

## WATER RESOURCES

### INTRODUCTION

As described previously in the early chapters of this Plan, HB 1141 imposed several requirements concerning the composition of Comprehensive Plans. The most significant requirements are for the addition of two new chapters or Elements. One of these is the Municipal Growth Element and has already been presented in this Plan. The other is the Water Resources Element, which is the subject of this chapter. In a nutshell, the purpose of this Element is to insure that the Town has or is planning to have, adequate water supply to serve the projected population of the Town, as well as adequate wastewater capacity, and the ability of the local waterways to assimilate projected stormwater from both point and non-point sources.

As was mentioned in the Municipal Growth Element, there are three different required elements of a Comprehensive Plan that must address water, sewer, and stormwater management issues; Municipal Growth, Water Resources, and Community Facilities and Services. There is also actually a fourth Element involved when the impact of water and sewer availability and systems is factored into the Land Use Element. Given the fact that we are required to address these issues in three, if not four, different parts of the Plan there will necessarily be an awful lot of overlap and there must be coordination between the Elements. The focus of the Water Resources Element is distinguished from the other Elements in that it focuses primarily on the following questions:

- Is there adequate water supply to meet current and future needs?
- Is there adequate wastewater and septic supply to meet current and future needs?
- What, if any, impact will meeting these needs have on water resources?

These are essentially the same issues the Municipal Growth Element was required to examine for a host of services. The Water Resources Element is simply more narrowly focused on just water, wastewater, and stormwater. It may therefore be more detailed than was the analysis presented in the Municipal Growth Element, but the two should be consistent, if not identical in this analysis.

Before looking at the specifics of these services and resources, it is important to reiterate a general longstanding and overriding principle of the Town of Easton. That is that no water or wastewater service is extended to properties located outside of Town boundaries. Property-owners or developers that desire our services are required to annex into the Town. Furthermore property that is developed within the Town is required to connect to our municipal system. As a result of this policy, there are very few private wells or septic systems within the Town limits.

There are only two known exceptions to this policy. One is for the Ratcliffe Farm Subdivision. This a 15 lot large-lot waterfront subdivision located distant from the 16<sup>th</sup> lot, on which the more Town-scale Easton Village project is presently being developed. These 15 lots were allowed to develop on private wells and septic systems. The other exception is for a handful (less than a dozen) houses which were in existence and served by well and septic at the time that they were annexed. They have been allowed to remain as such until it is necessary for them to connect to the Town's municipal system.

For the reason outlined above, this Plan does not include a map of the Town's water and wastewater service areas. They are virtually identical to the Town boundary. The only exceptions are the South Clifton subdivision located off of Route 50 and one property which receives water service (but not wastewater) on St. Michael's Road.

## WATER SUPPLY AND SYSTEM

Public water service in the Town of Easton is provided by the Easton Utilities Commission (EUC), an independent agency owned by the Town. The following language is taken directly from EUC's website and provides an excellent overview of the state of the Town's water supply and distribution system:

*Since 1914, Easton Utilities has been dedicated to providing clean, clear, healthy water in plentiful supply to all of the town's residents. Throughout each year, our fully trained and certified staff carefully monitors water quality.*

*The Water Department currently serves 6,000 customers through 84 miles of water mains and over 550 fire hydrants. Easton Utilities pumps water from naturally filtered underground aquifers (water-bearing sands) through six wells that are 600 to 1,200 feet deep. We then treat the water as required and pump it into the distribution system. The water that comes out of a customer's tap includes water from each of these wells. No single well provides all of a customer's water. Of those wells, one is drilled 600 feet into the Aquia Greensand Aquifer. Another three wells are drilled 1,000 feet into the Magothy Aquifer. The final two wells are 1,200 feet deep drilled into the Upper Patapsco Aquifer and feeds directly into a state-of-the-art water treatment plant on Glebe Road.*

*The storage capacity of Easton's Water Department is 2 million gallons, which is met through two separate 1 million gallon storage tanks. In 2005, Easton Utilities added the second 1-million gallon elevated water storage tank to improve fire flow capability, boost system-wide water pressure, and add capacity sufficient to accommodate the Town's future needs.*

The Municipal Growth Element (see especially Table 10) indicated that EUC has planned for expansion of the water system to accommodate a population of 31,181 in 2033, using an average daily demand of 4.27 MGD (7.73 MGD maximum). Our 3% annual average compound growth rate reaches the same conclusion in terms of the Town's population in 2033. Thus this seems to be a reasonable projection and assumption. Furthermore, since our targeted growth rate is actually 1%, this planned expansion will obviously accommodate this amount of growth. It may not even be needed at all for a number of years beyond 2033. It can be concluded therefore that EUC both accommodates the existing water demands of the Town and is planning to continue to do so well into the future (i.e. to the year 2033). Since we have also calculated that effective "build-out" of the Town will likely be achieved beyond the long range 2040 timeframe of this Plan, it seems logical that only minimal upgrades will be necessary beyond what is already planned in order to serve the Town's ultimate population (and there is ample time to do so).

One of the mandated requirements of this Element is to examine current and future water sources and include planning strategies to protect them from pollution and over-allocation. This is difficult, if not impossible to do given that (1) Easton's source of water is located well outside of our jurisdiction and (2) it is shared by many other users. This is also recognized by Talbot County and the problem is summarized well in their Draft Water Resource Element as follows:

*Talbot County's public and private water users draw drinking water from several major confined groundwater aquifers, many of which (particularly the Aquia and Piney Point) are widely used throughout the Eastern Shore. The capacity of these confined aquifers is increasingly strained by new development throughout the Delmarva Peninsula. The US Geological Society (USGS) reports that "withdrawals from Maryland Coastal Plain aquifers have caused ground-water levels in confined aquifers to decline by tens to hundreds of feet*

*from their original levels. Continued water-level declines could affect the long-term sustainability of ground-water resources in agricultural areas of the Eastern Shore.”<sup>3</sup> In most cases, the recharge areas for these aquifers (particularly the Piney Point and Aquia), are not necessarily found on the Eastern Shore.*

*Groundwater and surface water resources are also linked. Water from surficial aquifers can comprise a significant amount of the base flow of streams and rivers. While groundwater withdrawn through wells is typically returned to the ground or surface via point source discharges, septic systems, and absorption of runoff from outdoor water uses (such as watering of lawns), large withdrawals can potentially impact the quality and quantity of flows in nearby surface water bodies.*

*There exists no comprehensive study of the water-bearing formations used by Talbot County residents and businesses. Individual (e.g., project-specific) groundwater studies do not take into account the cumulative impacts of heavy demand on the Aquia and other formations from both the Eastern and Western Shore. In addition, the Water Balance methodology recommended by Models and Guidelines #26 (the state’s official guidance for preparation of the Water Resources Element) is not applicable for the Coastal Plain. Thus, while the County understands that its groundwater supplies are limited and declining, there is no reliable measure of water supply against which to compare current and especially projected water demands.*

*MDE, the Maryland Geological Survey (MGS), and the US Geological Survey (USGS) have begun work on a Coastal Plain Aquifer Study, but that study remains incomplete. The County should use the data and recommendations of the Coastal Plain Aquifer Study (once completed) to shape its own water use policies and ordinances. However, the County also recognizes the need for and supports the development of broader regional water policies to protect already scarce resources.*

*For purposes of this Water Resources Element (and lacking specific evidence to the contrary), this Water Resources Element presumes that the MDE groundwater permit issued for each public drinking water system reflects the maximum safe yield of the aquifer(s) used by that system.<sup>1</sup>*

## **WASTEWATER SERVICE AND CAPACITY**

Easton Utilities is also the provider of wastewater service in the Town of Easton. Their description of the state of this service is as follows:

*Easton began construction on its first sewage system in 1911. In operation by 1914, it was the first separate storm and sanitary wastewater system in the State of Maryland. Currently, the Wastewater Department serves about 6,000 customers through over 70 miles of wastewater mains, six major pumping stations and an environmentally-friendly wastewater treatment facility. The wastewater treatment facility, one of Maryland's most environmentally friendly, is anticipated to meet Easton's wastewater needs to 2030 while exceeding Chesapeake Bay water quality goals for reducing nitrogen and phosphorus. The process is designed to reduce effluent concentrations of nitrogen to 3 milligrams per liter (mg/l) and phosphorus to 0.3 mg/l—a decrease of 83 percent (182,000 pound) and 81 percent (16,000 pound) respectively. The new facility began operation in 2007.*

As the description above indicates, EUC brought online a new, state-of-the-art wastewater treatment facility in 2007. This plant utilizes enhanced nutrient removal (ENR) technology and has a design treatment capacity of 4 MGD, of which slightly more than half (2.09 MGD) was being utilized as of 12/31/08. Taking into account committed allocations

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<sup>1</sup> Talbot County, Maryland Water Resources Element, Planning Commission Draft, June 3, 2009.

and a reservation for Infiltration and Inflow (I&I), this plant has a remaining allocable capacity of 1,351,051 GPD. This equates to 5,404 EDU's (Equivalent Dwelling Units) as of January 2009.<sup>2</sup>

The wastewater treatment plant brought online in 2007 was designed to accommodate the Town's projected growth of 18 years (i.e. until 2025) and to facilitate a relatively simple expansion to increase the plant's treatment capacity. Given that we are projecting to achieve effective build-out in 2041 if we continue to grow at 3% per year we would need to expand treatment capacity prior to 2025 to accommodate the remaining projected growth of the Town, which is projected to be about 14,000 people (14,431), from 24,470 in 2027 to 38,901 at build-out. Given current household size this forecasts 6,500 additional dwelling units that would need to be accommodated in a "final" capacity expansion.

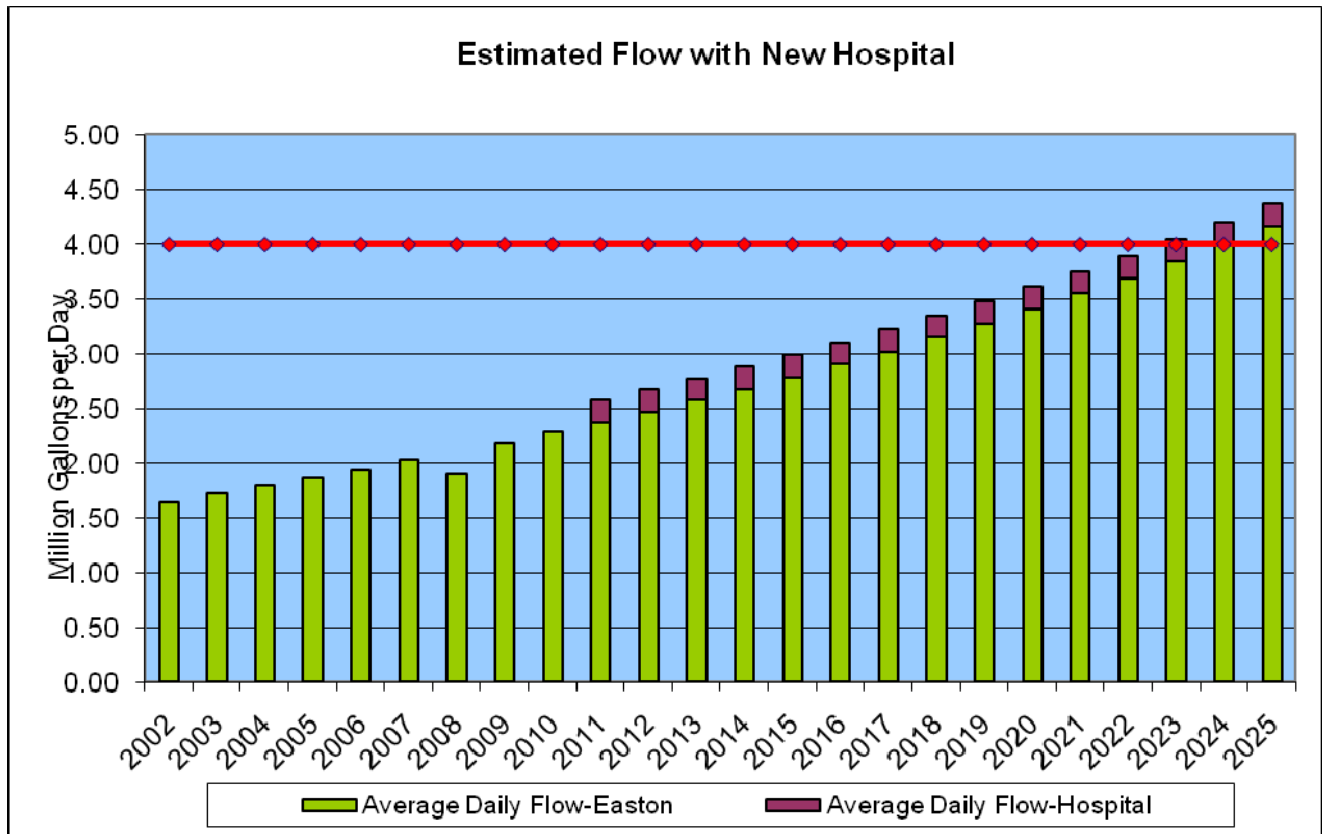
There are two wild cards in attempting to estimate future demand for wastewater capacity. The first is the future growth of the Town. If growth rates change, the year in which capacity is reached at the plant is likewise changed. Obviously this date may get pushed significantly into the future depending on how successful we are in achieving our targeted 1% growth rate. Similarly, if the Growth Boundary is changed, the Town's ultimate population is changed, and therefore the size and possibly even the need for the 2025 capacity expansion may not be warranted.

One future user that seems near certain to connect to the Town's wastewater system is the proposed new Regional Hospital. Easton Utilities Commission (EUC) has examined this issue and according to Hugh Grunden, President and CEO of EUC, the proposed hospital and associated buildings are projected to generate approximately 200,000 gallons

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<sup>2</sup> Per letter from Talbot Bone, P.E., Manager, Water and Wastewater Department of Easton Utilities to Kathy Foster, R.N., MSN, Talbot County Health Officer dated 02/12/09 representing EUC's annual report to the County Health Dept.

of wastewater per day. At the projected level, the hospital would consume approximately 5% of the treatment facility's total design capacity and less than 10% of the remaining capacity. The impact of the hospital in terms of any future expansion needs is that if it is constructed as currently planned, then the wastewater treatment plant would reach capacity in 2023, two years ahead of the original plan. This is summarized graphically below.



In summary, the Town's wastewater treatment facility currently provides state-of-the-art treatment for all of the Town's residents and can easily accommodate growth of the upcoming planning period, as well as one or two beyond that. Based on current assumptions concerning household sizes, growth rates, and extension of services beyond the Town limits (which is not currently allowed), it is expected that the capacity of the plant



will need to be increased effective in 2025. The addition of the new Hospital to this system causes this expansion to be needed approximately two years sooner (i.e. 2023). On the other hand, if the growth rate is effectively reduced to 1%, the WWTP would not need to expand during the 30 year time-frame this Plan contemplates.

## **STORMWATER MANAGEMENT AND POINT AND NONPOINT SOURCE LOADING STATUS AND REMEDIATION**

Stormwater management in Easton is governed by the Town's Stormwater Management Ordinance. According to that Ordinance, its purpose is: "to protect, maintain and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures to control the adverse impacts associated with increased stormwater runoff. Proper management of stormwater runoff will minimize damage to public and private property, reduce the effects of development on land, control stream channel erosion, reduce local flooding, and maintain after development, as nearly as possible, the pre-development runoff characteristics."

The Scope of the Stormwater Management Ordinance is copied below.

No person shall develop any land for residential, commercial, industrial, or institutional uses without having provided stormwater management measures that control or manage runoff from such developments, except as provided within this section. The stormwater management measures must be designed consistent with the Design Manual and constructed according to an approved plan for new development or the policies stated in section 3.4 for redevelopment.

### **3.2 Exemptions**

The following development activities are exempt from the provisions of this Ordinance and the requirements of providing stormwater management:

- A. Agricultural land management activities;
- B. Additions or modifications to existing single family detached residential structures if they comply with 3.2 C of this section;
- C. Developments that do not disturb over 5,000 square feet of land area.
- D. Land development activities that the Administration determines will be regulated under

specific State laws, which provide for managing stormwater runoff.

E. Nothing in this section shall prohibit the Town Engineer from requiring stormwater management controls upon evaluation of accumulative effects of previous exemptions.

### **3.3 Waivers / Watershed Management Plans**

A. Stormwater management quantitative control waivers shall be granted only to those projects within areas where watershed management plans have been developed consistent with F. of this section.

B. If watershed management plans consistent with F. of this section have not been developed, then stormwater management quantitative control waivers may be granted to projects:

(1) That have direct discharges to tidally influenced receiving waters;

(2) That do not increase the post-development peak discharge for the 2-year and 10-year storm events by more than 10 percent.

(3) When all stormwater from the development will flow to an existing regional stormwater facility that was designed and constructed to accommodate the stormwater from the development consistent with the quantitative control requirements of this Ordinance.

Adequate conveyance must exist from the site to the regional facility. Unmanaged runoff must not be allowed to discharge into natural drainage systems.

C. Stormwater management qualitative control waivers apply only to:

(1) In-fill development projects where stormwater management implementation is not feasible;

(2) Redevelopment projects if the requirements of §3.4 of this Ordinance are satisfied; or

(3) Sites where the approving agency determines that circumstances exist that prevent the reasonable implementation of quality control practices.

D. Waivers granted must:

(1) Be on a case-by-case basis;

(2) Consider the cumulative effects of the Town of Easton waiver policy; and

(3) Reasonably ensure the development will not adversely impact stream quality.

E. If the Town Engineer has established an overall watershed management plan for a specific watershed, then the Town Engineer may develop quantitative waiver and redevelopment provisions that differ from sections 3.3B and 3.4.

F. A watershed management plan developed for the purpose of implementing different stormwater management policies for waivers and redevelopment shall:

(1) Include detailed hydrologic and hydraulic analyses to determine hydrograph timing;

(2) Evaluate both quantity and quality management;

(3) Include cumulative impact assessment of watershed development;

(4) Identify existing flooding and receiving stream channel conditions;

(5) Be conducted at a reasonable scale;

(6) Specify where on-site or off-site quantitative and qualitative stormwater management practices are to be implemented;

(7) Be consistent with the General Performance Standards for Stormwater Management in Maryland found in Section 1.2 of the Design Manual; and

(8) Be approved by the Administration.

G. The Town Engineer may grant a waiver of quantitative stormwater management requirements for individual developments provided that a written request is submitted by the applicant containing descriptions, drawings, and any other information that is necessary to evaluate the proposed development. A separate written waiver request shall be required in accordance with the provisions of this section if there are subsequent additions, extensions, or modifications to a development receiving a waiver. A waiver request submitted for subsequent additions, extensions, or modifications to a development receiving a waiver shall be evaluated based on the cumulative impacts of the development.

H. Waivers within the Tanyard Branch watershed shall not be granted unless the impacts are determined negligible by the Town Engineer. (See "Exhibit A" (map of Tanyard Branch Watershed) attached to this document).

### **3.4 Redevelopment**

A. The recharge, channel protection storage and overbank flood protection volume requirements specified in the Design Manual do not apply to redevelopment projects, provided that the redevelopment does not increase the 2-year and 10-year storm event discharge rates over the preredevelopment discharge rates for the 2-year and 10-year storm events. Where redevelopment results in an increase in the pre-development 2-year and 10-year storm flows, quantitative management per Section 4.0 shall apply.

B. All redevelopment projects shall reduce existing site impervious areas by at least 20 percent. Where site conditions prevent the reduction of impervious area, then stormwater management practices shall be implemented to provide qualitative control for at least 20 percent of the site's impervious area. When a combination of impervious area reduction and stormwater practice implementation is used, the combined area shall equal or exceed 20 percent of the site.

C. Where conditions prevent impervious area reduction or on-site stormwater management, practical alternatives may be considered, including but not limited to:

(1) Off-site BMP implementation for a drainage area comparable in size and percent imperviousness to that of the project. Off-site BMPs shall be located within the same watershed as, and in proximity to the proposed redevelopment;

(2) Watershed or stream restoration; the Applicant shall obtain all necessary permits and other required approval from appropriate State and federal agencies;

(3) Retrofitting; or

(4) Other practices approved by the Town Engineer.

D. In the case of site demolition prior to site plan approval, pre-development impervious areas may be considered with proper documentation as determined by the Town Engineer.

### **3.5 Variance**

The Town Engineer may grant a written variance from any requirement of Section 4.0, Stormwater Management Criteria, of this Ordinance if there are exceptional circumstances applicable to the site such that strict adherence will result in unnecessary hardship and not fulfill the intent of the Ordinance. A written request for variance shall be provided to the Town Engineer and shall state the specific variances sought and reasons for their granting. The Town Engineer shall not grant a variance unless and until sufficient justification is provided by the person developing land.

As mentioned previously the State's Stormwater Management Design Manual has been updated and the Town's Stormwater Management Ordinance will have to be updated accordingly. One of the more significant changes is likely to focus on the waiver section reproduced above.

Stormwater in Easton contributes both point and non-point loads to local waterways. The stormwater management system of Easton filters, collects, and treats runoff at the wastewater treatment plant located east of Town on the banks of the Choptank River. Nonpoint run-off that eludes the stormwater management system enters either the Choptank or the Miles River watershed. The Town is actually split into three 8-digit watersheds, the Miles and the Upper and Lower Choptank. All three of these watersheds are listed as impaired by nutrients by the Maryland Department of the Environment (MDE) and the Lower Choptank has completed a TMDL. TMDL is an abbreviation for Total Maximum Daily Load and it often refers to a plan or strategy for limiting the maximum amount of the identified pollutant that may enter the impaired water body.

There is not yet in place a TMDL strategy which affects Easton, but we are trying to do our part to reduce pollutant loadings by imposing the 10% pollutant reduction standard of the Chesapeake Bay Critical Area throughout the entire Town. Thus as development

occurs in Easton, water quality should theoretically improve, at least for the newer areas of Town. The problem areas are then confined to the older parts of Town. All of these areas drain into the Tanyard Branch via storm drains installed over 100 years ago (in approximately 1905).

A significant portion of the Town drains into Tanyard Branch, which empties into the headwaters of the Tred Avon River, which travels southwestward from Easton, by Oxford and into the Choptank River. The Tanyard Branch is subject to significant attention by the Town. Projects located in this basin are subject to specific additional stormwater management requirements. In short, within the Tanyard Branch watershed the discharge quantity volumes are required to be evaluated for the 2-year and 10-year storm events to the extent that the maximum post development release rate from the site shall not exceed the 2-year predevelopment rate for both storm events. As an alternative, developers may propose improvements within the watershed that will provide a similar level of benefit, as determined by the Town Engineer. Waivers within the Tanyard Branch watershed are not granted unless the impacts are determined negligible by the Town Engineer.

In addition to these higher standards for Tanyard Branch, the Town is also working cooperatively with Talbot County on a new grant-funded project to implement a number of innovative stormwater management practices along the stream. This includes the construction of a large regional sediment pond and inlet filter bags designed to catch litter before it enters the waterway. These activities are already funded and should be implemented in the near future. Additional projects for which the Town is seeking grant-funding in 2010 include the installation of a constructed wetland at the site of the Easton Utilities administration building and the design of a replacement conveyance system with sediment removal devices and Best Management Practices (BMP's) which will reduce nitrogen and phosphorous loadings to the watershed. This proposed project is parallel

with the Town's Rails-to-Trails network and therefore natural filters and subsurface BMP's will be employed.

An analysis of the impact of the Easton WWTP on the Choptank River is included in Talbot County's Water Resources Element. It finds that this facility will have adequate nitrogen and phosphorous discharge capacity to support projected growth through 2030 and beyond. In fact in 2030 it finds that the Easton WWTP will have 21,314 pounds per year of TN and 913 pounds per year of TP in remaining discharge capacity. It should be noted that the County's projections assume a 1% population growth rate for the Town of Easton, which the Easton Planning Commission has also adopted as a target for this Comprehensive Plan. In the preparation of its Wastewater Treatment Facility Capacity Increase and Improvement Plan in June of 2002, Easton Utilities Commission proposed the following treated effluent concentrations for the new WWTP:

Parameter	Concentration	Quantity (Load)
Flow (Average Annual)	4.01 MGD	N/A
Biochemical Oxygen Demand	10 mg/l	334 pounds per day
Total Suspended Solids	10 mg/l	334 pounds per day
Total Nitrogen	3 mg/l	100 pounds per day or 36,621 pounds per year
Total Phosphorous	0.5 mg/l	17 pounds per day or 6,103 pounds per year

On the more individual scale, the impact of fertilizer can be significant on the water quality of receiving waters. There is very little agriculture practiced within Easton's

corporate limits and therefore not a lot of impact from this source of nutrients. However there are large areas of agricultural production within our Future Growth Area. Depending on the amount of fertilizer these farms use as well as how the application of this fertilizer is managed, the impact of such nutrients should be reduced upon annexation and development in the Town. However, the impact of lawn-applied fertilizer on the water quality of streams and rivers can be significant as well. This is obviously a concern within the already developed portion of the Town and will be a concern as farmlands (and forested areas) are converted to developed lands in the future. The State of Maryland is requiring home improvement and similar stores to begin selling non-Phosphorous lawn fertilizer. This will hopefully help to reduce the negative water quality impact associated with lawn fertilization in the future.

The impact of the reduction of agriculture on the waterways surrounding Easton can be seen in the following summary table. It is the result of the MDE Nutrient Loading Spreadsheet. This spreadsheet analyzes the impact of future growth in Easton under three different scenarios. The first represents 3% growth, which is also the Build-out scenario for a 30 year time-frame. The second and third scenarios represent the Planning Commission's stated goal of 1% growth, again projected to a 30 year horizon. The difference between the two 1% scenarios is in the proportion of infill/redevelopment vs. Greenfield development. The first 1% scenario assumes that 75% of future development will occur in infill/redevelopment sites (i.e. anything within the 2009 Town Limits) and 25% will come from the development of land that is currently agriculture outside of Town limits. The second 1% scenario assumes that this split will be 50-50.

# Nutrient Loading Analysis Spreadsheet - Summary Results

## Land Use and Septic Systems

(See Scenario Descriptions Below)

	2007 LU, 2007 BMPs	2007 LU, Trib Strat BMPs	Scenario 1 Trib Strat BMPs	Scenario 2 Trib Strat BMPs	Scenario 3 Trib Strat BMPs
	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
Development	0	3,818	8,246	5,252	5,382
Agriculture	0	4,927	279	3,274	3,143
Forest	0	1,813	1,813	1,813	1,813
Water	0	112	112	112	112
Other	0	684	904	904	904
<b>Total Area</b>	<b>0</b>	<b>11,354</b>	<b>11,354</b>	<b>11,355</b>	<b>11,354</b>

Residential Septic (EDUs)	0	557	56	269	269
Non-Residential Septic (EDUs)	0	375	38	188	188

## Total Nitrogen Loading

	2007 LU, 2007 BMPs	2007 LU, Trib Strat BMPs	Scenario 1 Trib Strat BMPs	Scenario 2 Trib Strat BMPs	Scenario 3 Trib Strat BMPs
	(Lbs/Yr)	(Lbs/Yr)	(Lbs/Yr)	(Lbs/Yr)	(Lbs/Yr)
Development NPS	0	22,900	49,572	31,535	32,322
Agriculture NPS	0	42,567	2,441	28,178	27,038
Forest NPS	0	2,507	2,507	2,507	2,507
Other Terrestrial NPS	0	4,145	5,473	5,473	5,473
<b>Total Terrestrial Load</b>	<b>0</b>	<b>72,119</b>	<b>59,992</b>	<b>67,692</b>	<b>67,339</b>

Residential Septic (EDUs)	0	4,912	348	1,677	1,677
Non-Residential Septic (EDUs)	0	1,180	89	421	421
<b>Total Septic Load</b>	<b>0</b>	<b>6,092</b>	<b>436</b>	<b>2,098</b>	<b>2,098</b>

<b>Total NPS Nitrogen Load</b>	<b>0</b>	<b>78,210</b>	<b>60,429</b>	<b>69,790</b>	<b>69,437</b>
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<b>Total PS Load</b>	<b>0</b>	<b>23,800</b>	<b>48,729</b>	<b>27,415</b>	<b>27,415</b>
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<b>Total Nitrogen Load (NPS+PS)</b>	<b>0</b>	<b>102,010</b>	<b>109,158</b>	<b>97,205</b>	<b>96,852</b>
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**Total Phosphorus Loading**

	2007 LU, 2007 BMPs	2007 LU, Trib Strat BMPs	Scenario 1 Trib Strat BMPs	Scenario 2 Trib Strat BMPs	Scenario 3 Trib Strat BMPs
	(Lbs/Yr)	(Lbs/Yr)	(Lbs/Yr)	(Lbs/Yr)	(Lbs/Yr)
Development NPS	0	2,441	5,451	3,414	3,507
Agriculture NPS	0	3,977	224	2,690	2,588
Forest NPS	0	34	34	34	34
Other Terrestrial NPS	0	500	651	651	651
<b>Total Terrestrial Load</b>	<b>0</b>	<b>6,953</b>	<b>6,360</b>	<b>6,789</b>	<b>6,779</b>

<b>Total PS Load</b>	<b>0</b>	<b>2,400</b>	<b>3,655</b>	<b>2,742</b>	<b>2,742</b>
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<b>Total Phosphorus Load (NPS+PS)</b>	<b>0</b>	<b>9,353</b>	<b>10,015</b>	<b>9,531</b>	<b>9,521</b>
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**Impervious Cover and Open Space**

	2007 LU, 2007 BMPs	2007 LU, Trib Strat BMPs	Scenario 1 Trib Strat BMPs	Scenario 2 Trib Strat BMPs	Scenario 3 Trib Strat BMPs
Total Impervious Cover	0	1,865	3,497	2,449	2,485
Agriculture	0	4,927	279	3,274	3,143
Forest	0	1,705	1,705	1,705	1,705

Scenario Description	Scenario List
Year 2007 with 2007 Level of BMP Implementation	2007 LU, 2007 BMPs
Year 2007 with TS BMP Implementation	2007 LU, Trib Strat BMPs
Scenario 1 Build-out (or 3% Growth 2040)	Scenario 1
Scenario 2 - 2040 1% Growth, 75% infill, 25% greenfield	Scenario 2
Scenario 3 - 2040 1% Growth, 50% infill, 50% greenfield	Scenario 3

The spreadsheet that produced these calculations was prepared by the Maryland Department of the Environment, who also supplied much of the baseline data. The data inputted by Town Staff required a large number of assumptions. These assumptions are listed in Appendix 2 of this Plan.

Among the conclusions that can be drawn from this analysis are the following:

- Due to the reduction of agricultural land (and thus the reduction in fertilizers) there is a decrease in the amount of non-point source (i.e. run-off) nitrogen and phosphorus in all three scenarios.
- Similarly the removal of existing septic systems currently outside of the Town of Easton but in the Growth Area, provide benefits in terms of nutrient reduction when these houses are connected to the Town's Wastewater System.
- Both of the 1% scenarios also have a reduction in Total Nitrogen and Total Phosphorus loads (including point, i.e. the wastewater treatment facility, and non-point).
- The 3% or build-out scenario uses the expected nutrient caps for the nutrient loads as otherwise it would exceed them. This implies that enhanced nutrient reduction techniques are implemented at some point in the future. At the time that this becomes necessary, the Town will have to evaluate the cost/benefit of such enhancements as it has done in the past each time the system is upgraded. It is conceivable that the Town Council at that time will decide that the cost associated with such enhancements is greater than they believe is worth bearing. If so, development will cease, except for redevelopment projects, before reaching the limits of our Growth Boundary.

## WATER RESOURCES GOALS AND OBJECTIVES

GOAL: To ensure that the Town has an adequate, safe and sanitary water supply.

OBJECTIVES:

- ✓ Continue to coordinate water system master planning with the Town's Comprehensive Plan.
- ✓ Construct the capital improvements outlined in Easton Utilities' Master Water Plan.

GOAL: To provide adequate wastewater treatment service to the Town.

OBJECTIVES:

- ✓ Continue to coordinate Sewer planning with the Town's Comprehensive Plan.
- ✓ Monitor growth rates and be prepared to expand the capacity of the Wastewater Treatment Facility (currently expected to be required in 2025) well in advance of the need to do so.

GOAL: To effectively treat stormwater runoff and reduce pollutant loadings entering Easton's waterways.

OBJECTIVES:

- ✓ Continue to administer and enforce the Town's Stormwater Management Ordinance.
- ✓ Review the effectiveness of the existing practice of installing silt fences at construction sites. Adopt policies that establish more effective run-off protection and/or ensure more careful monitoring by responsible inspection agencies.
- ✓ Incorporate the latest guidance and requirements as found in the State Stormwater Design Manual following its approval.

- ✓ Continue to work cooperatively with Talbot County to obtain grant funding for projects that clean up Tanyard Branch.
- ✓ Work independently and with Talbot County to develop comprehensive projects and strategies to improve the water quality of stormwater runoff.