

## I. INTRODUCTION

The ability to serve properties with public utilities, particularly water and sewer service, is the primary factor in determining existing land uses and future growth opportunities for any given jurisdiction. Public services are provided by the City of Havre de Grace through the Department of Public Works (DPW) and include water treatment and distribution, wastewater collection and treatment, and solid waste management. In addition, stormwater management – for both the older portions of the City and in newer neighborhoods – is also overseen by City DPW personnel. Other utilities briefly addressed in this chapter include electric service, natural gas, telephone, and cable television, which are provided by private utility companies.

The provision and capacity of water and sewer systems determine the City's direction, size, and rate of growth. Under Maryland's Neighborhood Conservation and Smart Growth initiative, the City of Havre de Grace is an identified Priority Funding Area. Priority Funding Areas, or PFA's, are designated areas that have been identified as appropriate for development and where infrastructure, such as water and sewer, already exist and can easily be extended. An amendment in 2000 to the State of Maryland's Economic Growth, Resource Protection, and Planning Act also created an eighth vision: "Adequate public facilities and infrastructure under the control of the County or Municipal Corporation are available or planned in areas where growth is to occur". Without undermining local control of land use decisions, these Smart Growth policies ensure improved planning for future growth and infrastructure at the local level and provide for more coordinated growth within Maryland as a whole.

The City of Havre de Grace operates its own water and wastewater facilities, and is autonomous in planning and constructing necessary infrastructure within its municipal boundary. However, coordination between the Havre de Grace and Harford County is also paramount. Water systems within Harford County, which include the three municipalities of Havre de Grace, Aberdeen, and Bel Air, are designed to be integrated and mutually supportive, with large water mains providing interconnections between jurisdictions. Harford County Government also owns a water treatment facility plant within the City and relies on Havre de Grace to supply two million gallons of water for daily use. The City, on the other hand, provides information to Harford County Government's Water and Sewer Master Plan for its semi-annual revision so that coordination for long-term facility planning is achieved between jurisdictions. Improved coordination between the jurisdictions of Harford County, City of Aberdeen, and City of Havre de Grace must be pursued for regional growth within this area.

In addition to water and wastewater treatment, the City provides for the disposal of solid waste, i.e. trash, yard waste, recyclables, white goods and metal items, for residents within the City and oversees the control of storm water runoff. Both are necessary to maintain the environmental quality within the Havre de Grace area. Trash collection is administered by the Department of Public Works and contracted through a competitive bid process. It includes weekly collection,

disposal, and recycling services. The City's DPW also oversees stormwater management for both the older storm drain system and newer neighborhood stormwater management facilities. Onsite stormwater management is required for all new development and redevelopment projects.

The following are recommendations that relate directly to City operations or responsibilities. Other sections of this chapter describe existing service within Havre de Grace and projected future growth, and includes water service, wastewater system, stormwater management, solid waste, electric power, natural gas, telephone, and cable television. The subject of stormwater management is also addressed in Chapter 10, Sensitive Areas, because of its relationship to environmental protection and erosion control.

## II. RECOMMENDATIONS

- Develop a formal Capital Improvement Program for the scheduling of necessary public infrastructure improvements.
- Continue to implement the 1998 Havre de Grace Water System Master Plan recommendations and identified capital improvements for the older portions of the City as well as new growth areas. Capital improvements for the older portions of the City include the water main cleaning and lining program, replacement of 4" mains with 6" and 8" lines for fire suppression, water valve replacement, and the provision of continuous loops within the water system so that improved water circulation is achieved. Growth-driven capital improvements include the construction of new water mains, general distribution and treatment plant improvements, and the construction of a new water tower to increase flow pressure for growth areas. The identified growth-driven improvements are to be privately funded through the development process.
- Continue to coordinate a "pro-rata share" implementation strategy for water and sewer service so that the City can ensure the adequate routing and sizing of future utility extensions. Application of this program allows for the municipality to require payments by developers to provide for over-sizing of both on-site and off-site water and sewer connections within a defined service area. In cases where an individual landowner or developer wishes to provide water and sewer service to a given site, the developer may voluntarily initiate a recoupment reimbursement program to construct off-site utility extensions.
- Continue to coordinate with Harford County regarding semi-annual revisions to the Harford County Water and Sewer Master Plan.
- Coordinate the planning, design, and easement acquisition for a major sewer main (i.e. the Northwest Interceptor) to serve the City's residential, commercial, and mixed office/employment growth areas that are located west of the current City limits. This project will be privately funded through the development process.
- Work with the Maryland Department of the Environment and perform all necessary

actions to re-rate the City's Wastewater Treatment Plant capacity to 2.3 million gallons per day (MGD) to maximize its current treatment capacity.

- Coordinate with Harford County on a mutually agreeable schedule to modify their 2.0 MGD water allocation in anticipation of the City's long-term growth needs.
- Examine and update associated fees relating to capital cost recovery for new water and sewer customers, specifically with regard to new residential units.
- Examine current water and sewer rate structure to ensure that rates are aligned with maintenance costs related to an aging system.
- Examine opportunities for regional utility support between the Cities of Aberdeen and Havre de Grace with regard to water supply and sewer service. This will require coordination between Harford County, the City of Aberdeen, and the City of Havre de Grace for issues related to treatment facilities and existing water and sewer mains.
- During the development process, require the installation of water main loops for system redundancy and the ability to isolate breaks and other service problems.
- Improve the City's mapping and tracking system as related to water and sewer infrastructure. This includes the development of digital mapping of water and sewer infrastructure utilizing Geographic Information System (GIS) and field identification for mapping surface information.
- Study the feasibility of an industrial pretreatment facility for the Chesapeake Industrial Park.
- Continue to offer recycling, yard waste, white goods, and metal disposal services within the program of solid waste management for the residents of the City.
- Improve storm water management and runoff water quality in the older portions of Havre de Grace through innovative techniques, such as small bio-retention facilities, storm drain filters, and grass filter strips, where appropriate.
- Continue to inspect stormwater management facilities on a semi-annual basis so that their effectiveness is maintained.
- Continue to inspect individual residential, commercial, and industrial properties for contributing inflow/infiltration into the sewer system.

### **III. BASIS FOR UTILITIES PLANNING**

#### **A. Planning Process**

The design, construction, and operation of water, wastewater, and storm water utilities are interdependent with existing and projected land uses and development within a designated service area. Facilities must be planned well in advance in order to assure that adequate systems are in place to handle the demands without adverse effects to the environment.

## **B. Design Criteria**

The Comprehensive Plan presents a range of build-out unit densities for residential and commercial development. For the purposes of estimating utilities system demands for water and wastewater capacities, the median value of these ranges will be used. Population densities for residential development in the Havre de Grace area have been established at 3.0 persons per single family detached dwelling unit and 2.5 persons per townhouse (or single family attached) and multi-family units. In terms of the specifications for infrastructure construction, the City follows Harford County's design standards for water and sewer mains.

### **1. Water Distribution System**

Using an allowance of one hundred (100) gallons of water per person per day, each single-family detached dwelling unit is expected to use 300 gallons daily and each townhouse or multi-family unit is expected to use 250 gallons daily. In cases where the dwelling unit type is unknown, 300 gallons per estimated dwelling unit (EDU) will be used. For commercial flows, an allowance of 1300 gallons per day per acre of commercial land is used. These residential and commercial unit flow values are consistent with the design guidelines used by Harford County. Table 6.1 provides estimated water demands for developing areas within the City limits and future planned growth areas.

### **2. Wastewater Collection System**

Using an allowance of ninety (90) gallons per day per person for its wastewater collection system and treatment facility, each single-family dwelling unit is expected to produce 270 gallons of wastewater per day and each townhouse or multi-family to produce 225 gallons daily. In cases where the dwelling unit type is unknown, 270 gallons per EDU will be used. For commercial flows, an allowance of 1200 gallons per day per acre of commercial land is used. These residential and commercial unit flow values are consistent with the design guidelines used by Harford County. Table 6.2 provides estimated wastewater capacity requirements for new developing areas within the City and future planned growth areas.

## **IV. WATER SERVICE**

### **A. General**

The City of Havre de Grace provides water service to its population through a network of pipes, pumps, tanks, and treatment systems. Individual users are connected to the

system with flow meters used for billing purposes. Water supplies must be provided to meet the immediate and long-term needs of the community with adequate distribution and storage facilities constructed and maintained to provide adequate water pressure and flows for domestic use. Reserves for fire fighting capability must be built into the system for the protection of life and property. The following sections describe Havre de Grace's present and projected future water needs and system requirements.

## **B. Existing**

### **1. Demands**

Within the City, the average daily water demand is approximately 1.43 MGD, with a peak demand of 1.85 MGD.

### **2. Sources**

The City's DPW operates a municipally owned water plant which provides water throughout the City as well as 2.0 MGD to Harford County. The source of Havre de Grace's water is the Susquehanna River. This facility, located on St. John Street, was bought from a private firm in 1926 and expanded to a 2.4 MGD plant in 1954. Under an agreement with Harford County, signed in 1980, the plant was optimized to 3.9 MGD. In the late 1980's, Harford County constructed a 6.0 MGD plant adjacent to the City plant. The County water treatment facility is in stand-by mode and is exercised once a week.

### **3. Distribution System**

The City's water distribution system is composed of four, six, eight, ten, and twelve-inch water mains which deliver water at an average minimum pressure of approximately seventy pounds per square inch to all developed sections of the City. Fire protection also is provided by this system through a series of fire hydrants distributed citywide. The City has two above-ground water storage tanks; a two million gallon tank located in the Meadowvale community, the other a 400,000 gallon tank located on Lapidum Road. In an emergency, because of this capacity, the City can provide a day's water supply from storage alone.

### **4. Analysis**

The City's existing water treatment facility has an additional 0.48 MGD capacity to meet future demands based on the plant's average day performance. The supply, treatment, distribution, and storage facilities are operational and adequate for the present conditions but have limited reserve capacity available for future growth.

## **C. Future**

### **1. Demands**

The planning area build-out, exclusive of the 2.0 MGD allocation to Harford County, will require an average daily water supply of 2.63 MGD, with a peak daily rate of 3.41 MGD. Some areas, such as Susquehanna River Hills, may never require extension of public water but are factored here in the event that private wells fail. Table 6.1 shows the ultimate water supply requirements for the City and each planning sub-area. These figures represent the water demands of the people residing inside current City limits (as of July 2003) as well as those who would be living in the developing and projected growth areas, if fully developed. These Planning Sub-Area descriptions coincide with the Comprehensive Plan Area map in Chapter 3, The Plan.

Due to the need for increased water pressure on properties near the I95 Interchange, a 600,000 gallon water storage tank is being designed as part of the Bulle Rock area expansion to be funded by the private development interests. Increased water pressure is needed specifically for fire suppression systems within multi-family residential and commercial structures as well as for the City’s future hydrant system in those areas. Installation of the tank and associated pumping capacity will service the area west of the two existing storage tanks that are located near MD 155.

**TABLE 6.1  
COMPREHENSIVE PLAN ESTIMATED WATER DEMANDS**

<b>Planning Sub-Area</b>	<b>Average Day (Gal/Day)</b>	<b>Subtotals by Sub Area</b>
<b>Total Existing City</b>	<i>1,425,000 *</i>	<i>1,425,000 *</i>
<b><u>A. Developing Areas</u></b>		
1. I-95 Interchange, Southeast Quadrant: <i>Mixed Office Employment and Residential Uses</i>	<i>142,000</i>	
2. Bulle Rock Project, The Meadows Area	<i>196,000</i>	
3. Bulle Rock Project, Parkway Entrance <i>Residential and Community Center</i>	<i>242,000</i>	
4. Grace Manor	<i>23,000</i>	
5. Havre de Hills/Lewis Lane	<i>24,000</i>	<i>627,000</i>
<b><u>B. In-fill Growth Areas</u></b>		
1. Shawnee Brooke	<i>8,000</i>	
2. Havre de Grace Heights	<i>21,000</i>	
3. Revolution Street Commercial Corridor	<i>N/A, water available currently</i>	

Planning Sub-Area	Average Day (Gal/Day)	Subtotals by Sub Area
4. US 40 Commercial	60,000	
5. Lampson Property	21,000	110,000
<b><u>C. Phased Growth Areas</u></b>		
6. Cherry Hill Farm (Guzzo Property)	20,000	
7. Greenway Farm	174,000	
8. Green Properties	53,000	
9. Earlton Road	48,000	
10. Robinhood Road	29,000	
11. US 40 Commercial Extended	39,000	
12. Bulle Rock Golf Course: <i>Residential, Club House/Restaurant, and Inn/Conference Center</i>	52,000	415,000
<b><u>Other Areas</u></b>		
13. Garrett Island	<i>N/A, open space</i>	
14. Chapel Road Communities	10,000	
15. Susquehanna River Hills	39,000	
16. Arundel Quarry	<i>N/A, mining activity</i>	
17. Sion Hill ( <i>MET easement</i> ) **	<i>N/A, open space</i>	
18. Old Bay Farm ( <i>MET easement</i> ) **	<i>N/A, open space</i>	49,000
<b>Total for Planning Areas</b>		<b>1,201,000</b>
<b>Total for Current Usage plus Planning Areas</b>		<b>2,626,000</b>

\* Average Day (Gal/Day) is for Fiscal Year 2003, from July 1, 2002 to June 30, 2003.

Peak Day Factor is 1.3 of Average Day, or 1,852,500 for Fiscal Year 2003.

\*\* A Maryland Environmental Trust (MET) easement has been placed on this property.

2. Sources

The significant increase in water demand associated with growth potential as described in the Comprehensive Plan will require an adjustment of the

arrangement between the City and Harford County Government in relation to the current allocation of 2.0 MGD of City treatment capacity to Harford County. An incremental call-back of 432,000 gallons from the allocation to Harford County will be initiated when it is required. In relation to long-term anticipated growth in the Havre de Grace region, timing and cost for water re-allocation between the City and Harford County must be further studied.

## V. WASTEWATER SYSTEM

### A. General

The City is responsible for the collection and treatment of wastewater generated within its service area. The City's system of house connections, gravity sewers, pumping stations, and treatment facilities operate to assure that wastewater pollution does not impact tributaries to the Chesapeake Bay or the Bay itself. The following sections describe the existing system and future facilities that will be required to accommodate the Comprehensive Plan goals.

### B. Existing

#### 1. Flows

Currently, the Wastewater Treatment Plant is rated by Maryland Department of the Environment (MDE) as a 1.9 MGD facility. The current average daily flow from the Havre de Grace service area is 1.73 MGD. Capacity for the wastewater treatment plant is factored differently than for water treatment and distribution. Water used for lawn sprinkling or car washing, for example, does not return through the sewer. In addition, the 2.0 MGD that is supplied to Harford County does not return to the wastewater treatment plant. However, groundwater can leak into the sewer system through cracks in pipes, failed joint connections, or manholes. This leakage is known as infiltration.

In an older wastewater system such as in Havre de Grace, severe rainfall events can cause higher flows on certain days. The City's plant has experienced extreme peak flows due to rainfall induced inflows to the system. The City is working to reduce inflow and infiltration to the Wastewater Treatment facility by inspecting all residential, commercial, and industrial properties to eliminate illegal stormwater connections to the sanitary collection system. By working with property owners, rain water, downspouts, and basement sump pumps are redirected to onsite swales and public storm drain inlets in an appropriate manner. Sources of inflow are identified and incrementally eliminated through the inspection process.

#### 2. Treatment

The City constructed its first sewage collection system in 1910. It was developed as a combined sanitary and stormwater gravity flow system with raw

sewage discharging directly into the Susquehanna River until 1967. During the latter portion of 1965, the City began construction of a 1.5 MGD Wastewater Treatment Plant on the Chesapeake Bay, adjacent to the Maryland National Guard Reservation. Placed in operation in 1967, this treatment plant provided primary treatment of the combined wastewater. Effluent from the plant was disinfected by a chlorination process and discharged into the Chesapeake Bay via a submerged outfall. In 1985, the plant was upgraded and expanded to a 1.9 MGD secondary treatment plant, which included phosphorous removal. The plant effluent still discharged into the Chesapeake Bay through a 4,000-foot outfall pipe.

After a series of sewage overflows at the primary clarifiers and rotating biological contactors discharged into the Chesapeake Bay without secondary treatment, a 750,000 gallon flow equalization tank was constructed at the Wastewater Treatment Plant in 1992. In late 1994, the City completed the elimination of a number of interconnections between the stormwater collection system and the sanitary sewer collection system. Using \$50,000 in Supplemental Assistance funds from MDE, the City removed fourteen storm water catch basins from the sanitary sewer system, which drastically reduced storm water inflow to the Wastewater Treatment Plant.

In 1998, a contract was awarded to Stearns & Wheler for the design of a Biological Nutrient Removal (BNR) facility. Construction of this \$6.7 million facility was substantially completed in September 2002. Goal levels for nitrogen and phosphorous removal were achieved. Though the treatment facility is currently rated at 1.9 MGD, additional capacity has been achieved in this recent BNR upgrade. Working with MDE, the City will proceed to re-rate the Wastewater Treatment Plant to 2.3 MGD. In late 2002 following the grand opening of the upgraded facility, the State announced significantly tighter limits for nitrogen and phosphorous removal to meet the new Chesapeake Bay water quality standards. By the end of 2003, the Department of Natural Resources will prepare a final report documenting the new reduction goals and strategies to achieve them.

The City has the only existing Wastewater Treatment Plant within the Havre de Grace Facility Planning Area. A tabulation of the City's Wastewater treatment facilities, disposal methods, and other pertinent information is presented as follows:

a. Wastewater Treatment Plant (1.9 MGD)

- *Treatment Process:* Grit chamber, primary clarifier, flow control chamber, 250,000 gallon flow holding tank, 640,000 Modified Ludzack Ettinger (MLE) process, rotating biological contactor, final clarifier, chlorination/dechlorination, post aeration, sludge digestion, sludge dewatering, and sludge composting.

- *Plant Effluent Discharge:* Plant discharges into the Chesapeake Bay.
- *Sludge Disposal:* The City has received a general distribution permit from MDE so the composted sludge can be distributed to and purchased by public consumers. The resultant bio-solid compost is graded Class A and is safe for home, garden, and yard use.

b. Pumping Stations

*Existing Stations*

- Main Pumping Station
- Erie Street
- St. John Street
- Maryland National Guard
- Concord Cove
- Canvasback Cove
- Log Pond
- Municipal Yacht Basin Ejector
- Frank J. Hutchins Park
- Seneca Pointe
- Woods at Bayview

*Stations Under Construction*

- Bulle Rock

*Stations Under Design*

- Route 40 West

c. Collection System

- Consists of more than 40 miles of sewer lines, varying in size from 6 to 30 inches.

3. Analysis

The City's Wastewater Treatment Plant has a remaining available capacity of 0.17 MGD. The wastewater conveyance and treatment systems are adequate for current conditions. Recent improvements to the treatment plant and interceptors have eliminated many prior capacity problems. The City is continuing to evaluate other possible modifications to the treatment plant to improve effluent quality and to more effectively handle rainfall induced peak flows.

Table 6.2 provides projected average daily flow for developing areas and growth areas identified in Chapter 3, The Plan. Because of the efficiency of the treatment plant due to recent improvements, the City will proceed to re-rate the Wastewater Treatment Plant to 2.3 MGD with MDE. In addition, the City may consider additional expansion of the treatment facility if it is determined necessary and cost effective for long-term growth. The City will also continue to investigate the development of an industrial pretreatment facility. This pretreatment facility would service existing and future industrial plants that cannot pre-treat on their own sites, due to environmental constraints or the lack of space.

The City is pursuing "regional" facility implementation strategies by initiating a "pro-rata share" sewerage plan for the designated growth areas. This concept provides a mechanism by which the City can ensure the adequate routing and sizing of utility extensions. Application of this program allows for the locality to require payments by developers for their "fair-share" cost of off-site sewer extensions, and requires developers to provide for over-sizing of both on-site and off-site sewers within a defined area. A developer may be reimbursed for a portion of the increased cost of the off-site sewer construction area.

In cases where an individual landowner or developer wishes to provide sewer service to a given site, the developer may voluntarily initiate a recoupment program to construct off-site sewer extensions. Currently, the Northwest Interceptor Sewer and Sewage Pumping station are being designed and will be financed through private recoupment arrangements. The proposed Northwest Interceptor will provide sewer service to land areas from I-95 to US 40. In addition, the fee structure for capital cost recovery will need to be evaluated and adjusted to fund future improvements to the Wastewater Treatment Plant that will be required by growth.

**TABLE 6.2**  
**COMPREHENSIVE PLAN ESTIMATED WASTEWATER CAPACITY NEEDS**

<b>Planning Sub-Area</b>	<b>Average Day (Gal/Day)</b>	<b>Subtotals by Sub Area</b>
<b>Current City Requirements</b>	<i>1,730,000*</i>	<i>1,730,000*</i>
<b><u>A. Developing Areas</u></b>		
1. I-95 Interchange, Southeast Quadrant: <i>Mixed Office Employment and Residential Uses</i>	<i>131,000</i>	
2. Bulle Rock Project, The Meadows Area	<i>177,000</i>	

Planning Sub-Area	Average Day (Gal/Day)	Subtotals by Sub Area
3. Bulle Rock Project, Parkway Entrance <i>Residential and Community Center</i>	218,000	
4. Grace Manor	21,000	
5. Havre de Hills/Lewis Lane	22,000	<b>569,000</b>
<b><u>B. In-fill Growth Areas</u></b>		
1. Shawnee Brooke	<i>N/A, water only</i>	
2. Havre de Grace Heights	<i>N/A, water only</i>	
3. Revolution Street Commercial Corridor	<i>N/A</i>	
4. US 40 Commercial	55,000	
5. Lampson Property	19,000	<b>74,000</b>
<b><u>C. Phased Growth Areas</u></b>		
6. Cherry Hill Farm (Guzzo Property)	18,000	
7. Greenway Farm	156,000	
8. Green Properties	49,000	
9. Earleton Road	43,000	
10. Robinhood Road	26,000	
11. US 40 Commercial Extended	36,000	
12. Bulle Rock Golf Course: <i>Residential, Club House/Restaurant and Inn/Conference Center</i>	47,000	<b>375,000</b>
<b><u>Other Areas</u></b>		
13. Garrett Island	<i>N/A, open space</i>	
14. Chapel Road Communities	<i>N/A, water only</i>	
15. Susquehanna River Hills	<i>N/A, water only</i>	
16. Arundel Quarry	<i>N/A, mining activity</i>	
17. Sion Hill ( <i>MET easement</i> ) **	<i>N/A, open space</i>	
18. Old Bay Farm ( <i>MET easement</i> ) **	<i>N/A, open space</i>	<b>0</b>
<b>Total for Planning Areas</b>		<b>1,018,000</b>

Planning Sub-Area	Average Day (Gal/Day)	Subtotals by Sub Area
<b>Total: Current Usage and Planning Areas</b>		<b>2,748,000</b>

\* Average Daily Flow (Gal/Day) is for Fiscal Year 2003, from July 1, 2002 to June 30, 2003.  
 \*\* A Maryland Environmental Trust (MET) easement has been placed on this property.

**VI. STORMWATER MANAGEMENT**

**A. General**

The annexation and subsequent urbanization of the largely undeveloped areas beyond the City limits present a number of environmental problems with regard to stormwater management. Construction activities can generate significant quantities of sediment. Impervious pavements and building roofs increase volume of stormwater runoff and the timing and magnitude of peak flows. Runoff from residential, commercial, and industrial areas can be polluted with oils, toxins, or metals.

A new stormwater management ordinance (Ordinance No. 826), which is consistent with the 2000 Maryland Stormwater Design Manual Volumes I & II, was adopted in March 2002. State and federal regulations continue to require more oversight and control by local municipalities of discharges into waters of the State. New regulations require permits under Phase II of the National Pollution Discharge Elimination System (NPDES) for discharges from Small Municipal Separate Storm Sewer Systems. Elements of this program must address these six areas:

- Public education and outreach
- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site run off and control
- Post construction storm water management
- Pollution prevention and good housekeeping

**B. Existing**

Although a stormwater collection system exists through the City of Havre de Grace, it is not entirely a closed system. In areas where no closed system exists, open conduits or natural overland systems accomplish drainage. Until late 1994, there were a number of interconnections between the storm water collection and the sanitary sewer collection systems, which resulted in overflow episodes at the City's Wastewater Treatment Plant.

As previously indicated in the Wastewater Treatment Section, these interconnections are being removed in an ongoing process through DPW.

Three streams – Fountain Run, Ivy Run, and Lilly Run – flow through the City. All are prone to flooding. These streams, along with the Susquehanna River and Chesapeake Bay, have been designated on the Federal Flood Insurance Programs Maps, making low cost flood insurance available to residents within designated boundaries. The City has also adopted, by ordinance, floodplain and stormwater management rules and regulations in conformance with State law to ensure development projects meet certain criteria.

**C. Future**

All future development within the City’s planning area must be designed to retain the post-development storm on-site or in a similarly planned regional facility based on the 2000 Maryland Stormwater Design Manual Volumes I & II. A site-specific hydrologic and hydraulic study should be conducted for each new development to determine the location, timing, and funding of retention and/or detention structures within the City. Further analysis of the planning area should reveal potential locations for stormwater structures. Stormwater should be routed to these future facilities to mitigate changes in stormwater volume and pollutants associated with urban development.

The Unified Stormwater Sizing Criteria are used to estimate peak storm water discharges for the 2-year, 10-year and 100-year frequency storm. The runoff coefficient for each area should be selected on the basis of the types of contributing areas or surfaces. Where heterogeneous areas are encountered within sub areas, weighted values of the coefficients should be used. The projected Water Quality Volume required to compensate for increase in runoff can be estimated by the formula:

$$WQ_v = [(P)(R_v)(A)]/12$$

P = Rainfall in inches (1.0 Eastern Zone)  
 R<sub>v</sub> = Volumetric runoff coefficient  
 A = Area in acres

It is expected the following stormwater management methods would be used, where applicable: sediment and erosion control, storm water detention, storm water retention, cluster development, and the provision of bio-retention facilities and grassy swales. Stormwater management is addressed in the review process for the development of individual properties. As mandated by State law, new development should not encroach on the natural stream valleys and other sensitive environmental areas. Refer to Chapter 10, Sensitive Areas, for further discussion about stormwater management and its relationship to environmental resource protection.

**VII. SOLID WASTE**

The City provides solid waste collection and recycling opportunities for residential units through a competitive bid process. The DPW administers the resultant contract with the private contractor. All commercial, multi-unit residential, and industrial facilities contract

directly with a private trash contractor of their choice. Non-recyclable refuse removed from Havre de Grace is taken typically to an incinerator or landfill operated by Harford County, which currently charges a \$42 per ton solid waste disposal fee.

### **VIII. ELECTRIC POWER**

Electricity supplied to the City is provided by Baltimore Gas and Electric Company (BGE), a privately-owned utility company. BGE services all residential, commercial, and industrial areas in the City. Twice yearly, a formal review of the current and projected loads for this community is conducted and any steps needed to supply additional customers, and/or load increases from existing customers, are initiated as well as addressing reliability concerns for this area.

### **IX. NATURAL GAS**

Natural gas service is also provided throughout the City by Baltimore Gas and Electric. BGE supplies natural gas to Havre de Grace through a combination of low, high, and ten pounds per square inch (psi) pressure systems. BGE evaluates area loads in the Havre de Grace area on a yearly basis in order to assess infrastructure adequacy.

### **X. TELEPHONE**

Verizon provides local telephone service throughout the City. All long distance firms, such as AT&T, MCI, and Sprint, are available to the residents of Havre de Grace.

### **XI. CABLE TELEVISION**

Comcast Cablevision, as a franchisee of the City, provides cable television service throughout Havre de Grace. Besides offering a standard line-up of local and national programming, Comcast provides such premium services as HBO, Cinemax, Disney, and Home Team Sports, to name a few, at an additional fee. Comcast Cable also provides high speed internet connection service.