

Report

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# Preliminary Facilities Options Analysis

Scope I.D.: 05M032

City of Minneapolis Department of Public Works  
Solid Waste and Recycling Services  
Minneapolis, Minnesota

***In conjunction with***

Hennepin County Department of Environmental  
Services  
Minneapolis, Minnesota

September 2005

# Preliminary Facilities Options Analysis

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309 2<sup>nd</sup> Avenue South – Room 210  
Minneapolis, Minnesota 55401-2222

*In conjunction with*

Hennepin County Department of Environmental Services

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September 2005

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# Preliminary Facilities Options Analysis

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## 1 Introduction

The city of Minneapolis (City) and Hennepin County (County) are interested in combining resources to provide solid waste management related facilities for residents of Minneapolis. The City and County long-term plans for solid waste services both include facilities to address specific needs of household residents.

The Hennepin County Department of Environmental Services currently manages household hazardous wastes (HHW) at locations outside the City. The driving distance to these facilities limits their use by residents of the City. The County operates special collection events within the City, which are heavily used by nearby residents. Experience has shown the County that participation in HHW services is improved by having convenient access to permanent facilities. It is especially important to have them conveniently located for residents of an urban, core city such as Minneapolis. The County desires to locate one or two permanent HHW facilities within the City to provide more convenient access for residents and increase participation in the HHW program.

The City Solid Waste and Recycling Division currently manages all other residential solid wastes via a combined municipal and contract collection system. The City has historically used two different city-owned transfer stations to provide special solid waste services (the Voucher Program) and transfer of yard wastes to the city's contract yard waste processor in the city of Hutchinson. In addition, the two transfer stations provide back-up capacity for management of municipal solid waste (MSW). The City maintains the permitted capacity of both transfer stations at 350 tons per day (tpd). The long-term future availability of the transfer station sites is currently questionable. Thus, the City is interested in this preliminary review of facility needs.

By combining efforts and resources, the City and County could cost-effectively provide convenient service to households of Minneapolis for all types of solid waste materials. In fall 2004, the City and County started discussions regarding joint facilities. This project is a direct outgrowth of the City and County planning discussions. Foth & Van Dyke was retained to assist with the potential implementation process.

## 2 Kick-off Meeting

Foth & Van Dyke held a project kick-off meeting with representatives of the City and County on August 2, 2005. The meeting served to define the scope of this initial phase of the potential implementation process. The general consensus was that each entity (City and County) should assess what services could be provided, which services are considered to be minimum, and what combinations of services could be provided effectively. This preliminary analysis would then address requirements for the base level of services and various options that either the City or County want considered. This analysis addresses requirements for site size, general location preferences, and site needs. With this information, the City and County can identify whether there are possible sites available or would need to be acquired.

### 3 Base Level of Services and Options

Mike Brandt, Hennepin County Conservation Division Manager provided a listing of HHW/Problem Materials (HHW/PM) for consideration. The listing included the following materials:

#### HHW/PM Basics

- ◆ Latex paint and driveway sealer
- ◆ Oil based paint
- ◆ Flammables
- ◆ Pesticides
- ◆ Acids
- ◆ Bases
- ◆ Poisons
- ◆ Aerosols
- ◆ Adhesives
- ◆ Car batteries
- ◆ Antifreeze
- ◆ Household batteries
- ◆ Fluorescent bulbs
- ◆ Free Product Center

#### Possible PM Additions

- ◆ Motor oil and filters
- ◆ Appliances
- ◆ Consumer electronics
- ◆ Tires

#### Possible Recycling Additions

- ◆ Scrap metal
- ◆ Cardboard
- ◆ Paper
- ◆ Glass
- ◆ Plastic

#### Possible Educational Additions:

- ◆ Classroom to also serve as a “Community Room”
- ◆ Eco-yard

Mr. Brandt indicated that Hennepin County’s base level of service is to provide HHW service at a minimum. The preference is for two separate facilities strategically located within the City. Services such as recycling and electronic waste (E-waste) would be a step up.

Ms. Susan Young, Minneapolis Solid Waste & Recycling Division Director indicated that everything that the City currently collects in their Voucher Program is a base level of service. The Voucher Program overlaps with all the potential additional materials listed by the County except the classroom and Eco-yard. In addition, the Division includes service for MSW and construction and demolition (C&D) materials that are currently managed in the Voucher

Program. The North Transfer Station is currently used to receive and transfer yard wastes. Yard waste transfer continues to be a base level of service.

Ms. Young indicated that the Division's list of services over and above the base would include addressing large limbs, trees, and brush. In addition, the Division desires that the capacity to provide back-up transfer station capability be included in the optional services.

Based on this discussion, this preliminary analysis considers the following materials to be included in the City and County base level of services:

- ◆ All the HHW/PM items noted above
- ◆ All PM additions noted above (part of current City Voucher Program service)
- ◆ All recycling materials noted above
- ◆ Current Voucher Program service for MSW and C&D materials
- ◆ Current yard waste transfer service

Facility alternatives analyzed as part of the base include:

- ◆ Single large scale HHW Facility (one site)
- ◆ Two split HHW Facilities (two sites)
- ◆ Voucher Transfer Station (stand-alone)
- ◆ Yard Waste Transfer Station (stand-alone)

Possible services under optional scenarios:

- ◆ Community Room
- ◆ Eco-Yard
- ◆ Separate 500 tpd MSW transfer station
- ◆ Time separated MSW transfer station - a facility that combines Voucher Program service with 500 tpd MSW transfer station capability. (The facility use for MSW transfer would be scheduled during hours the Voucher Program is not in operation. For example, MSW transfer from 6:00 a.m. to 2:00 p.m. and Voucher Program from 2:30 p.m. to 8:00 p.m.).

A facility to address tree wastes continues to be a need for the City, but further direction was not developed as part of this preliminary analysis.

In follow-up to the Project Kick-off Meeting, Mr. Brandt provided a tour for Foth & Van Dyke staff members at the County HHW facility located in Bloomington, Minnesota. This site visit and follow-up discussion was very helpful in gaining a better understanding of the County's

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needs for HHW services. Foth & Van Dyke staff members also briefly visited the City South Transfer Station to provide team members with a perspective on the current status of the Voucher Program and level of service.

#### 4 Preliminary Review Meeting

A preliminary review meeting was held with City and County representatives on September 6, 2005. The discussion focused on two areas, including:

- ◆ Refining the building size needs of the HHW services; and
- ◆ The potential to develop a range of site sizes for each option by modifying some of the approaches to “non-building” site areas.

Subsequently, Foth & Van Dyke worked with Hennepin County to gain agreement on the building size needs for the Base HHW Services. The building and corresponding site size needs are covered in the next section of this letter report. In addition, Foth & Van Dyke developed some minimum site size needs, which are presented later in this letter report. The minimum site sizes are based upon some key changes in the assumptions for storm water management and combining uses for yard areas acknowledging that some reductions may have significant impacts on operational effectiveness.

#### 5 Preferred Site Size Needs

Table 5-1 provides a summary of the projected site size needs for each of the Base Services, Optional Services, and Combinations. The detailed calculations used to develop the summary table are provided in Appendix A—a spreadsheet showing the square footage estimates for each of the site need components (buildings, transportation related, stormwater management, yard areas, and miscellaneous/contingency).

Table 5-1 shows the site size estimates for the two different base case approaches to HHW facilities and the various transfer station approaches. The estimated site sizes for the various combinations are also shown. It should be noted that there are clearly site size benefits from combining services. For example, a stand-alone Split HHW facility is estimated to require 4.2 acres and a stand-alone Voucher Program Transfer Station is estimated to require 4.2 acres (for a total of 8.4 acres). But, when combined into one site, the total is only 5.8 acres. Similar efficiencies are shown for the other combinations. The potentially most efficient site size and use appears to be the combination of a Split HHM, Voucher, and Time-separated Transfer Station capacity with an estimated total of 6.4 acres needed for this facility.

Table 5-1 Summary of Preferred Site Size Estimates (acres)

Base Services	Size	Optional Service	Size	Combinations	Size
Large-scale HHW <sup>1</sup>	5.0	Separate MSW TS <sup>5</sup>	4.4	Split HHW w/voucher	5.8
Split HHW <sup>2</sup>	4.2			Split HHW w/yard waste	5.7
Voucher TS <sup>3</sup>	4.2	Time separated MSW transfer <sup>6</sup>	0.5	Split HHW w/Voucher & transfer capacity	7.1
Yard Waste TS <sup>4</sup>	3.3	Eco-yard	0.3	Split HHW w/voucher & time separated transfer	6.4
		Community Room <sup>7</sup>	0.3		

<sup>1</sup> Substantially based on reducing the allocations from the Hennepin County facility in Bloomington, MN, with the assumptions for the reduced traffic flow (going from 50,000+ visits at Bloomington to an assumed 25,000 visits.

<sup>2</sup> Smaller HHM facilities assumed to require two to serve entire City (assumed 20,000 visits per year at each site).

<sup>3</sup> A stand-alone facility to handle existing City voucher service.

<sup>4</sup> A stand-alone facility to handle existing City yard waste service.

<sup>5</sup> A stand-alone 500 tpd MSW transfer Station.

<sup>6</sup> Additional site size to add physical capability to transfer 500 tpd of MSW at different hours from Voucher and HHM.

<sup>7</sup> Includes added parking for buses.

## 6 Preliminary List of Assumptions for the Preferred Site Sizes

The site visit to the Bloomington HHM facility and discussion with Mr. Brandt provided good information for basic assumptions. In addition, the existing City Solid Waste Master Plan contains pertinent conceptual design information for the transfer station options. Following is a summary of many of the key assumptions used to develop the estimated site sizes:

### 6.1 HHW Related Assumptions

- ◆ The HHW program in the City is assumed to be required to accommodate 15,000 to 20,000 participants per year for each of the “split sites” and 20,000 to 25,000 at a single site. Each site would be open to the public on five days per week. Note that the plan for operation should allow for approximately one (1) day per week of operation without being open for receiving materials. This day would allow for material sorting, bulking, storing, clean-up, etc. activities and is critical to effective operation.
- ◆ The space allocation for the HHW facility options assumes that the facility would operate similar to the Bloomington HHW facility except that paint, aerosols, oil filters, and flammable materials would be stored on site until a full trailer load (22 gaylords) is available, then sent to Bloomington in the containers in gaylords.
- ◆ Hazardous material (lab packed and bulked) would be shipped for disposal direct from City facility(ies).
- ◆ Unloading HHW materials will occur inside the building. Capability for two lines of vehicles for unloading materials within the building is planned.

- ◆ Space for a Free Product Center is planned.
- ◆ It is assumed that all materials will be received, processed, and stored within the building. Some staging of materials, such as metals, is assumed to occur outside of the building.

## 6.2 Voucher/Transfer Facility Related Assumptions

- ◆ The size of the buildings and site associated with the Voucher Program Facility and the 500 tpd MSW Transfer Station are based on information contained in the City's existing Master Plan.
- ◆ Yard waste—An estimated 20,000 tons is collected annually. Seasonal peaks result in as much as 500 tpd in a peak day, which the Division has routinely experienced. Further specific plans for operation will be needed to finalize the building and site space allocations.

## 6.3 Common Facility Related Assumptions

- ◆ If HHW, Transfer Station, and Yard Waste functions are combined into one site, it is assumed that some, but not all, separate vehicle access will be provided, (i.e., vehicle access to HHW will be separate from vehicle access to MSW tipping). This will allow for efficient receiving of separate waste streams. Full separation of vehicles for each material stream is not planned due to the increased site area and associated capital improvement cost required for this scenario (e.g., separate vehicle access “street-to-street” for HHW receiving vs. MSW tipping vs. transfer trailers vs. yard waste would require large site commitments for each vehicle stream); therefore, although desirable, this does not appear to be a reasonable assumption at this time. The level of vehicle separation will need to be coordinated with site signage to achieve a reasonable level of control within economic constraints.
- ◆ The site areas included typically assume a rectangular site. If the sites identified for consideration are less regular (e.g., triangular, L-shaped, etc.), it then can be assumed that the site layout will not be as efficient and therefore additional area would be required for the listed needs.
- ◆ Sustainable strategies will be used where practical and will be based on the Minnesota Sustainable Design Guide. These strategies may include the following improvements:
  - ▶ Use of recycled material for pavement base course material.
  - ▶ Use of ash by-product for a portion of the aggregate component of the bituminous material mixture and for a portion of the concrete mix for pavement and building concrete.
  - ▶ Use of native plant material for site vegetation, where appropriate.

- ▶ Use of sustainable/conservation techniques, including infiltration basins, bioswales, and detention basins for stormwater management.
- ▶ Use of recycled/sustainable and/or locally manufactured building products where economically appropriate.
- ▶ Use natural lighting where appropriate.
- ▶ Use efficient lighting and mechanical systems/equipment.
- ▶ Develop site lighting with cut-off fixtures.
- ▶ Use low VOC emitting materials.
- ▶ Plan for recycling construction waste materials from the project.
- ◆ Appropriate building and occupant safety measures will be used, including:
  - ▶ Fire suppression systems appropriate for the material present in the space.
  - ▶ Interior spill control, containment, and drainage systems.
  - ▶ Ventilation rates to provide safe working areas for building occupants.
  - ▶ Explosion venting for areas identified as requiring such systems.
  - ▶ Fire detection and alarm systems.
- ◆ Site access (ingress and egress) from and to the street would be provided for an assumed two (2) separate traffic vehicle types; the specific types would be dependent on the facility options selected for a specific site (e.g., HHW material delivery/exiting on one access drive, Voucher/MSW/Transfer trailers on a separate access drive).
- ◆ Queuing:
  - ▶ For HHW traffic, it is assumed that access plus queuing will provide approximately 300 lineal feet of drive to allow for queuing to be off-street during peak times.
  - ▶ Similar access and queuing assumptions used for the HHW traffic were used for the Voucher Program.
  - ▶ MSW Transfer access and queuing were assumed to provide adequate access and queuing to keep traffic from backing up onto City streets.
- ◆ Stormwater management—Sizing of detention, infiltration and other stormwater management improvements was assumed to be adequate to store stormwater on site. Consideration should be given to spill control on site versus planning for stormwater to infiltrate as a management method. If infiltration is planned to be used, spill controls should be provided upstream of the bio-swale/infiltration basin to prevent a spill from entering the soil in the swale/basin. A combination of detention and infiltration could be

used to allow for controlling a spill prior to the contaminated surface water entering the swale/basin. Alternatively, separate stormwater systems could be used for surface water that are within a potential spill area (material delivery, staging, etc.) and surface water that is not within a potential spill area (roof drainage, lawns, etc.).

- ◆ Site area for snow storage is assumed to be provided in the setback, sedimentation basin, miscellaneous, and contingency spaces.

## 7 Minimum Site Size Needs

Using the “Preferred Site Sizes” as a base, Foth & Van Dyke adjusted some assumptions to develop “minimum site sizes.” Estimates for each of the facilities and associated services are shown in Table 7-1. The detailed calculations used to develop the summary table are provided in Appendix B—a spreadsheet showing the square footage estimates for each of the site need components (buildings, transportation related, storm water management, yard areas, and miscellaneous/contingency).

Table 7-1 Summary of Minimum Site Size Estimates (acres)

Base Services	Size	Optional Service	Size	Combinations	Size
Large-scale HHW	3.8	Separate MSW TS	3.4	Split HHW w/voucher	4.5
Split HHW	3.2			Split HHW w/yard waste	4.4
Voucher TS	3.3	Time separated MSW transfer	0.4	Split HHW w/Voucher & transfer capacity	5.6
Yard Waste TS	2.6	Eco-yard	0.3	Split HHW w/voucher & time	5.3
		Community Room	0.3	separated transfer	

The building sizes contribute a relatively small percentage of the site sizes relative to the services provided; therefore, the building sizes were not reduced from the sizes of the preferred site sizes. The reductions in site size estimates were primarily achieved from the following areas:

- ◆ Eliminating the rain gardens
- ◆ Reducing sedimentation areas
- ◆ Reducing staging areas and semi-turning room, thus making truck maneuvering less efficient
- ◆ Reducing allowances for setbacks for front and side yards
- ◆ Reducing the allocations for miscellaneous and contingency space.

The positive result of this process is a reduction in the size of sites needed. The negative result is that the operations conducted at facilities of the minimum size will be much closer and visible to site neighbors. In addition, annual operating costs will be higher as a result of paying fees for stormwater treatment.

## 8 General Location Preferences

Site selection criteria for a HHW facility or a transfer station option can be separated into four interrelated areas as follows:

- ◆ Feasibility for development (current and future)
- ◆ Proximity to material generation and disposal
- ◆ Environmental factors, including aesthetics
- ◆ Cost factors

**It is not likely that a site will successfully meet all selection criteria. Therefore, specific site selection will involve balancing priorities inherent in each set of criteria.**

The following specific criteria should be considered during any site selection.

### 8.1 Feasibility Criteria

- ◆ **Site size and efficiency:** The site must be sized to accommodate the building, ease of vehicular traffic/access and any other ancillary site operations. Preferred site size estimates for various options are shown in Table 1. Minimum site sizes are shown in Table 2. As noted, the site size assumptions assume the availability of a rectangular shaped site. If available sites have different shapes, the total acreage may increase.
- ◆ **Topography/geology/hydrology.** Topographic relief will allow ease of development for constructing the anticipated “step” between tipping and loading for transfer station conceptual designs. Thus, topographic relief may be beneficial, but is not required. Features such as soil type, floodplains, wetlands, drainage patterns, and the presence of bodies of water can impact the suitability for use.
- ◆ **Ownership.** The impact of ownership on the selection will need to be considered (e.g., a site already owned by the City or County may increase the opportunity for development). If an identified suitable site is not owned by the City or County, can it be purchased or can a long-term contract for use be negotiated?
- ◆ **Access.** Roads to and from the site must be adequate to handle anticipated vehicular traffic year-round. Factors such as proximity to major arteries and necessary road improvements will need to be considered. Access to truck routes is required. Proximity to rail lines may allow flexibility of transfer of materials to disposal facilities, but is not required.
- ◆ **Utilities.** The facility will need electricity, natural gas, water, sanitary sewers, and telephone. Minimum site sizes will need a stormwater sewer. Availability of these utilities in close proximity will limit the cost to make necessary connections.

- ♦ **Zoning.** A site in an area not zoned for transfer station use may face delays and opposition from local residents and local officials to a zoning change request. Care should be given to specific zoning ordinances specifying setbacks, building height, required parking, and building materials. Based on previous Foth and Van Dyke experience with transfer stations in the City, transfer stations of this type fall under recycling facilities as a conditional use in Medium Industrial and General Industrial Districts.

## 8.2 Proximity Criteria

- ♦ **Proximity to waste generation.** Proper selection of a site location will increase the efficiency of handling material from the generating sites to the transfer station. For the split HHW options, it would be appropriate to locate one facility centrally in the north half of the City and one centrally in the south half. These general locations are currently working for the Division for the Voucher Program and yard waste transfer services.
- ♦ **Proximity to other City facilities.** Factors such as joint use of labor and/or equipment can serve to reduce the operating costs and increase the flexibility of prioritizing critical operational needs.
- ♦ **Proximity to other land uses.** Siting a facility at a distance from residential areas will reduce disruption of the residences, and therefore should reduce residents' objections to the facility. Attention needs to be paid to proximity to incompatible uses.

## 8.3 Environmental Criteria

- ♦ **Environmental quality.** Impacts on air quality, water quality, endangered plants and animals or other issues will need to be addressed. Generally, properly designed and operated transfer stations and HHW facilities do not have adverse environmental impacts.
- ♦ **Historical/archeological significance.** If these issues exist, the site will likely be eliminated from consideration.
- ♦ **Past land use.** An environmental assessment of a proposed site should be conducted if problems are suspected (e.g., underground storage tanks, buried rubble, etc.). Alternatively, selecting a brownfield site could beneficially serve two purposes—site remediation and the joint City/County solid waste facilities.
- ♦ **Impact on surrounding land values.** It may be difficult to predict the impact the transfer station or HHW facility will have on surrounding land values, but this factor can be a significant concern to surrounding land owners, whether a legitimate concern or not. Perhaps Hennepin County has actual experience with property value changes with their existing facilities.

## 8.4 Cost Criteria

- ◆ **Land acquisition.** The benefits of purchasing a new site should be weighed against the savings associated with using property already owned by the City or County.
- ◆ **Site preparation.** Poor site conditions (e.g., floodplain, flat site, extremely sloping site, poor geological conditions, etc.) can increase development costs and should be weighed against other factors.
- ◆ **Utility connection and construction.** If utilities are not available in close proximity, connection costs can be significant. With the developed nature of the City, this is not anticipated to be an issue.
- ◆ **Road upgrades.** If access roads are not currently constructed to meet the needs of the increased traffic resulting from the transfer station, upgrades may be necessary.

## 9 Range of Site Size Needs and Advantages/Disadvantages

Table 9-1 provides a summary of the range of the site size estimates from the Preferred size to the Minimum. As noted previously, there are significant efficiencies gained by combining the operations at a single site for the HHW and Voucher programs. While the “Minimum” site sizes shown are expected to be workable, it should be noted that there could be some significant drawbacks. The Minimum site sizes will result in there being less buffer of the operations conducted at the facilities from site neighbors. There could be more impact from noises or vehicles on local streets. In addition, by not having room on-site to manage stormwater, the annual operating costs will be higher.

Table 9-1 Range of Site Size Estimates (acres)

	Preferred Site Size	Minimum Site Size
<b>Base Services</b>		
Large-Scale HHW	5.0	3.8
Split HHW	4.2	3.2
Voucher TS	4.2	3.3
Yard Waste TS	3.3	2.6
<b>Optional Service</b>		
Separate MSW TS	4.4	3.4
Time Separated MSW TS	0.5	0.4
Eco-Yard	0.3	0.3
Community Room	0.3	0.3
<b>Combinations</b>		
Split HHW with Voucher	5.8	4.5
Split HHW with Yard Waste	5.7	4.4
Split HHW with Voucher and Transfer Capacity	7.1	5.6
Split HHW with Voucher & Time Separated TS	6.4	5.3

The advantages of the preferred site sizes include:

- ◆ Stormwater is managed on site, minimizing long term environmental impact and operating costs;
- ◆ Operations will be located further from site neighbors;
- ◆ There is less likelihood of conflicts between different users of the facilities such as HHW participants with Voucher or MSW transfer facility users;
- ◆ The sites will have more flexibility to accommodate future unknown uses; and
- ◆ The sites will have more potential for neighborhood amenities such as a Community Room and Eco-Yard.

## 10 Summary

There are clearly advantages in site size needs for the City and County to combine services. For example, rather than require 4.2 acres for a HHW facility; 4.2 acres for a Voucher Program facility; and 4.4 acres for a separate MSW transfer facility for a total of 12.8 acres—a combined split HHW, Voucher Transfer Station, and Time-Separated, MSW Transfer Station is projected to require only 6.4 acres. Thus, it appears to be a wise use of public resources for the City and County to continue to work together to implement these facilities.

The combination of the Split HHW with Voucher Program and Time Separated Transfer Station provides the most potential to address existing City and County needs in an efficient manner. Foth & Van Dyke recommends this combination as the best potential value for the City and County.

While the Minimum Site sizes are anticipated to be workable, the Preferred Site Sizes will have more space to incorporate neighborhood amenities and allow more neighbor-friendly operations in general. In addition, annual operating costs should be lower at Preferred Site Sizes due to on-site management of stormwater.

The County believes two split HHW facilities—one centrally located in the north and another centrally located in the south—will result in optimizing participation in the HHW programs. This would result in improved management of these household wastes in the future. Therefore, a long-term goal for the City and County should include development of two HHW facilities. Rather than trying to develop both at the same time, they could be developed sequentially. If so, the combination split HHW, Voucher Transfer, and Time-Separated MSW Transfer should be pursued as the first combination.

The site selection criteria described in this report should serve as a guide (with the understanding that no one site may successfully meet all selection criteria). Site selection typically involves finding the best balance of priorities inherent in the criteria.

The following general site needs can be utilized to start the process of selecting specific potential sites.

- ◆ **Location.** Near the centroid of collected waste (center of the area from which the waste is generated) such as north or south Minneapolis for convenience of HHW users and matching current City transfer station capacity; zoned for industrial use, including Medium Industrial or General Industrial Districts; close proximity to major roads, avoid proximity to residential neighborhoods.
- ◆ **Size and topography.** The site should have a minimum of the estimated site sizes in Table 2 but it should be noted the site sizes in Table 1 are highly preferred. It would also be preferred to have sufficient topographic relief to accommodate a 14-foot vertical drop between the tipping and loading slabs.
- ◆ **Utilities.** Electricity, natural gas, water, sanitary sewer, and telephone service should be available at the site (plus stormwater sewer at the minimum site sizes).

The next step in this potential implementation process is to attempt to identify a number of sites that could meet City/County needs, develop preliminary cost estimates, and consider potential cost sharing approaches between the City and County (understanding these facilities would be funded via enterprise funds of each department, not general funds).



# Appendix A

## Preferred Site Size Spreadsheet

## Appendix B

### Minimum Site Size Spreadsheet

## Appendix C

### Space Programming Calculations – HHW Facility