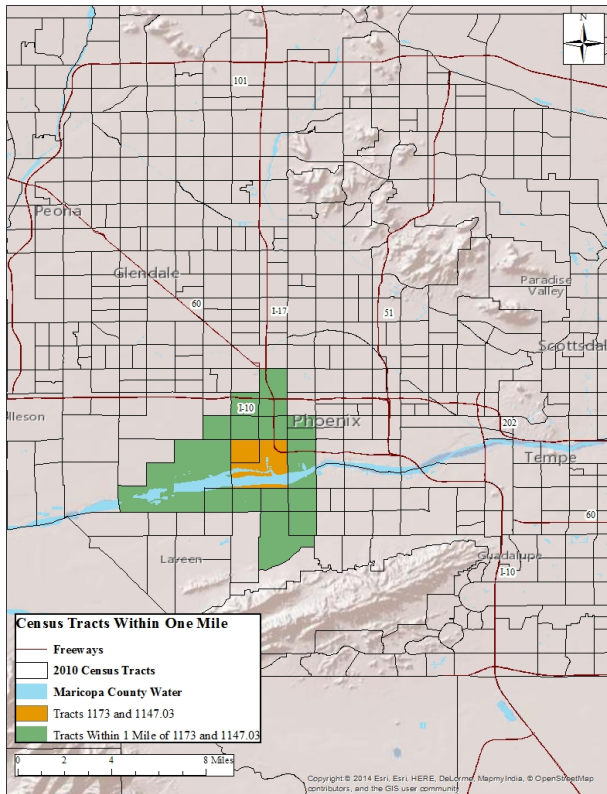
APPENDIX H

CENSUS TRACT MAP FOR TRACT 1153



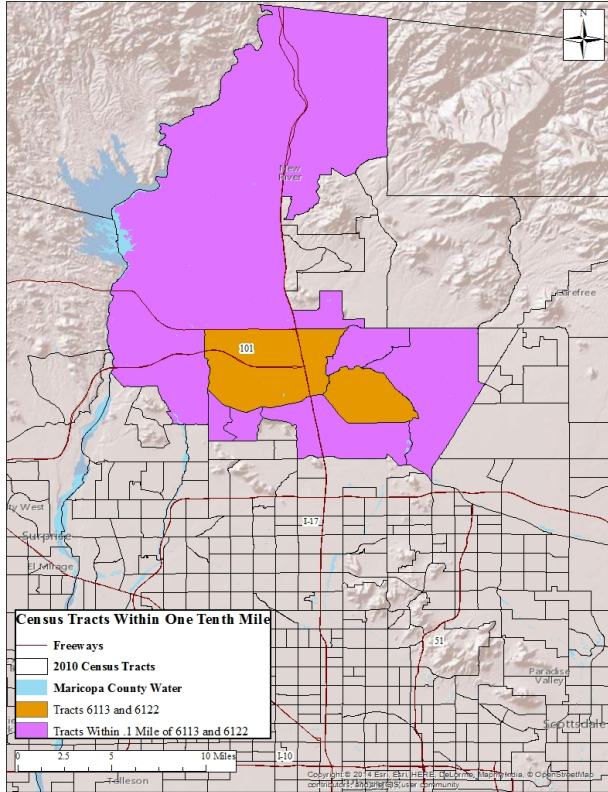
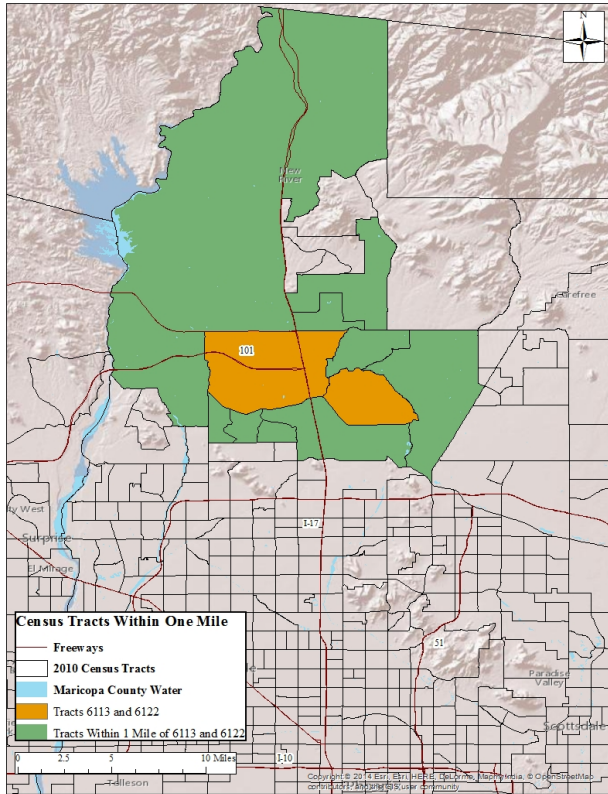
APPENDIX I

CENSUS TRACT MAP FOR TRACTS 1173 AND 1147.03



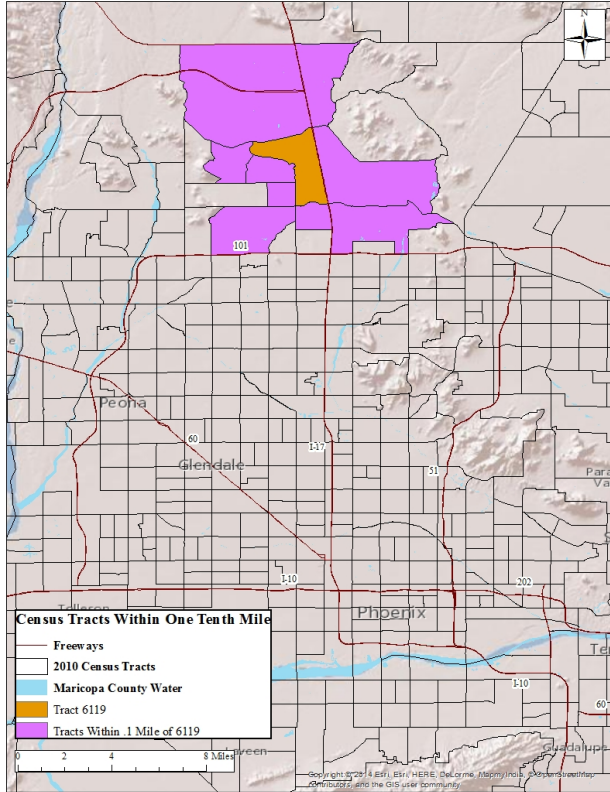
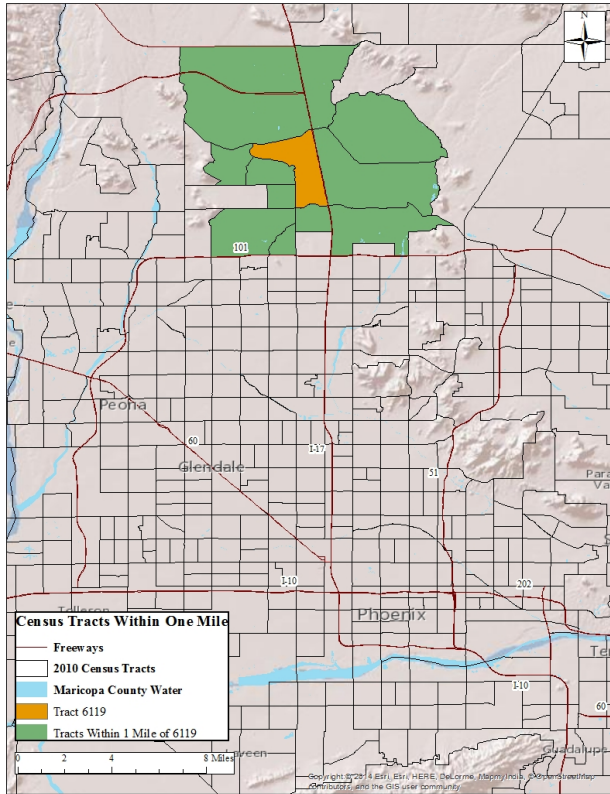
APPENDIX J

CENSUS TRACT MAP FOR TRACTS 6133 AND 6122



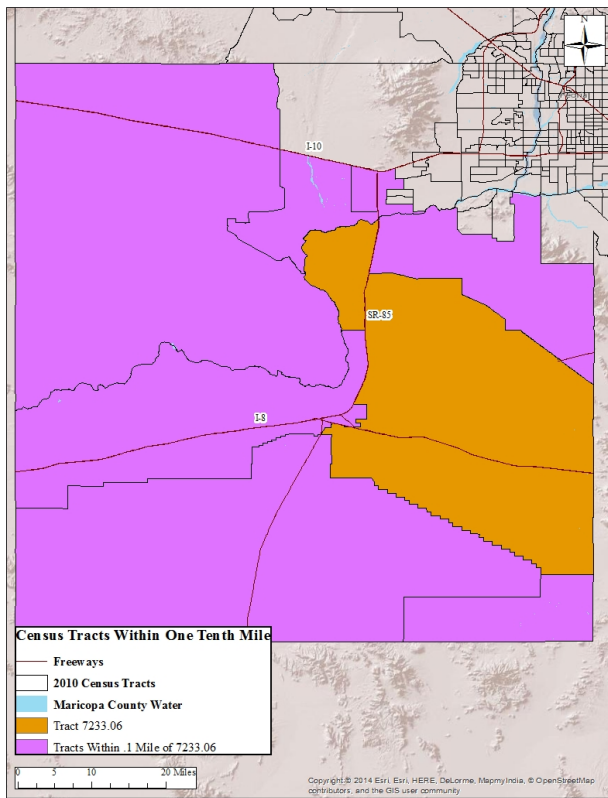
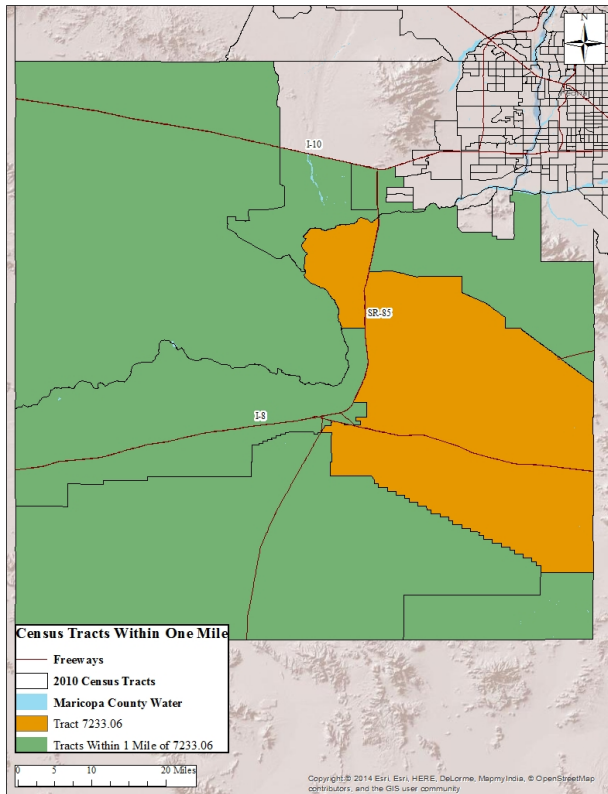
APPENDIX K

CENSUS TRACT MAP FOR TRACTS 6119



APPENDIX L

CENSUS TRACT MAP FOR TRACTS 7233.06



APPENDIX M
DEMOGRAPHICS FOR CENSUS TRACTS

1970	
Population	Specifics
Educational Attainment	% HS Degree or Less
	% Greater than 4 Year Education
Income	Median Household Income Total
Race	% White, Non-Hispanic
	% Black, Non-Hispanic
% Home Ownership	% Owner Occupied Units
Housing Units	
Houses Rented	
Employment	% Unemployed
Percent Poverty	% Poverty, Total
Poverty Rate Denominator	Persons for whom poverty status is determined (denominator for calculating poverty rate)
Median Household Value	
Total Household	

1980	
Population	Specifics
Educational Attainment	% HS Degree or Less
	% Greater than 4 Year Education
Income	Median Household Income Total
Race	% White, Non-Hispanic
	% Black, Non-Hispanic
	% Hispanic
	% Native American
% Home Ownership	% Owner Occupied Units
Housing Units	
Houses Rented	
Employment	% Unemployed
Percent Poverty	% Poverty, Total
Poverty Rate Denominator	Persons for whom poverty status is determined (denominator for calculating poverty rate)
Median Household Value	
Total Household	

1990	
Population	Specifics
Educational Attainment	% HS Degree or Less
	% Greater than 4 Year Education
Income	Median Household Income Total
Race	% White, Non-Hispanic
	% Black, Non-Hispanic
	% Hispanic
	% Native American
% Home Ownership	% Owner Occupied Units
Housing Units	
Houses Rented	
Employment	% Unemployed
Percent Poverty	% Poverty, Total
Poverty Rate Denominator	Persons for whom poverty status is determined (denominator for calculating poverty rate)
Median Household Value	
Total Household	

2000	
Population	Specifics
Educational Attainment	% HS Degree or Less
	% Greater than 4 Year Education
Income	Median Household Income Total
Race	% White, Non-Hispanic
	% Black, Non-Hispanic
	% Hispanic
	% Native American
% Home Ownership	% Owner Occupied Units
Housing Units	
Houses Rented	
Employment	% Unemployed
Percent Poverty	% Poverty, Total
Poverty Rate Denominator	Persons for whom poverty status is determined (denominator for calculating poverty rate)
Median Household Value	
Total Household	

2010	
Population	Specifics
Educational Attainment	% HS Degree or Less
	% Greater than 4 Year Education
Income	Median Household Income Total
Race	% White, Non-Hispanic
	% Black, Non-Hispanic
	% Hispanic
	% Native American
% Home Ownership	% Owner Occupied Units
Housing Units	
Houses Rented	
Employment	% Unemployed
Percent Poverty	% Poverty, Total
Poverty Rate Denominator	Persons for whom poverty status is determined (denominator for calculating poverty rate)
Median Household Value	
Total Household	

APPENDIX N

INTERVIEW QUESTIONS FOR CURRENT DECISION MAKERS

1. Please describe your role in Solid Waste/ within the City and how long you have held this position.
2. I would like to understand the process of stakeholder engagement from start to end. Can you please talk me through the process?
3. How do you decide how much stakeholder engagement is necessary?
4. In what languages does Solid Waste provide translations for materials?
5. Can you describe a few times when you had to include the public in decision making? How did they go? What were the outcomes?
6. When did Solid Waste begin to consider sustainability?
7. What drove the desire to consider sustainability?
8. To what extent is sustainability useful for you?
9. How important do you think sustainability is? Why?

APPENDIX O
LANDFILL REGULATORY CRITERIA

According to the regulations, a landfill cannot be located near an airport for fear of creating a bird hazard for aircraft (Criteria for Municipal Solid Waste Landfills, 2003f). Additionally, a landfill cannot be located within a 100-year floodplain as to ensure that "...the unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health and the environment" (Criteria for Municipal Solid Waste Landfills, n.d. a). The next requirement is that a MSWLF cannot be located within a wetland unless it meets all of the requirements set forth in CFR §258.12 (Criteria for Municipal Solid Waste Landfills, n.d. b). A MSWLF also cannot be located within 200 feet of a fault area that has shown movement during the Holocene, unless the owner or operator can meet the criteria listed in CFR §258.13 (Criteria for Municipal Solid Waste Landfills, n.d. c). A landfill cannot be located within a seismic impact zone unless the criteria set forth in §258.14 are met (Criteria for Municipal Solid Waste Landfills, 1992d). MSWLFs cannot be located in unstable areas which are defined as areas that are "susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a landfill" (Criteria for Municipal Solid Waste Landfills, n.d. e). The State and County guidelines for the siting of a MSW landfill generally follow the Federal guidelines. The County also includes the criterion for air emissions found in 40 C.F.R. 60 Subpart WWW, which limits the amount of nonmethane organic compounds that are emitted from municipal solid waste landfills (Maricopa County, 2005). The State is in charge of enforcing all regulations.