ST. MARY'S COUNTY GOVERNMENT
COMMISSION ON THE ENVIRONMENT
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November 29, 2007

Board of County Commissioners for St. Mary's County
P.O Box 653, Governmental Center
Leonardtown, MD 20650

Dear Commissioners:

The Commission on the Environment and its Water Policy Task Force (WPTF) have completed a review of the County's Comprehensive Water & Sewer Plan Update (CWSP). We have focused our review on those sections dealing with management of our County's potable water supplies (Section 1.9 & 3). We believe our recommended changes incorporate all the most recent actions the BOCC and the COE have taken to establish sound water planning in our County, with one exception. This has to do with a difference of opinion on whether McIntosh Run should be retained as a potential reservoir site or has already been lost to development.

As requested by the Department of Land Use & Growth Management (LUGM), we have retained the original CWSP wording and shown our changes by "strike thoughts and underlines". We ask that you consider our version of Sections 1.9 & 3 for incorporation into the final version of the Plan. An electronic and hard copy of our comments has been provided to LUGM.

Sincerely,

John (Barne) Wheeler
Chairman, Commission on the Environment
Chairman, Water Policy Task Force

1 encl:
COE CWSP Update Comments

Cc:
Department of Land Use & Growth Management

Commission on the Environment Comments on the St. Mary's County

Comprehensive Water & Sewer Plan Update

1.9 Recommendations of the Water Policy Task Force (WPTF): In 2000 the ~~Commission on the Environment~~Board of County Commissioners (BOCC) appointed a task force, subordinate to the Commission on the Environment (COE), to investigate such problems as declining ground water levels, inadequate well construction, development of community water systems, surface water supplies, conservation, and the County's role in water supply resources planning and development. In the seven years of its operation the WPTF has had a number of accomplishments and some recommendations that are still awaiting action or reply. These are briefly summarized below:

Accomplishments:

1. Developed and obtained BOCC approval (January 2006) of a Countywide water policy, which states how the county will manage potable water withdrawals from the aquifers beneath the County, which supply virtually all water, consumed (see Section 3 for details of this policy).

2. Established a zoning requirement that all housing developments of 25 or more dwelling units be connected to a public water system operated by the Metropolitan Commission (MetCom) and drawn from the Patapsco Aquifer, the deepest of the three aquifers in use by the County. This policy will: reduce stress on both the Aquia and Piney Point/Nanjemoy aquifers that are used by individuals and smaller ~~,~~ ;subdivisions; will enable sprinkler systems to be installed in these developments thus increasing fire ssafety; ~~and~~ will reduce ~~the probability of contamination by reducing~~ both the number of holes drilled into our aquifers and the possibility of contamination. Request for waivers to this policy are permitted; however, unanimous approval from the Directors of the Health Department, MetCom and Land Use & Growth Management are required before this can occur.

Recommendations of the Task Force ~~include~~:

1. ~~Establish the Comprehensive Water and Sewerage Plan, as an authority and tool to implement the St. Mary's County Comprehensive Plan, to be used in a manner that ensures an adequate water supply for the citizens of the County at reasonable cost.~~Recommend deletion of this item. The intent of this item was to make the CWSP have the same standing as the zoning ordinance and Mr. Canavan said it legally did not. If we want it to then we need to state more clearly.~~—~~

2. Have St. Mary's County, ~~with MetCom's~~with MetCom's technical assistance, take an active

role in the MDE permit process through routine coordination plus active participation in the well drilling permits approval process for large commercial/industrial potable water users. (Whereas the issuance of appropriation permits for large non-residential users is of interest to MetCom because of potential adverse impact that they could have on ~~MetCom's~~Netcom's~~a~~ ability to obtain future supplies, MetCom's enabling legislation limits it to regulating public supplies. MetCom would be happy to provide technical assistance to the County Commissioners, but sitting as the "Board of Public Health~~",~~", and through their control over the Comprehensive Water and Sewer Plan, the County Commissioners should take responsibility for this role.) These large users would, unless engineering considerations dictate otherwise, be directed to use the Patapsco Aquifer, but only after all other feasible alternative water sources were examined and found unacceptable from an engineering standpoint. If aquifer water had to be used, every attempt should be made to minimize withdrawals through recycling or reuse.

3. ~~Change St. Mary's County Health Department policy regarding new, confined aquifer-source wells to require that 4 inch pump diameter casings be installed to a depth of at least the 80% management level established by MGS/MDE, but not below the top of the confining unit/clay layer for the aquifer involved, with original pump location at least 50' below the static water level, but not below the top of the aquifer.~~Recommend deletion. This is already a requirement and has been so for a number of years. Besides these rules are included in Md. Legislation.

4. ~~Require that developers of all future subdivisions of 25, or more, residences and of all industrial parks and all other development complexes expected to use 10,000 gallons per day or more provide a metered, community water system, drawing from the Patapsco, or other lowest aquifer, to be dedicated to and operated by MetCom.~~ Recommend deletion. Moved to Accomplishments section above.

5. ~~Require that MetCom and other large users of aquifer water drill any new wells to the Patapsco, or other lowest aquifer.~~ Recommend deletion, moved to Accomplishments section above.

6. ~~Through policy, programs, zoning, regulations and individual site plan decisions, manage future development to preclude drawdowns of aquifers to 80% levels and below.~~ Recommend deletion. Covered in the County's water management plan in the Accomplishments section above.

7. ~~In areas approaching the 80% drawdown level of available aquifers, consider a moratorium on new development until alternate sources of water are provided or conservation and reduction of water use eliminates the problem.~~ Require MDE to specify exactly what happens when water

levels in a particular aquifer approach or reach the Management Level (defined as 80% of the distance from pre-pumping levels to the top of the aquifer in question). Also, require MDE to clarify the extent of the geographical area affected by such an event.

8. ~~Conduct a County-wide well replacement study to determine the extent of well failures associated with falling potentiometric water levels in the confined aquifers and the resulting implications regarding ground water resources.~~ Recommend deletion. Information available on a new permit application does not provide sufficient information on why the well is being requested and, in particular, does not contain information on the circumstances surrounding what caused the old well to fail. Additionally, MGS regularly publishes an official list of water levels in the wells they monitor throughout Southern Maryland. Also, before such a study is commissioned some thought needs to be given as to what the County intends to do about it. It is highly unlikely that ~~the County~~the County will require MetCom to extend public water systems into such areas, so long as the effective wells can be replaced by new wells.
9. Expand the well monitoring and water use metering programs, under MetCom, to provide continual data on ground water usage and condition. No hard data is available concerning water use from private wells throughout the County. These wells contribute from between 40-60 percent of all water used from our aquifers. Specifically and in conjunction with the Maryland Geological Survey (MGS), establish a system of metering private wells around the county to obtain valuable data concerning both water use and water levels.
10. Develop a County water conservation program, to include education, water saving devices and practices and conservation rewards.
11. ~~Seek new aquifers, and assess and use any found.~~Investigate the suitability and adequacy of the Patuxent Aquifer, the deepest in the County.
12. Conduct an evaluation of surface water impoundment sites. These sites have been identified for over 20 years and never investigated. The Corps of Engineers is capable of such investigations. Matching monetary funding may be available for such an effort.
13. Conduct an evaluation of potential substitutes for ground water such as rain water, gray water, desalinated water and, for certain purposes, sewage treatment plant effluent (recycled wastewater). Obtain necessary state & legislative changes needed to make gray water systems and recycled

wastewater both legal and encouraged in Maryland.

14. Consider restricting non-potable water users to unconfined aquifers or other non-potable sources. For large commercial/industrial potable water application permits, require in-depth study to insure that every feasible alternative is explored before potable water for non-potable used is allowed.

15. ~~Establish a permanent Water Policy Advisory Committee, directly under the Board of County Commissioners, to assess and advise regarding situations, actions and results~~ Recommend deletion. This is a dated recommendation and has not been discussed by the WPTF or COE for over three years.

3. WATER

This chapter will deal with water supply and distribution throughout the County. Discussion of those elements which relate to the County as a whole will be followed by detailed descriptions of each water service area with related recommendations. This discussion will help ensure the safety and adequacy of water service for current and future populations of the County, including Leonardtown.

3.1 Water Resources: St. Mary's County is fortunate to have aquifers that are readily available for consumption. However, the County should also look for other sources of potable water to supplement water supplies provided by the aquifers.

3.1.1 Aquifers: Historically the County has withdrawn a majority of its groundwater from the Aquia and Piney Point-Nanjemoy aquifers. Recently the Metropolitan Commission (MetCom) has begun utilizing the Upper Patapsco aquifer for public wells. Additionally, a fourth and deepseser aquifer, the Patuxent, lies beneath the previously mentioned three and has not yet been explored from either quality or quantity standpoints. In the County's January 10, 2006 water policy letter to Senator Roy Dyson, the State was requested to give priority to investigating the potential of this aquifer. The letter also requested that further priority study be given to how our aquifers are recharged. Specifically, the outcrop areas to the north and west of us where water enters the aquifers needs to be investigated to insure that land use decisions made there do not damage, interrupt or pollute the water flowing to us.

3.1.2 Surface Water: The major surface water resources surrounding St. Mary's County are brackish and could only be used for municipal supplies by desalinization. There is a potential to use water from the larger freshwater streams such as St. Mary's River ~~or McIntosh Run~~ (recommend deletion if it has actually been lost to development) if sufficient water can be stored in the resulting reservoir~~s~~. At least one potential water supply reservoir site is in public ownership, St. Mary's Lake, but has not been put into service because ground water supplies are abundant, more uniform and more easily treated.

3.1.3 Potential Reservoir Sites: In view of falling potentiometric water levels ~~and failing wells~~, particularly in the highly stressed areas of Lexington Park, Leonardtown and Charlotte Hall, this water and sewerage plan identifies ~~four~~ three potential reservoir sites. A fourth, Macintosh Run, has been lost to development and is no longer considered feasible.(Don't

believe that this is correct. Much of the drainage area remains forested and in agricultural use. The status of this Run needs to be determined before this paragraph can be finalized)

Site Location	Potential Service Area
1. On St. Mary's River	Lexington Park, California
2. On Killpeck Creek	Charlotte Hall, Mechanicsville
3. On Pembrook Run	Lexington Park Great Mills

Pollution potential of surface water supplies is much greater than for ground waters, the degree depending on land uses permitted in catchment areas. ~~The majority of the McIntosh watershed is made up of agricultural areas and could be subject to contamination by insecticides, fertilizers, and animal waste. unless otherwise controlled~~ (this sentence should be deleted if, in fact, McIntosh Run has been eliminated from consideration). ~~–~~The Killpeck and Persimmon reservoirs are within water front protection zones which, while providing more stringent control of land use, does not preclude contamination from the sources mentioned above. Upper reaches of the St. Mary's River are in a Development District, but the proposed reservoir is immediately surrounded primarily by open space / recreation area. ~~but~~ However, there are signs of encroaching development, especially along the southwestern boundary. Contaminants of agricultural origin should not be a problem in this reservoir, and proper management of the recreation area will prevent damage from human sources.

In order to retain the possibility of utilizing these reservoirs for ultimate water supply, the land areas covered not only by water impoundments but the much larger catchment areas will require protection from development. Future sewerage and water planning should be consistent with this objective and should help to effectively preserve the County's approved water catchment and dam site strategy. The above potential reservoir sites have been identified for many years, but nothing has been done to document their feasibility. Priority effort should be undertaken at the earliest opportunity to validate their potential. The U.S. Army Corps of Engineers has the capability to accomplish such an analysis. This would factually establish each sites feasibity and suitability as a reservoir, or for preservation for conservation, pollution or sedimentation control purposes. Such documentation would provide a firm basis for development decisions made in the areas surrounding each.

Surface water withdrawals in the County are limited to a few commercial and agricultural operations. The use of this resource should be encouraged, where practical and where no damage to stream base-flow would occur, to reduce the demand on groundwater for non-potable uses.

3.1.4 Desalinization: In light of falling potentiometric levels ~~and the possible salt water intrusion into existing wells~~, this plan recommends that the County explore the possibility of desalinization. St. Mary's County is surrounded by brackish water that could be utilized as an auxiliary source of potable water with desalinization. This would appear most suitable in the Lexington Park and Leonardtown areas, which now suffer from highly stressed aquifers and are identified as designated growth areas. In the County's water policy letter of January 10, 2006 to Senator Roy Dyson, the Commissioners have asked the State to place priority on studying the potential of using desalinization as a potential water supply source. ~~Brackish water from wells where intrusion of salt water has occurred may be treated by desalinization.~~ With the advent of membrane treatment systems desalinization has become more economically viable and efficient. There area variety of different methods of removing salts from brackish water.

Membrane Processes: Include electrodialysis and reverse osmosis. The reverse osmosis process is the mostly widely used desalinization process in the United States.

Thermal Process: Includes multi-stage flash distillation, multi-effect distillation, and vapor compression.

3.2 Water Usage: The use of water resources in Maryland is controlled by the Maryland Department of the Environment (MDE) through the issuance of water appropriation permits. This system has been developed to oversee the right of individual landowners to make reasonable use of the water associated with their property without causing an unreasonable impact on other water users or the resource. This right of law extends beyond jurisdictional boundaries which is why the broad regulatory authority has remained the responsibility of the state.

The state has established regulations that limit the use of a confined aquifer in any region to ~~90~~ 80 percent of the difference between the historic, pre-pumping water level and the top of the aquifer. This limit has been given a special name, the "Management Level", and is used in all studies and analyses conducted by the Maryland Geological Survey (MGS). These essential studies have provided the data by which the County was able to formulate its aquifer/water management policy. The regulations give al~~low~~ MDE the authority to deny ~~deny~~ a proposed appropriation that would unreasonably harm the

aquifer or other users of the aquifer. MDE may advise the applicant to file a new application for an appropriation from another aquifer. In making this determination, MDE must consider a number of factors including the aggregate changes and cumulative impact to water resources in the area and the practicality of avoiding harm by adjusting the use of the applicant or another permittee. If an applicant intends to appropriate ground water in unprecedented quantities for a unique purpose that is not common to the area effectedaffected and the appropriation would cause harm to other users, when no other options are available, MDE may require an applicant to pay for the cost of improving neighboring facilities or mitigate the impact on nearby users.

The water appropriation permit system includes a regular review and renewal cycle and the requirement for large water users to report withdrawals semi-annually. In the County's January 10, 2006 water policy letter and again in its follow-on letter of August 7, 2007, the Commissioners requested that the State clarify its definition of the Management Level.

3.2.1 Ground Water Usage: In the southern half of the County, the Aquia and Patapsco aquifers supply water to large municipal, industrial and institutional systems. The Metropolitan Commission has enacted a policy that requires new public wells to utilize the Patapsco Aquifer. The shallower Piney PointNanjemoy aquifer supplies water to smaller commercial and individual domestic users. The Piney Point aquifer is not available for uses in an area north of Morganza. Since the Piney Point aquifer is unavailable, the Aquia aquifer is used extensively by all categories of water appropriators. The increase in county population is leading to a greater demand for water appropriations from the Aquia. A decline in the potentiometric surface has created a local concern for the future reliability of the Aquia aquifer. The August 7, 2007 Commissioner letter to Senator Roy Dyson specifically outlined the County's concerns in this area and requested confirmation of our water management plan outlined in previous correspondence to him on January 10, 2006 – specifically that the County intends continued full use of the Aquia Aquifer in conjunction with the Patapsco. There have been a number of well failures throughout the County that are believed to be a result of recent drought conditions, falling potentiometric levels and the use of telescopic well casings. Report of Investigations No.64, prepared by the Maryland Geological Survey (MGS) in 2001, indicates that computer simulations of projected drawdownsdrawdowns of the Aquia aquifer, particularly in the Country Lakes area could approach the 80% management limit by the Year 2020. An update, Supplemental Report No. SI/RI-64, released during 2001, extends the approach year to 2025 while assuming that new wells, into the Patapsco group, replace some draws on the Aquia aquifer. A As

a result, a study of the Patapsco ~~group~~ Aquifer was launched in 2002~~.~~ to determine if this aquifer could provide sufficient water to relieve stress on the Aquia.

~~Even though the Aquia aquifer supply should be adequate for the next two decades or so, it was essential to examine the potential for deeper aquifers, particularly in the northern half of St. Mary's County in order to identify future alternative supplies and to begin using these supplies prior to 2025 to slow demand on the aquifer and, thereby, reduce the impact on the water levels in existing wells. These include the deep aquifers of the Patapsco Formation. Before these aquifers could be considered reliable future water supplies, a further investigation was conducted to determine the potential supply and water qualify characteristics.~~Recommend deletion…redundant In 2003 MGS completed the drilling of seven test wells to explore the potential of the Patapsco aquifer. In 2005, an administrative report titled "Water-Supply Potential of the Coastal Plain Aquifers in Calvert, Charles, and St. Mary's Counties, Maryland, with Emphasis on the Upper Patapsco and Lower Patapsco Aquifers", dated June 2005, by David Drummond with MGS, which indicates that the upper Patapsco aquifer is of excellent quality and should provide adequate supply through the year ~~2025~~ 2030 based on the current county population projections. This study, the culmination of 6 years of varied studies and analyses, formed the core of the County's plan to manage potable use from all the aquifers at its disposal. That plan, stated in the previously mentioned January 10, 2006 Commissioner letter to Senator Roy Dyson is quoted below:

> "We believe that St. Mary's County will reach Management Levels in the Aquia and Piney Point Aquifers not long after the 2030 time frame in the Lexington Park, Leonardtown and Charlotte Hall areas unless the Patapsco Aquifer is more extensively used. Heavier reliance on the Patapsco by all municipal & all other major users can provide private well users with more available water from the Aquia & Piney Point; and will halt and may perhaps reverse the water level declines in both that have occurred over the past 60 years. In the Lexington Park area, our Metropolitan Commission started, in 2000, to use the Patapsco to relieve stress on the Aquia and to conform to the new Federal Arsenic drinking water standards. The leveling of the decline in potentiometric surfaces in our test wells and improved water quality indicates the change is having the desired effect. We have informal indications from MDE that heavier use of the Patapsco is acceptable. Therefore, the Board of County Commissioners proposes to require that new or replacement wells be drilled into the Patapsco wherever it is feasible from an engineering standpoint to do so. This requirement would apply to all wells installed by our water and sewer authority, the Metropolitan Commission; to all major users; and to new rural subdivisions with 25 units or more that are served by a public water system. We are aware that some requests for water appropriation permits can come directly to the the Maryland Department of the

Environment (MDE) without passing through our County's governmental planning process. We further recognize that directing an applicant to use a specific aquifer is a State prerogative; but we feel that heavier use of the Patapsco is a sound, proactive approach to managing our County's water supplies."

"We ask the State Water Resources Management Advisory Committee to confirm support for this proposed requirement, and, where major user appropriations permits come directly to MDE that we are afforded an opportunity to comment on the aquifer to be used before the permit is issued."

Not specifically stated in the above policy, but contained in all the analyses performed by MGS, is the commitment by the Metropolitan Commission to hold water withdrawal rates from the Aquia Aquifer to 2002 pumping rates with additional requirements being satisfied through use of the Patapsco. New wells needed by MetCom to replace failing ones in the Aquia or Piney Point aquifers could be drilled into these aquifers as long as the withdrawal rates from the new well(s) did not exceed the 2002 pumping rates in the affected area. MetCom could however, depending on circumstances, decide to use the Patapsco for the new well, with remaining nearby Aquia & Piney Point wells being allowed to increase their flow to 2002 levels.

~~New and replacement community water system wells should begin making use of the deeper Patapsco aquifer. This is particularly important in the northern half of the County where there is a need to separate larger community wells from individual domestic wells. It is the policy of this Plan that all private domestic wells utilize the shallowest water bearing confined aquifer. All community system wells and all appropriations in excess of 5000 gpd must use a deeper confined aquifer in areas where such aquifers exist.~~Recommend deletion in view of the management plan/policy stated above.

3.3 Well Construction: The productivity of a well depends on a number of factors. Two of the most important are the properties of the aquifer and the care a well driller takes in constructing and developing the well. The basic construction of the well dictates the quantity of water that may be produced by the well and the type of pump that may be used. The type of pump limits the depth from which water may be withdrawn.

Well construction regulations changed in 1973. Prior to that date, ~~2 inch~~2-inch casings with jet pumps were permitted for domestic and commercial wells. Since 1973, a minimum four-inch well casing has been required, as has use of submersible pumps. State regulations then required that the ~~four inch~~four-inch casing be extended only to a depth of 20 feet below the existing static water level. Two-inch casings ~~can~~could then be extended below that point into the aquifer. There ~~is~~was no standard requiring the

pump to be installed at a greater depth below the static water level. In many cases, the increasing demand for ground water has resulted in a decline in the static water level far greater than the 20-foot buffer. This ~~has~~ caused many wells to be replaced, because the 4"casing ~~is~~ was not deep enough to allow the submersible pump to be dropped sufficiently far down to ~~the current static levels~~insure an adequate water supply. As a result, many people ~~have~~ faced a financial burden by having to replace their wells. Since 1993, however, the required minimum depth for 4" casings is 200' below the static water level but not below the top of the aquifer. Pumps must be 50' below the static water level, but not below the top of the aquifer. ~~By conditioning~~ Requiring wells to be constructed in this manner has corrected the previously mentioned problem. ~~permits in this manner, future well failures may be averted.~~ (Rationale: improves explanation and makes proper tense changes)

3.4 Water Conservation: This Plan fully supports water *conservation* measures as a means to save water, energy and the expense of additional water handling facilities. Water conservation is already required in some aspects of the existing Plumbing Code. Conservation causes a number of beneficial side effects. Obviously our water resources are saved. Sewer flows into treatment plants are lessened, thereby increasing capacity without any capital outlay. Lower water usage usually translates into a lower water bill.

The use of water meters and associated pricing plans is an effective water conservation measure. It is the intent of the Metropolitan Commission to meter all water services by the end of FY 2008. The Commissioners of Leonardtown have also budgeted and are planning to install residential water meters in FY 2008. This Plan supports and encourages the Commission's efforts as well as Leonardtown's.

3.4.1 Treated Wastewater Re-use/Sustainable Development: It is estimated that 5% of potable water is used for human consumption. It is, therefore, theoretically possible to reduce water consumption by as much as 95% by re-using highly treated wastewater. As of 2002, the St. Mary's County Metropolitan Commission had constructed a water reclamation project for the irrigation of the Breton Bay Golf Course. and has obtained MDE approval to irrigate the Wicomico Shores Municipal Golf Course in a similar manner. This Plan encourages and supports the Commission's efforts to pursue the technologies as an alternative to using confined aquifer supplies.

The Metropolitan Commission has also explored the re-use of treated wastewater effluent from the

Marlay-Taylor, the Patuxent River Naval Air Station and from the greater Lexington Park area. This plan encourages the Metropolitan Commission to actively pursue the use of treated wastewater effluent, ~~rain water~~rainwater, and gray water as viable alternatives to potable water consumption as well as a method of reducing wastewater effluent nutrient discharges into the Chesapeake Bay.

3.4.2 In the January 10, 2006 letter to Senator Roy Dyson, the Commissioners specifically asked that legislation be initiated to make gray water systems and recycled wastewater both legal and encouraged in Maryland.

3.5 **Monitoring:** The MGS ground water monitoring network and the MDE water appropriation permitting system provide water level and pumpage data on the Piney Point/Nanjemoy, Aquia Aquifer. This information should be routinely provided to the Metropolitan Commission and the St. Mary's County Health Department. Cooperation between MGS, MDE and the County will create a better-defined picture of the status of water resources.

3.6 **Planning for Growth and Development:** St. Mary's County has the responsibility to adequately prepare for growth. Management of growth is directed by the open, comprehensive public planning process which has resulted in the 2002 Comprehensive (Land Use) Plan. That Plan requires that all subdivisions of 25 lots or more be served by public water systems. The Comprehensive Water and Sewerage Plan is a tool designed to ensure that adequate water supply systems are developed that utilize all available water resources in support of that planning process.

This plan recommends the usage of community water systems as the primary method of achieving that objective. Central water systems, therefore, should be the primary source of future water supply. Cluster development, in particular, lends itself to community systems. Further, this Plan supports the current policy that all community water systems customers are metered. Private well construction should be discouraged except for individual lots and minor subdivisions in the Rural Preservation District (RPD). To discourage development in the RPD as recommended, the Comprehensive Plan and the State growth management objectives, Forest Conservation Program, Critical Areas Program, etc., growth in rural areas should be contained in Village Centers and Town Centers served by community water systems.