SECTION I
INTRODUCTION

1. Background

Prince George's County, Maryland is a vibrant and prosperous community with a rich heritage and an exciting future. Founded and named for Prince George of Denmark in 1696, the County enjoys the traditions of over 300 years of history. It blends the old and the new, providing lifestyles and communities to suit everyone's taste. Prince George's County offers urban, suburban and rural settings for employers and residents.

1.1 Geography and Relation to Washington and Baltimore

The County, comprised of nearly 500 square miles, is located in the heart of the Baltimore/Washington corridor. The County wraps around the northeastern, eastern, and southeastern borders of Washington, D.C., and is just 37 miles south of the City of Baltimore. Prince George's County has an urban atmosphere that still manages to provide a scenic and peaceful place to live, work, and play with more than 350 parks. The County is bounded on the east and west by major tributaries of the Chesapeake Bay.

1.2 Geology

Prince George's County is predominantly situated in the physiographic province called the Atlantic Coastal Plain with but a small area along the northwest border in the Piedmont Province. The Atlantic Coastal Plain is underlain by unconsolidated deposits of gravel, sand, silt, and clay that range in age from Cretaceous in the northern part of the County to recent in the floodplains. The Piedmont is underlain by crystalline rocks of pre-Cambrian age. The Piedmont is gently rolling to hilly and moderately dissected by broad, shallow valleys.

The major geologic formations in the County include the Patuxent, Patapsco, Magothy, Aquia, Calvert and Nanjemoy, and Arundel Clay formations. Geologic conditions of the County directly influence land use planning and, specifically, the siting of new solid waste facilities. These formations contain major aquifers flowing from west to east. Information concerning the County's geology helps to determine the ability of a particular soil type to support a proposed building and the potential for seepage of ground water pollutants.

1.3 Relation to Chesapeake Bay

Tidal tributaries to the Chesapeake Bay, Patuxent River on the east, and Potomac River on the west, form a significant portion of the border of Prince George's County. Over the years, increased commercial and industrial development, as well as residential growth, has resulted in significant loss of natural resources and sweeping changes to the land and water quality. Although development of commercial, residential and recreational projects along the Anacostia River will economically benefit Prince George's County, it may also lead to increased litter and dumping of waste in areas along the river's edge. This waste can end up washing into the Chesapeake Bay from storm drains that empty directly into the watershed. Waste

hurts the overall water quality in the Bay and can entangle many of the animals that live in the Chesapeake Bay and its watershed.

1.4 Population and Growth

The County's future population growth has important impacts on the need for costs, sizing and siting of solid waste management facilities. Population, employment, households and dwelling units are the four major parameters affecting the demand for a facility and the amount of waste generated. Waste generations, in turn, determine the structuring of waste disposal and collection systems and the amount of land required for solid waste management uses. In 1970, population growth in the County was slow. The population was 660,567 and increased by 4,504 or 0.68 percent to 665,071 in 1980. Then, from 1980 to 1990, the population increased dramatically by 64,197, or almost 10 percent to 729,268. In 2000, the population of Prince George's County was 807,946. By the year 2020, the County's population is projected to reach 932,256. In these two decades, this is an increase of 124,310 or 15 percent. This growth will generate physical, economic and environmental pressures on the County's solid waste management systems.

1.5 Commerce and industry

Prince George's County has more than 60 business parks, providing a range of sites for businesses. Significant projects include: Konterra, a 2,200-acre mixed-use development along I-95; Karington, a 400-acre mixed-use development in Bowie to include residential, office, and retail; University of Maryland Enterprise Campus, a 130-acre research park, adjacent to the top public research university in the region and a Metro station; University Town Center, a mixed-use project with office, residential, and retail; Boulevard at Capital Centre, a 55-acre project in Landover with main street retail and office components; and National Harbor, a 300-acre "grand resort on the Potomac" with planned office, entertainment, conference, and retail facilities.

14,490 businesses employ over 230,000 workers. An estimated 466 of these businesses have 100 or more employees. Major employers include the Beltsville Agricultural Research Center, Computer Sciences Corporation, NASA Goddard Space Flight Center, the University System of Maryland, and Verizon. Fledgling technology companies are nurtured in several business incubators in the County. Prince George's County has nearly a dozen high-technology-oriented federal labs and agencies. Almost 900 high-technology companies employ 33,600 highly-trained workers in the County—the second highest number of high-tech companies, as well as the second highest number of defense and aerospace companies, of any jurisdiction in the State.

The County's commitment to encouraging business growth and investment is best reflected by the new facilities which have recently located or expanded here, such as the Food and Drug Administration, Swales Aerospace, Freeman Decorating, Honeywell Technologies, TVI Corporation and Internosis. Four new significant federal facilities have been completed recently or are under construction in the County: (1) the Food and Drug Administration (FDA) Center for Food Safety and Applied Nutrition in College Park; (2) the Alcohol, Tobacco and Firearms (ATF) Fire Forensics Laboratory in Beltsville - a 180,000-square-foot, pilot fire research facility; (3) a Drug Enforcement Agency (DEA) laboratory in Landover; and (4) the National Center for Health Statistics' 200,000 square foot building in Hyattsville at the University Town Center.

2. Waste Generation and Collection

The United States Environmental Protection Agency (EPA) estimates that national annual generation of Municipal Solid Waste (MSW) was 222 million tons in the year 2000 and will rise to 253 million tons in 2010. Containers and packaging are expected to remain the largest category of products in MSW, at 36 percent of total generation by 2000 and 38 percent by 2010.

Generation refers to the amount of waste discarded, including materials diverted to recycling and composting programs. As Prince George's County does not control collection of all waste, generation refers to quantities, after diversion for recycling and composting, that are disposed of in the County's landfill as well as in facilities outside the County.

2.1 Residential

GBB estimates that approximately 423,300 tons of waste was generated by residents of Prince George's County. This includes waste from residents that receive collection by residential programs (up to four-plex units) as well as waste generated in apartment buildings and collected by commercial collection programs. This generation quantity is based on an average generation value of 2.74 pounds per capita per day (0.5 tons per capita per year).

The current solid waste collection services consist of three components: private contract services, County contract services, and municipality-provided services. Private contract services collects waste from multi-family buildings (apartments, condominiums) not included in the second or third type of type of collection service. County contract services have been extended to all areas of the County with the exception of scattered housing in the southeastern quadrant. Municipality-provided collection services refers to services provided by the several Cities and Towns in the County. County residents may also dispose of trash at one of the County-owned and operated drop-off facilities, Brown Station Road Public Container Pad and Recycling Area or Missouri Avenue Solid Waste Acceptance and Recycling Center.

2.2 Commercial

GBB estimates that approximately 321,600 tons of waste was generated by commercial activities in the County in 2004. Commercial waste refers to all non-residential sources of waste characterized as municipal solid waste. Commercial waste refers to waste generated by businesses, institutions, and industry, including County government activities, but excludes waste from construction, demolition, or land clearing activities. Approximately 142,200 tons of the total generated was recycled. Commercial waste is collected by private contract service. While contractors may use the County's Brown Station Road Landfill, they may use a disposal facility of their choosing. Most commercial waste is disposed of outside of the County.

3. Waste Disposal

Present disposal facilities in Prince George's County include sanitary landfills, rubblefills and a fly ash fill. In addition, numerous private and public material recycling facilities are available in and out of the County to prepare recyclables for

end-markets. In general, these types of disposal and recycling programs are expected to continue within the next 10 years as existing facilities accommodate the County's solid waste stream. The major change to the existing disposal capacity requires developing new landfill capacity and/or siting of a transfer station to replace the Brown Station Road landfill which is scheduled to close in the range of 2011 to 2013.

3.1 Recycling

Recycling is the diversion or removal of materials from a solid waste stream and the use of those materials in their original form for productive use or processing the materials to produce secondary raw materials for the production of new products. In order to accomplish this goal, the standard practice is for the generator of the material to separate the materials to be recycled at the source. For example, Prince George's residents separate beverage containers and other materials and place them at the curb in a bin. The materials are transported to a processing facility to be processed to meet industry standards for reuse in their current form or to be used as raw material to make new products. After processing to meet generally accepted materials specifications, the recovered commodities are shipped to end users or manufacturers to become part of new products.

Prince George's County has as its goal to exceed the State of Maryland guideline of recycling 35 percent of its solid waste. Therefore, the disposition of 35 percent of the solid waste generated in the County will be into new products and uses.

Recycling conserves natural resources, including energy, and lowers overall environmental impacts. However, it costs more to collect the waste separately and process it than to just dispose of the waste in a landfill.

3.2 Waste To Energy (WTE)

Municipal solid waste is converted into energy through the combustion of municipal solid waste in specialized power plants. These WTE power plants consist of six major components: (1) waste receiving and feeding, (2) the fire box where combustion takes place, (3) the boiler where the heat converts cold water to steam, (4) the generator where steam is converted to electricity using a turbine, (5) ash collection, and (6) combustion gas cleaning and discharge. Modern WTE facilities utilize sophisticated air pollution control equipment to clean the pollutants from the gases that result from combustion, including acid gas scrubbing, filtering for particulate removal, and carbon and ammonia injection to reduce mercury and oxides of nitrogen. The ash that remains, approximately 10 percent by volume, can be used as aggregate, but for most facilities in the United States, it is landfilled.

WTE facilities require a high capital expenditure and can be difficult to site in urban areas. There are four WTE facilities in the Washington-Baltimore region. These are not available to Prince George's County. Besides generating electricity, WTE facilities can reduce the need for landfills and reduce emissions from diesel trucks and other equipment.

3.3 Landfill

A sanitary landfill is a land area where solid waste is disposed in a manner that protects human health and the environment. Sanitary landfilling is an engineering

method of disposing of solid waste on land in a manner that protects human health and the environment. The design of landfills is regulated by the EPA. The requirement includes lining the bottom of the landfill with plastic and/or special clay to protect the ground water. Drains are installed to capture any liquid coming from the landfill so that it can be treated. The daily waste deliveries spread in layers, compacted into the smallest practical volume, and covering the compacted solid waste with soil. The gases that are emitted due to the decomposition of the organic material are captured and treated. Larger landfills use these gases to generate electricity.

Due to the environmental requirements, small landfills are not cost effective. This has resulted in a trend toward large regional landfills located in remote areas. These are sometimes called "megafills" and can accept 3,000 tons or more of solid waste per day. Prince George's solid waste is currently disposed of in the Brown Station Road Landfill owned by the County.

3.4 Transfer

The trucks that collect solid waste from homes and businesses are small and can carry between five and ten tons. This is inefficient and costly if they have to go very far. This has resulted in the practice of reloading the solid waste into larger trucks or other vehicles. These systems consist of large semi-trailers (capacity 20 -23 tons), railroad cars (capacity 60 – 100 tons), or barges (capacity 60 - 200 tons) to haul from a central point(s) within a jurisdiction to one or more distant solid waste management facilities, usually landfills. The act of transfer includes unloading of collection vehicles at the transfer station, loading solid waste from the transfer station to the transfer vehicles and hauling it to distant solid waste management facilities.

The use of transfer is a cost-saving measure that utilizes the most efficient means of transportation to move solid waste from the areas where it is generated, usually urban to landfills or other disposal facilities. Transfer has the disadvantage of putting more traffic on the transportation network and causing air pollution in the process.

3.5 Other

Because there is over one ton of solid waste generated every year for every citizen in the United States, other methods of disposal have been researched and tried. Composting is the system tried most often in recent years. Composting is the biological decomposition and stabilization of organic feedstocks (organic fractions of solid wastes, green wastes and bio-solids) under conditions that allow the development of thermophilic temperatures as a result of biologically produced heat to produce a final humus-like product that is stable, free of pathogens and plant seeds, and can be beneficially applied to the land.

Composting of homogeneous materials such as yard waste has been very successful throughout the country. Composting of mixed solid waste, especially in large volumes, has been a failure. Over a dozen large-scale facilities, 300 tons per day and larger, have been built in the United States and closed, including the FURST facility in Baltimore. The problems have been the quality of the compost product and economic due to the large capital investment required.

4. Study Methodology

The purpose of this study was to evaluate and select sites within the county for a municipal solid waste transfer station. An effective process for identifying feasible sites for a municipal solid waste transfer station includes a close assessment of potential land parcels. To increase the productiveness of this assessment, it was helpful to first rule out land areas that have one or more flaws that preclude feasibility. The criteria that prevented a land parcel or parcels from being considered feasible were as follows:

1. TOPOGRAPHIC FEATURES
   - Floodplain
   - Wetlands
   - Chesapeake Bay Critical Areas
2. ZONING
3. EXISTING LAND STATUS
   - Municipalities
   - Federal and State Facilities
   - Parks
   - Historic Property
   - Operating or Closed Solid Waste Facilities
   - Roadway Adequacy
4. OTHER FEATURES
   - Proximity to Airports
   - Andrews Air Force Base

Only one such exclusionary criterion was necessary to rule out a land area. Application of all such criteria allowed identification of all land areas that should be ruled out. After this process, the remaining land areas in the County were examined for attributes to identify the most feasible site(s).

The exclusionary criteria were selected based on features that have been mapped. Land features that have not been mapped but were significant flaws were applied on a parcel-by-parcel basis in site selection activities conducted after the exclusionary analysis.

After the exclusionary analysis was conducted and land areas were ruled out, specific parcels of land within the county were evaluated and ranked to determine which site would be suitable for a transfer station.

The process for ranking candidate sites for a municipal solid waste transfer station includes the evaluation of each candidate site against consistently applied criteria. Land areas with flaws that preclude their consideration for use as a transfer station site were previously identified during the exclusionary analysis. The sites that passed the exclusionary screening moved on to the next stage, which was to apply functional or operational criteria to parcels of land in areas of the County. The application of functional or operational criteria identified the relative desirability among multiple sites. Functional criteria did not exclude a site as these criteria provide an assessment of attributes desirable for a transfer station site.

The functional or operational criteria that were selected by the GBB Project Team were based on meeting needs identified for the transfer station. Certain criteria were developed from the conceptual design of a transfer station suitable for the County's needs. Other criteria were selected to reflect factors outside of the transfer station. Criteria used include:

1. Adequate Size
2. Roadway Adequacy
3. Rail Access
4. Ease of Development
5. Compatible Near Land Use
6. Environmental Impacts
7. Collection Truck Travel Time
8. Cost of Development
9. Other Features

For some criteria, it is possible to develop a quantitative measure. For example, the criterion *Travel Time* was a measurable quantity that clearly reflects operational issues and cost. The greater the travel time from the source of waste to the transfer station, the greater the cost of transportation and, therefore, the lower the assigned score. Other functional criteria are more subjective and required a qualitative approach to evaluation. For example, the criterion *Compatible Near Land Uses* were evaluated by analyzing adjacent properties and developing a score based upon compatibility. In this instance, nearby schools and residences resulted in a lower score.