

**An Analysis of the Municipal Solid Waste Permitting and Recycling Programs of the State
of Alabama**

by

Jacob Kearley

A thesis submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Master of Science

Auburn, Alabama
December 14, 2013

Key Words: Landfill, Municipal Solid Waste, Permitting

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Approved by

Prabhakar Clement, Co-Chair, Professor of Civil Engineering
Joel Hayworth, Co-Chair, Research Associate Professor of Civil Engineering
Brian Anderson, Associate Professor of Civil Engineering

Abstract

In the past half century solid waste policy has changed significantly as public awareness and the realization of potential environmental hazards of landfills has grown. The State of Alabama has recently begun to experience major regionalization of landfills due to these changes in solid waste policies. The recent influx of large regional solid waste facilities has been the cause of much public concern which has brought into question the fairness and adequacy of parts of Alabama's landfill permitting process. An open dialog was shared with the public at 13 meetings throughout Alabama to critique the process and gather public input. In addition, surveys, a case study and the landfill permitting processes of other states were also analyzed to identify shortcomings and propose improvements to the process. The findings of this study suggest several advantages and disadvantages to Alabama's current landfill permitting process and propose three relatively straightforward changes that, if made, will establish the fairness and procedural adequacy sought by the public and landfill owners alike. Also, in order to establish a baseline to further understand the extent to which waste is diverted from landfills, a focused study was done on the Grove Hill subdivision of Auburn, AL. Surveys were used to evaluate the effectiveness of Auburn's curbside recycling program. This study also suggests the general attitude toward recycling is very good; however, actual recycling behavior may be lacking.

Acknowledgments

I would like to thank Dr. Clement, Dr. Hayworth and Dr. Anderson for all their help and guidance and the opportunity I had to work with them through this study. I would also like to thank all my peers and the associated faculty who helped with the public meetings and gave me their support. Lastly, I would like to thank the Alabama Department of Environmental Management for funding for this study and providing me with this opportunity.

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List of Abbreviations

ADEM	Alabama Department of Environmental Management
CCSWA	Citizens for a Clean Southwest Alabama
CERCLA	Comprehensive Environmental Remediation, Compensation, and Liability Act
FFCA	Federal Facility Compliance Act
HGA	Host Government Authority
HSWA	Hazardous and Solid Waste Amendments
MSW	Municipal Solid Waste
NIMBY	Not In My Back Yard
RCRA	Resource Conservation and Recovery Act
RPC	Regional Planning Commission
RRA	Resource Recovery Act
RRR	Reduce, Reuse, Recycle
SWDA	Solid Waste Disposal Act
SWMP	Solid Waste Management Plan
US EPA	United States Environmental Protection Agency

1. Introduction and Background

The relationship between environmental policy and environmental science is quite dynamic. Over the past half-century our understanding of how humans affect the environment has grown considerably and has thus led to much activism concerning environmental policy and a greater concern over the future consequences of our actions (Saha and Mohai, 2005).

Regardless of industry type, there tends to be a cycle where business practices are adapted to accommodate new policies, which leads to further advances in science and technology and in return these technological advances lead to further changes in policy. In order to understand the current situation of solid waste policy in the State of Alabama and the problems it faces, one must first understand the changes in solid waste policy over time and how they have affected the solid waste disposal industry.

1.1. History of Federal Municipal Solid Waste Disposal Legislation/Regulation

The issue of municipal solid waste (MSW) landfill permitting has changed drastically in the last half-century. Historically, local communities have been solely responsible for regulating and managing their own open dumps without state or federal oversight. However, in the early 1960s, growth in public awareness and concerns about air and water pollution led to the development of the Solid Waste Disposal Act (SWDA) of 1965 which became the first federal law to specifically address the disposal of solid waste. This was shortly followed by several other federal laws including the Resource Conservation and Recovery Act (RCRA) of 1976 and the Comprehensive Environmental Remediation, Compensation, and Liability Act (CERCLA) of

1979 which are currently the main guidelines used to regulate the permitting and remediation of disposal sites, respectively. Consequently, the solid waste industry has become one of the most regulated industries today.

1.1.1. Solid Waste Disposal Act (SWDA) of 1965. The SWDA was originally passed on October 20, 1965. The purpose of the SWDA was to increase research and development of solid waste management systems to find improved methods of disposal and to fund state and local governments to aid in the planning, development, and conduct of solid-waste disposal programs. The SWDA played an essential role in identifying the problems with solid waste management systems and created a means by which to improve the existing system. In summary, the findings of this act state that continual technological progress has resulted in an increase in volume and change of composition of the solid waste being disposed. It also goes on to cite the continual growth of the U.S. population in concentrated areas as a leading cause for “serious financial, management, intergovernmental, and technical problems” which have caused “inefficient and improper methods of disposal of solid wastes.” Additionally, this problem produced many negative side effects that affect the public directly, including: the pollution of air and water resources; creation of accident hazards; increase rodent and insect vectors of disease; adverse effect on land values; creation of a public nuisance; and interference with community life and development.

1.1.2. Resource Recovery Act (RRA) of 1970. The RRA of 1970 was an amendment to the SWDA that focused on expanding federal efforts to implement a system of recycling and resource recovery. This act also acknowledges the large amount of energy that is consumed in the manufacture and disposal of products and recognizes that the recovery of these resources could significantly decrease the burden on solid waste management systems. The RRA itself did

not have a major impact on the solid waste infrastructure but it did set the stage for other changes to take place. In this same year the United States Environmental Protection Agency (US EPA) was established which preceded a complete overhaul in solid waste systems and the overall solid waste regulatory framework.

1.1.3. Resource Conservation and Recovery Act (RCRA) of 1976. The RCRA produced a great change in solid waste management because it added another level of regulatory hierarchy by giving the federal government a regulatory role where only state and local regulators had authority before. Through this act the US federal government created a comprehensive set of regulations that addresses solid and hazardous waste management. This act established three different programs; the solid waste program, the hazardous waste program and the underground storage tank program which are commonly referred to as Subtitle D, Subtitle C and Subtitle I, respectively. RCRA Subtitle D regulates the management of MSW and the permitting of MSW disposal facilities (referred to here as landfills).

The RCRA Subtitle D regulations created a major shift from open dumps to sanitary landfills by outlining mandatory design and operating conditions for all landfills. In effect, these regulations required the closing of open garbage dumps and effectively addressed the mitigation of water and air pollution. RCRA was further refined through the SWDA amendments of 1980 and the Hazardous and Solid Waste Amendments (HSWA) of 1984, but these amendments were primarily used to further organize RCRA and refine the Subtitle C program, respectively, with very few changes to the Subtitle D program. The HSWA of 1984 did, however, initiate a gathering of information on MSW facilities. This information was used to determine what actions were needed to reach the goals initially defined by RCRA. These actions were published in the US EPA's *Agenda for Action* and outlined goals and recommendations for MSW

management (US EPA, 1989). Then, in 1991, RCRA was expanded to include more federal standards on landfills in the pursuit of further pollution control with an emphasis on groundwater protection. Most notably, these new standards limited landfill locations and required the inclusion of liners and groundwater monitoring in the facility design and operation plans. In addition, the Federal Facility Compliance Act (FFCA) of 1992 was enacted which made federal facilities subject to RCRA regulations. The last significant change in RCRA came in 1996 with the development of financial assurance criteria for MSW landfills. This requires landfill owners to demonstrate their ability to financially cover closure and post-closure maintenance costs as well as the cost of any corrective action measures should a facility fail to contain its contaminants.

The many improvements implemented through RCRA have vastly changed the way solid waste is managed and disposed. Although RCRA has had a great impact on the management of solid waste and provided guidelines and initiatives for recycling and energy conservation, the primary disposal method currently used in the US continues to be landfilling. There is no doubt that RCRA has effectively addressed many landfill-related pollution problems; however, there still exist unsolved problems with the design standards of MSW landfills and the required post-closure care of such facilities (Pivato, 2011).

1.2. The Effect of Federal Regulations on MSW Landfills

Figure 1 shows the change in numbers of landfills from 1988 to 2009 (US EPA, 2013). The number of landfills in the US decreased significantly during this time period from 7,924 in 1988 to 1,908 in 2009. This is a net decrease of 76% in the number of landfills during this time period. The number of landfills seemed to be lowest in 2005 (1,654), but no data were collected

for the 2003-2004 time period; therefore, it is difficult to determine the time at which the number of landfills began to increase. Moreover, the 2005-2007 reports have conflicting data and therefore the data collected during this time period may be inaccurate. Nonetheless, this figure exhibits a drastic decrease in the number of landfills in the US after the enactment of RCRA in 1996, which is a strong indication of a change in the business of MSW landfills.

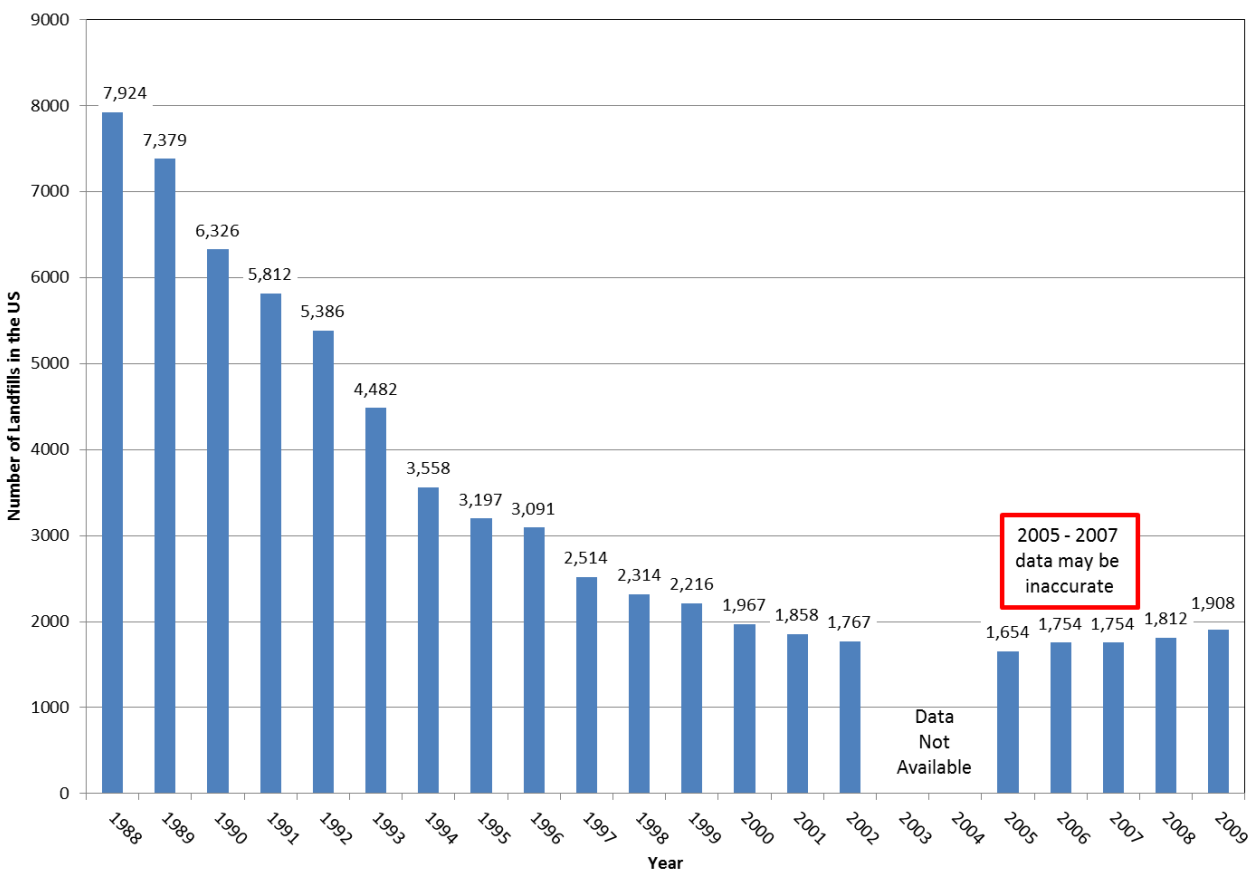


Figure 1. Number of Landfills in the US by Year (US EPA, 2013).

Table 1 is a summary of amendments and publications related to the SWDA that affect the municipal solid waste industry. This table serves as a historical context to reference the effects of legislative events on landfills. By examining the temporal correlation between federal regulation and changes in the solid waste industry one can begin to understand why changes in the solid waste industry have taken place. By combining Figure 1 and Table 1 (Figure 2), the effects of RCRA regulations on the solid waste industry are revealed.

Figure 2 shows that the largest decreases were from 1989-1990, 1992-1993 and 1993-1994 where the number of landfills in the US decreased by 1053, 904 and 924, respectively. As Figure 2 suggests, the large decrease in numbers of landfills in 1990 was likely a reaction to the EPA's *Agenda for Action* report as public and private facility owners took action to avoid future noncompliance issues. Likewise, the large decrease in the consecutive 1993 and 1994 landfill counts were most likely a reaction to the new federal criteria for MSW facilities and the requirement for federal facilities to comply with RCRA regulations. Another sharp decline occurred in the 1996-1997 period where the number of landfills decreased by 577. The reaction to new financial assurance criteria was likely the cause of this decline.

Table 1. Acts, Amendments, and Publications Related to MSW

Year	Laws/Publications
1965	Solid Waste Disposal Act (SWDA)
1970	Resource Recovery Act (RRA)
1976	Resource Conservation and Recovery Act (RCRA)
1980	Solid Waste Disposal Act Amendments Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
1984	Hazardous and Solid Waste Amendments (HSWA)
1989	EPA's Agenda for Action Published
1991	New Federal Criteria for Municipal Solid Waste Landfills
1992	Federal Facility Compliance Act (FFCA)
1996	Land Disposal Program Flexibility Act Financial Assurance Criteria for MSW Landfills

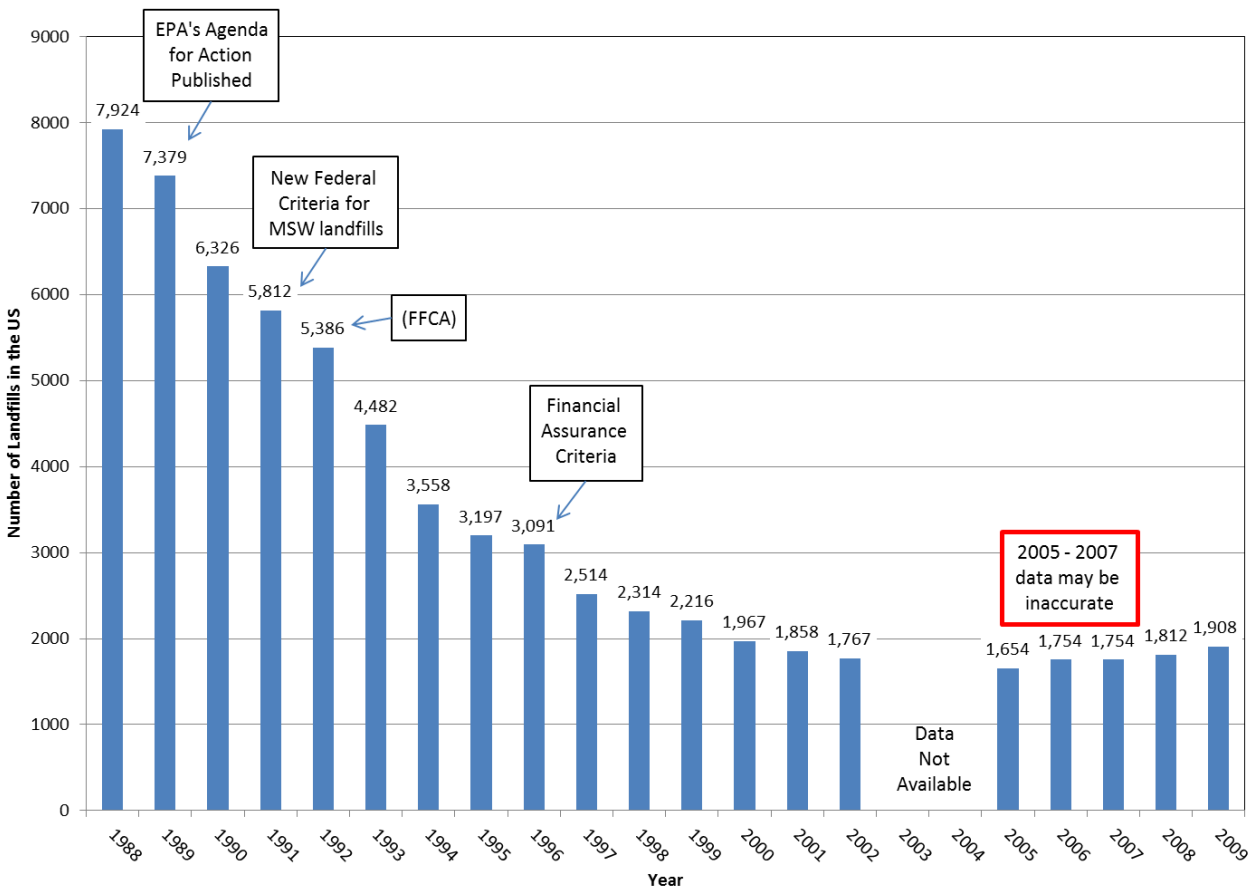


Figure 2. Table 1 and Figure 1 Cross-Referenced

The major decrease in the number of landfills was an alarming occurrence because this shift caused a capacity crisis in the US. However, this disposal crisis is no longer a major issue as the average landfill capacity in the US has increased significantly (Chowdhury, 2009). The increase in the average capacity of a landfill is the main effect of the changes in MSW policy. Before RCRA Subtitle D regulations were passed, most local governments operated their own landfills serving the cities and towns within each county (WARC, 2003). After Subtitle D regulations were implemented, all MSW landfills that did not have a liner were forced to close and any new landfills had to meet location requirements in addition to including liners, leachate collection systems and groundwater monitoring wells in their design and operation plans. These

new requirements greatly increased the cost of developing a landfill; therefore, landfill owners were forced to increase the size of their facilities and range of their service area in order to overcome the initial cost of landfill development. This gravitation toward larger facilities as well as recommendations from the US EPA encouraged the regionalization of solid waste management systems. Required solid waste management planning allowed multi-county management efforts to take place which allowed the development of regional MSW landfills of various sizes.

1.3. Evolving Problem with Alabama's MSW Landfill Permitting Process

The recent era of solid waste stream management in Alabama began with Alabama Law 89-824, passed by the Alabama Legislature in 1989 (ADEM, 2008). This law amended Alabama's Solid Waste Disposal Act through Article 3, which, among other things:

- Directed the Alabama Department of Environmental Management (ADEM) to prepare the Alabama Solid Waste Management Plan
- Directed Regional Planning & Development Commissions to develop regional solid waste management needs assessments
- Required local governments to prepare and adopt local Solid Waste Management Plans

One of the significant outcomes of this law was the development of ADEM's Solid Waste Management Plan (SWMP). The initial development of this plan was accomplished through a two-phase approach. Phase I provided guidance to local governments in development of local solid waste management plans, and included a statewide survey designed to estimate the amount of solid waste generated per person per day, as well as the make-up of this waste stream (Auburn University, 2013). Phase II refined previously gathered solid waste management data

and recommended statutory improvements to Alabama's management of solid waste (Auburn University, 2013). In 2002, the Alabama Environmental Management Commission (EMC) adopted Phase I and Phase II of the SWMP into ADEM's solid waste regulations. However, until 2008, only a portion of the recommendations in Phase II of the plan were adopted by the Alabama Legislature (specifically, the Alabama Scrap Tire Environmental Quality Act, passed by the Alabama Legislature in 2003).

Alabama's regional planning commissions are tasked with gathering data to adequately report the condition of solid waste management systems, from production to disposal, within their regions (Code of Alabama Section 22-27-46). This information is reported to ADEM for inclusion in the state SWMP, in addition to being used to assist local governments in their efforts to establish an efficient and productive solid waste management system. The initial funding for Alabama's 12 regional planning commissions (RPCs) to conduct required solid waste needs assessments was provided by the Alabama Department of Economic and Community Affairs (ADECA) annual work program which was funded through a combination of Community Development Block Grant and Appalachian Regional Commission funds (WARC, 2003). These funds were discontinued in 1994 and were never replaced by any other form of funding for the RPCs. Furthermore, the annual appropriation of state funds was never intended to be used for the costs incurred by the ongoing planning requirements of Alabama Law 89-824. State and local planning probably has the greatest urgency for reliable data on the MSW disposal and recovery (Chowdhury, 2009). Therefore, the discontinuation of funding through the ADECA annual work program effectively made the requirement of regional solid waste needs assessments an unfunded mandate on the RPCs (Alabama Department of Environmental Management V. Association of Regional Councils). Attempts by the RPCs to fulfill their responsibilities have

been greatly hindered as a result of this lack of funding and have thus minimized the effectiveness of the regional solid waste needs assessments within Alabama's solid waste program.

In 2008, the Solid Wastes and Recyclable Materials Management Act (SWRMMA) was passed by the Alabama Legislature. This act considerably modernized the management of solid waste streams in Alabama, and included a number of the recommendations initially proposed in Phase II of the Alabama SWMP. Among other things, the bill instituted a statewide solid waste disposal fee (\$1.00 per ton). This fee provided revenue to establish the Solid Waste Fund (to pay costs associated with remediation of unauthorized solid waste dump sites); and the Alabama Recycling Fund (to provide grants to local Alabama governments and non-profit organizations to develop and enhance recycling and waste minimization programs). Additionally, it provides funding to ADEM to both perform its solid waste management regulatory duties, and fund educational programs related to solid waste management and recycling. Also, it provides revenue to the state to cover the costs associated with collection of the fees (ADEM, 2008).

1.3.1. Landfills in Alabama. In the past decade Alabama has begun to experience major regionalization of landfills. According to ADEM, Alabama currently has two facilities that accept waste beyond those states that are immediately adjacent to Alabama: the Arrowhead Landfill in Perry County and the Brundidge Landfill in Pike County. Both of these landfills were constructed within the past decade and are permitted to accept 15,000 and 7,500 tons of waste per day, respectively. These facilities have begun a trend in Alabama toward large disposal facilities, often referred to as "mega-landfills". Alabama has eight landfills that only accept waste from states that are immediately adjacent to Alabama. Two of these eight facilities, one located in Coffee County and the other located in Washington County, have multi-state service

areas (ADEM, 2011). The Coffee County facility is permitted to accept waste from the entire States of Alabama, Florida and Georgia, whereas the Washington county facility is permitted to accept waste from the entire States of Alabama, Georgia, Florida, Mississippi and Tennessee. The other six facilities are small regional landfills and only accept waste from portions of states that are closest to the location of the facility. Excluding the Arrowhead Landfill, the average permitted capacity of all the landfills in the State of Alabama is about 1600 tons per day, thus making the Arrowhead Landfill's permitted capacity on average almost 10 times larger than all the other landfills in the State of Alabama. In addition, there has been a recent attempt to permit another "mega landfill" in Conecuh County, AL near the town of Repton. This facility was proposed to have a permitted capacity of 10,000 tons of waste per day and have a service area of twenty-seven states (Conecuh Woods LLC, 2011).

1.3.2. Alabama Landfill Moratorium. In response to public concern over "mega-landfills" Governor Robert Bentley signed Executive Order Number 8, which directed ADEM (with input from the Alabama Solid Waste Management Advisory Committee and the Alabama Department of Public Health (ADPH)), to adopt and promulgate new rules, regulations, and requirements for the permitting of solid waste management facilities and landfills meeting certain size/capacity criteria. This order also required all solid waste management facilities be approved by the Alabama Solid Waste Management Advisory Committee. Importantly, the order imposed a moratorium on the issuance of new or modified permits (or the transfer of existing permits) for solid waste management facilities until the new rules, regulations, and requirements required by the order were promulgated.

Certain directives contained in Executive Order Number 8 were enacted into law in May of 2011 with the passage of Act 2011-297, Bill H-406, which specified a 24-month moratorium

on the issuance of new permits. Act 2011-297 states that the purpose of this moratorium is to allow adequate time for ADEM and ADPH to review their responsibilities under the Solid Wastes and Recyclable Materials Management Act and for the update of the State's solid waste management needs. The moratorium on the issuance of new or modified permits was extended in 2012 for an additional 12 months through the passage of Act 2012-434, Bill H-556. This law extended the moratorium act to May, 2014.

2. Analysis of Alabama's Current MSW Landfill Permitting Program

As previously noted, laws and regulations relating to Alabama's landfill permitting process are in need of revision to accommodate different types of facilities and allow state organizations to become more effective in their attempt to adequately service the public. In order to address this issue ADEM awarded the Auburn University (AU) team a two-year grant to conduct a study on Alabama's solid waste program in April 2012. This study was accomplished through a two-phased approach. Phase I is primarily a study of the current Alabama solid waste landfill permitting process, while Phase II is primarily a study of potential alternative materials management approaches for minimizing solid waste disposal in Alabama landfills (Auburn University, 2013).

Phase I of the study included a series of public meetings to gather public input on key issues related to Alabama's landfill permitting process and overall solid waste management. The results of these meetings are used here to establish the public's perception and potential inadequacies of Alabama's current permitting process. The permitting process is then analyzed using two additional methods to further identify potential inadequacies and advantages that should be addressed 1) by use of the context of a case study and 2) by review and comparison of the solid waste landfill permitting process in other states. The identified advantages and inadequacies can then be compiled for a more organized analysis of the permitting process and identification of possible enhancements. In this way Alabama's landfill permitting process can be evaluated and improved while retaining the identified advantages of the process.

2.1. Presentation of Alabama's Current MSW Landfill Permitting Process

Figure 3 illustrates Alabama's current solid waste landfill permitting process. Permitting of solid waste landfills in Alabama is governed by the Code of Alabama, Title 22 (Health, Mental Health, and Environmental Control), Chapter 27 (Solid Waste), Article 3 (Solid Waste Management Plan); and the ADEM Administrative Code 335-13. Sections 22-27-47 and 22-27-48 of the Code of Alabama define the authority and responsibility of the governing body of a county or municipality (referred to here as local host government) in which a new solid waste landfill is seeking to be established. Additionally, these sections of the Code of Alabama define the responsibility of the Regional Planning Commission (RPC) for the region in which a new landfill is proposed to be established. These authorities and responsibilities also apply to certain modifications of existing solid waste landfill permits; they do not apply to industrial landfills receiving wastes generated on site only or by the permittee. Importantly, these sections of the Code of Alabama establish a "firewall" between the responsibilities and authorities of a local host government and the RPC, and ADEM. As a result of this firewall, the responsibilities of ADEM, as defined in ADEM Administrative Code 335-13, are limited to assessing technical engineering and operational issues. The Code of Alabama specifically states that ADEM may not consider a permit application for a new or modified permit for a solid waste facility unless the application has received approval by the affected local host government, and has also received a statement of consistency from the RPC. The RPC is required to evaluate the landfill proposal, using the provisions of the current regional solid waste needs assessment, and determine whether the proposal is consistent or inconsistent with this regional assessment. This statement of consistency by the RPC is non-binding on the local host government or ADEM (that is, an RPC statement of inconsistency does not require rejection of the permit application by the

local host government or by ADEM); however, it is required prior to ADEM’s review of a technical proposal.

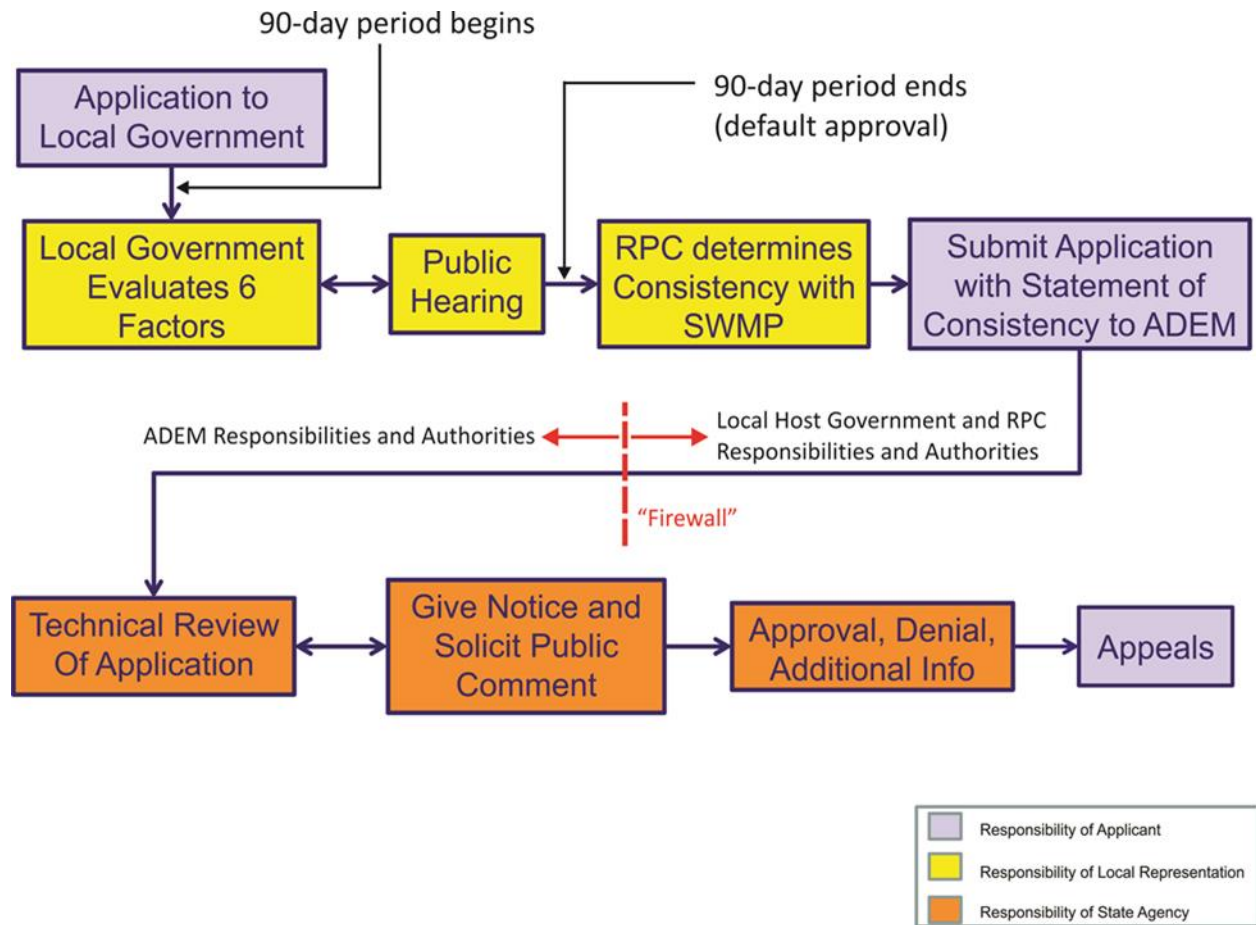


Figure 3. Flowchart representation of Alabama’s current solid waste landfill permitting process

2.1.1. Local Approval. A local host government must have a local SWMP approved by ADEM before it can consider a new or modified solid waste landfill permit. Additionally, a local host government must consider six factors in determining whether to approve a permit application:

- (1) The consistency of the proposal with the jurisdiction's solid waste management need as identified in its plan;
- (2) The relationship of the proposal to local planned or existing development or the absence thereof, to major transportation arteries and to existing state primary and secondary roads;
- (3) The location of a proposed facility in relationship to existing industries in the state that generate large volumes of solid waste, or the relationship to the areas projected for development of industries that will generate solid waste;
- (4) Costs and availability of public services, facilities and improvements required to support a proposed facility and protect public health, safety and the environment;
- (5) The impact of a proposed facility on public safety and provisions made to minimize the impact on public health and safety; and
- (6) The social and economic impacts of a proposed facility on the affected community, including changes in property values, and social or community perception.

Further, the local host government is required to hold at least one public hearing (advertised in a local newspaper at least 30 days, but not more than 45 days prior to the public hearing) prior to determining whether to approve a permit application. If the local host government does not act on a proposal within 90 days of receiving the application, then the application is approved by default (Code of Alabama Section 22-27-48). Additionally, the permit applicant is not required to obtain the RPC statement of consistency until after the local host government has approved the permit application (but prior to submitting an application to ADEM for technical review).

2.1.2. Regional Assessment. Code of Alabama Section 22-27-48 (b) defines the method by which a particular region must assess a proposed facility. Alabama has 12 solid waste regions

throughout the State, corresponding to the 12 RPC's. As previously mentioned, each region is responsible for developing its own solid waste needs assessment that includes each county within the specified region. Once a proposed facility is approved by a local host government, the applicant must request a statement of consistency from the RPC. The RPC must then evaluate the proposal as it relates to available existing capacity within the region and the projected lifetime of such capacity. The evaluation must also identify any proposed capacity which is in excess of expected regional needs. This statement of consistency may include a positive or negative indication but regardless of the RPC's findings the applicant may continue the process by submitting a formal technical proposal to ADEM.

2.1.3. State Approval. According to Alabama Administrative Code 335-13 an owner of a proposed landfill must submit the following in order to request a permit:

- Host government approval;
- RPC Statement of consistency;
- Facility design plans and operational procedures in accordance with Permit Application Procedures for Solid Waste Disposal Facilities as prepared by the Department;
- Technical data and reports;
- All technical reports, plans and specifications, plats, geological and hydrological reports required by this Division, prepared under the following:
 - Plans, specifications, operational procedures, letters of final construction certification and other technical data shall be prepared by an engineer. The seal or signature and registration number of the design engineer shall be affixed to the plans, specifications and reports.

- Reports, letters of certification and other documents and technical data concerning the siting standards must be prepared by a person with technical expertise in the field of concern.
 - Legal property descriptions and survey plats shall be by a land surveyor with the seal or signature and registration number of the land surveyor affixed.
- The name and mailing address of all property owners adjacent to the proposed site
- ADEM must provide notice and an opportunity for a public hearing on any landfill permit to meet State law. ADEM must also notify potentially interested persons of the proposed landfill by publishing a notice in a newspaper of general circulation in the area. Landowners adjacent to a proposed landfill must receive a copy of public notice as well. The notice must be given no less than 35 days prior to the proposed issuance of a permit. The notice must contain information about the specific type and nature of the landfill, the type of waste to be disposed, the person or agency requesting the permit, and the descriptive location of the landfill, address and telephone number of the Department, and must inform interested persons that they may request a public hearing on the proposed landfill.

ADEM must authorize a public hearing upon receipt of a significant number of technical requests; however, it should be noted that the Alabama Administrative Code does not provide a definition of what constitutes a “significant” number. Requests for public hearings must be submitted in writing to ADEM by interested persons, within 35 days after the publication of the public notice and must contain the following:

- The name, address and telephone number of the person requesting the hearing.
- A brief statement of the person's interest and the information the person wishes to submit.

- The person's signature, if an individual, or the signature of a responsible officer of an organization or legal entity.

Frivolous or nontechnical requests may be denied by ADEM. If a hearing has been authorized, ADEM must appoint a hearing officer to conduct the hearing and must establish a time, date, and location for the hearing. ADEM must take one of the following actions after the hearing:

- Deny the permit, stating in writing the reasons for denial and inform the person requesting the permit of appeal procedures;
- Issue the permit; or
- Require additional information, elements of design for the facility, and specify procedures for inclusion into the permit prior to issuance of the permit.

2.2. Public Meetings and Survey Results

2.2.1. Locations. In order to gather public input on issues regarding Alabama's MSW landfill permitting process, thirteen public meetings were held at locations throughout Alabama (Table 2). The locations were selected so that at least one public meeting would be held in each RPC district within the state. Two public meetings were held in RPC district 6 to accommodate anticipated higher levels of public interest in this district as a result of the proposed Conecuh Woods Landfill project.

2.2.2. Attendance. Attendance at the 13 public meetings is shown in Figure 4. Public meetings were advertised through direct outreach, newspaper announcements, radio public service announcements, interviews and news stories, news outlet websites, and the Auburn project website. Public meeting attendance was varied and this variability was likely a result of the level of public interest with respect to solid waste issues in the state. As shown in Figure 4,

attendance at the Repton, Uniontown, and Auburn public meetings was high relative to the other public meetings, which is likely a consequence of heightened public interest in solid waste issues in these areas relative to other areas of the state.

Table 2. Meeting Number, Date, RPC Region, and Location of Public Meetings

Meeting	Date	Day	Time	Region	City	Venue
1	06/29/12	Friday	3-5pm	9	Montgomery	301 Columbus St. (Old Alabama Town Reception Center)
2	08/21/12	Tuesday	6-8pm	4	Anniston	Alabama Cooperative Extension Auditorium, 1702 Noble St # 108
3	08/23/12	Thursday	6-8pm	10	Auburn	Auburn University Student Center, 255 Heisman Dr., Ballroom B
4	10/10/12	Wednesday	3-5pm	8	Fairhope	Gulf Coast Research & Extension Center Auditorium, 8300 State Hwy 104
5	09/05/12	Wednesday	6-8pm	5	Troy	Pike County Cattlemenn's Association, 4200 U.S. 231 South, Troy, AL 36081
6	09/06/12	Thursday	6-8pm	12	Huntsville	Huntsville Marriott, 5 Tranquility Base, Huntsville, Discovery/Atlantis Room
7	09/18/12	Tuesday	6-8pm	6	Repton	Repton Junior High School, 2340 Conaly St., Repton
8	09/19/12	Wednesday	6-8pm	6	Uniontown	City of Uniontown, 100 Front St.
9	09/24/12	Monday	6-8pm	1	Florence	Marriott Shoals, 10 Hightower Place, Florence Room--Conference Center
10	09/25/12	Tuesday	6-8pm	11	Decatur	Ingall's Pavillion, 802-A Wilson Street, Decatur
11	10/16/12	Tuesday	6-8pm	7	Dothan	ACES-Houston County, 1699 Ross Clark Circle, Ste. 4
12	11/12/12	Monday	6-8pm	2	Tuscaloosa	Tuscaloosa County Extension Auditorium, 2513 7th Street
13	11/13/12	Tuesday	6-8pm	3	Birmingham	Vulcan Park & Museum, 1701 Valley View Drive, Birmingham, 35209

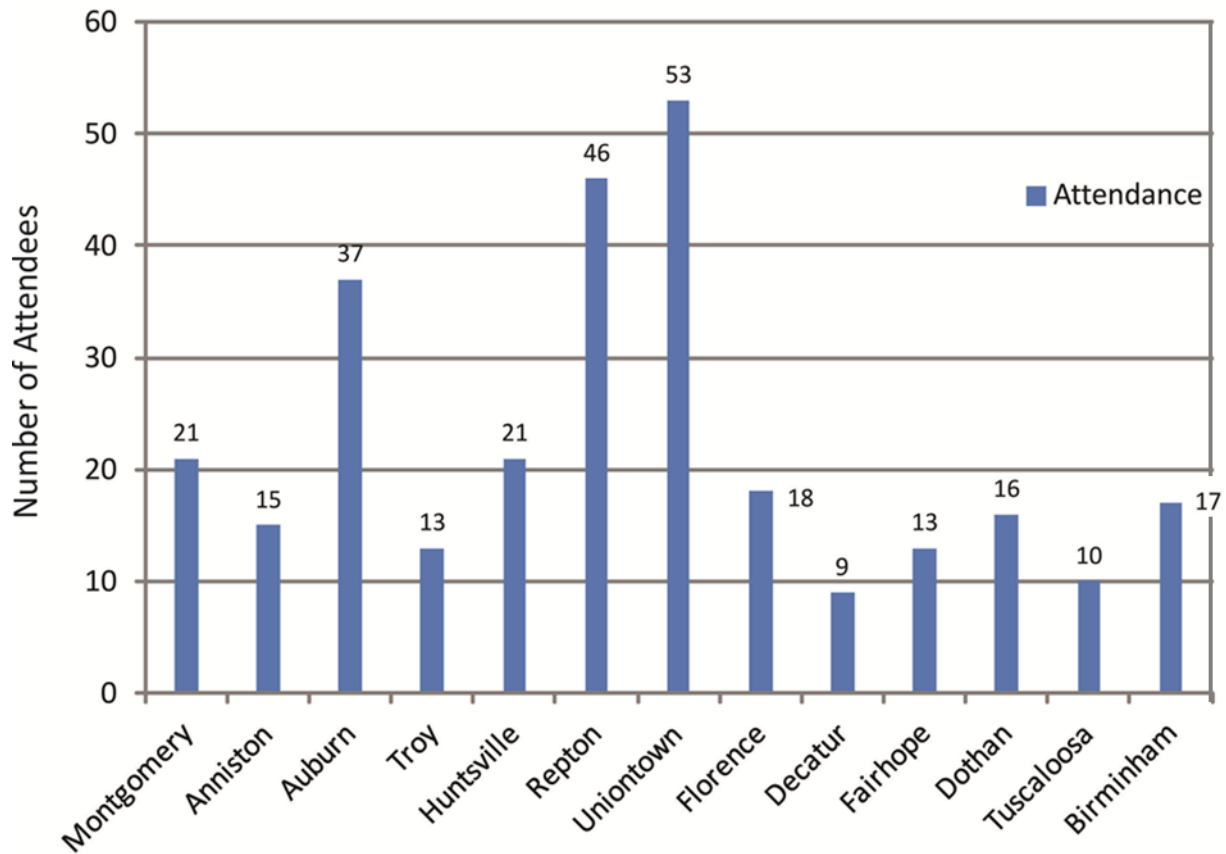


Figure 4. Attendance at public meetings.

2.2.3. Meeting Style. Each public meeting was conducted in a similar fashion. Attendees completed a sign-in sheet prior to the start of a meeting. Visual aids (see Appendix A) were displayed at the public meetings to help participants visualize the permitting process of other states and provoke discussion. The public meetings were conducted in charrette-style, with a brief introduction by the project team, followed by a short video presentation explaining the purpose and objectives of the study and the objectives of the meeting. After the video presentation, meeting attendees were divided into roughly equal-sized groups, with a member of the project team joining each group. The team arranged the members of each group so that obvious friends and colleagues were separated into different discussion groups. In this way, the

tendency for like-minded individuals to dominate a single discussion group was minimized. Each group then participated in a “table-top” discussion, moderated by the project team member, where issues related to the project objectives were discussed. A volunteer from each group recorded this dialog, and at the end of the discussion period summarized the results of the discussion with all meeting attendees. The project team member for each group also recorded their group discussion, which was archived by the project team for later use. At the conclusion of the meeting, a survey was distributed to the meeting attendees and collected by the project team.

2.2.4. Surveys. Survey questions were designed to gauge public perception and sentiment regarding Alabama’s current solid waste landfill permitting process, and potential enhancements to Alabama’s solid waste landfill permitting process. The surveys also request limited demographic information. An example of the survey can be found in Appendix B.

2.2.5. Project Data. Project data are comprised of two general sets: (1) soft data consisting of summarized dialogs recorded by project team members during table-top discussions in public meetings, and (2) hard data from survey responses during public meetings. The survey dataset was compiled by considering each question on each completed survey. If the response to a particular survey question was incomplete, or if the response was provided in a way other than requested in the survey instructions, the response was rejected and not included in the survey dataset.

With respect to discussions during public meetings related to Alabama’s current solid waste landfilling permit process, the majority of these discussions at all public meetings were remarkably similar, allowing the following trends to be identified:

- The assessment of landfill need is perceived by the public as inadequate

- Local host government assessment of need (represented by the evaluation of six factors defined in Ala. Code Section 22-27-48) is questionable
 - RPC process does not provide meaningful benefit to the process
 - Social justice concerns are not accommodated in the process
 - Consideration of potential environmental issues is not required by the local host government
- Public/local engagement and information transfer is perceived to be inadequate
 - Public notice process is thought to be inadequate
 - Public access to site suitability and needs assessment information is considered lacking
 - Host government decision-making process is perceived as not transparent
 - 90 day default “yes” rule is almost universally unpopular

It is important to emphasize that the trends noted above are the study team’s assessment of the general sentiments expressed by attendees at the public meetings. Demographic information (presented below) supports the statement that for the most part, public meeting attendees were generally well-educated and reasonably well-informed (with respect to solid waste landfilling issues). Moreover, a number of the public meeting attendees were citizens who work either directly in Alabama’s waste management industry, or are affiliated in some enterprise or organization which requires knowledge of parts or all of Alabama’s solid waste landfill permitting process. For example, members of RPC districts attended a number of public meetings, as did county commissioners, mayors, owners/operators/employees of landfills, etc. Thus, the trends identified above, although based on opinions and perceptions, should be considered as reasonable assessments of the current landfill permitting process.

Demographic information is represented graphically in Figure 5. The demographic information provided by public meeting attendees generally indicate that most attendees were white, over the age of 60, relatively well-educated, and generally have high income. This is consistent with project team observations that public meeting attendance was motivated primarily by individual interest in solid waste landfilling issues and availability of personal time to attend the meetings.

2.2.5.1. Survey Question 1 Responses. Survey question 1 requests respondents rank what they consider to be the top three factors in siting a new landfill. The cumulative responses for each of the three selections are summarized in Figure 6. These cumulative averages support several trends: (1) the proximity to water sources and approval of local residents are the two most important factors; (2) the condition of a potential landfill site and the distance from home to a solid waste collection point are the next most important; (3) “other” aspects (defined below) are also important; and (4) adjacent land use and value, the impact of waste hauling vehicles (noise, traffic, road damage, etc.), and aesthetics are least important.

One of the selections to survey question 1 is the category “other.” The respondent selecting this category was asked to specify their concern. The concerns noted by meeting attendees selecting the “other” category can be summarized as location, need, political leadership, public health, environmental impact, and technical issues. Figure 7 shows the total number of “other” category selections for all meetings; as can be seen, need was the most significant concern for respondents selecting the “other” category. Respondents who were concerned with need were predominantly referring to the need for additional landfill capacity in a particular area which they perceived as already having sufficient capacity.

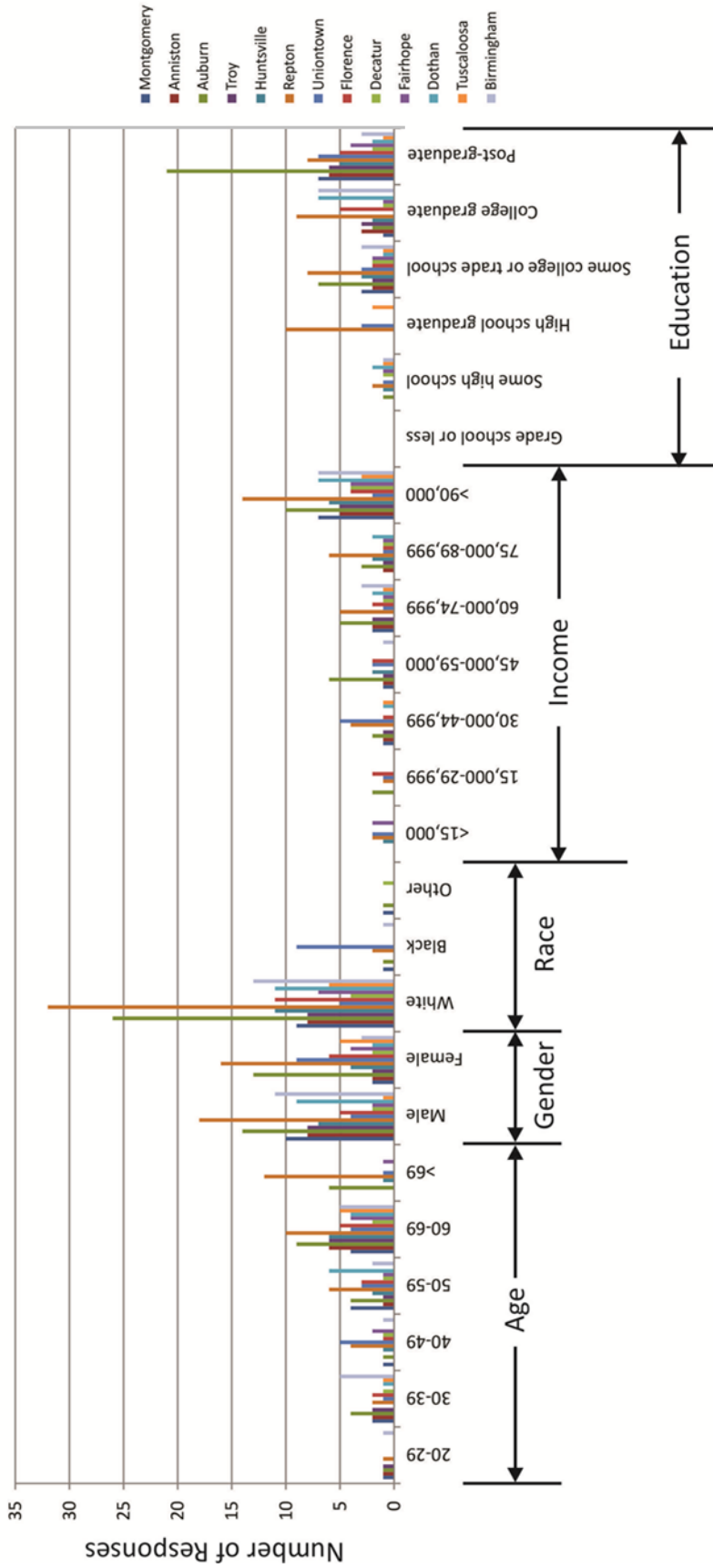


Figure 5. Demographic information from all public meetings.

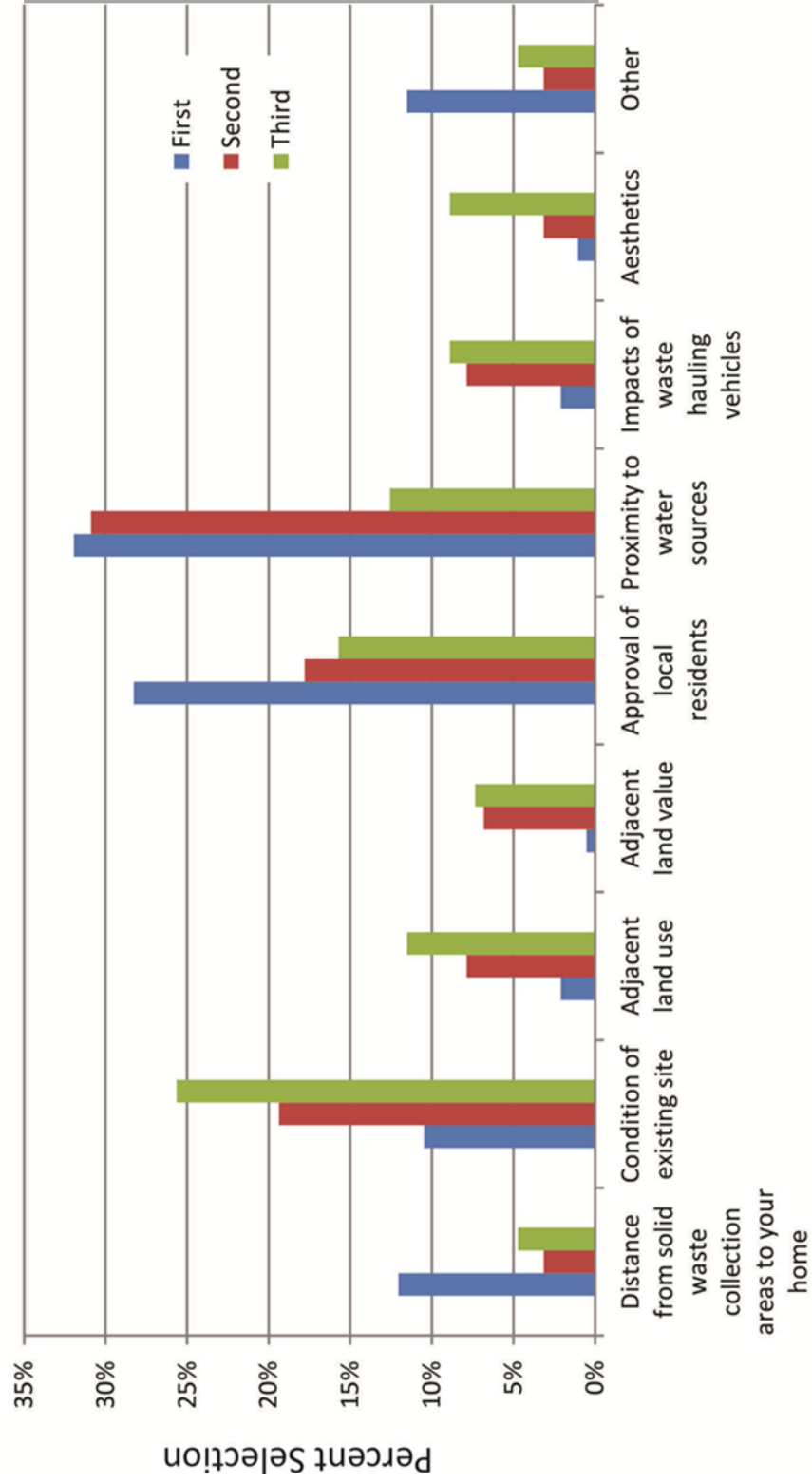


Figure 6. Cumulative percent all selections for question 1 for all meetings.

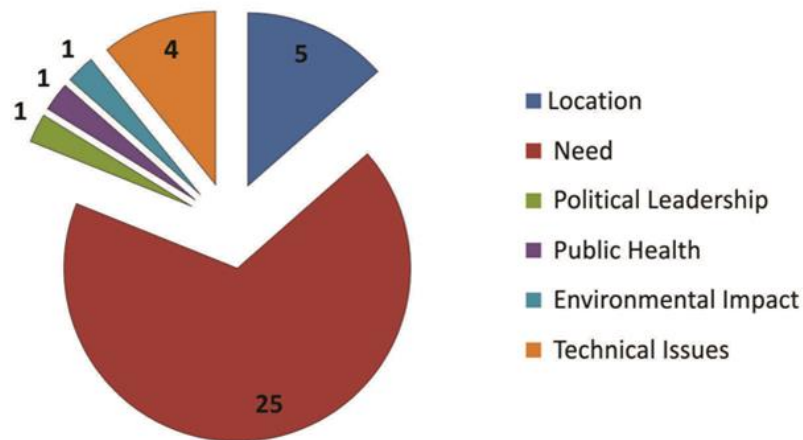


Figure 7. All responses to “Other” category provided by public meeting attendees

2.2.5.2. Survey Question 2 Responses. Survey question 2 requests respondents rank what they consider to be the top three concerns regarding existing landfills. The cumulative responses for each of the three selections are summarized in Figure 8. It is clear that the impact to water quality and sanitary conditions (loose trash, air quality, insects, vermin, etc.) are the most important concerns noted by public meeting attendees. Aesthetics (visual, odor, etc.), reduction in property values, and loss of wildlife habitat are the second most important concerns. Changes to landscape, loss of productive farmland, and traffic concerns are somewhat important; noise is considered least important. Similar to survey question 1, survey question 2 provided an “other” category where respondents could specify other concerns not explicitly noted in the survey question. However, the “other” category was not chosen by any public meeting attendees.

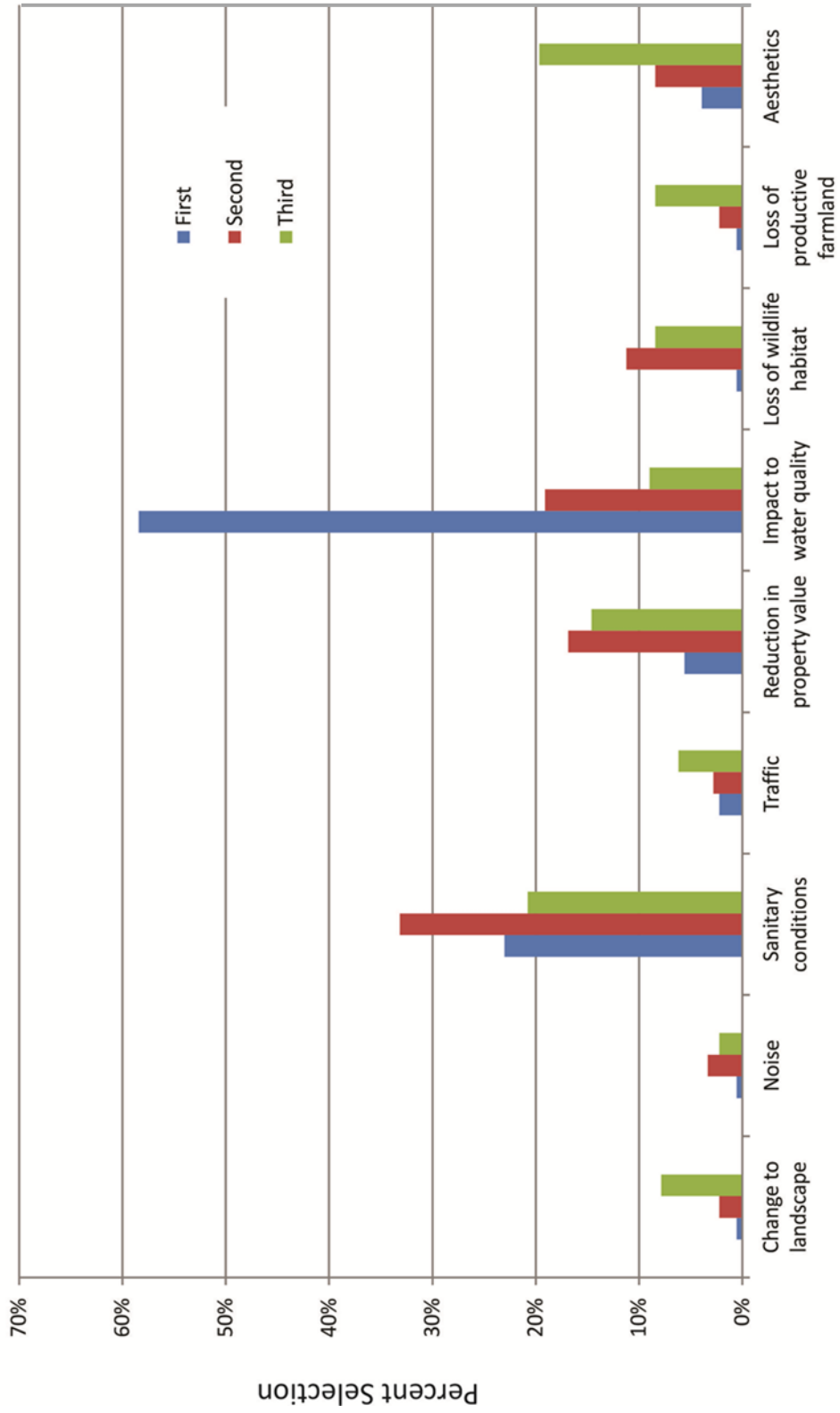


Figure 8. Cumulative percent all selections for question 2 for all meetings.

2.2.5.3. Survey Question 3 Responses. Survey question 3 asked respondents where they get information regarding landfill issues. Results are shown as a cumulative total in Figure 9. Newspapers and public meetings were noted as the venue where most public meeting attendees obtained landfill-related information. Television, websites, and local community leaders were also cited as common venues for landfill-related information. Interestingly, family members and mailed cards and newsletters were less often cited as common venues for landfill-related information. A category for “other” was included with this question; however, most of the respondents who selected this category did not include a description of these other sources of information

2.2.5.4. Survey Question 4 Responses. Survey question 4 asked respondents how they thought public opinion and technical recommendations should be balanced in siting new landfills. Results are shown as cumulative percent for all meetings in Figure 10. Most public meeting respondents thought public opinion should be considered equally with scientific or technical recommendations (approximately 60%). Those respondents who thought public opinion should be the most important factor (approximately 19%) and those who thought scientific or technical recommendations should be the most important factor (approximately 17%) were generally equal.

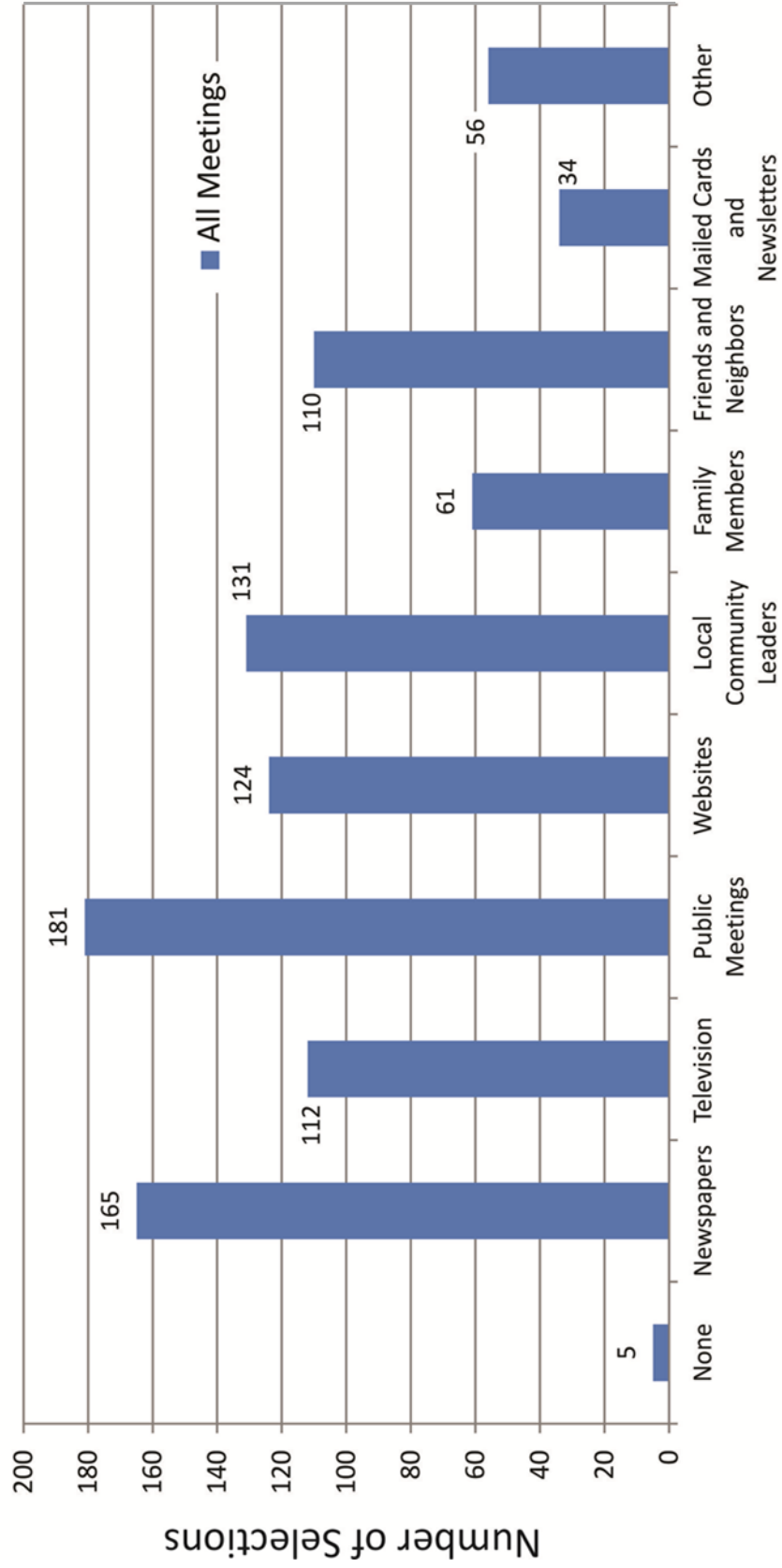


Figure 9. Cumulative responses to survey question 3 from all meetings

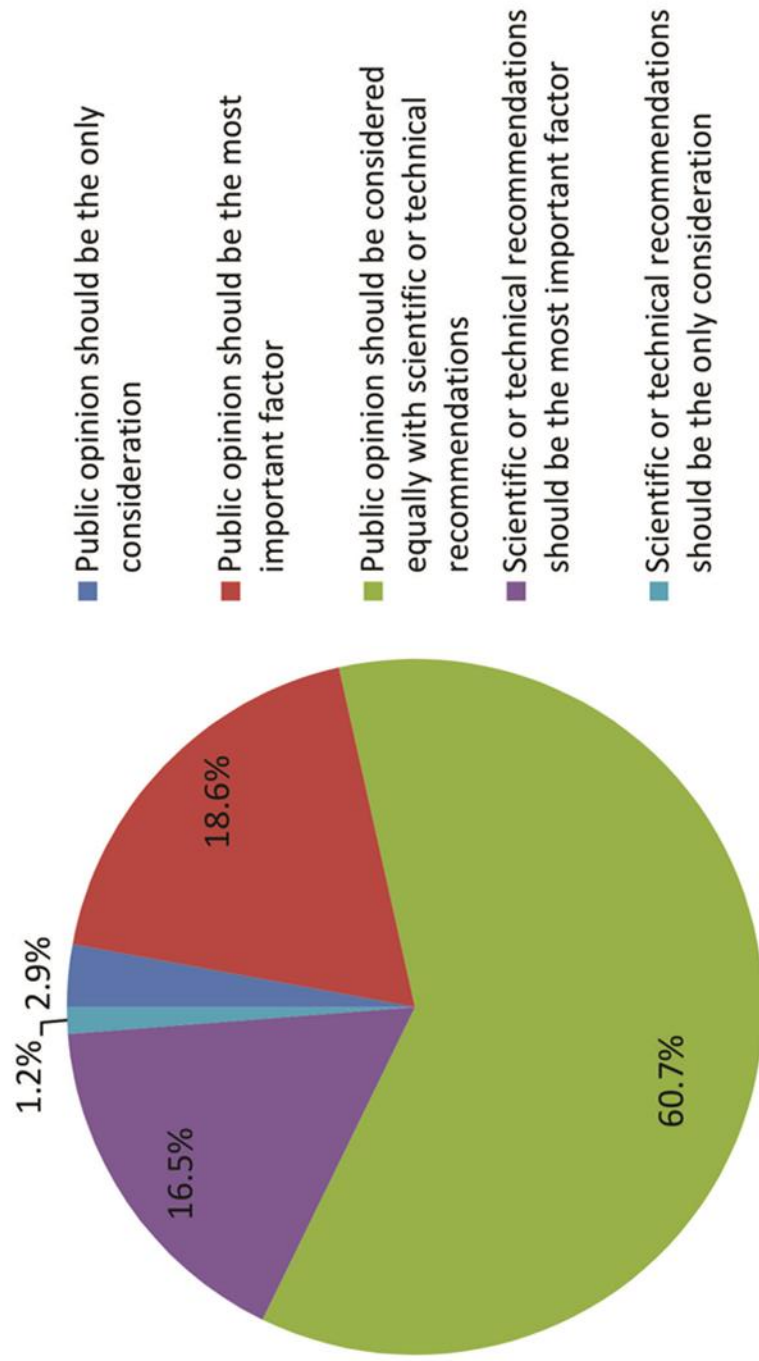


Figure 10. Cumulative percent response to survey question 4 from all meetings.

Survey question 4 also asked respondents whether the “90 day” default acceptance clause in the current landfill permitting process should be removed, and if so, to suggest an alternative. This particular survey question was a point of much discussion in the table-top dialogs during the public meetings. Responses are displayed in Figure 11 as totals for all meetings. The majority of respondents thought that the 90-day default acceptance clause should be removed. Although the survey question requested suggested alternatives from those respondents who thought the 90-day default acceptance clause should be removed, not all respondents provided alternatives. Figure 12 summarizes suggested alternatives for those who provided them. The majority of respondents thought that the 90-day default acceptance clause should be replaced with a 90-day default disapproval clause. Many respondents also thought that local host government officials should be required to vote.

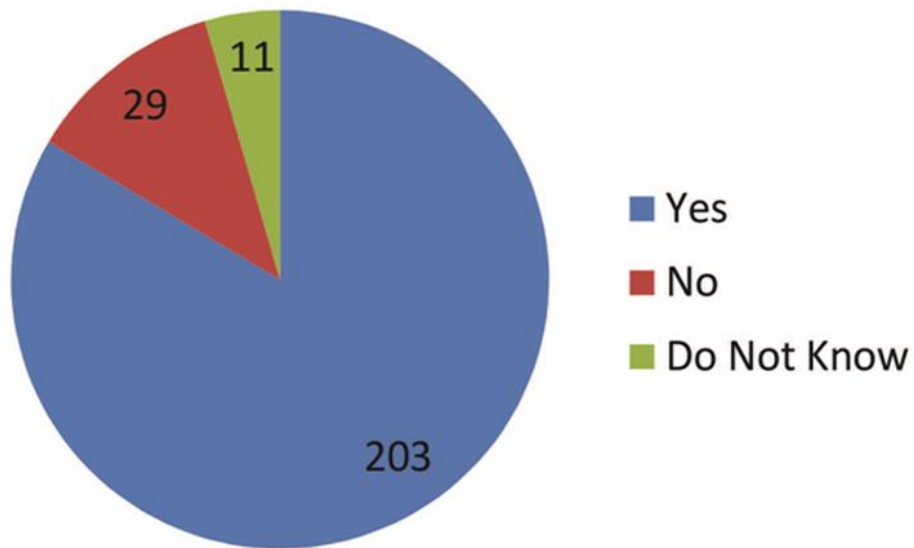


Figure 11. Total responses (all meetings) to whether the 90-day default acceptance clause should be removed (survey question 4).

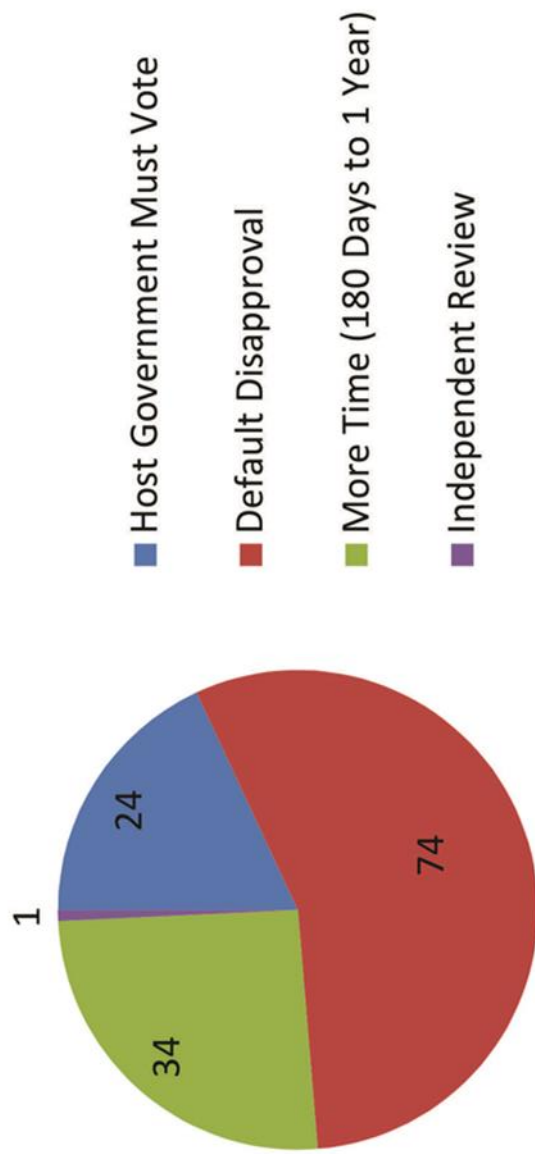


Figure 12. Suggested alternatives for replacement of the 90-day default acceptance clause (survey question 4).

2.3. Conecuh County Case Study

To further assess the permitting process in the context of concerns brought forth by Alabama Bill H-406 it is important to study how this process is addressed in a practical sense. Conecuh County was recently proposed as a location for the development of a very large landfill and was therefore selected as a case study to further understand how the current permitting process in Alabama is approached. It is important to note that the following information and procedures given here do not represent the methods used by all local host governments when attempting to consider a proposed landfill.

2.3.1. Background. Conecuh County, Alabama is located in southwest Alabama adjacent to and north of Escambia County, Alabama which lies on the Alabama-Florida line. There are three municipalities within Conecuh County: Evergreen (the county seat), Castleberry and Repton. Conecuh County is a primarily rural county with a population of only 13,228 as reported in the 2010 United States Census. According to the US EPA, Americans produce 4.4 pounds of solid waste per person per day (US EPA, 2010). This amounts to roughly 10,600 tons of solid waste produced by Conecuh County each year. Currently, this waste is disposed of in the Timberlands MSW landfill in Escambia County, Alabama (Conecuh County Solid Waste Management Plan, 2003).

On January 11, 2011, Conecuh Woods, LLC submitted an application for a solid waste facility to be located in an unincorporated area of Conecuh County near the town of Repton (Conecuh Woods LLC, 2011). According to the application, the facility is to have 1,550 acres of usable disposal area and have an eventual permitted capacity of 10,000 tons of solid waste per day. This would make the Conecuh Woods landfill the second largest landfill facility in the State

of Alabama and one of three (3) such facilities in the State permitted to accept waste from States beyond those adjacent to Alabama.

The application for the facility initially passed the local host government approval stage with a 3-2 approval vote by the Conecuh County Commission on April 18, 2011, despite strong opposition from the citizens group Citizens for a Clean Southwest Alabama (CCSWA) and other public officials in the surrounding communities (Citizens for a Clean Southwest Alabama et. al. V. Conecuh County Commission). However, before the application moved to the state review stage, the CCSWA et.al. filed a complaint against the Conecuh County Commission, citing several potentially unlawful violations committed by the Conecuh County Commission. The judgment in the lawsuit resulted in the overturning of the commission's decision, citing several reasons to validate the judgment.

2.3.2. Results of CCSWA v. Conecuh County Commission. In this case, a judgment against the landfill was given due to the lack of attention given to the exclusionary guidelines and public comments, as well as the disregard of the county commission to include the public in the host fee agreement. The judgment noted that the host fee agreement created an additional disservice to the public by depriving the county citizens of their right to an impartial judgment.

2.3.2.1. Exclusionary Guidelines. Exclusionary guidelines are a set of siting criteria that ADEM is required by law to use when determining whether or not a solid waste disposal facility is compatible with the surrounding area. These criteria can be found in the Ala. Admin. Code r. 335-13-4-.01 and address the siting of landfills in or near wetlands, floodplains, active faults and airports among other requirements. According to section 12.2 of the Conecuh County SWMP the County Commission must consider how well the planned facility addresses the requirements of the exclusionary guidelines when considering approval of solid waste facilities. In their attempt

to address these guidelines, the county commission hired a private engineering firm to do an assessment and submit a report to determine if the proposed facility satisfied these requirements. However, in their evaluation, the engineering firm “simply summarized the limited information provided in the application and concluded that ADEM would ensure that the state siting requirements were met when Conecuh Woods, LLC submitted a permit application to ADEM” (Citizens for a Clean Southwest Alabama et. al. V. Conecuh County Commission). The commission accepted this report without questioning the inconclusive results of some of the findings. In addition, the proposed Conecuh Woods disposal facility site plan identified four disposal cells that would impact existing wetlands. When presented with a site plan provided by Conecuh Woods, LLC in court depositions, four of the five county commission members agreed that disposal cells were proposed to be located in wetland areas. This was found by the court to be undisputed evidence of disregard of the siting requirements defined by the County SWMP.

2.3.2.2. Evaluation of Public Comments. According to the Conecuh County SWMP, the local governing body must evaluate written comments/questions and verbal testimony with respect to landfill permitting, and provide responses. This provision is included to ensure that public concerns are considered in matters that affect the community as a whole. Two letters were written and submitted to the county commission concerning the exclusionary guidelines and evaluation criteria; one written by the attorney for the citizens group CCSWA and the other by the attorney for the Town of Repton. Neither of these letters were addressed or responded to by the county commission as required by state law. Therefore, the court found the county commission to have violated the procedural requirements of the Code of Alabama 22-27-48(a) and the Conecuh Co. SWMP and thus unlawfully rendered a decision on the application.

2.3.2.3. Host fee Agreement. A solid waste disposal facility charges a tipping fee assessed per ton of waste disposed. A host fee agreement is an agreement between the owner of a privately owned landfill and the local host government within which the landfill is located. This fee is a portion of the tipping fee and serves as compensation to the host government for the use of its natural resources and services during the life of the landfill. In a publicly owned landfill the profit produced by the tipping fee goes directly into the general fund of the host government.

In the case of Conecuh County, a host fee agreement was established but was never presented to the public in the course of approving the application. This is a violation of the Code of Alabama 22-27-48(a) which requires that all pertinent documents be made readily available to the public for inspection and comment. The host fee agreement inherently includes important information that greatly affects the local community and the allocation of general funds. However, the Conecuh Woods host fee agreement was negotiated, finalized and signed outside of a public meeting and without a majority vote by the county commission. In their court depositions the Conecuh County Commissioners expressed their understanding that a vote on the approval of the application served concurrently as an approval of the host fee agreement. The court ruled that the document was “pertinent” to the proposal and that the commissioners should have presented this document to the public.

2.3.2.4. Impartial Judgment. One of the most interesting points included in this ruling was the conclusion that the people of Conecuh County were deprived of their right to an impartial judgment due to the substantial amount of money the commissioners knew would be paid to the county if the application was approved. Procedural due process was cited as a constitutionally protected right for all citizens. The ruling quotes *Stallworth v. City of Evergreen* in saying “An unbiased and impartial decision-maker is one of the most, if not the most,

fundamental of requirements of fairness and due process.” The ruling goes on to state “The United States Supreme Court has held that the probability of actual bias on the part of the judge or decision maker is too high to be constitutionally tolerable when the decision will financially benefit the public fisc over which the decision maker also has responsibility.” The outcome of this ruling is understandable; however, it does bring into question the validity and appropriateness of any host fee agreement that is often used to compensate the local community.

3. Comparison of Alabama's Solid Waste Landfill Permitting Process with Other States

Alabama's solid waste landfill permitting process was compared with the permitting processes of other states as a means of identifying potential improvements to Alabama's process. The states used in this comparison are Tennessee, Mississippi, Georgia, South Carolina, Texas, Arkansas, and Vermont. It is useful to understand the permitting processes used by neighboring states (Mississippi and Georgia) because of their similar size, population, geological features, terrain and climate. Other states were chosen for review because of their varying sizes and structure with due emphasis given to the southeastern region. Details included in legislation and regulations vary a great deal from state to state; the information presented here generalizes different aspects of each program to allow for a better comparison. Differences in the details of each process are described in the explanations provided in the tables below. The processes described in this report were derived from state legislation and regulations made publicly available, and some details may vary slightly from the actual standard operating procedures of each state.

All the states included in this review have a basic structure that allows for a local and regional review of a potential MSW landfill. Each local host jurisdiction and region has a solid waste management plan (SWMP) that a proposed facility must be consistent with. However, each SWMP has different guidelines, requirements and goals that are established by law and the state environmental agency and could consist of a great level of detail. The elements and levels of detail of each of these SWMP's are not discussed here except to note that not all SWMP's

have the same requirements other than those established by the US EPA (40 CFR Part 258 (Subtitle D of RCRA)).

Tables 3-6 describe the structure of the permitting programs of each state with respect to Alabama. Table 3 is a review of the local/regional approval for each state. It describes the method of approval, time limits and default resolutions. Table 4 describes the involvement of the state environmental agency in local issues. This includes the methods used for assessment of need, how decisions are validated, and how the public participates in the process. Note that the assessment of need is defined in different ways for different states. Tables 5-6 provide a more detailed description of individual states needs and environmental assessments, respectively. These tables show the entity responsible for the assessment, when the assessment is done in relation to host government approval, and the methods of the assessment.

The first column in Table 3 describes whether the review is a joint or separate approval by each entity, and the second column describes the method of each approval. For Alabama, there is a local public review process and, if approved locally, a regional statement of consistency (SOC) is needed from the RPC prior to application to the state agency.

Tennessee is very similar to Alabama except for differences in the structure of the regions. Like Alabama's 12 RPC districts, Tennessee has 9 development districts that develop a SWMP for their district. However, these districts are not responsible for enforcement of the SWMP. Tennessee allows regional agreements to be formed between two or more counties within a district to encourage a regional approach to solid waste management. If a county is included in a regional agreement, the region enforces the district SWMP. If a county is not included in a regional agreement, then local approval is the only approval required because all regional and local plans must conform to the district SWMP to be an approved plan. Mississippi

has a joint approval where both the host governmental authority (HGA) and regional authority (RA) must make provisions to include a proposed site in their SWMP's. The HGA may either reject the application outright or decide to begin a local review process like Alabama and Tennessee. If the HGA approves the site, it must file a request with the state environmental agency for approval of the change to their solid waste plan. This request would also involve the SWMP of any regional entity with jurisdiction in the area of the proposed facility.

In Georgia, much like Tennessee, a county may develop its own SWMP, or two or more counties may decide to form a region and create a joint SWMP. The HGA must hold a public needs meeting and a public siting decision meeting to determine approval of a proposed facility. If the applicant is a private entity the facility is exempt from a needs meeting. Also, if the host county is involved in a joint (regional) plan, a needs meeting must be held in each county within the region but only one siting decision meeting is held in the host jurisdiction.

For South Carolina, the applicant must obtain a SOC from the HGA and RA that outlines how the facility is consistent with planning, zoning, and established buffer requirements. Vermont is much the same way except buffer requirements are not evaluated. For each of these two states, South Carolina and Vermont, there is no public review process prior to the issuance of the SOC. Instead, the state agency is responsible for hearing public concerns regarding siting and need and must provide resolution to these concerns by either denial of the permit or approval with public statement explaining approval.

Table 3. Local and Regional Approval for Alabama and Comparison States

State	Local/Regional	Method	Time Limit	Default
AL	Separate approvals ¹	Public Review, HGA vote-Regional SOC(P) ¹	90 days ¹⁰	Approval
TN	Separate approvals ²	Public Review, HGA vote-Regional SOC(P) ²	60 days min. ¹¹	None ¹⁴
MS	Joint approval ³	Public Review, HGA vote, Change of SWMP ⁶	90 days ¹²	Denial
GA	Joint approval ³	SOC(P,Z)/Public meeting on need and siting ⁷	None ¹³	None ¹⁵
SC	Joint approval ³	SOC(P,Z,B)	None	N/A ¹⁶
TX	Partial Joint Evaluation ⁴	Local Review Committee Report ⁸	90 days	None ¹⁷
AR	Separate Approvals ⁵	SOC (P,Z,B)/Regional Needs Assessment ⁹	None ¹³	None ¹⁵
VT	Joint approval ³	SOC (P,Z)	None	N/A ¹⁶

HGA= Host Governmental Authority

SOC= Statement of Consistency

SWMP=Solid Waste Management Plan

P=Planning

Z=Zoning Ordinance

B=Buffers/Exclusive Siting Criteria

- 1: Both done prior to application submission
- 2: Local approval prior to application submission
- 3: Local units may be included in regional plan.
- 4: Local/Regional committee report reviewed by state agency
- 5: Local host approval only if another "high impact" facility located within 12 miles
- 6: If approved, HGA must change Local SWMP to include proposed facility
- 7: Needs meeting only required for publicly-owned facility
- 8: Committee of local and regional interests produces fact-based report of issues both resolved and unresolved based on Part I and II Application
- 9: Need defined: Projected regional capacity must not exceed 30 years unless HGA approves such excess capacity
- 10: Application submission, public notice and hearing, and HGA vote
- 11: Application submission, 30 day comment period, 15 days for public notice and hearing if requested, 30 days for HGA vote
- 12: Application submission, public notice and hearing, 90 days after hearing for HGA vote
- 13: No time limit specified except for public notice and hearing timeframes
- 14: HGA must vote
- 15: Decisions made in public meetings
- 16: Must have SOC to continue
- 17: Report is fact-based and does not recommend approval or disapproval

Table 4. State Agency Involvement in Local Decisions (Alabama and Comparison States)

State	State Agency Involvement	Assessment	Reviewed By	Public Input
AL	None ¹	6 Evaluation Criteria	HGA	Public Meeting
TN	None ¹	8 Evaluation Criteria	HGA	Public Comment ¹¹
MS	Partial ²	5 Evaluation Criteria	HGA/Agency	Public Hearing
GA	Low-Partial ³	Need ⁸ /Site Selection ⁸ /Site Suitability ⁹ /Negotiations ⁸	HGA/Agency	Public Meetings
SC	High-Partial ⁴	Need ⁹ /Consistency ^{8/9} /Site Suitability ⁹ /Negotiations ⁸	HGA/Agency	Public Meetings
TX	Full ⁵	Local Review Committee Report/Part I and II Application	HGA/RA/Agency	Public Meetings ¹¹
AR	Low-Partial ⁶	Co-location ⁸ /Need Assessment ¹⁰ /Site Suitability ^{9/8}	HGA/RA/Agency	Public Meetings
VT	Full ⁷	Application Review	HGA/RA	Public Comment

HGA=Host Governmental Authority

RA=Regional Authority

SWMP=Solid Waste Management Plan

- 1: State agency only ensures that proper local approval procedures were followed
- 2: State agency must approve HGA SWMP change by evaluating siting criteria identified in the plan. (could be exclusive siting criteria)
- 3: State agency only determines site suitability after site is selected
- 4: State agency determines need, approves consistency and determines site suitability
- 5: State agency reviews report and Part I and II application
- 6: State agency can override RA decision if unsubstantiated
- 7: State agency produces a fact sheet concerning facility location, design, operation, etc. for review by HGA's and other entities
- 8: HGA Responsibility
- 9: State Agency Responsibility
- 10: RA Responsibility
- 11: Public hearing may be needed in special occasions

Table 5. Assessment of Need (Alabama and Comparison States)

State	Responsible Entity	Relation to Local Approval	Method
AL	HGA/RA	Concurrent	SWMP Review
TN	RA	Concurrent	SWMP Review
MS	HGA/State Agency	Concurrent	SWMP Review
GA	HGA	Concurrent	Public Meeting ¹
SC	State Agency	Previous/Concurrent	Fixed Criteria ²
TX	HGA/State Agency	Concurrent/Subsequently	Review Committee/Part I and II Application ³
AR	RA	Concurrent	Fixed Criteria/Public Meeting ⁴
VT	HGA/State Agency	Concurrent	SWMP Review

HGA=Host Governmental Authority

RA=Regional Authority

SWMP=Solid Waste Management Plan

1: Not required for privately owned facilities

2: No new facility within 75 miles of 2 operating facilities

3: Need may be addressed if considered a matter of concern to the review committee or public

4: The regional excess capacity cannot exceed 30 years unless approved by HGA

Table 6. Environmental Assessment (Alabama and Comparison States)

State	Responsible Entity	Relation to Local Approval	Method
AL	State Agency	Subsequently	Exclusive Siting Criteria Only
TN	State Agency	Subsequently	Part 1 Application ⁴
MS	State Agency	Subsequently	Exclusive Siting Criteria Only
GA	State Agency	Subsequently	Site Suitability ⁵
SC	State Agency	Subsequently	Site Suitability ⁵
TX	HGA/State Agency	Concurrent/Subsequently ¹	Review Committee/Part I and II Application ⁶
AR	RA/State Agency	Concurrent ²	Site Suitability
VT	State Agency	Concurrent/Subsequently ³	Hydrogeological Study/Application Review ⁷

HGA=Host Governmental Authority

RA=Regional Authority

1: Depends on whether or not the review committee process was utilized

2: RA checks exclusive siting criteria. Agency invites other authorities to participate in site investigation

3: Subsequent to SOC; However, public may comment on environmental issues at time of application submission

4: Exclusive criteria in addition to other requirements of the application

5: Hydrogeological Study with explicit criteria to achieve

6: Any issues, including issues with exclusive siting criteria, may be addressed

7: Agency uses public comments and other criteria to verify satisfactory siting of the facility

In Texas, the applicant has an option to enter into an agreement with affected people and/or identify issues of concern, or apply directly to the state agency. Regardless of the option chosen, the application must include zoning and land use maps and the applicant must provide an evaluation of the impact on the surrounding area. If the applicant chooses to engage in the local review process, the appropriate local and regional officials appoint members with certain qualifications to serve on the review committee. This approval is considered a partial joint approval because the committee consists of optimally 12 members but must maintain a 2:1 ratio of local appointments to regional appointments, thus giving more weight to regional interests. The objective of this committee is to identify and address all potential issues and report their findings to the state agency. In their report, the committee must identify which issues were resolved and which remain unresolved, and provide details of their findings.

For Arkansas, a regional public review process is utilized rather than a local public review like that of Alabama and Tennessee. The HGA must provide a SOC for local land use and zoning but only has the opportunity for a public review if another facility is located within 12 miles of the host jurisdiction. The applicant must petition the regional authority for a determination of consistency with exclusive siting criteria, planning, and need, and must include the regional determination with the application to the state agency.

The matter of time limits and default decisions are exclusive to Alabama, Tennessee and Mississippi. As noted earlier, in Alabama, the HGA has 90 days from the time of the application to make a decision on the landfill. If no decision is made within 90 days of the submittal of the application, the proposed facility is automatically approved. However, there is no mechanism stated in law that requires the HGA to notify the applicant of receipt of the application. Therefore, the beginning of the 90-day period can be manipulated to some degree by the HGA.

In Tennessee, the HGA must notify the public of a proposed facility application and the opportunity to submit comments. A 30-day comment period continues from the time of application submission, where the public may request a hearing. If a hearing is granted, the HGA must provide notice of the hearing 15 days prior to the hearing. Thirty days after the close of the comment period and/or after the public hearing, the HGA must make a decision on the proposed facility. There is no default specified for occasions where the HGA fails to decide within the time frame specified. In Mississippi, the HGA has 90 days from the public hearing to vote on the proposed facility. If no decision is made, the application is rejected at that time and the applicant may re-apply if they wish. In Texas, the local review committee has 90 days to complete their report but there is no decision concerning approval or denial at this stage.

Table 4 describes the types of local evaluations that are done and how involved the state environmental agency is in these processes. For Alabama and Tennessee, the state agency (in Alabama's case ADEM) is not involved at all in the local review of the proposed facility. Specified criteria are used to assess the facility and public concerns are heard followed by a vote on the facility. Mississippi generally follows the same format except the review takes into account parameters specified in the SWMP. In Mississippi, if the facility is approved locally then the state agency has the final say in whether or not changes in the local SWMP to include the facility should be approved. Georgia and South Carolina have a similar structure in their approval process, except that the state agency in South Carolina is more involved than the state agency in Georgia. This difference can be seen in the initial approval of each of these two states. As discussed earlier, initially, the HGA in Georgia must approve the site by conducting a needs and siting decision meeting. However, in South Carolina, need is determined by the state agency in that no new facility may be located within 75 miles of two or more facilities. If the facility

meets this requirement, a SOC must be obtained and reviewed by the state agency prior to approval. Following the local approval process, the Georgia and South Carolina processes are almost exactly the same. The next approval is a hydrogeological site suitability study, where the agency may approve the site if it meets established criteria. Following this step, the full technical evaluation of an application may commence and concurrently, with the submittal of a petition by the public, a facility issues negotiation process is initiated. The state agency may not take part in these negotiations. This process allows affected persons to negotiate potential compensation agreements as well as certain facility operation concerns (e.g., hours of operation, maintenance of a vegetative buffer, etc.) with the applicant.

The State of Texas is fully involved in the local approval process of solid waste disposal facilities. Except for local land use and zoning ordinances, the state agency may use any information provided in the local review committee report and application to assist in its decision. In Arkansas the state agency is only slightly involved. After local and regional approval, the state agency performs a site investigation, in which any interested local, regional, state, or federal authorities may take part in or simply attend. In Vermont, a full application is submitted to the state agency along with the SOC's from the appropriate HGA and regional agency. The state agency has its own internal criteria that are evaluated to ensure the site is located in an optimal location. It should be noted that the size of Vermont allows for a closer relationship between local and state interests, thus enabling the state agency to more closely understand the concerns of the local community.

In the local assessments in Alabama and the comparison states, measures are taken to gather public input in either a meeting or comment period. However, in all of these states (including Alabama) there is no quantifiable measure to define the amount of influence the

public can have on the approval of a landfill. Georgia, South Carolina, and Texas attempt to address this issue, but there still exists some level of ambiguity with respect to how public opinion is considered in the decision-making process. The most important things to note in Table 4 are the checks to decisions made at the local level. When there are two or more entities responsible for decision review, each entity has the opportunity to check the others and overturn an approval if they deem necessary. In most situations, approval is needed from all reviewing entities to continue the permitting process. Arkansas is unique in the sense that disapproval at the regional level can be overturned by the state agency if the agency determines that this disapproval is unsubstantiated.

Table 5 describes how needs assessments are done within each permitting program. This table is self-explanatory and some level of insight has already been given in the discussion of Tables 3-4. In most cases, “need” is defined in a local or regional SWMP and may be brought up as an item of discussion in a public meeting or in review by local, regional and/or state authorities. For South Carolina, the fixed criterion for “need” is that a disposal facility may not be located within 75 miles of two other disposal facilities. The fixed need criterion noted in the Arkansas permitting program is that a region may not have disposal capacity in excess of 30 years, unless the excess capacity is approved by the host community. In Texas, the issue of “need” may be addressed if it is considered an issue by the local review committee, but is not required.

Table 6 explains how the environment and public health are addressed in the permitting process of each state. For all states, siting criteria exist that must be met to protect the environment and other natural resources of each state. These criteria could have a wide range of requirements to meet but in no way may these requirements be less stringent than federal criteria

(40 CFR Part 258 (Subtitle D of RCRA)). Most states take further measures to ensure the facility is located at a site suitable for a landfill. Tennessee and Texas have two or more phases in their applications. The first phase in Tennessee and the first and second phase in Texas are checks to ensure the facility is located at a suitable site and all administrative information is present. In this way, the applicant does not have to provide full facility designs until all administrative details are approved. Similar to the needs assessment, the local review committee in Texas may include environmental issues in their review. For Georgia, South Carolina and Arkansas, a hydrogeological analysis is done to determine the suitability of the site with respect to potential groundwater contaminant issues. Arkansas allows for a more thorough site investigation than either Georgia or South Carolina because, as mentioned earlier, they invite other authorities to be involved in the site suitability study. In Vermont, the applicant must conduct a study to determine the groundwater conditions of the site and submit the results in a report with their application. If results are deemed satisfactory, the state agency will further investigate the site to ensure it is optimally located. Of the 8 states reviewed, Alabama and Tennessee are the only states that do not require some form of public input on the siting or environmental impact during the HGA review process and prior to an application continuing to the technical review stage.

4. Discussion of Shortcomings and Presentation of Potential Enhancements

With consideration to the permitting processes noted for the comparison states (Tables 3-6), there are several aspects of Alabama's current landfill permitting process that are advantageous. Alabama's current landfill permitting process is very streamlined. The non-ADEM portion of the process (HGA and RPC responsibilities) moves in a linear step-by-step fashion; pauses, stops, and reverses in this linear process do not exist by design. Of the comparison states, Tennessee's process most closely resembles Alabama's. The principal advantages of Alabama's current process are speed and predictability. These characteristics are especially important to applicants, since they allow costs associated with the permitting process to be predicted and controlled. Another advantage of Alabama's current landfill permitting process is the separation of authorities and responsibilities between the HGA and RPC, and the state's environmental regulator ADEM. This is referred to as a "firewall" in this report (see Figure 3). This firewall separates issues and decisions predominantly in the political domain from issues and decisions related to the technical design and operation of the proposed landfill. Again, Tennessee's landfill permitting process most closely resembles Alabama's in this regard. The principal advantage of this firewall design is that it protects ADEM's regulatory oversight and enforcement role from the possibility of conflicts of interest, while relegating authority and responsibility for decisions related principally to community planning to elected HGA representatives.

4.1. Summary of Perceived Shortcomings

Based on public perceptions and concerns voiced during the public meetings conducted as part of this study, it is apparent that the advantages in Alabama's current landfill permitting process noted above are interpreted by a number of those citizens who participated in the public meetings during this study as disadvantages. The main negative perceptions and concerns were presented earlier in this report and are given again here:

- The assessment of landfill need is perceived by the public as inadequate
 - Local host government assessment of need (represented by the evaluation of six factors defined in Ala. Code Section 22-27-48) is questionable
 - RPC process does not provide meaningful benefit to the process
 - Social justice concerns are not accommodated in the process
 - Consideration of potential environmental issues is not required by the local host government
- Public/local engagement and information transfer is perceived to be inadequate
 - Public notice process is thought to be inadequate
 - Public access to site suitability and needs assessment information is considered lacking
- Host government decision-making process is perceived as not transparent
- 90 day default “yes” rule is almost universally unpopular

When comparison state's processes (Tables 3-6) are considered together with Alabama's public's concerns and perceptions noted above, it is reasonable to conclude that the processes followed by the comparison states are to some degree designed to address public concerns and perceptions similar to those in Alabama. For example, in a number of comparison states, state

environmental regulatory agencies are involved to varying degrees in the functions relegated to the HGA and RPC in Alabama (Table 4). It is difficult to determine how this heightened level of involvement by state environmental regulatory agencies positively or negatively affects the landfill permitting process in these states; however, it is likely that these processes add time and expense in the eventual acquisition of a permit. Moreover, for landfills being developed as commercial enterprises, this heightened involvement increases the potential for real or perceived conflicts of interest between the state and these private entities. Regardless, it is important to note that for most of the comparison states, the involvement of state regulatory agencies in the processes relegated to the HGA and RPC in Alabama are for the most part limited to approving changes to, and determining consistency with SWMP's, and determining site suitability with respect primarily to potential environmental suitability.

The factors underlying the negative perceptions and concerns voiced by the public during this study can be summarized as:

1. The belief that the HGA process can be influenced by various interests to arrive at a preconceived outcome
2. A misunderstanding of the RPC function, which the public perceives as a check on the HGA process but in fact is a non-binding assessment of the consistency (or inconsistency) of the proposed facility in the context of the regional SWMP
3. The belief that the RPC function is incapable (by virtue of a lack of knowledge/information, training, and resources) of judging the consistency or inconsistency of a proposal
4. The belief that the RPC process can be influenced by various interests (primarily HGA representatives) to arrive at a preconceived outcome

5. The belief that the mechanisms for informing the public on intent, providing the public with fact-based information supporting the proposal, and engaging the public in the decision-making process through notices and meetings, during the HGA/RPC phase of the permitting process is inadequate
6. The belief that HGA responsibilities can be avoided by virtue of the 90-day default acceptance clause
7. The belief that some entity is needed to oversee the HGA/RPC process to ensure that the process remains impartial

The most prevalent perception noted during the public meetings is contained in the last factor above; that is, that some neutral entity is needed to ensure impartiality during the HGA/RPC process. The other factors noted above can be thought of as what the public perceives as the reasons this impartial oversight is needed. For most public meeting participants, the default entity most often recommended was ADEM, and the reason for this that was most cited is the fact that ADEM is the state environmental regulatory agency and that this is “their job.” This perception also reveals a misunderstanding on the part of the public regarding ADEM’s oversight, compliance, and enforcement role for environmental concerns in the state. As the comparison of the roles of other state environmental agencies in the landfill permitting process demonstrates, most state agencies are not involved in decisions primarily related to the community planning aspects of a landfill permit. For state agencies that do have some involvement in some aspects of a permit application which in Alabama are relegated to the HGA and RPC, this involvement is limited to approving changes to and determining consistency with local or regional SWMP’s, and assessing site suitability in a limited and defined way. Overall, trust in governmental entities is a significant factor in the public perception of dangers imposed

by landfills and seems to be the general public's primary source of dissatisfaction with Alabama's current permitting process. (Johnson and Scicchitano, 2012) suggest several factors that affect public perception of landfills including the suggestion that public processes that develop trust between governments and citizens may be an effective way to reduce public resistance to a particular landfill locational decision. Regardless of the roles of state agencies, it is important that the public is engaged in the decision making process at the local level and that any legislative or regulatory changes made concerning the current permitting process support the involvement of the public.

In summarization of the information presented above, each issue identified about the process can be grouped into one of four categories: environmental concerns; need evaluation; procedural fairness; and compensation. In general, all the concerns noted during the meetings were focused on the local and regional portions of the application review process. The state review portion of the process appears to be mostly satisfactory despite the opinions of a few public meeting attendees who expressed opposing ideas about the role of the state. Here, the perceived shortcomings of the process are discussed in detail to provide a better understanding of public perception and to identify possible solutions.

4.1.1. Environmental Concerns. Discussions with public meeting attendees identified the need for some type of environmental assessment to be conducted prior to the host governmental authority's vote on a proposed landfill. Figures 6 and 8 reinforce this perception as survey respondents listed the proximity to water and the impact on water quality as their largest concerns when considering new and existing landfills, respectively. Furthermore, the Conecuh County case study identified environmental concerns that, if left unaddressed, could potentially alter the initial intent of a proposal as originally presented to the local host government. For

example, if the original design of a proposed facility violates the exclusive siting criteria but is locally approved (e.g. the proposed Conecuh Woods Landfill), the initial proposal may be greatly altered at the state review stage thus changing the proposed capacity and expected life of the landfill.

The required post-closure care period (the period, after facility closure, which landfill owners must retain responsibility for these facilities) is 30 years (RCRA Subtitle D). Although the required liner, leachate collection, and monitoring well systems can be very effective at delaying groundwater contamination for several decades, natural deterioration and weakening of these systems may ultimately cause them to fail thus potentially allowing contaminants into the environment (US EPA, 1988). In fact, many researchers have found some liner systems to have very limited durations of only 10-30 years (Pivato, 2011).

The public meeting discussions suggest that environmental concerns should be duly addressed at the local level. In the Conecuh County case an assessment of Alabama's exclusionary guidelines (listed in Ala. Admin. Code r. 335-13-4) was identified as an environmental assessment measure that the county was required to do as directed by their approved SWMP. However, the exclusionary guidelines simply follow the guidelines mandated by the federal government and do not provide minimum standards to address other issues Alabama citizens may deem important. Additionally, Alabama state law does not require local governments to do an environmental assessment of a proposed disposal site. An environmental assessment in the local approval stage could be very beneficial by ensuring a proposed landfill can effectively avoid environmental hazards and meet the original facility design and operation expectations as initially presented to the local host government.

4.1.2. Need Evaluation. As noted earlier by Figure 7, “need” for a landfill was the primary answer in the “other” category listed in survey question number one and was perceived by many public meeting attendees to be largely inadequate. This seems to be an issue with the local approval process as well as with the regional assessment. As explained earlier, the host government assessment of need is one of six comparative criteria that are listed in Code of Alabama Section 22-27-48. The criterion states that the host government should consider “the consistency of the proposal with the jurisdiction’s solid waste management need as identified in its plan.” This allows the host government to create a rather arbitrary definition of need that may be interpreted in several different ways. Moreover, Alabama state law does not provide a definition of need nor does it require local governments to define need in their SWMPs. This provides an opportunity for landfills of any size to be located in any county no matter the population of its service area (although there are some indirect constraints in that an owner must ensure enough revenue from the waste to cover overhead and produce a successful business).

Also as discussed earlier, the regional statement of consistency is perceived as a check on the local government but is actually a non-binding assessment. A determination of inconsistency by the regional commission does not require disapproval by the host government or ADEM. Moreover, the RPCs are currently attempting to fulfill their required duties under an unfunded mandate which greatly hinders their attempts at producing sufficient assessments of need and conversely, meaningful statements of consistency for a proposed facility. The inability for the RPCs to satisfactorily complete the functions they were intended by law to do undermines their inclusion in the permitting process and reinforces the perception that the RPCs do not provide a meaningful benefit to the process.

4.1.3. Procedural Fairness. Fairness in the permitting process was an important factor in the Conecuh County ruling and was also a central topic of discussion in the public meetings. The potential for bias in the decision-making process can become to be too great and effectively deprive the public of their constitutional right to an impartial decision. In addition, the availability of information and full disclosure to the public are considered by many to be inadequate and may not allow the public the opportunity to consider important aspects of a proposal. The results of survey question 4 (Figure 10) show great support for an equal consideration of public opinion with technical/scientific recommendations when considering a proposed landfill. This calls for a need for further guidelines to be put in place to ensure the public is engaged in the decision making process and appropriately represented. Specifically, public notice, access to information, public engagement and the “90-day” default clause were all identified as potential areas of improvement.

As explained earlier, a local host government is required to hold a minimum of one public hearing in order to inform the public of a proposed facility and gather public input. To advertise this hearing only one public notice is required to be published in one newspaper in the local area. This notice must be given between 30 and 45 days prior to the meeting and may only run for one day. Advances in media technology since Alabama’s solid waste management laws were written has greatly expanded the number of methods by which people may gather information and thus has greatly diminished the number of people who read newspapers. In order to compensate for this change, different methods of public notice may need to be utilized. Also, the timing and quantity of these notices may need to be adjusted to ensure sufficient public awareness of the proposed actions.

Parallel to the need for improvements in public notice is the need for access to information regarding a proposed facility. Currently, the requirement for making information accessible to the public is that “all pertinent documents shall be available for inspection during normal business hours at a location readily accessible to the public” (Ala. Code Section 22-27-48). This is an undefined requirement that allows the host government to determine what to deem “readily accessible” and allows for the potential for insufficient access to pertinent documents. The public’s right to view the proposal in the context of the local SWMP and regional needs assessment for analysis and comparison should be protected.

Providing the public with open avenues of communication with the HGA and applicant are vital to the engagement of the public. This is exhibited by several other states (Tables 3-6) by use of negotiations or public inclusion in assessments of the site and landfill need. This allows an open exchange of information and helps to establish some level of trust between all parties involved. The current process allows for some level of indirect contact with the applicant to gather more information about a proposed facility but it does not facilitate a response to concerns. For example, if the HGA approves a facility it must explain its reasoning for the approval but it is not required to respond to specific comments and questions about the proposal. For such a facility with the great potential for negative externalities the local community should be engaged to a higher degree than is currently required.

4.1.4. Compensation. The issues discussed surrounding the topic of compensation were largely covered in the presentation of the Conecuh County case and are expanded on here. In some cases, as in the Conecuh County case, local host governments require a host fee from a landfill owner in order to compensate for the use of local host government services and infrastructure (i.e. fire protection, roads, etc.). This can be very advantageous to a host

government as it can produce a great deal of revenue for the host community. However, it can also lead to bias in the HGA decision-making process as noted in the Conecuh County case ruling. Development fees and property taxes among other sources of revenue are appealing to HGA officials who allocate these funds to community services and programs; but, without adequately engaging the public, this method of landfill approval deprives citizens of their right to a fair, unbiased decision. Of the comparison states, Georgia and South Carolina are the only states that display a direct effort to engage the public in negotiations with an applicant. In these states, negotiations are limited to defined “affected parties” and allows for the opportunity for no host agreement to be reached. If host fee agreements are to be permissible, it may be advantageous to allow local residents and landowners the opportunity to negotiate compensation for potential negative externalities. Such compensation programs have been used elsewhere for large-scale waste disposal sites to compensate local residents (Hong, Jung and Kim, 2012) and can effectively avoid the conflict of interest introduced by a host fee agreement. However, if this type of program were utilized special attention should be given to its administration in order to avoid dissention among residents who fall outside the compensation requirement.

4.2. Suggested Alternatives to Alabama’s Solid Waste Landfill Permitting Process

The advantages in Alabama’s landfill permitting process (speed, predictability, linearity, and separation of community planning decisions and regulatory decisions) and the perceived disadvantages voiced during the public meetings (assessment of landfill need, public and local engagement and information transfer, host government decision-making process transparency, 90-day default approval) can potentially be reconciled by making the relatively straightforward changes to the current permitting process noted below and shown in Figure 13.

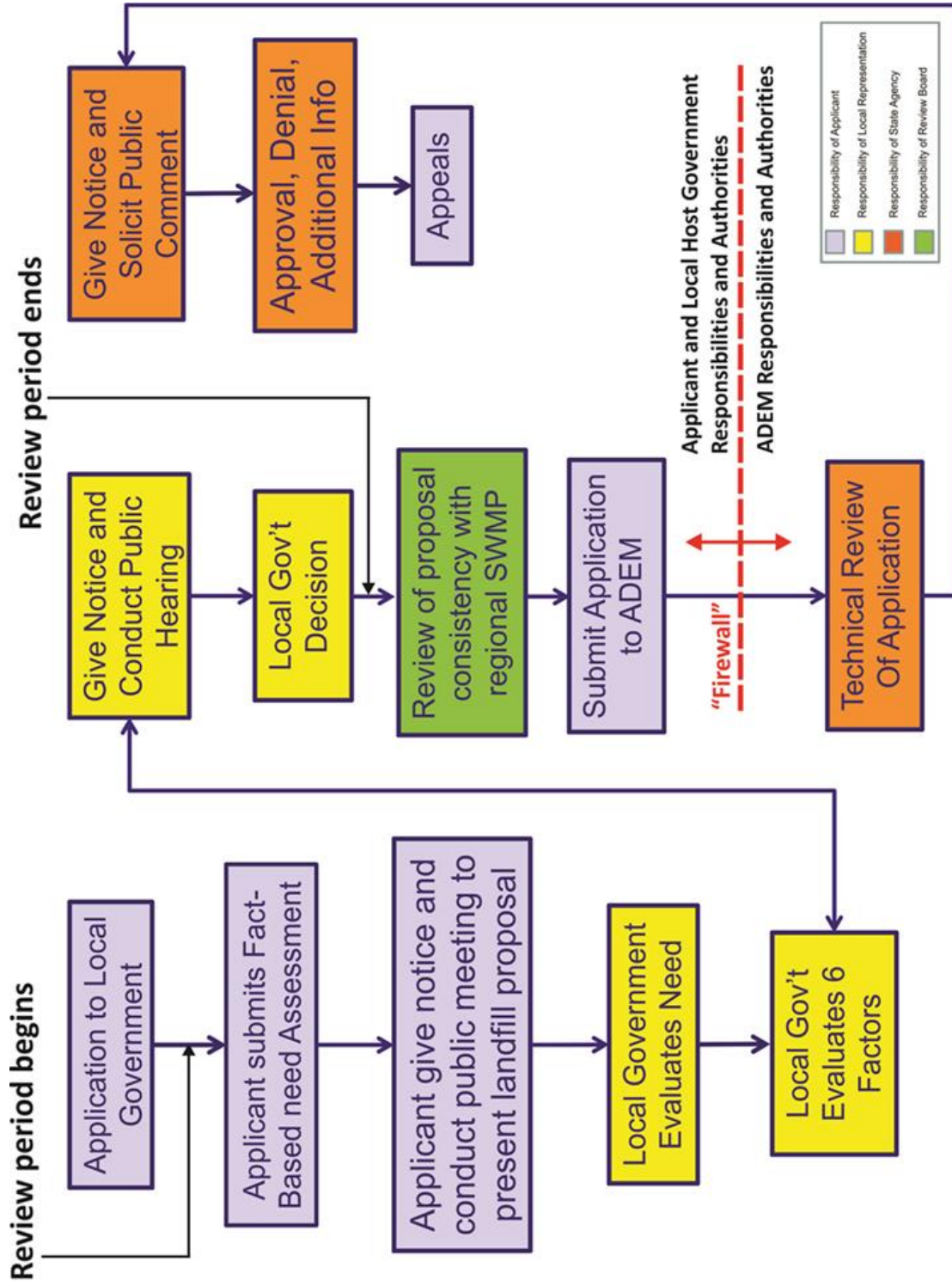


Figure 13. Flowchart representation of proposed Alabama solid waste landfill permitting process.

4.2.1. Change 90-day default approval. Changing the 90-day default approval option is perhaps the least controversial potential enhancement to Alabama's landfill permitting process. Implementing a change to this step in the permitting process was almost universally supported by the public during public meetings held as part of this study (Figures 11-12). Most public meeting attendees believed that the 90-day default approval should be changed to a 90-day default denial, and that the local HGA should be required to vote (rather than have the option of a default condition).

The mechanism of default approval following a defined time limit is employed in other areas of municipal governance in Alabama below the state level. For the most part, this mechanism is employed in situations where uncertainty with respect to the amount of time allowed prior to a decision will place an unreasonable financial burden on an applicant. Although none of the comparison states have default approval for landfill permits, a number of these states have a defined time limit on application process, and several have no defined time limit (Tables 3-6). As noted earlier, an advantage of a defined time limit is speed and predictability; thus, a defined time limit for HGA approval or denial, followed by a vote by the HGA on approval or denial, should address concerns voiced by the general public.

4.2.2. Evaluate the RPC as the entity assessing consistency of proposal with regional SWMP. The role currently served by the RPC in Alabama's landfill permitting process (determining consistency of proposed landfill with regional SWMP) is a necessary function. All comparison states have mechanisms in place to address this requirement (Table 3). Further, in Alabama this step in the current landfill permitting process can act indirectly as a means of delaying or stopping a proposed landfill, since ADEM requires a statement of consistency or inconsistency with regard to the regional SWMP prior to initiating their technical review. Thus,

if an RPC does not submit a statement of consistency or inconsistency to ADEM, the proposal cannot move forward, independent of approval by the HGA. However, information provided by the public and by members of various RPC's support the conclusion that in general, Alabama's RPC's are not well suited to making a determination of consistency or inconsistency. As previously mentioned, the primary reasons for this are a lack of resources (both personnel and funding), and a lack of training to properly perform an assessment. Landfill permit proposals are relatively infrequent events; thus, RPC's are infrequently required to assess a landfill permit for consistency with their regional SWMP. However, conducting an assessment is not a trivial matter, without considering other pressures which may accompany an assessment. For example, RPC's are funded in part through contributions from member local governments; thus, the potential exists for conflicts of interest between the HGA functions and RPC functions in the landfill permitting process. Given the proper resources and training, it is possible that RPC's could properly perform an assessment of consistency or inconsistency without the potential for conflicts of interest; however, considering the infrequent nature of landfill permit proposals, a more appropriate approach is to replace the RPC with some other construct specifically designed to address the technical and non-technical aspects of an assessment of consistency, and vested with the responsibility to perform this role. This is represented in Figure 13 as the responsibility of a review board. One possible construct for this review board is that it is comprised of a mix of public and private members who have the necessary qualifications to perform a comprehensive assessment of the consistency of a proposed landfill with respect to a particular regional SWMP. The board could have members appointed by the legislature, and also at-large members appointed to represent the interests of the general public, non-governmental organizations, regional and local host governments, industry, and academia. Although defining the form and

structure of this review board is outside the scope of this report, the central point is that the necessary function of reviewing a landfill proposal for consistency with the regional SWMP should be conducted by an entity that is (1) qualified to perform the assessment, (2) does not have the potential for conflicts of interest, and (3) can assemble and perform their duties on an infrequent basis is a reasonable alternative to the current process while maintaining the advantages of the current landfill permitting process.

4.2.3. Require the applicant to provide fact-based information supporting their proposal to the public and to the HGA prior to HGA decision. Although in practice most landfill permit applicants perform a certain amount of due-diligence prior to submitting an application to the HGA, this is not required by Alabama law (Code of Alabama Section 22-27-48). As noted earlier and supported by public comments and survey responses, the public perceives the ability of the HGA to evaluate the need and appropriateness of a landfill proposal to be limited. This perception has some legitimacy, since such proposals are infrequent, and HGA representatives are for the most part not well-versed in the varied types and sources of technical, social and economic data necessary to perform such an evaluation. Some comparison states acknowledge this issue by requiring applicants to provide various types of information to the HGA and/or state agencies prior to the HGA making a decision to approve or deny a proposal (Tables 3-6). In some comparison states, agencies have the responsibility to review and approve or disapprove this information prior to a decision to a proposal moving forward in their process. Maintaining the separation between the HGA and RPC (or other construct) and ADEM is advantageous to Alabama's landfill permitting process for a number of reasons previously noted. Thus, a reasonable alternative is to require the applicant to provide fact-based information sufficient to allow the public to understand the basis of need and rationale for the proposed landfill, and the

predicted positive and negative consequences to the environment and community resulting from the proposed landfill. Including requirements for the applicant to provide a fact-based assessment of need, and then to present their proposal in an open public forum, would address many of the concerns noted during the public meetings held as part of this study, and would also provide the local HGA with the information necessary to make an informed decision on the proposal (Figure 13). There are many different types of analyses described in literature (Sumathi, Natesan and Sakar, 2008) (Ekmekcioglu, Kaya and Kahraman, 2010) (Korucu and Erdagi, 2012) that could be used to determine the best possible location for a landfill compared to the surrounding environmental condition and social impact. However, regardless of the type of analysis used, at a minimum this information should specifically address the six factors a local host government must consider in determining whether to approve a permit application (Code of Alabama Section 22-27-48), the environmental suitability of the proposed site for the proposed landfill, and should provide realistic, fact-based estimates of the economic benefits and drawbacks of the proposed landfill. A potential role for ADEM in this process could be defining what this fact-based needs assessment should include (in partnership with other appropriate state agencies, e.g., Alabama Department of Public Health, and Alabama Department of Transportation) and the identification and certification of qualified contractors within the state with the necessary expertise to perform this function.

The requirement for the applicant to provide notice and present results of the fact-based needs assessment in a public meeting is similar to the process followed under federal law for hazardous waste landfills. As envisioned for Alabama's landfill permitting process, a public meeting prior to the HGA assessment of need, public hearing, and decision provides an opportunity for the public to become informed of the applicants intent, and be presented with the

information used by the applicant to support their proposal earlier in the permitting process. This public notice and public meeting requirement would not replace the public hearing function presently in Alabama's landfill permitting process; rather, it would require the applicant to present fact-based information supporting their proposal to the public and to the HGA early enough in the permitting process to contribute in a meaningful way to the decision-making process.

5. Auburn, AL Grove Hill Subdivision Curbside Recycling Program Analysis

5.1. Introduction

Although much progress has been made in the development of solid waste reduction and reuse technology, solid waste disposal in landfills remains the most economic form of disposal in the vast majority of cases; thus, landfilling continues to be the primary means of disposal (El-Fadel, Findikakis and Leckie, 1995). This leads to the unavoidable and increasingly difficult task of locating a site to store this waste as discussed in great length above. The US EPA's Reduce, Reuse, Recycle (RRR) campaign has made good progress toward the overall minimization of solid waste. Like many other states, some parts of Alabama have utilized different types of recycling systems even before the RRR program was initiated. In 1987 Auburn became the first city in Alabama to establish a curbside recycling system. Twelve years later Auburn expanded its recycling services by establishing an open drop-off center for residents to bring their recyclables at any time they deemed convenient. Despite the 26-year history of Auburn's recycling efforts no data has been gathered to evaluate the effectiveness of the program or to identify possible improvements that could be made to its system. This study serves to establish a baseline analysis of the curbside recycling program for the Grove Hill subdivision within the city of Auburn and to provide a model that may be used to evaluate other subdivisions encompassed in Auburn's recycling program. By conducting a focused study, one can better identify localized issues that may not be evident on a regional scale.

5.2. Methodology

This study was modeled after a study done by (De Young, 1990) to evaluate the effectiveness of selected recycling education programs in Michigan. In De Young's study a survey was used to evaluate initial self-reported recycling behavior of several different groups that had been exposed to recycling education programs. One of the groups in De Young's study was surveyed before and after the recycling education program in order to determine the program's effectiveness. By dividing Auburn into subdivisions De Young's methodology can likewise be used to evaluate the city of Auburn.

5.3. The Sample

As previously mentioned, this study is focused on the Grove Hill subdivision in which a survey was distributed to about 700 households via a link in the Grove Hill Homeowners Association monthly newsletter that is distributed by email to all the Grove Hill residents. A total of eighty-nine respondents participated in the survey although not all respondents answered every survey question. The survey utilized seven standardized questions described below. According to the Auburn Environmental Services department Grove Hill has been noted to have a greater rate of participation in the curbside recycling program than any other subdivision in Auburn. Therefore, the results from this study are expected to be inflated and not accurately represent the rate of recycling for the rest of the City of Auburn. However, these results may accurately represent the potential rate of recycling if the availability of recycling services were improved and if the public were further informed about how to effectively participate. Nonetheless, this survey serves to establish a baseline by which to measure the extent that Auburn's recycling services are used within the Grove Hill subdivision.

5.4. The Survey Questions

The survey (see Appendix C) includes seven questions designed to analyze recycling behavior and public perception on recycling. The six questions from De Young's study were used here to evaluate self-reported behavior, perceived barriers to recycling, motivation for recycling and future behavioral intentions although some of De Young's questions and available responses were slightly altered to specifically evaluate Auburn's recycling system. The other question was specifically designed to get public perception on recycling and gauge the willingness of the public to recycle. The questions and available responses are described below.

The first question was used to assess the public's general attitude toward recycling. The specific question read, "Please indicate how important you feel recycling is as a component of solid waste management?" The respondents were asked to rate their answers on a 5-point Likert response scale from "Not Important" to "Very Important" with an additional "Don't Know" option available.

The second question was used to evaluate public perception on recycling and gauge the willingness of the public to recycle. The question asked, "What statement most accurately depicts your feelings about recycling?" The available responses were listed as follows: (1) Recycling is a vital key to protecting the environment, (2) Recycling is helpful and will eventually pay off as long as participation continues to increase, (3) Curbside pick-up makes it easy so why not recycle?, (4) Recycling would be great if it were cost-effective, (5) Recycling will never make a difference on the environment and is a total waste of time and money. The results of this question are expected to provide a clear indication of what is perceived to be the overall sentiment of the residents concerning Auburn's recycling program.

The third question was used to evaluate the self-reported behavior of each household. This question simply read, “Does your household recycle?” and the respondents were only presented with a yes/no answer choice. This question allows each respondent to be classified as either a recycler or non-recycler; however, it is not unusual for respondents to report their behavior intent rather than their actual behavior (De Young, 1990). For this reason, the respondents were asked a follow-up question to report what materials they recycled.

Currently, Auburn’s curbside recycling program is limited to the following items: aluminum cans; flattened cardboard (4X2 max.); glass (brown and clear); newspaper; plastics (#1 & #2 code); and steel/tin cans. Compost items such as tree limbs and grass/hedge clippings are also available for curbside pickup. The Auburn recycling drop-off center accepts a much wider range of recyclables (i.e. batteries, electronics, mixed paper, scrap metal, etc.) including all items collected in the curbside program. The answer choices for this question listed each commodity available for curbside collection and allowed an “other” option for respondents to describe any additional items that are personally recycled at the drop-off center or any other recycling or reuse facility.

Next, to understand the perceived constraints on the intended recycling behavior, question five asked respondents, “What are some reasons you don’t recycle more?” The response to this question can be very useful in identifying the root cause for lack of participation in this specific group of people and in determining what actions should be taken to mitigate these barriers. Respondents were allowed to select as many choices as they deemed appropriate of the following answer choices:

- “Recycling is too much of a hassle”
- “There is not enough room to store the items”

- “There is not enough time to sort or bundle all the items”
- ”I simply forget to recycle”
- ”I don’t know just what to do”
- “Recycling costs me too much money”
- “The messiness recycling causes around the house”

An “other” option was also provided for this question to allow respondents to describe potential barriers that may specifically be perceived in the Grove Hill subdivision.

Question six was used to assess the potential motives behind recycling and reuse. The question was stated, “Below are several reasons why people might recycle materials. Please indicate on a five-point scale the degree to which they apply to you.” The reasons listed were as follows: (1) I recycle to help conserve natural resources, (2) I recycle to help support charity, (3) I recycle to earn money, and (4) I recycle because it seems like the right thing to do. Each reason was given a five-point Likert scale to evaluate the degree to which each of these reasons applies to them. The responses ranged from “Not At All” to “Very Great Deal” with an additional “Don’t Know” option.

The final question asked respondents about their future recycling intentions. This question provides a projection of the intended direction of recycling participation and allows future studies to assess expected recycling rates within this subdivision. The specific question read, “In the future, do you plan to...” and the available options were:

- Increase your recycling efforts,
- Decrease your recycling efforts, or
- Maintain your current recycling efforts.

5.5. Grove Hill Survey Results and Discussion

The survey results are presented in Figures 14-21 and are analyzed and discussed question by question.

5.5.1. Recycling Attitude. Question 1 received 85 responses and Figure 14 represents a summary of these responses. As expected from information provided by the Auburn Environmental Services personnel, most respondents found recycling to be a very important part of solid waste management. The mean score for Question 1 was very high at 4.69 with none of the respondents selecting the “Not Important” or “Don’t Know” options. This level of importance is indicative of heightened awareness of recycling efforts and the perceived benefits of recycling. The fact that this level of importance has been obtained in one subdivision provides encouragement that other residential areas within the City of Auburn may have similar attitudes. Improvement in the pro-recycling attitude of residents in Grove Hill may be very limited; therefore, Auburn’s recycling program should focus on improving in other areas of the program rather than promoting a pro-recycling attitude.

Question two had 89 respondents and as can be seen in Figure 15, nearly half of the respondents feel that recycling is a vital key to protecting the environment. This selection was the most popular and represents the respondents are likely very active in their recycling efforts and will attempt to recycle regardless of the services available to them because this behavior serves a cause they are passionate about. The selections two and three were almost equally popular with 19 and 23 selections, respectively. The respondents that chose selection two also represent those who may be quite active in their recycling behavior but also understand some of the caveats of recycling. This group is likely more in tune with the importance of recycling education and understands the need of participation. The respondents that chose selection three

likely understand the many benefits to recycling but are not passionate enough to go out of their way to utilize other resources like the drop-off center. This group generally only recycles when it is convenient. Only eight respondents chose selection four. These respondents also likely only recycle when it is convenient but they also perceive other negativities concerning recycling programs (i.e. cost of recycling vs. cost of disposal). No respondents selected the last option which indicates that all respondents perceive some level of value in recycling behavior. Encouraging recycling behavior and finding ways to make this behavior easier to participate in would address the concerns of those who may not already actively recycle.

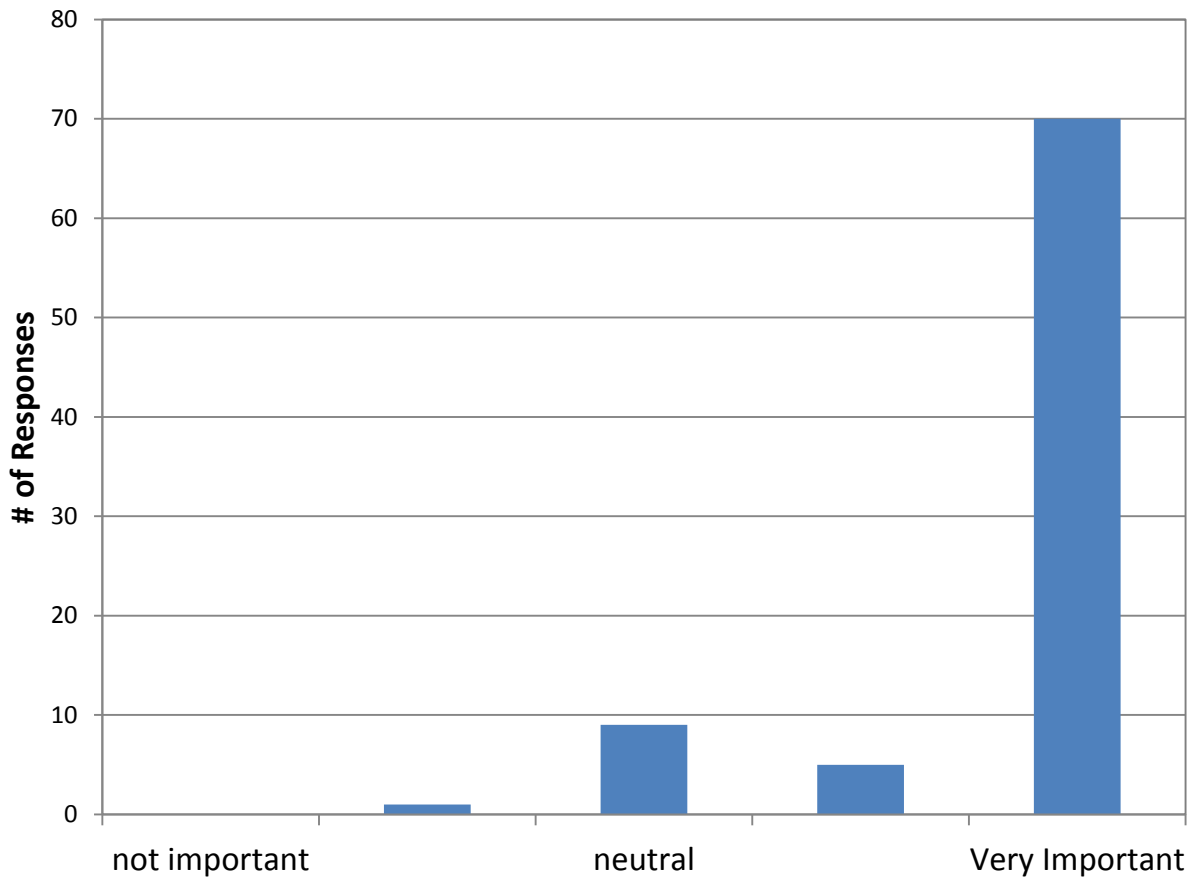


Figure 14: Please indicate how important you feel recycling is as a component of solid waste management?

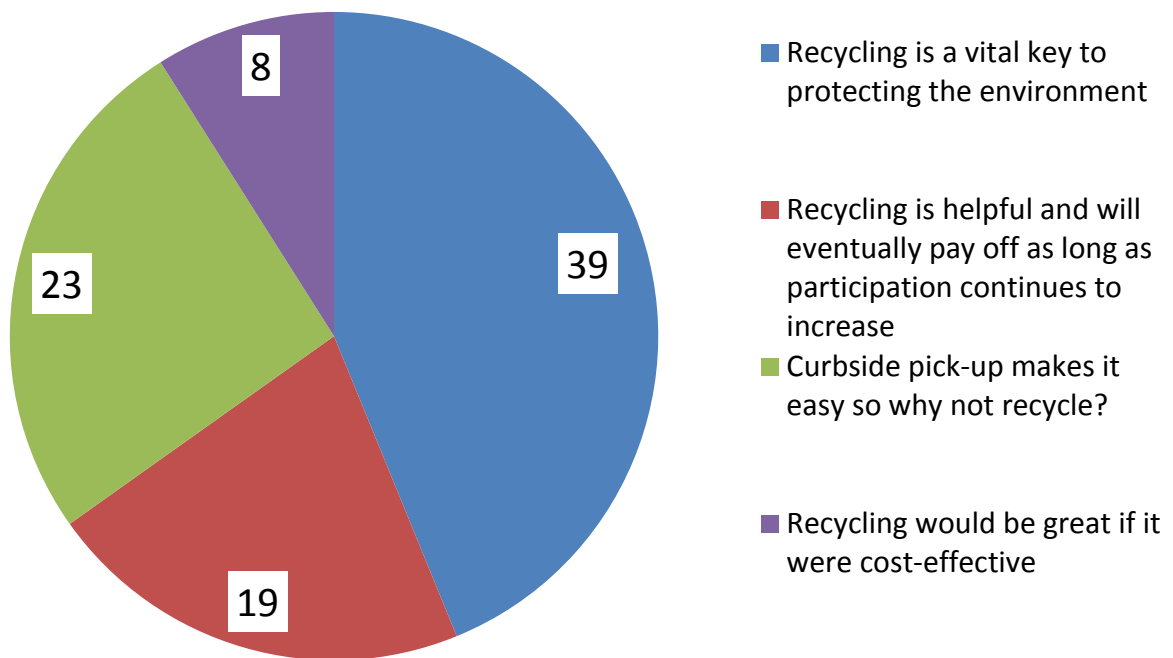


Figure 15: What statement most accurately depicts your feelings about recycling?

5.5.2. Recycling Behavior. As shown in Figure 16, 77 of the 89 respondents said that their household does recycle. Figure 16 represents a self-reported recycling rate of more than 85% which, if it were a true representation, would be much higher than the expected average recycling rate. Therefore, since recycling behavior is socially encouraged, it is acceptable to assume that these numbers are exaggerated due to the likelihood that respondents define “recycling” in such a way that involves their current behavior. Although these numbers may not accurately represent the actual behavior, they do indicate that the Grove Hill residents have come to accept recycling as an important and appropriate behavior.

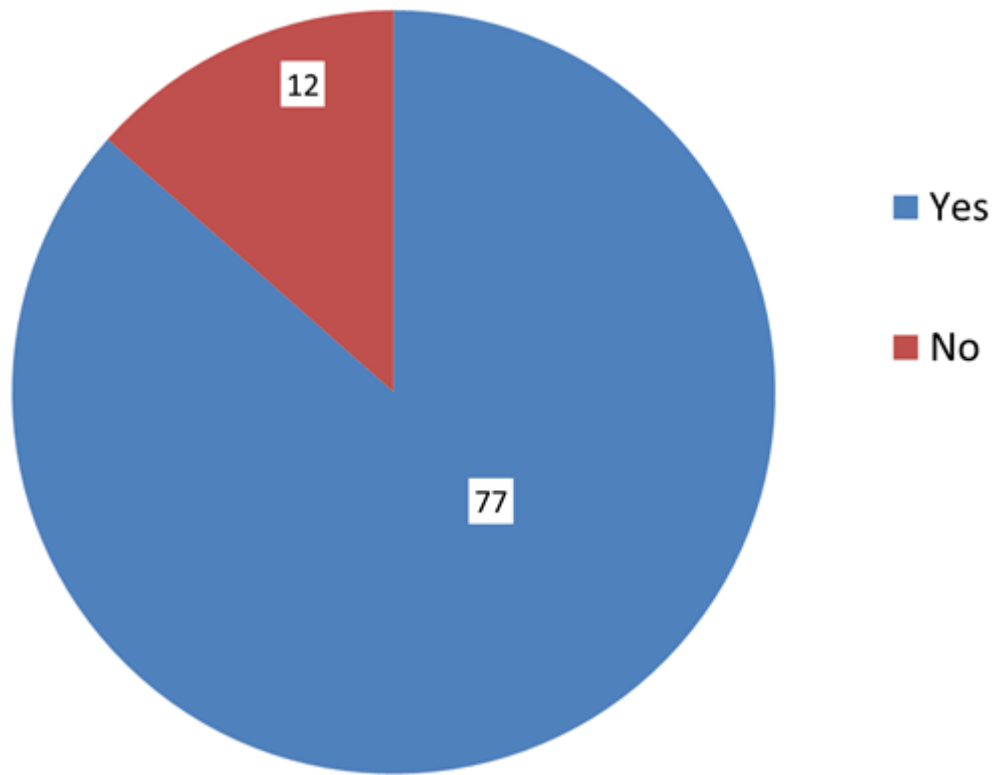


Figure 16: Does your household recycle?

5.5.3. Materials Recycled. Figure 4 helps to further understand what materials are recycled and get a more accurate representation of actual recycling behavior. The responses from question 4 indicate the most recycled items were plastic bottles and flattened cardboard. Aluminum cans and newspaper were also reported to be largely recycled while glass and steel cans are the items least recycled by those who use the curbside recycling service. Figure 17 represents the recycled items listed in the “other” category for question 4. Magazines and batteries were the items listed most often with mixed paper, green glass and yard waste also being listed multiple times. In fact, some of the respondents indicated that they would recycle magazines more if they were included with the curbside collection. The miscellaneous selection represents relatively uncommon items that were only listed once.

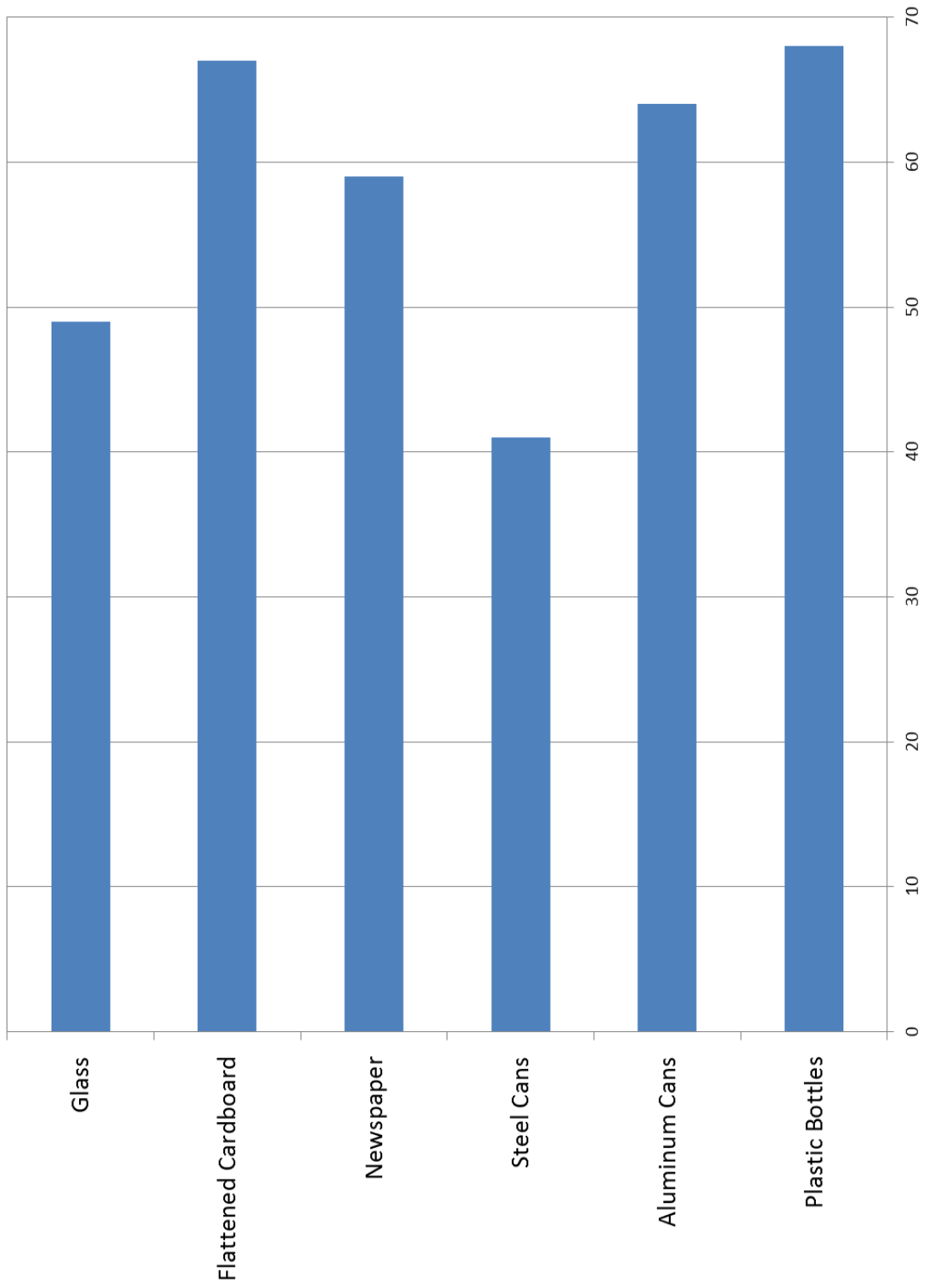


Figure 17: What materials does your household recycle?

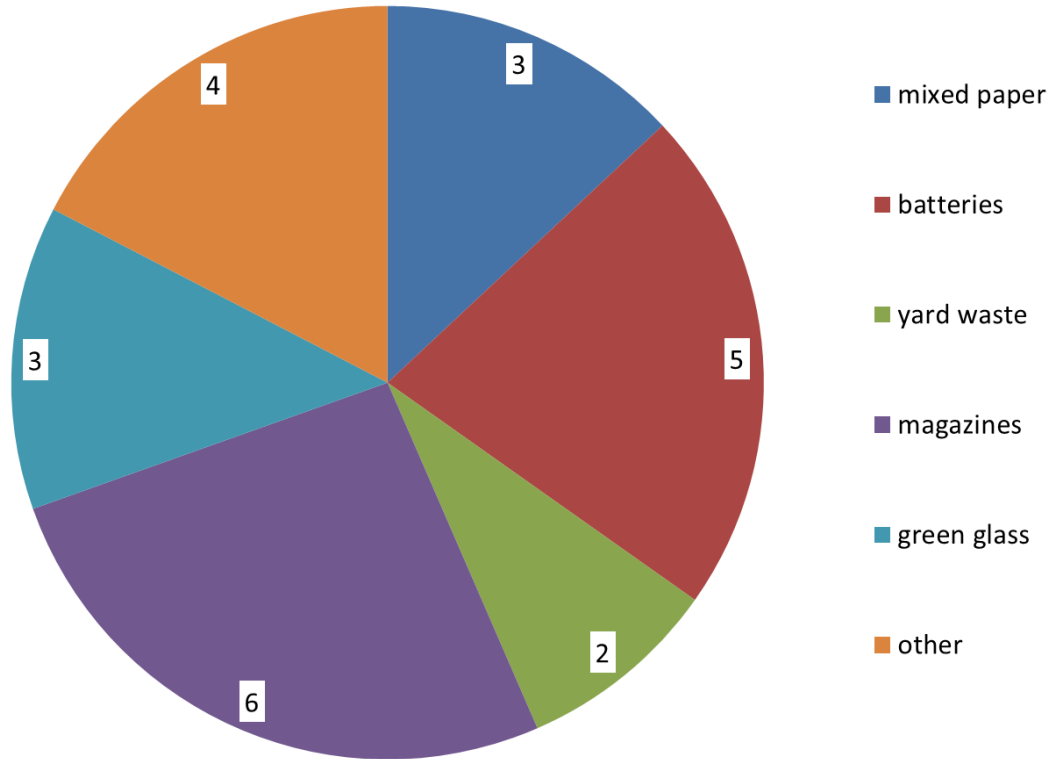


Figure 18: “Other” category for question 4

5.5.4. Barriers to Recycling. Figure 6 below represents the responses to question 5. Only 37 of the original 89 respondents answered this question and, as can be seen in Figure 19, room to store the items and time to sort the items are perceived to be the greatest barriers. These barriers could be overcome by either systematic changes within the household (i.e. designating a section of the house for placement of recycling bins, separating recyclables upon discarding, etc.) or by allowing residents to mix recyclables for later sorting at a sorting facility. Currently, Auburn’s curbside recycling program requires recyclables to be pre-sorted which requires residents to utilize at least one container per material they wish to recycle. Providing an education program to suggest possible changes a household could make to improve in this area

would likely minimize these problems. Nearly a third of those who responded to this question reported that they do not know just what to do. Residents who selected this answer likely are unaware of the requirements of Auburn’s curbside pick-up program. As is common amongst recycling programs, Auburn recycling has requirements that must be met in order for residents to have their recycled items collected (i.e. items must contained be in an open container, items cannot be in bags, etc.). None of the respondents felt that recycling costs them too much money which was expected because there is no charge for recycling in Auburn and residents may purchase inexpensive containers to store their recyclables for curbside pickup.

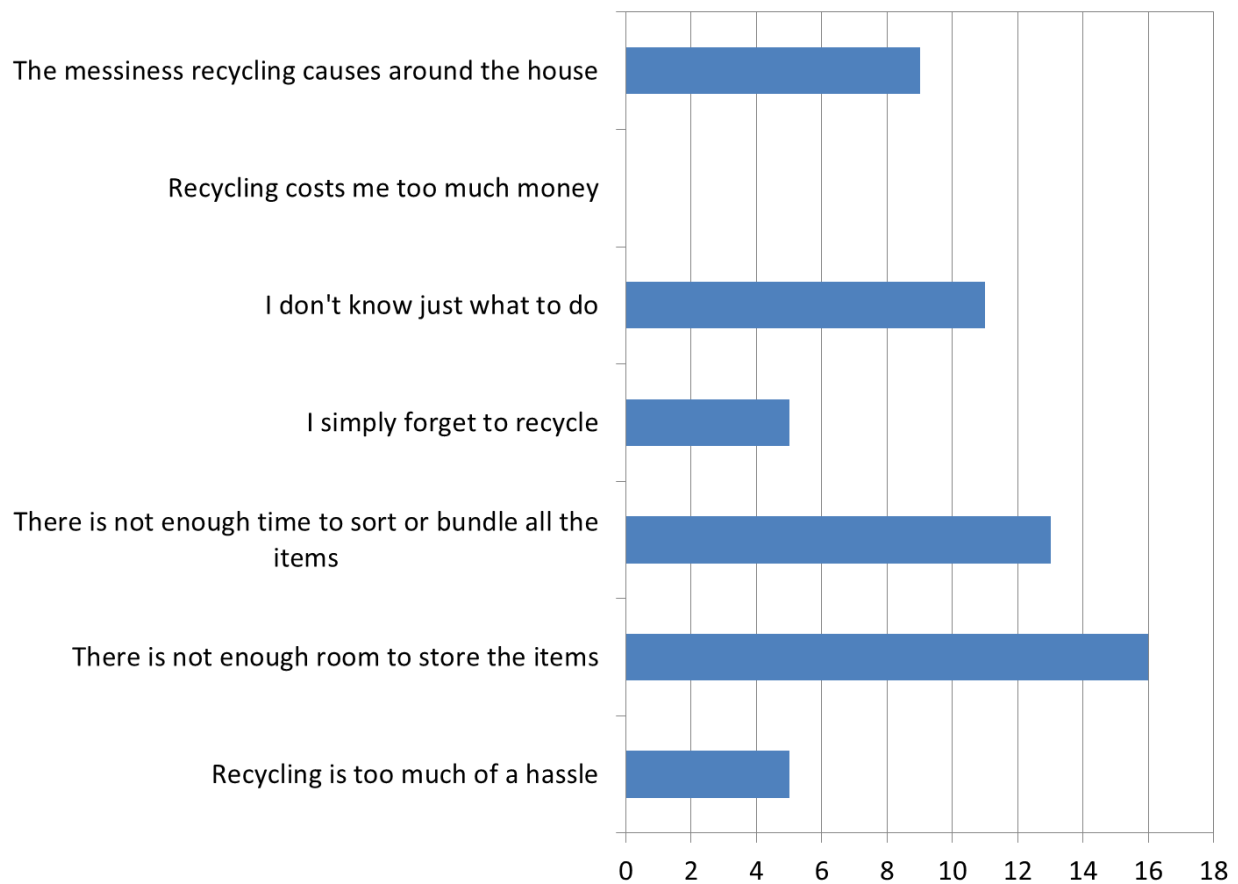


Figure 19: What are some reasons you don’t recycle more?

Several respondents provided a comment in the “other” category on this particular question to share additional barriers to recycling that were not listed in the provided selections. The greatest issue seems to be that there is great confusion with what items are accepted/refused, particularly concerning plastics. Other issues that were noted were that residents felt that the city should provide bins for recycling and accept a wider range of materials. Providing information that clearly explains what items are acceptable and how those items must be presented on the curbside would be very beneficial in alleviating much frustration and confusion felt by residents. It may be advantageous for Auburn Environmental Services to come up with a system to inform residents when they violate the program requirements and how to comply with these requirements in the future.

5.5.5. Recycling Motivation. According to Figure 20 the greatest motivation for respondents to recycle is the conservation of natural resources and because it seems like the right thing to do with ratings of 4.45 and 4.42, respectively. This strongly supports the idea that recycling is widely perceived as an acceptable and desired behavior although some may not act on this behavior. The motivation to recycle to support charity received a rating of 2.27 and the largest amount of “Don’t Know” responses with 6. This indicates that many respondents are unsure of how recycling works and ultimately where the materials go and how they are used. Those who do recycle to support charity may utilize programs like the Salvation Army or Goodwill thrift stores for unwanted clothing and furniture items that are still usable. Other than these types of donations there are no strong ties to charities for participation in recycling. The motivation to recycle to earn money had the lowest rating at 1.19. This was expected as residents do not receive any direct monetary reward for the materials they recycle.

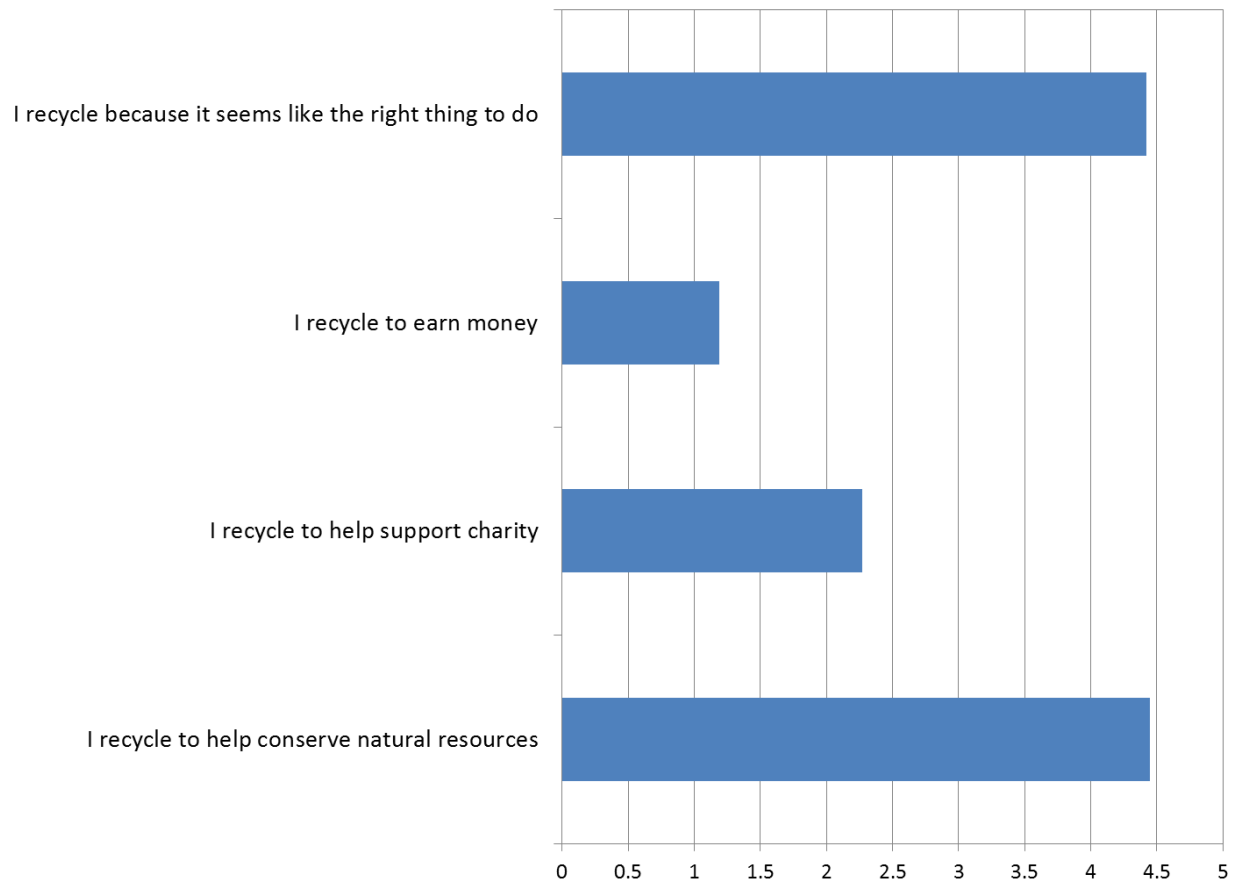


Figure 20: Below are several reasons why people might recycle materials. Please indicate on a five-point scale the degree to which they apply to you.

5.5.6. Behavioral Intent. As displayed in Figure 21, 66% of the respondents said that they planned to maintain their recycling efforts while the other third said they plan to increase their efforts to recycle. More importantly, none of the respondents said that they planned to decrease their recycling efforts. As the results to other questions within this survey suggest, this indicates that almost everyone is willing to participate in recycling behavior; although, there are some issues that could be addressed to improve actual recycling behavior.

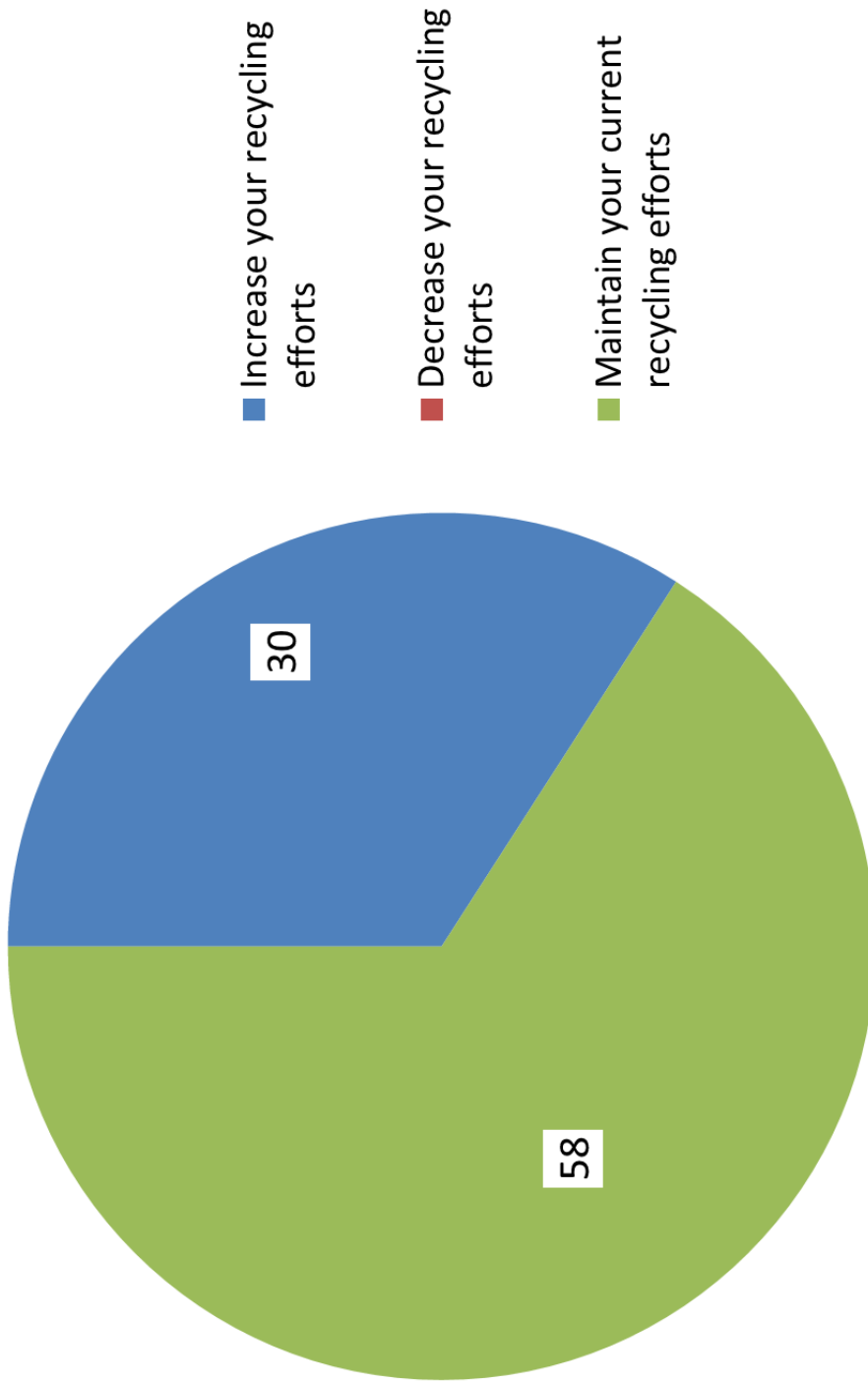


Figure 21: In the future, do you plan to...

6. Conclusions

Public awareness and increases in regulation of landfills have caused a great shift within the solid waste industry from several low-capacity landfills to much fewer large-capacity landfills. Due to this change and a breakdown in the permitting process the State of Alabama began experiencing an influx of so-called “mega-landfills” within its borders. This prompted a moratorium in Alabama on all MSW landfills that meet certain criteria in order to analyze the state solid waste program as a whole. The findings of this study include an analysis of Auburn’s recycling program as well as its permitting program, the results of which are presented here.

6.1. Alabama Permitting Process

Results of this study suggest the following potential enhancements to Alabama’s solid waste permitting process: (1) change the 90-day default approval; (2) evaluate the RPC as the entity assessing consistency of a proposal with the regional SWMP; and (3) require the applicant to provide fact-based information supporting their proposal to the public and to the HGA prior to a HGA decision. These potential enhancements to Alabama’s landfill permitting process in theory are straightforward, but from a practical perspective are likely to be challenging. One potential response to these proposed enhancements is to do nothing—this alternative would not leave the current process unmanageable, since in fact there are several advantages to the current process which make Alabama’s methodology more efficient than those of other states. However, results from the public meetings held during this study clearly support the proposed enhancements, as do other information presented in this report, including examples from other states. The approach used here is to first ensure that the advantages in the current process are not

lost. With this in mind, the details underlying the proposed enhancements are largely yet to be determined. Further, the proposed enhancements do not require changes to the authorities and responsibilities of the HGA or ADEM; rather, they place added responsibilities on the applicant to provide the appropriate information and notice to the public and HGA in a timely fashion and in a way that allows the HGA to benefit in their decision-making role. Perhaps the most significant proposed enhancement is the replacement of the RPC function with some other construct vested with the authority and responsibility to perform the current RPC function. The alternative to this is to leave the RPC function as it stands today; however, if this is done, then an investment in resources and training is necessary to ensure that the RPC's are capable of performing this role in a way that the public views is technically sound and without potential conflicts of interest.

6.2. Auburn Curbside Recycling Program

The results of this study also show that the residents of Grove Hill in Auburn, Alabama generally perceive recycling as an acceptable and desired behavior. In addition, most of these residents understand the benefits of recycling and find some value in participating in a recycling program. Although most respondents reported that they do recycle this behavior may not be a common or consistent behavior for most individuals. Sorting and storage of the recyclable items were reported to be the largest barriers to participation in addition to not knowing exactly what to do to participate. These issues could potentially be overcome by utilizing an information campaign to instruct residents on how to acceptably participate in the program and provide suggestions on how to store and sort items within the household. The largest motivations residents have to recycle are protection of natural resources and because it seems like the right

thing to do. However, if residents perceive monetary or charitable incentives the participation in recycling behavior would likely increase significantly. It is encouraging to note that all respondents plan to either increase or maintain their recycling behavior. This attitude can be very beneficial when considering future solid waste management systems if the intended recycling behavior can be capitalized on to become actual behavior.

6.3. Future Studies for Alabama

Currently, Alabama does not require a defined, uniform methodology for local host governments to conduct an environmental assessment or to define need for a landfill. Further studies on Alabama's landfill permitting process could be done evaluate and establish the fine details of environmental assessments on landfill sites and possibly formulate a system by which a site can be scored. Likewise, a detailed system to evaluate and define need for a landfill could also be done. Future studies should be careful to ensure the public is adequately involved and that environmental justice concerns are accounted for. The Auburn, AL curbside recycling program study could be expanded upon to include other subdivisions within Auburn in order to develop a cumulative dataset for the entire city. Each subdivision could be individually evaluated and compared with one another in order to identify issues that may be perceived locally and to further understand which issues are general challenges for the city. This could help the Auburn recycling program to be more efficient and focus its efforts in areas where they are needed the most. Future studies on improving actual recycling behavior would be universally beneficial; however, it is important to understand that the perceived barriers to and motivation for recycling may be different depending on geographic location.

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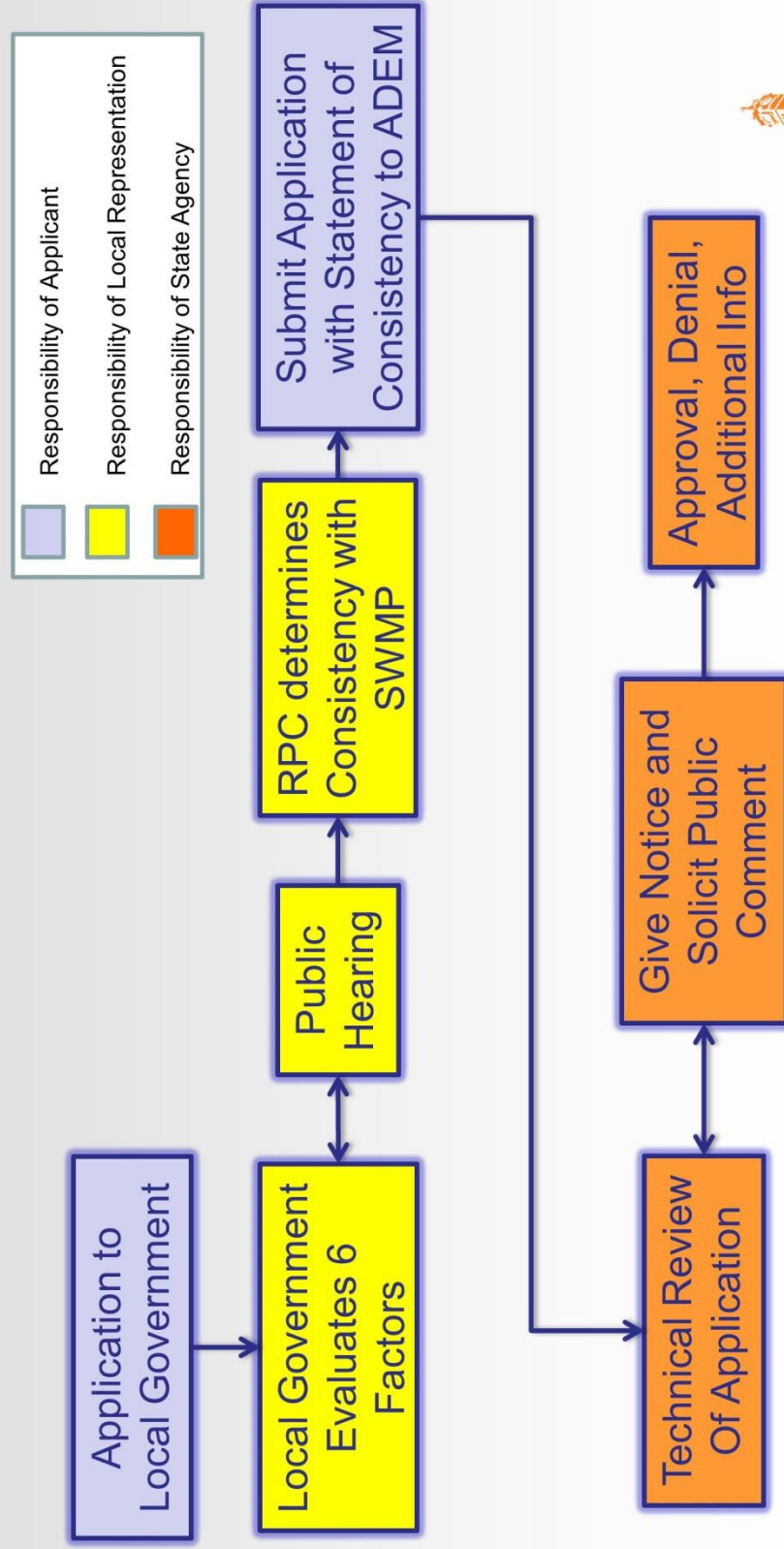
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Appendix

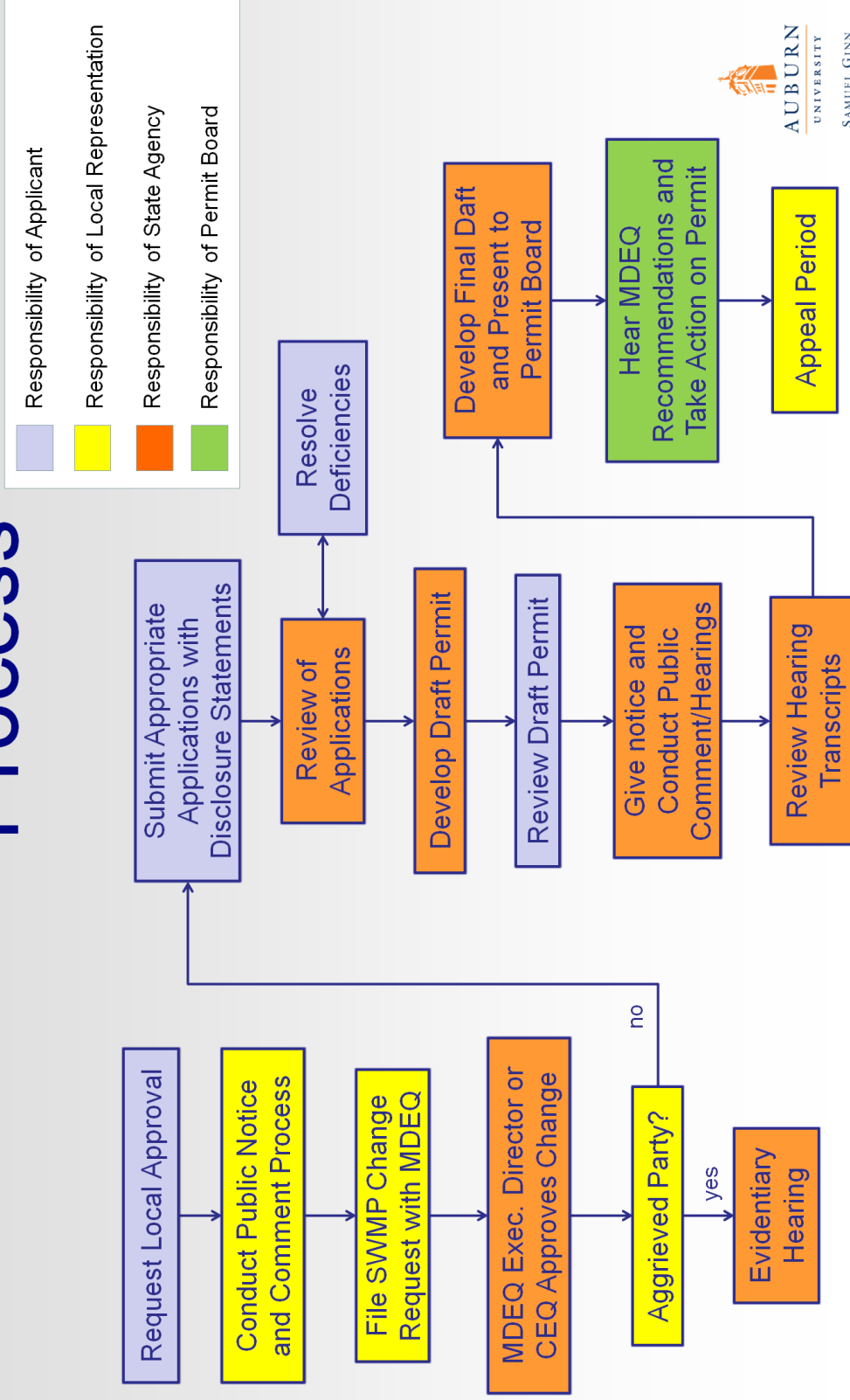
A

Alabama Landfill Permitting Process

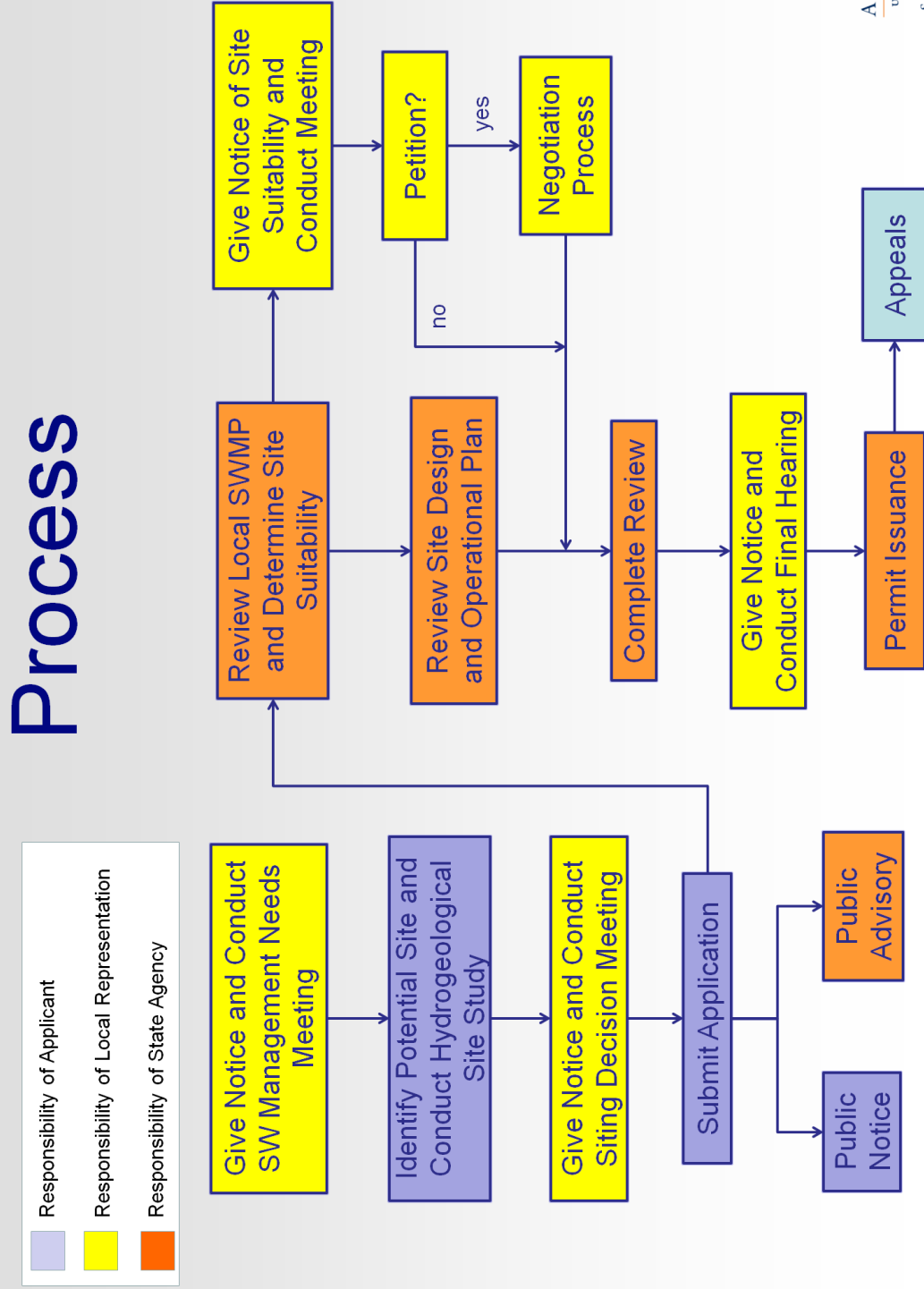


Mississippi Landfill Permitting Process

Process

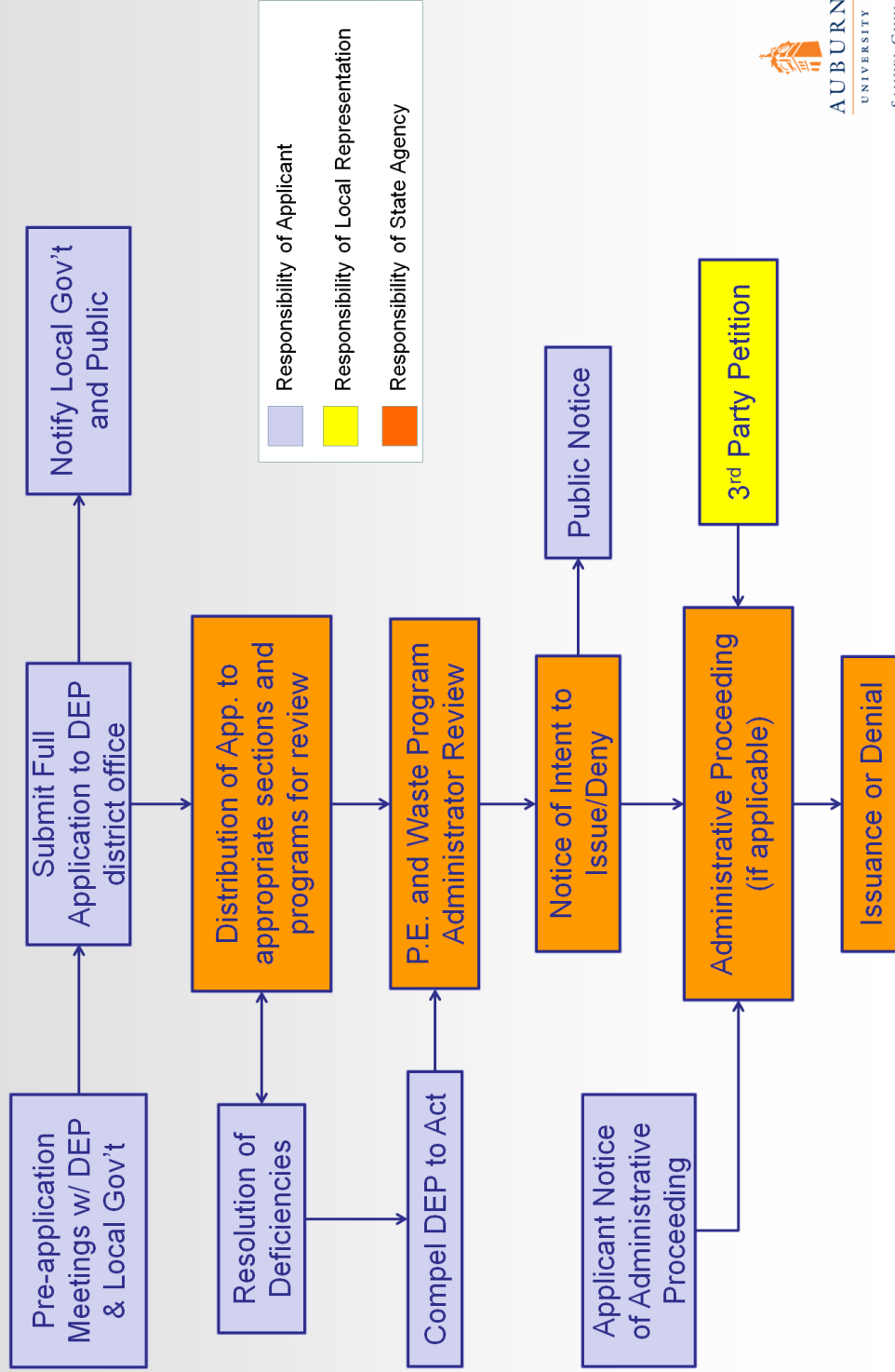


Georgia Landfill Permitting Process



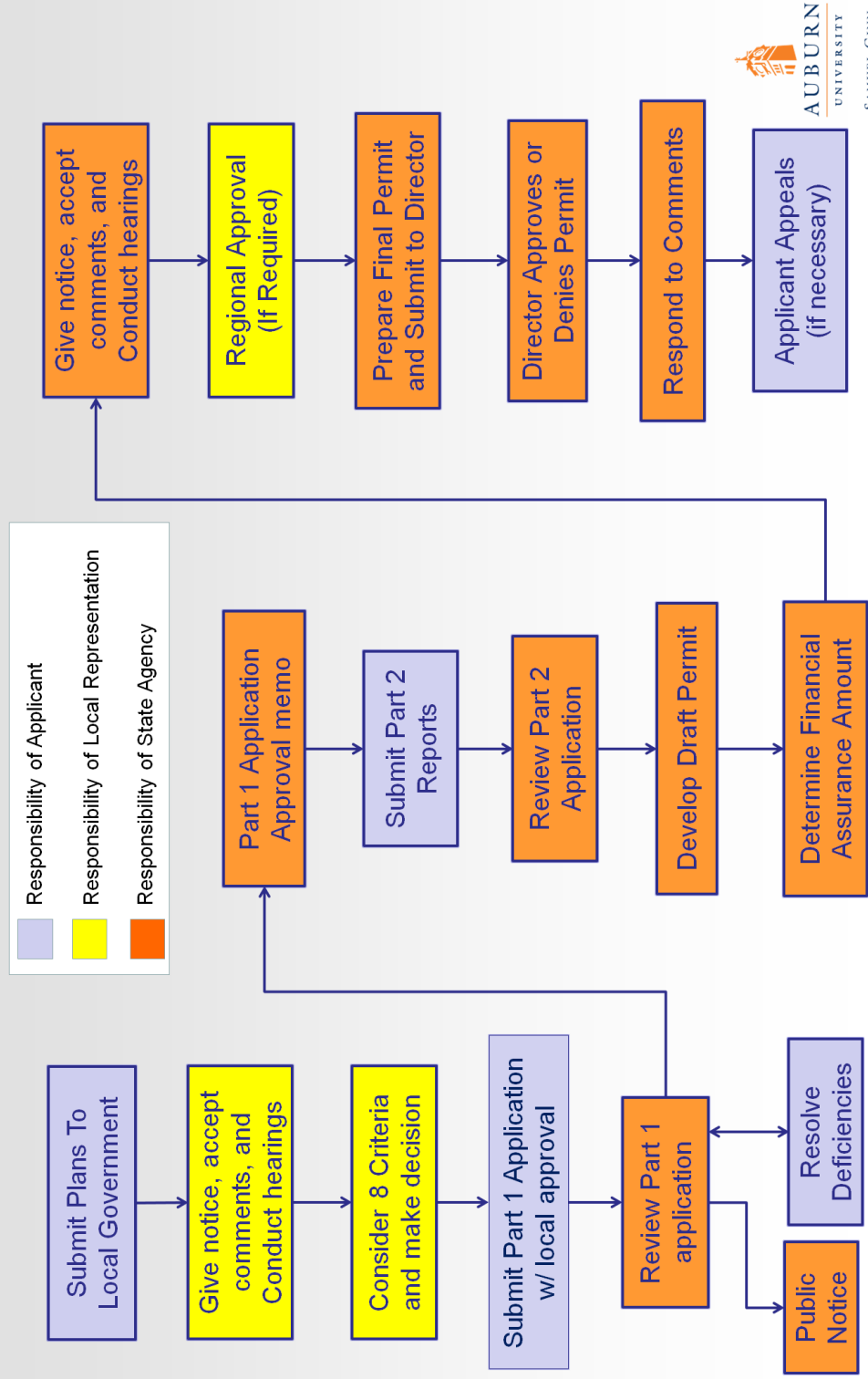
Florida Landfill Permitting Process

Process



Tennessee Landfill Permitting

Process



Appendix

B

Survey for Potential Enhancements to the State Solid Waste Program

1) Please rank what you consider to be the top 3 factors in siting a **new** landfill (1 being most important).

- Distance from solid waste collection areas to your home
- Condition of existing site (stability, soils, etc.)
- Adjacent land use
- Adjacent land value
- Approval of local residents
- Proximity to water sources (wells, rivers, lakes, etc.)
- Impacts of waste hauling vehicles (noise, traffic, road damage, etc.)
- Aesthetics (visual, odor, etc.)
- Other (specify) _____

2) Please rank your top 3 concerns regarding **existing** landfills (1 being greatest concern).

- Changes to landscape
- Noise
- Sanitary conditions (loose trash, air quality, insects, vermin, etc.)
- Traffic
- Reduction in property value
- Impacts to water quality
- Loss of wildlife habitat
- Loss of productive farmland
- Aesthetics (visual, odor, etc.)
- Other (specify) _____

3) Where do you get your information regarding landfill issues (check all that apply)?

- None
- Newspapers
- Television
- Public meetings
- Websites
- Other (specify): _____
- Local community leaders
- Family members
- Friends and neighbors
- Mailed cards and newsletters

4) How should public opinion and technical recommendations be balanced in siting new landfills (Check only one)?

- Public opinion should be the only consideration
- Public opinion should be the most important factor
- Public opinion should be considered equally with scientific or technical recommendations
- Scientific or technical recommendations should be the most important factor
- Scientific or technical recommendations should be the only consideration

Should the "90 day" default acceptance clause in the current landfill permitting process be removed?

- Yes
- No
- I don't know

If yes, please suggest an alternative idea:

5) Do you participate in beneficial reuse/waste reduction in your home or business (check all that apply)?

- Recycle plastic
- Recycle paper/cardboard
- Recycle metals
- Consciously buy products with less packaging and/or made from recycled/recyclable materials?
- Compost
- Use reusable packaging

6) Please rank what you consider to be the best 3 alternatives to landfilling solid waste (1 being best).

- Incineration
- Waste-to-energy conversion
- Beneficial reuse
- Recycling
- Composting and mulching
- Other (specify) _____

8) Do you think power companies should be required to purchase electricity generated by alternative waste management technologies (e.g., waste to energy conversion; use of landfill gas) at market prices and sell this energy to consumers at market prices?

- Yes No I don't know

8) Please rank what you consider to be the top 3 methods for paying for alternatives to solid waste landfilling (1 being most appropriate).

- Increase in tipping fees at landfills
- Tax levied by state
- Fees on producers/manufacturers of materials most commonly disposed of in solid waste landfills
- Profits associated with resale of products derived from alternative use (energy, recyclables, beneficial reuse)
- Other (specify) _____

Demographic Information

The information requested below is optional. Please keep in mind that this information is for the sole use of the Auburn University team, and will not be shared with any other entities. We will use this information to develop correlations between information provided in this survey, other surveys from future public meetings, and location information within Alabama.

Zip code: _____ Age: _____ Gender _____ Ethnicity _____

Please check the line that best estimates your total household income:

- Under \$15,000 \$60,000 - \$74,999
- \$15,000 - \$29,999 \$75,000 - \$89,999
- \$30,000 - \$44,999 \$90,000 or above
- \$45,000 - \$59,999

What was the last grade of school you had the opportunity to complete?

- Grade school or less (0-8) Some college or trade school (13-15)
- Some high school (9-11) College graduate (16)
- High school graduate (12) Post graduate (17+)

Appendix C

Grove Hill Recycling Survey-Sponsored By Auburn University

1. Please indicate how important you feel recycling is as a component of solid waste management?

Not Important		Neutral		Very Important	Don't know
1	2	3	4	5	<input type="checkbox"/>

2. What statement most accurately depicts your feelings about recycling?
- Recycling is a vital key to protecting the environment
 - Recycling is helpful and will eventually pay off as long as participation continues to increase
 - Curbside pick-up makes it easy so why not recycle?
 - Recycling would be great if it were cost-effective
 - Recycling will never make a difference on the environment and is a total waste of time and money

3. Does your household recycle? Yes No

4. If you answered yes to the previous question, what materials does your household recycle?

<input type="checkbox"/> Plastic bottles	<input type="checkbox"/> Newspaper	<input type="checkbox"/> Other _____
<input type="checkbox"/> Aluminum cans	<input type="checkbox"/> Flattened Cardboard	_____
<input type="checkbox"/> Steel cans	<input type="checkbox"/> Glass	_____

5. What are some reasons you don't recycle more?
- Recycling is too much of a hassle
 - There is not enough rooms to store the items
 - There is not enough time to sort or bundle all the items
 - I simply forget to recycle
 - I don't know just what to do
 - Recycling cost me too much money
 - The messiness recycling causes around the house
 - Other _____

6. Below are several reasons why people might recycle materials. Please indicate on a five-point scale the degree to which they apply to you.

	Not at all		Neutral		Very great deal	Don't know
a. I recycle to help conserve natural resources	1	2	3	4	5	<input type="checkbox"/>
b. I recycle to help support charity	1	2	3	4	5	<input type="checkbox"/>
c. I recycle to earn money	1	2	3	4	5	<input type="checkbox"/>
d. I recycle because it seems like the right thing to do	1	2	3	4	5	<input type="checkbox"/>

7. In the future, do you plan to...
- Increase your recycling efforts
 - Decrease your recycling efforts
 - Maintain your current recycling efforts