CHESAPEAKE ENVIRONMENTAL PROTECTION ASSOCIATION, INC.
P.O. Box 117, Galesville, Maryland 20765

NEWSLETTER **Fall 2015**

PRESIDENT'S MESSAGE

By Al Tucker, President, 2015

Over the summer, the CEPA planning committee met to consider the activities to be undertaken for the upcoming year. As a result, the committee agreed that CEPA should continue its focus on the two signature issues in Maryland:

1. The future of our drinking water.
2. The limits of population growth.

Clearly, the availability of water will be a key factor limiting population growth. The Code of Maryland authorizes the Maryland Department of Environment (MDE) to deny water appropriations for development based on the availability of water. However, there appear to be several factors hindering the implementation of those policies that affect the status of both these issues. Both will require significant policy development and changes in our current approaches to coordinate sound land and water use planning.

Growth continues to be the thorny topic. Without further understanding, it often conflates population growth (more people) and economic growth (increased well-being). Both are voracious consumers of natural resources. In the suburban counties of Southern Maryland, those resources are primarily land and water. The counties' tax bases depend primarily on people, and their economic development depends on residential development, primarily low density suburban sprawl, which consumes land and water. Here, economic development does not lead to increased well-being, but to degradation of quality of life. These conditions don't have to continue. Other places like Singapore and Israel are net zero consumers of freshwater with extremely limited land resources. Economic development has not been hindered either, as their economies have adapted to the efficient use of land with increased population densities. In other words, these places have adapted their fundamental infrastructure to meet the needs of increased population density in sustainable ways.

We are beginning to see signs that we are approaching the limits of our local environment. The very fact that we have to manage stormwater shows us that our natural ecosystems cannot provide the services they did decades ago. But our approaches to solutions do not address the fundamental problem of the lack of undeveloped land (mostly forests) and limited water resources. Building more subdivisions requires more land for stormwater treatment facilities and more water use thus creating a never ending cycle of resource destruction.

We must make fundamental changes in policy at the state level. The basic form of Maryland government devolves final decisions on development to local jurisdictions. The Maryland Department of Planning (MDP) offers advice, planning and analysis, but the final decisions and implementation are local. The legislature passed the Smart Growth Initiative in 1998 with incentives of direct funding to Priority Funding Areas. In a recent report[1], pre and post analysis shows no significant shift of development to the Priority Funding Areas and that the incentives are used mainly to fund projects that would not be economically feasible on their own. The MDP policies for Sustainable Growth present an oxymoron, because that growth cannot be sustained without ending in system collapse. Current policies continue to conflate population growth with economic growth and do not address the fundamental issue of how to accommodate more people on less land with dwindling water resources.

Planning and implementation needs to be done on a regional scale, and the time frame for each plan needs to be extended. The current 10 year horizon of General Development Plans is far too shortsighted. Regional water usage shows that one county's usage affects the water availability in neighboring counties. However, without knowledge of the long-term sustainability of an aquifer for a 20 to 30 year period, future water availability cannot be predicted. Currently, MDE issues water permits on a permit by permit basis, essentially first come first served, for a county's 10 year plan. MDE issues the permit, but the responsibility of supplying water remains with the county. This will be a problem in Charles County where current estimates of groundwater are insufficient to meet projected growth.

Individual counties do not have the resources to address these complex issues. They need to cooperate to find solutions that address changes in infrastructure to accommodate more people. They should form regional coalitions based on the availability of their resources and plan for their common good.

Over the coming year CEPA will explore these two signature issues in depth to provide more clarity on the underlying problems and the solutions that could provide improvement in the quality of life for future generations.

1. Maryland Department of Planning presentation,"Summary of Single-Family Residential Development Activity in Maryland Inside & Outside of Priority Funding Areas", (2012), http://www.mdp.state.md.us/msdc/PFA/Resid_Growth/Parcel%20Analysis_2012/Improved%20Single%20Family%20Residential%20Parcels_2012.pdf

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IN THIS ISSUE

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PHRAGMITES – INVASION OF THE COMMON REED

By Jerry Hill

You may noticed stands of tall green reeds growing in our area along shorelines, in wetlands, inland marshes, ditches, and alongside roads. Phragmites australis is a perennial grass growing 6-15 feet tall that remains standing through all seasons and is fairly easily recognized by its plume-like flower head. The common name for phragmites is Common Reed. In the marshlands south of Philadelphia, throughout much of New Jersey, and near the marshy areas around Newark and the Meadowlands sports complex, one can see dense populations of phragmites stands dominating the shorelines. The high reed density is problematic in several ways, and is what makes phragmites an unwelcome invader to our local area. Phragmites pushes out native species of plants, and the lack of sunlight and high reed density is inhospitable to most animal species normally living in the marshy areas. Root systems and rhisomes (defined later) in the soil tend to stabilize the soil from erosion, but the natural plant species that are displaced generally do that as well. Biomass produced from the stalks and leaves increase the soil base over time, thus raising marsh levels and altering wetland hydrology. This can change the flow of water through a wetland and can dry wetlands over time. Walking through phragmites stands is very difficult due to the density and height of the stalks. A phragmites invasion can hinder access to areas that were previously accessible. And once a phragmites colony is established, it will continue to spread and push out all previously established vegetation.

Pictures (Photo credits: Google Images)

Phragmites in North America -- *Phragmites australis* (Cav.) Trin. ex Steud, or common reed, is thought to be one of the most widespread plants on Earth and is found in marshes world-wide. Although the species name, australis, suggests it is native to Australia, it is believed to have originated in the Middle East. Today phragmites exists throughout the lower 48 states, Central America, and southern Canada, but not in Hawaii or Alaska. Recent research using genetic markers shows that three separate lineages occur in North America – one endemic and widespread (the native), one from Europe (the introduced invasive), and one whose nativity is unclear, occurring across the southern U.S. from California to Florida and into Mexico and Central America (the "Gulf Coast" type).

The native endemic lineage (*Phragmites australis* ssp. *americanus*) was historically widespread, occurring throughout Canada and most of the U.S. except for the Southeast (Texas to Florida and north to South Carolina). It remains widespread in the western U.S. In the eastern U.S., the native has been largely replaced by the invasive lineage, but it can still be found in scattered locations, including along several major rivers on Maryland's eastern shore.

The invasive lineage of *Phragmites australis* was likely introduced from Europe. It is now found throughout the continental U.S. and in southern portions of six Canadian provinces. In the southern U.S., where it overlaps with the Gulf Coast lineage, the invasive form occurs around the Mississippi River delta and has the potential to spread further to other parts of the Gulf Coast.

The "Gulf Coast lineage" has been recognized as *Phragmites australis* subsp. *berlandieri*. Its distribution is restricted to the southernmost states and it has been introduced to southern Arizona and California. It is not clear if it is truly native to the U.S. or spread north from Mexico and Central America.

Phragmites has been present in North America for more than 3,000 years. Prior to the 1900s, the native reed was found mostly along the upper borders of marshes in mixed communities of plants such as sedges and cattails. Over the last century, however, Phragmites has rapidly expanded its range, becoming dominant in marshes throughout the Mid-Atlantic. This spread appears to be associated with the arrival of the invasive lineage from Europe occurring in the 1800s. Recent scientific studies have indicated that cross-pollination of the native and non-native species results in increased viability of the seeds produced. Ironically, colonies of phragmites in Europe have declined in recent years.

Uses of Phragmites -- Phragmites reeds have been employed since ancient times for a variety of uses. Native Americans used phragmites reeds and leaves to make prayer sticks, flutes, cigarettes, arrows, paper, roof thatch, mats, baskets, and other products. Today, there are potential uses in industry (roof thatching, construction and gardening, paper and pulp, polymerization for textile or plastic); energy (combustion, biogas, biofuel); agriculture (animal feed, fertilizer, compost); and water treatment (natural filtering and purification). These uses generally require managed growth and harvesting. One advantage is that production and harvesting of phragmites would not compete for land currently in agricultural production.

Colonization and Spread -- Colonization is generally by seed spread. Seeds form and are dispersed into the air in the fall. Up to 2,000 seeds are produced per seed head per year. The seeds are dispersed generally by wind and water. Water dispersal carries seeds to shorelines, but a single high-water event can carry a large number of seeds to more inland locations where new colonies are established.

Stolons are stems that are connected to the parent plant that grow along the soil surface and can form roots and shoots. *Rhizomes* are underground stems connected to the parent plant that are capable of growing roots and shoots. Both allow Phragmites to expand around an area where the plant is already established. *Phragmites* can also spread to new areas when pieces of rhizomes or stolons are broken off and moved to a new location by water, bird, or human activity where they can root.

Once a patch of Phragmites is established, it can form dense stands and spread rapidly via rhizomes and stolons. Studies have shown that the growth of rhizomes averages about 15.7 in. per year, and stolons can grow up to 4.25 in. in a day. Stem density can be up to 200 stems per square meter.

Treatment and Control -- Efforts to control Phragmites have been extensive across the Chesapeake Bay watershed. Maryland is required by law to control Phragmites in state-owned wildlife management areas. Anne Arundel County is currently considering control measures on county owned lands.

Methods to control phragmites include: herbicide spraying, mowing, burning, grazing, flooding, and smothering. Efforts to eradicate a colony require that the entire plant be killed, including the roots and rhizomes. Otherwise the plant will regenerate. Mowing and grazing are therefore more of a maintenance method rather than eradication. Mechanically removing the root system by large scale tilling generally promotes considerable wetlands erosion. Additionally, pieces of rhizome remain in the soil enabling reestablishment.

Burning also does not affect the root and rhizome system of a living colony, and therefore is not effective as a standalone control method. After treatment with an herbicide, burning can be an effective method to clear the remaining biomass enabling native vegetation to quickly regenerate. Locally of course, burning can only be conducted under carefully controlled conditions and with proper permitting. Dead phragmites burns readily with the associated risk of fire spread.

Smothering is done with black plastic sheets laid over areas of cut stems for an entire summer. High heat and lack of light will eventually kill the plants beneath the plastic. This method is most effective in small areas exposed to direct sunlight.

Biological control is also a possibility. Literature and field studies reveal that currently 26 herbivores (insects) are known to attack phragmites australis in the U.S. Many of these species were accidentally introduced during the last decades. Five are potentially native. Of the species identified in both the U.S. and Europe, some are phragmites specialists. Much study is needed before a species can be safely introduced to control phragmites. Introducing new species to control problem plants or animals has not always worked as intended.

Herbicide spraying therefore is currently the most effective and preferred method of phragmites control. Effective herbicides are absorbed and transported throughout the plant including the root and rhizome systems. These herbicides are non-selective, but phragmites colonies grow so densely that nothing else grows within a stand, and it is relatively easy to apply herbicide with little overspray on adjoining vegetation.

Glyphosate (the formulation approved by the U.S. EPA for use in wetlands) is sold under trade names such as Rodeo, Aquaneat, and Aquastar and is a broad spectrum aquatic herbicide that is virtually nontoxic to mammals, birds, and fish when used according to instructions. It can be purchased at any store that sells agricultural chemicals. Habitat is another broad spectrum herbicide effective in controlling Phragmites, utilizing Imazapyr as the active ingredient. All herbicides must have a non-ionic surfactant added which allows the herbicides to adhere to the plants leaves, stalks and rhizomes for effective control. These herbicides may be applied in or around wetlands using aerial spray equipment, a boom or handgun from a boat, or from the shore using spray equipment. However, large stands in open areas are sometimes best treated with application by helicopter. Phragmites should be treated when they are actively growing and are at mid- to full-bloom (late July through October before a killing frost).

Follow-up spot treatment is frequently required as some regeneration occurs in the following year. If phragmites stands remain in the local area, reestablishment by seeding may occur in subsequent years, so the property owner should be vigilant to the signs of colonies starting to re-establish.

Because of the potential for misuse and degradation to sensitive wetlands and animal habitat, Maryland requires that spraying in wetlands be conducted with an approved aquatic herbicide by a licensed and certified technician. A toxic chemicals application permit is also required in wetlands. Permits can be obtained from MD Dept. of the Environment, Industrial Discharge Permits Division 410-537-3323 or http://www.mde.state.md.us/assets/document/permit/MDE-WMA-PER015.pdf

Maryland provides information on appropriate methods of control, property owner assistance programs, and help in locating licensed applicators and professionals in the control of phragmites. For information contact:
Waterfowl Habitat Specialist – Donald Webster
MD DNR – Wildlife and Heritage Service
828-B Airpax Rd., Suite 500, Cambridge, MD 21613
410-221-8838 x103

Awareness is the Key to Local Control -- Once a phragmites invasion is recognized, control is not difficult or expensive. However, vigilance is required to provide follow-up treatments or control measures as needed. State and local authorities are generally supportive of phragmites control measures. Since seed spread is the dominant form of colonization, it is desirable to rid an entire area of colonies to reduce the instances of re-colonization. Homeowners associations, garden clubs, and environmental organizations can be instrumental in organizing property owners and sharing costs.

Credits and References - These were sources for this article:

1. Swearingen, J. and K. Saltonstall. 2010. *Phragmites* Field Guide: Distinguishing Native and Exotic Forms of Common Reed (*Phragmites australis*) in the United States. Plant Conservation Alliance, Weeds Gone Wild. http://www.nps.gov/plants/alien/pubs/index.htm

2.Whigham, D., Kettenring, K., McCormick, M., Baron, H., The invasion of common reed (*Phragmites australis*) in Chesapeake Bay, USA

3. Aquatic Invasive Species in the Chesapeake Bay: Phragmites, Maryland Sea Grant, Publication UM-SG-PI-2013-03, September 2013

4.J.F. Köbbing1, N. Thevs1 and S. Zerbe2, The utilization of reed (*Phragmites australis*): a review, *Mires and Peat*, Volume 13 (2013/14), Article 01, 1–14, http://www.mires-and-peat.net/, ISSN 1819-754X © 2013 International Mire Conservation Group and International Peat Society

5. Web site: Invasive Plants, Phragmites: Common Reed, http://www.invasiveplants.net/phragmites/

6. Web site: USDA, National Agricultural Library, National Invasive Species Information Center, Aquatic Species, Common Reed, http://www.invasivespeciesinfo.gov/aquatics/commonreed.shtml

7. Web site: Common Reed – Biological Control of Invasive Plants in the Eastern United States (Aug 2002), Bugwood Wiki. Published by USDA, Forest Service, Publication FHTET-2002-04, http://wiki.bugwood.org/Archive:BCIPEUS/Common_Reed

8. Web site: Great Lakes Phragmites Collaborative, http://greatlakesphragmites.net/

9. Web site: Maryland DNR, A Landowners Guide for the Control of Phragmites, http://dnr2.maryland.gov/wildlife/Pages/plants_wildlife/Phragmites.aspx

Much more information can be found by searching for “phragmites” on the Maryland DNR web site.

AQUIFER RECHARGE – A BRIEF INTRODUCTION

By Bill Klepczynski

This article is intended to be a brief introduction to understanding aquifers and how they relate to water shortages. It also outlines in general some steps that can be taken to alleviate shortages.

A geologic formation from which groundwater can be pumped for domestic, municipal, or agricultural use is known as an **aquifer**. Often, aquifers are separated from one another by a geological formation that permits little or no water to flow between them. These geological formations can be either less **permeable** than the aquifer or entirely **impermeable**. Describing the diversity of aquifers, the United States Geological Survey (USGS) states that, "an aquifer may be only a few or tens of feet thick to hundreds of feet thick. It may lie a few feet below the land surface to thousands of feet below and may underlie thousands of square miles or just a few acres." *Ground Water,* USGS (1999) at: http://pubs.usgs.gov/gip/gw/how_b.html.

There are two major types of aquifers: **unconfined** and **confined**. An unconfined aquifer has the water table as an upper boundary and allows water to percolate directly into the aquifer from the surface. A confined aquifer, on the other hand, is sandwiched between impenetrable layers such as bedrock or clay. Often, a confined aquifer is pressurized such that drilling a borehole into it will cause the water in the aquifer to rise above the water table level and even, at times, rise above the surface, becoming an artesian well.

Most of the water supply for Anne Arundel County comes from groundwater supplied by the confined Patuxent, Patapsco, Magothy and Aquia aquifers. Groundwater is a variable resource because the circulation of water through the earth and the atmosphere is dynamic. Constant replenishment, changing demand and widely varying environmental conditions mean that actual groundwater availability can only be measured on a site-specific basis. Confined aquifers receive **recharge** from areas where water-bearing formations crop out on the surface, leakage through confining beds, and movement of water from adjacent aquifers. They are much less vulnerable to drought conditions. The **age of the water** in an aquifer is an indication of the **rate** at which the aquifer can be **recharged** or refilled *naturally*. The older the water in the aquifer the longer it will take for the water to build up in the aquifer. This means that it will not be recharged naturally in a short period of time.

The City of Annapolis owns and operates its own water supply system and uses groundwater from the Magothy and Patapsco aquifers. In addition, Fort Meade has its own private water system that includes six groundwater wells. A study by David Andreasen in 2007 indicates that sufficient ground water is available to supply the projected demand through 2040 from the Anne Arundel County Department of Public Works well fields, while at the same time supplying ground water to other users in Anne Arundel County and the surrounding counties (including Baltimore City) at permitted levels which is about 73 million gallons/average day. When **withdrawals** are optimized to minimize drawdown from the wells, the predicted water levels will not fall below the State-mandated management level near the well fields by the end of the study period (2044).

However, demand on the water supplied by the Anne Arundel County Department of Public Works is projected to increase nearly two-fold or more by 2040, with an estimated maximum withdrawal of 140 Mgal/day. An increase of that magnitude could cause significant drawdown resulting in some water levels falling below the regulatory management level, well operational problems and increased pumping costs.

Increasing demand for water has shown that the extensive groundwater reservoirs formed by aquifers are invaluable for water supply and storage. Natural replenishment of this vast supply of groundwater is very slow. Therefore, exploiting groundwater at a rate greater than it can be replenished causes groundwater levels to decline and, if not corrected, eventually leads to the elimination of usable groundwater.

Artificial aquifer recharge (AR) is the enhancement of natural ground water supplies using man-made conveyances such as infiltration basins or injection wells. **Aquifer storage and recovery** (ASR) is a specific type of AR practiced with the purpose of both augmenting ground water resources and recovering the water in the future for various uses.

AR and ASR wells are found in areas of the U.S. that have high population density and proximity to intensive agriculture; increasing demand on ground water for drinking water and agriculture; and/or limited ground or surface water availability. AR wells, for example, have been utilized to deter salt water intrusion into freshwater aquifers and to control land subsidence. While an AR well is used only to replenish the water in an aquifer, ASR wells are used to achieve two objectives: (1) storing water in the ground; and (2) recovering the stored water either using the same well or by pairing injection wells with recovery wells located on the same wellfield. ASR wells have been used to store and recover water for drinking water supplies, irrigation, and more recently, ecosystem restoration projects such as the Comprehensive Everglades Restoration Project. However, injection via wells is regulated by the EPA Underground Injection Control (UIC) Program. Although ASR includes the recovery of the injected water, the UIC program does not regulate recovery.

In this area, the USGS measures groundwater levels in approximately 470 coastal plain aquifer wells in order to understand short-and long-term changes within the water table and confined aquifers. These data help quantify aquifer response to recharge events and various stresses such as drought and groundwater pumping for domestic, public, or industrial supply including withdrawals for power plants in southern Maryland. However, these studies, as of now, do not include artificial methods for recharging the aquifers!

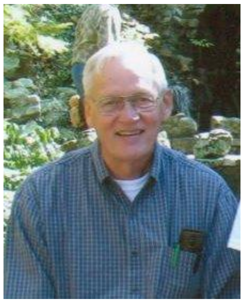
Of course, there are other ways to increase our water supplies. Often, someone suggests a **pipeline** to supply cities with water from rural, wetter regions. Serious proposals for pipelines from Alaska in the 1990s and far Northern California in the 1970s were rejected as too expensive.

The world's largest supply is right off the coast — ocean water. Two **desalination plants** are coming online in Southern California. Making seawater drinkable is expensive because it takes so much energy. Also, the distilled water is so acidic that it must be rebalanced or it will corrode the pipes that carry it.

Treated sewage from a sanitation plant which has been filtered, chemically doctored, and zapped with ultraviolet light has also been suggested. It is most important that the health and regulatory aspects of groundwater recharge with recycled municipal wastewater include practical recommendations to guide decision makers. At present, uncertainties about health risk considerations have limited the use of recycled municipal wastewater for groundwater recharge.

RESIDENTIAL GRAY WATER SYSTEMS

By Gary Antonides



The previous article described some actions that the County or State could take to conserve our water resources. One action that would be practical for individual homeowners to take is the use of gray water. Gray water is water from washing machines, showers, bathtubs, and bathroom sinks. When properly utilized, it can be used for landscape irrigation or toilet flushing. Waste water from toilets (and usually kitchen sinks) is considered black water and must go into a sanitary sewer system.

Maryland is encouraging the reuse of partially treated waste water in commercial or public facilities, especially for things such as golf courses, other types of irrigation, power generation, and toilet flushing. Presently, about 2% of water from Maryland's waste water treatment plants is used in this manner. In its "Zero Waste Maryland" plan (http://www.mde.state.md.us/programs/Marylander/Documents/Zero_Waste_Plan_Draft_12.15.14.pdf) the state has the goal of increasing that in steps to 40% by 2040. This magnitude of reuse already occurs in some other states. Florida, for example, reused 45% of its wastewater in 2012.

However, there is no mention in the plan of systems that could be used by individual homeowners. In many states, simpler systems, not requiring any treatment, are used by homeowners. It is recognized that the adoption of such systems will involve educating the public, but we can take advantage of the experiences of our western states. Figure 1, from www.graywateraction.org shows the states that allow residential graywater systems. As would be expected, the western states, where water is scarcer, have figured out how to provide the regulations, guidance, and education needed to support the use of these systems.

Figure 1.

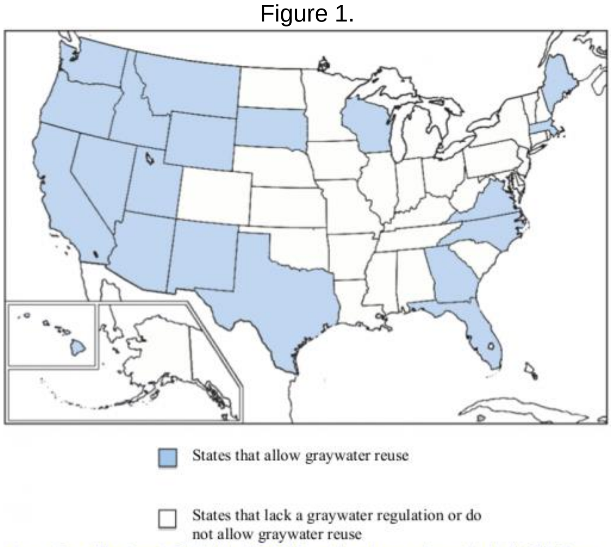
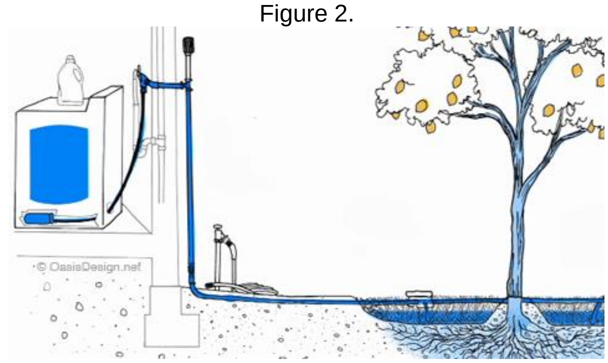


Image from "Treatment, Public Health, and Regulatory Issues Associated with GW Reuse By Sybil Sharvelle et. al. for WERF

Certain precautions are generally required when using gray water. It should not be stored over 24 hours because it does contain some pathogens that would grow and the water would become stagnant and dangerous to use. It should not be sprinkled on lawns because some of the pathogens would become airborne and could be breathed in. In fact, it should not be accessible to people or pets at all when used for irrigation. This means it should only be used for subsurface irrigation, and the irrigated plants should have a bed of gravel and/or wood chips next to them or surrounding them to absorb the gray water. There should also be a way to bypass the irrigation system if there is too much water such as after a recent rain, or during the winter, or when using bleach or washing diapers. Ecologically friendly soap should be used.

There are some simple systems that meet the above requirements and involve only simple additions to existing plumbing. The one shown in Figure 2 is from www.oasisdesign.net and is called a "Laundry to Landscape" system. It will be discussed here to highlight some of the issues in its use, both technical and regulatory. It utilizes the pump of the washing machine to get the gray water to the plants. Only one tree is shown, but several branches can be used to water a number of trees, shrubs, or other plants. It includes a valve to send the water to the sanitary sewer system when necessary.

Figure 2.



As an average, about 30% of residential water use is outside. About 25% of the indoor water usage is for washing clothes, so a laundry to landscape system could reduce our water usage considerably. It would also allow the irrigation water to soak back into the ground to help replenish the water in our aquifers rather than be treated as sewage and eventually pumped back into our rivers and bay where it becomes brackish and not reusable. www.oasisdesign.net and www.graywateraction.org have detailed guidance for these and other systems.

Of the states that do allow graywater reuse, some do not require permits for simple systems. In general, if it involves any connection to the existing plumbing, a permit is required, but this may not include the discharge hose from a washing machine. So the "laundry to landscape" system might be the most likely system to be allowed without a permit. In many states, there were many illegal residential systems before state regulations adopted reasonable regulations and started promoting the use of graywater.

In that regard, Maryland has some catching up to do. The legality of such systems in Maryland is confusing. The Code of Maryland Regulations (COMAR) requires graywater to go into the sanitary sewer system. A few years ago, CEPA advocated that simple graywater systems be allowed and a bill was presented to the House of Delegates to that effect, but it was not passed. In retrospect, it did not consider all the implications involved, and MDE opposed the bill, saying that there were already regulations for the discharge of "sewage" for subsurface disposal. This is technically true because if a county adopts the International Plumbing Code (IPC), as Anne Arundel and other Maryland counties have done, it supersedes the COMAR. Anne Arundel uses the 2012 version of the IPC which includes a chapter on graywater. The systems it covers are more complicated than the simple Laundry to Landscape system, involving storage tanks, filters, and large "absorption systems" to avoid surfacing of graywater. The "absorption systems" sound more like the requirements for regular residential septic fields. They involve seepage trenches at least 2 feet deep, with buried distribution pipes, and at least 6" of gravel. These compare to simple mulch beds described as part of a Laundry to Landscape system by Oasis Design or Graywater Action. Not much is said about the depth of the mulch pits, but the "San Francisco Graywater Design Manual for Outdoor Irrigation" specifies 6 to 12 inches deep. The IPC requires a perk test to determine the size of the absorption system. Oasis Design and Graywater Action also say a perk test should be done, but in some states (such as California) where a permit is not required, the homeowner can do his own simple perc test, such as described in the San Francisco manual.

I recently emailed Anne Arundel County Inspection and Permits to ask what their requirements are for graywater systems. They indicated that they go by the 2012 International Plumbing Code, which was described earlier, but they will soon adopt the 2015 Code. The 2012 Code requires a perc test, which normaliy involves the Health Department. I emailed them asking who had to do the perc test. The answer was that graywater is treated the same as other waste water and must enter the sewer system.

The systems described by Oasis Design and Graywater Action have benefitted from many years of experience in our Western states, and we feel it is time for Maryland to start the process of taking advantage of what they, and the Europeans for that matter, have learned about greywater.

PROFILE OF A TRUSTEE

Gary Antonides

Gary was born in Pensacola, Florida, the son of a Navy pilot who moved often while Gary was growing up. Gary went to the Naval Academy, spent four years on sea duty and two as a math instructor at the Academy before becoming a civil servant, working at the Naval Ship R&D Center for 15 years, dealing mostly with ship vibration. While employed there, he earned a master's degree in Engineering Mechanics from Catholic University. He then worked for a defense contractor, and finally as a consultant before he retired. His last major efforts before retiring were working for the Navy and Coast Guard writing a new set of vibration specifications for ships. This entailed membership in 4 different panels of the American National Standards Institute and the Society of Naval Architects and Marine Engineers.

Gary has been involved as a volunteer in a number of organizations and has held various offices in the community. The organizations include the Boy Scouts, his church, and his community recreation center in Herndon, VA. Since moving to Edgewater in 1980, he has been active in the Loch Haven Civic Association and the Annapolis Sail & Power Squadron as well as CEPA. He became a Trustee of CEPA in 1998, has served as President and Vice-President, and at present is Treasurer and the editor of this newsletter.

His main avocation is boating, and, for him, that involves taking his trailerable, cruising boat to various rivers, lakes, and coastal areas and exploring those areas and their histories. Various friends and family serve as crew. He has explored the East Coast from Maine to Key West, the Bahamas, many U.S. and Canadian rivers and canals, and some West Coast destinations from Catalina Island up to Desolation Sound.

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CEPA, PO Box 117, Galesville, MD 20765,
or join online at www.cepaonline.org.

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