Framework for Public Education and Outreach Plan

City of Lynchburg

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City of Lynchburg
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May 27, 2014
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

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Executive Summary

The City of Lynchburg is regulated by the Virginia Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) under the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer System (MS4). The City’s current permit became effective on July 1, 2013 and will have to be renewed prior to June 30, 2018. This permit requires that the City address elements of the Clean Water Act (CWA) through a series of Minimum Control Measures (MCM) and Special Provisions. The six MCMs are:

1. Public education and outreach on stormwater impacts
2. Public involvement and participation
3. Illicit discharge detection and elimination
4. Construction site stormwater run-off control
5. Post-construction stormwater management
6. Pollution prevention and good housekeeping for municipal operations

In General, MCM 1 requires that the City:

- Identify three (3) high-priority water quality issues
- Identify the target audience that can significantly impact these issues
- Develop relevant messages for these populations

The purpose of this plan is to document the steps taken to meet the public education and outreach requirements of the City’s MS4 permit, and provide a repeatable road map for updating this approach in the future.

HISTORY AND BACKGROUND

The City of Lynchburg, founded in the piedmont of Virginia in 1786 by John Lynch, grew out of a need for access between New London and Charlottesville, and was originally the site of a ferry boat port. In the years following its founding, the town of Lynchburg grew slowly, adding a tobacco warehouse, several stores, housing, taverns and churches. With steady development near the turn of the century, initial efforts of supplying water to the town began. Early inhabitants of Lynchburg obtained their water supply from springs or wells. Bored logs were used to deliver water to some houses. By the early 1800’s, Lynchburg had grown considerably with the tobacco trade fueling its economy and growth. Lynchburg’s economic progress brought with it the need to expand its water supply from springs and wells to a more...
substantial and reliable source, the James River. In 1829, James River water was first made available to houses and businesses. This was accomplished with the installation of a pump that lifted water to a reservoir 240 feet above the level of the river. For nearly a century the James River was able to serve as the primary water source for Lynchburg. With development and industry opening more land to erosion and pollution in the early 1900’s, the water supply from the James had become unacceptable for consumption from the viewpoint of citizens. This issue, coupled with continued expansion of the city, which added more pollution to the river above the water supply intake, made it clear that Lynchburg needed to seek another supply that would be free of pollution.

Upon completing the search for a new source for supply, it was determined that by damming the Pedlar River, Lynchburg could have its water needs met for years to come. The increasing need to provide clean and clear water in Lynchburg, led to the construction of the filtration plant on College Hill, among other facilities and infrastructure.

The City has continued to evolve over the years, from being primarily a tobacco supplier to currently having several plants and industrial parks in the immediate area. Since the 1960’s, Lynchburg has seen significant development within the city and the surrounding suburbs.

Within its approximately 50 square mile boundary, the City of Lynchburg has a variety of land uses, ranging from agricultural to highly industrial and commercial areas. The city has a large residential community and several parks and green spaces exist throughout. The population and industry present in the City, and throughout the region, has led to the degradation of water bodies that Virginians rely on for consumption, recreation, and natural aesthetics.

Several streams and creeks flowing through Lynchburg (Figure 1-1), including the James River which flows along the eastern city limits, have had observations of elevated pollutants such as bacteria, phosphorus, and PCBs. The City is currently addressing a significant source of these pollutants through its long term management strategy to reduce combined sewer overflows. The City’s MS4 permit, and this Public Education and Outreach Plan, have been designed to further reduce the sources of these impairments.

**LEGACY STORMWATER ISSUES**

Because of the age of the City and the amount of expansion that it has undertaken in the past 100 years, the City’s original storm and sewer infrastructure has proven to be insufficient. The City’s combined storm and sanitary sewer infrastructure discharges to its wastewater treatment plant, which works well under normal capacity but not during a large storm event. When large storm events do occur, the combined
sewer system does not have the capacity to manage the combined load of the sewage and stormwater run-off, resulting in the system overflowing into local waterways.

Since the early 1990’s, the City of Lynchburg has taken steps to remedy combined sewer overflow (CSO) discharges. The City has undertaken sewer separation projects in locations throughout the City, including building a second pipeline to separate stormwater from sewage, while also implementing development techniques that reduce the amount of run-off that enters the system. These steps continue, but the overflow issue continues to be a problem in certain areas of the City.

Lynchburg’s land cover is highly impervious and the city must consider sediment and nutrient issues in order to comply with its MS4 permit and the Chesapeake Bay TMDL. To meet compliance, Lynchburg will have to reduce the load of sediment and nutrients in accordance with its Chesapeake Bay TMDL Action Plan by 2025. DEQ monitoring has shown the James River to have elevated concentrations of phosphorus, although there are currently no regulatory requirements (i.e. TMDL) to reduce phosphorus concentrations in the James River.
Figure 1-1: Lynchburg Watershed Map (from Bacteria TMDL for James River Watershed)
The general framework for this plan is based on the EPA publication “Getting in Step: A Guide for Conducting Watershed Outreach Campaigns.” (3rd ed.). This publication provides an understanding of the importance of reaching out to people and motivating them to act, along with a wide range of guidance and examples to aid in finding appropriate ways to communicate the City’s message. “Getting in Step” presents the outreach process as six discrete steps, with each step building on the previous one. These steps make up the outline of this Plan and are:

1) Define the driving forces, goals, and objectives
2) Identify and analyze the target audience
3) Create the message
4) Package the message
5) Distribute the message
6) Evaluate the outreach campaign

The goal of using these steps as the framework for this Plan is that it will provide a defensible, and repeatable process, including citizen input, to determine which high priority water quality issues will be addressed in the City’s MS4 permit, and how.
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Define the Driving Forces, Goals, and Objectives
May 27, 2014

1.0 Define the Driving Forces, Goals, and Objectives

The first step in developing the Public Education and Outreach Plan is to determine the driving forces, goals, and objectives of the Plan. The driving forces will shape the goals and objectives, while the goals and objectives will subsequently guide the process of engaging and informing those who are contributing to the water quality issues and motivating them to adopt more appropriate behaviors. For the purposes of this Plan, it was important to identify these elements at the programmatic level as well as for each of the identified high priority water quality issues once they were established through the public process described below.

1.1 PROGRAM DRIVING FORCES

The primary driving force for this Plan is the need to comply with the City’s MS4 General Permit. This requirement provided the impetus to develop the Plan, as well as the City greater responsibility to protect the health, safety, and welfare of the public. This includes protecting surface waters from impairments that may lead to harmful algal blooms, bacterial impairments, flooding, channel erosion, and a wide range of non-point source and watershed related health risks.

Existing and forthcoming local TMDLs such as the James River Basin Bacteria TMDL (2007) and the more prescriptive and far reaching Chesapeake Bay TMDL provide another regulatory driver. Additionally, the analyses in the documentation for all of the approved TMDLs provide an understanding of the sources of impairments and potential steps that can be taken to reduce these sources.

1.2 PROGRAM GOALS

The City’s MS4 Permit includes requirements, in addition to MCM #1, which can be satisfied by a well planned and executed public education and outreach plan. These include requirements to develop action plans for local TMDLs and for the Chesapeake Bay TMDL, public involvement and participation, and illicit discharge detection and elimination, among others. The goal for each of the selected high priority water quality issues is to allow the City to accomplish multiple objectives that can be demonstrated to improve water quality in a cost-effective manner.
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Define the Driving Forces, Goals, and Objectives
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1.3 PROGRAM OBJECTIVES

The ultimate objective of this program is to develop a public education and outreach plan that can be used to satisfy the City’s MS4 Permit requirements (outlined above). This program will be implemented beginning on July 1, 2014. Potential sources for each of the potential impairments are suggested in the sections below. These sources serve as the water quality issues that will be targeted, with individual goals and objectives in the public education and outreach plan.
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Identify and Analyze the Target Audience
May 27, 2014

2.0 Identify and Analyze the Target Audience

In order to identify the target audience for the public education and outreach campaigns, the pollutants of concern for the Lynchburg area needed to be identified. The pollutants of concern were divided into water quality issues and the potential audiences associated with the pollutants analyzed to create the outreach message presented in Step 3.

2.1 PUBLIC INVOLVEMENT

A list of potential water quality issues was developed through internal and external coordination with City staff and local stakeholders. Citizen involvement was solicited at the August 3, 2013 James River Splash and Dash, sponsored by the James River Association (www.jrava.org). This annual event attracted approximately 100 people to the Lynchburg riverfront for a trail run and inner-tube race, along with a social gathering at the Depot Grille. During the social, attendees were asked to provide their thoughts on: 1) the importance of clean water in receiving bodies; 2) sources of contamination to waters in the Lynchburg area; and 3) what each of us can do to help. The responses were compiled in Table 2-1 and used as input data in the Water Quality Issue Scorecard.

The data on surface water quality issues obtained from local, outdoor enthusiasts at this event was thought to be representative of how water quality issues are perceived by the general public. The goal of using local citizen input into the development, and selection of, water quality issues is to promote a sense that the City is responding proactively to the issues and concerns of the public through the Public Education and Outreach Plan for the
IDENTIFY AND ANALYZE THE TARGET AUDIENCE
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purpose of garnering citizen support. It will be incumbent upon the City to ensure that public perceptions are managed during the implementation of this plan.

The following table (Table 2-1) provides the feedback received from the public.

**Table 2-1: Responses to Survey at the James River Splash and Dash**

<table>
<thead>
<tr>
<th>Why is it important to have clean water in our streams?</th>
<th>What can make the water dirty?</th>
<th>What can you do to help?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Health</td>
<td>Trash</td>
<td>Never Litter</td>
</tr>
<tr>
<td>So people don’t get sick when they swim in the river</td>
<td>Littering, chemicals from factories, pesticides</td>
<td>Spread awareness, recycle, Google it</td>
</tr>
<tr>
<td>Better Fish</td>
<td>Large Parking Lots</td>
<td>Fix my truck</td>
</tr>
<tr>
<td>To reduce sickness/diseases people contract from the water. Support healthy plant and animal life</td>
<td>Littering, pollution, waste</td>
<td>Recycle, not litter</td>
</tr>
<tr>
<td>To better serve the flowers and plants that that make-up the ecosystem</td>
<td>Run-off, litter</td>
<td>Spread the word about pollution sources and solutions</td>
</tr>
<tr>
<td>Health</td>
<td>Poor municipal management / construction, stormwater run-off</td>
<td>Advocate, clean up our yards</td>
</tr>
<tr>
<td>So I don’t feel gross gross after the Splash n Dash</td>
<td>Sewage / trash</td>
<td>Recycle</td>
</tr>
<tr>
<td>So we can use the river (canoeing, kayaking, fishing, etc.) and so we respect the wildlife and ecosystem there</td>
<td>Sediment run-off (especially from construction sites and eroded stream beds), fertilizers</td>
<td>Allocate funds to river cleaning projects. Educate and publicize</td>
</tr>
<tr>
<td>More fish. More fun.</td>
<td>Trash and irresponsibility</td>
<td>Be aware and a good steward</td>
</tr>
<tr>
<td>We use them for recreation and sustainability</td>
<td>Humans, livestock, stormwater run-off</td>
<td>Filter run-off, control erosion from construction sites. It all starts in small streams - we all live downstream!</td>
</tr>
<tr>
<td>Ecosystem Health, Clean water for drinking</td>
<td>Poop from animals, chemicals from factories</td>
<td>Use less stuff, stop companies from dumping stuff</td>
</tr>
<tr>
<td>Safe to swim in</td>
<td>Cows, Industrial pollution</td>
<td>Measure toxicity in water and clean up</td>
</tr>
<tr>
<td>Sturgeon</td>
<td>Litter</td>
<td>Throw away trash</td>
</tr>
<tr>
<td>Duh....</td>
<td>Fracking, Griffin Pipe, Development</td>
<td>Call DEQ. Pick up trash/butts</td>
</tr>
</tbody>
</table>
### 2.2 Pollutants and Stormwater Issues of Concern

The following list provides a summary of each of the pollutants of concern as identified by the public, along with the pollutant’s importance to water quality and potential pollutant sources.

1. **Bacteria** – Bacterial impairments are typically related to fecal bacteria that come from wildlife, agricultural activities, pets, and human sources. Fecal coliforms are used as indicators of waterborne pathogens by the DEQ and are used to quantify the safety of human exposure to
swimmable waters. Human sources of fecal bacteria are often related to faulty infrastructure, infiltration and inflows of sanitary systems resulting in overflows, and illicit connections. The City of Lynchburg has a combined sewer system that is known to discharge sanitary waste during high flow events, but which has a long term control plan to minimize such overflows. A significant percentage of households in the City have on-site septic systems, which could also serve as a source of bacterial loading. The previous cycle of the City’s MS4 Permit indicated that nine streams in Lynchburg were listed as being impaired for bacteria. In addition to these nine, Dreaming Creek was added to the list in 2010. The approved TMDL for bacteria impairments, however, is the James River, which includes segments of some local creeks. It is anticipated that additional TMDLs or TMDL modifications will be approved during this MS4 permit cycle.

2. **Nutrients** – Nutrients are essential to life, but when present in abundance can cause an unbalance in natural ecosystems and lead to undesirable consequences such as algal blooms, eutrophication, low dissolved oxygen, and turbidity. The primary nutrients of concern are nitrogen and phosphorus, with most freshwater systems (e.g. streams and river in Lynchburg) being considered phosphorus limiting. The Chesapeake Bay TMDL requires that the City reduce both nitrogen and phosphorus, and DEQ monitoring of the James River at Lynchburg has shown elevated concentrations of phosphorus. Primary sources of these nutrients in stormwater run-off include septic systems, stream bank erosion, and residential fertilizer application. It is often helpful to treat nutrients as individual pollutants rather than grouping them together since nitrogen and phosphorus accumulate and are removed through different processes.

3. **Sediment** – Sediment is a common surface water impairment that can have a variety of negative impacts on habitat and water quality. Sediment affects light penetration reducing vegetation growth, aquatic life by reducing habitat available for fish and macroinvertebrates, and the storage capacity behind impounding structures that can lead to flooding and structure failure. Additionally, sediment is often associated with other pollutants that attach to the sediment particles (e.g. phosphorus) or are carried into water bodies by mass erosion. Primary sources of sediment to receiving waters are through streambank erosion and land use changes (e.g. deforestation, construction activities, etc.). Sediment is one of the pollutants that the City of Lynchburg will be required to address in its Chesapeake Bay TMDL Action Plan. Additionally, MCM #4 (construction site stormwater run-off) deals extensively with sediment.

4. **Volume of Run-off** – Run-off increases in magnitude and volume with an increase in impervious surfaces. When run-off intensity and volume increase, stream channels can begin to degrade causing loss of habitat for fish and macroinvertebrates and can cause sloughing of personal property into the stream channel. Traditional stormwater management facilities (e.g. ponds) are
effective at reducing peak run-off rates, but are less effective at reducing the impacts associated with an increase in run-off volume. Stormwater management practices to reduce run-off volume require a more holistic and integrated approach to dealing with run-off, and as such, requires cooperation from the citizenry. Distributed volume reduction practices have been shown to provide a cost-effective approach to reducing combined sewer overflows. When used in tandem with peak reduction practices targeted at less frequent rainfall events, these practices can significantly reduce the effects of erosion. However, this is a programmatic water quality issue that will be addressed, to a large degree, in MCM #5, and the Chesapeake Bay TMDL Special Provisions.

5. *Stormwater Regulations* – Virginia has developed new stormwater regulations that will alter the practice of managing the run-off associated with development in the coming years. The development community will need to learn more about how to implement these regulations in order for them to meet their potential to mitigate the impacts associated with future development. The City has worked with the development community under previous MS4 Program Plans, which could serve as a model for future outreach. While improving the understanding of the new stormwater regulations in Virginia will certainly increase acceptance and efficacy, this stormwater issue may be adequately dealt with under MCM #5.

6. *Flooding* – Flooding can be a significant issue in areas with relatively steep terrain, large drainage areas, and highly developed watersheds. Flooding may range from minor issues such as localized flooding that affects low lying neighborhoods and inundates basements and crawl spaces, to large scale flooding that may result from wide swaths of slow moving water inundating large areas of the City. Flood control is typically dealt with through large scale capital improvement projects to improve conveyance or provide storage for large quantities of run-off.

7. *Trash* – Trash in receiving waters received the most feedback from the local participants. Trash can become a significant issue in urban watersheds and in recent years has been the basis for TMDLs throughout the country. It also presents an opportunity for public participation through civic group trash pickup outings and adopt-a-highway or adopt-a-stream programs. Trash may present a hazard to the health, safety, and welfare of the public, but is more often an aesthetic concern.

8. *Automobiles* – Many of the public comments dealt with the impact of automobiles on water pollution. Automobiles can contribute significantly to water quality impairments through the impact of the infrastructure that is required to support them (roads, culverts, parking lots, etc.) and through pollutants that they deposit in the watersheds. The primary pollutants that are
associated with automobiles are oil, grease, and heavy metals. In addition to pollutants that get into the drainage system from automobiles, the behavior of automobile owners can contribute to pollution through illegal dumping and illicit discharges (e.g. oil disposed of in storm drains or tires dumped into creeks).

9. **Wastewater Discharges** – Wastewater discharges may include a wide range of pollution sources such as industrial discharges, residential septic systems, and point source discharges (which should be permitted under separate permits). Public feedback included several comments about industrial discharges and Lynchburg has a significant number of septic systems, both of which can be affected through public education and outreach programs. However, most sources of wastewater, both industrial and municipal are permitted under separate permitting programs than the City of Lynchburg’s MS4 program.

10. **Agricultural Discharges** – Isolated urban areas may have significant agricultural activity within their watersheds. Agricultural sources of pollution include cattle, which can contribute to bacterial and nutrient loads, and crops, which can contribute to sediment, nutrients and organic chemicals in receiving waters.

These potential water quality issues were presented for consideration as representing the City’s three high priority water quality issues that will be selected for development of the public education and outreach plan to meet the MS4 Permit requirements between July 1, 2014 and June 30, 2018. The following table provides the framework for quantifying the identified water quality parameters.
### Framework for Public Education and Outreach Plan

Identify and Analyze the Target Audience  
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#### Table 2-2: Weighting table for watershed pollutants of concerns based on resident response

<table>
<thead>
<tr>
<th>Relates to other requirements of the MS4 permit</th>
<th>Weight (1-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesapeake Bay TMDL</td>
<td>15 10 10 10 8 8</td>
</tr>
<tr>
<td>Local TMDL(s)</td>
<td>5 10</td>
</tr>
<tr>
<td>MCM1 - Public Education</td>
<td>4 3 3 5 5 5 5 5</td>
</tr>
<tr>
<td>MCM2 - Public Involvement</td>
<td>4 8 5 5 5</td>
</tr>
<tr>
<td>MCM3 - IDDE</td>
<td>4 8 5 5 5</td>
</tr>
<tr>
<td>MCM4 - Construction</td>
<td>4 8 8</td>
</tr>
<tr>
<td>MCM5 - Post-Construction</td>
<td>4 8 8 8 8</td>
</tr>
<tr>
<td>MCM6 - Good Housekeeping</td>
<td>4 8 8 8 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relates to requirements of other City initiatives</th>
<th>Weight (1-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSO Long Term Control Plan</td>
<td>12 8 5 5 10 8 8</td>
</tr>
<tr>
<td>Comprehensive Planning</td>
<td>6 3 3 3 3 5 5 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relates to programs that the City may implement</th>
<th>Weight (1-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rain Barrel</td>
<td>2 5 8 5</td>
</tr>
<tr>
<td>Storm Drain Marking</td>
<td>2</td>
</tr>
<tr>
<td>Litter Clean-Up Activities</td>
<td>2</td>
</tr>
<tr>
<td>Pet Waste Programs</td>
<td>2 8 4 4 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter can be significantly reduced through outreach</th>
<th>Weight (1-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter can be significantly reduced through outreach</td>
<td>5 2 2 5 4 7 2 5 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>Weight (1-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

* Wastewater Discharges, in most cases, are addressed through separate permitting processes.  
** These issues are holistic in nature and address most pollutants throughout the watershed.

Based on the feedback obtained from various stakeholders within the City and among residents of the City, it has been determined that the three high priority water quality issues that the City of Lynchburg will be addressing are:

1. Bacteria  
2. Nutrients (Phosphorous and Nitrogen)  
3. Sediment

The three high priority water quality issues selected were the highest ranked pollutants of concern that are not regulated under a separate control measure and that could be the most impacted by public outreach and education.
2.3 WATER QUALITY ISSUES

Various water quality issues contribute to the pollutants of concern. The primary local issues that contribute to the pollutants of interest are listed as follows.

Water Quality Issues Contributing to Bacteria:
- Pet Waste
- Unmaintained septic systems
- Wildlife
- Animal fertilizers

Water Quality issues contributing to Nutrients:
- Yard Fertilizers
- Unmaintained septic systems
- Pet Waste
- Livestock waste

Water Quality issues contributing to Sediment:
- Agriculture
- Home maintenance and construction
- Stream buffer depletion

Based on discussion with City staff and a review of the available literature, local water quality issues (bacteria), citizen feedback, and considering the ability to influence behaviors through an outreach campaign, three primary audience for outreach were selected. They deal specifically with Pet Waste, Yard Maintenance and Septic Systems.

**Pet Waste:** Contributes to bacterial impairments and nutrient concerns. Suitable target audience can be defined and outreach has been proven to be effective to this audience.

**Yard Maintenance:** Proper yard maintenance influences water quality concerns. Specifically, yard maintenance contributes to solid (yard debris) and to nutrients (over-fertilization). Outreach to private citizens on proper yard maintenance can also be an effective outreach tool.

**Septic System Owners:** Failing septic systems have a proven linkage to bacteria loads and nutrient loads. Outreach to septic system owners has been proven to be effective in reducing nutrient and bacterial loads.
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2.4 TARGET AUDIENCES

Each of the selected high priority pollutant loadings can be impacted by public outreach and education. Not every citizen may be contributing to the current loading, so identifying the best and most appropriate locations and methods to reach the citizens contributing to the water quality problem is most economical.

Animal Lovers

Pet and animal waste is a large contributor of bacteria and nutrients. Putting signs and bags out for citizens to clean up pet waste and giving examples of implications if waste is not collected could impact a citizen while they are walking their dog. One sign could influence several people walking by. Also creating a park rule requiring pet waste to be picked up, may help people take notice. Also signage educating those on how pet waste in streams can hurt the wildlife in the stream, such as fish, amphibians, and reptiles, could influence animal lovers to further consider their actions. The parks with the most potential to impact water quality are those directly adjacent to streams, where the water flows directly into the stream without any treatment. The parks that are in the closest proximity to streams are Blackwater Creek Natural Area, Jefferson Park, Peaks View Park, Riverside Park, Heritage Park, and Ivy Creek Park. Streams flow through these parks. Although the mentioned parks are those that are adjacent to impaired streams and could impact water quality the most, putting some signage in other parks and recreation areas could also impact the receiving waters in each respective watershed.

Signage could also help reduce animal waste due to wildlife. Resident geese and duck populations can contribute large amounts of nutrients and bacteria to a watershed. In rural and forested settings the impacts may not be as bad, because there is less run-off and nutrients and bacteria can bind to sediment, but in rural areas feces can accumulate on an impervious surface and then run-off directly into a receiving water body without any filtration. Deterring citizens from feeding geese, and other wildlife may discourage geese from remaining at the lake. If citizens knew that increased wildlife activity within an urban area could lead to more problems than good, citizens may react differently to the wildlife. Wildlife should be encouraged however in forested areas.

In coordination with the City, we attempted to obtain rosters of pet licenses, but the information proved unavailable/inaccessible. Primary venues for outreach to pet owners will be City Parks (as listed above), outreach to pet supply companies, possible coordination with City animal control personnel. For general process marketing (mailers, etc.), we recommend using the same screening criteria (or some refined version thereof) described below under Yard Maintenance.
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Septic Systems
Identifying the land owners with septic systems is another potential audience that could create an impact on water quality. Unmaintained septic systems can lead to a large amount of chemicals, nutrients, and bacteria leaching into the surrounding environment without being properly filtered. Septic system maintenance is integral in maintaining water quality, however, citizens with a septic system may not be aware of the necessary maintenance and concerns associated with septic systems. Education to that audience could help improve bacteria and nutrients in the surrounding water bodies.

The potential target audience for Septic Systems was initially screened based on available GIS data to classify residential properties (both inside and outside the MS4 boundaries) that are not connected to sewer. The results of these initial screenings are provided below (detailed property ownership information was transmitted to the City for targeted mailings). Subsequent review of this data is recommended with the City utility department to identify properties that may need to be refined based on the following:

a. Properties that are misclassified within the GIS data
b. Properties that have sanitary sewer availability, but may not have paid connection fees to connect to Public sewerage.

c. Properties could be coordinated with health department records to identify parcels where failures may have occurred.
d. Some of the properties may be classified as residential, but may not actually have constructed residential units on them.
e. Other factors which the City feels are important.

As the City begins to implement the Public Outreach plan, these refinements may more narrowly focus those properties that are high priority targets for outreach.
Identify and Analyze the Target Audience
May 27, 2014

Figure 2-2: Residential Parcels Not on Sewer (outside MS4 boundaries)
Identify and Analyze the Target Audience
May 27, 2014

Figure 2-2: Residential Parcels Not on Sewer (inside MS4 boundaries)
Yard Maintenance

Proper yard maintenance and practices can also influence water quality and reduce pollutants to adjacent waters. Limiting the amount of fertilizer applied to lawns, cutting grass at a taller height, and proper disposal of yard waste can all reduce the amount of nutrients and sediment leaving a home site. Educating homeowners on best management practices for maintain their yards could reduce their cost (using less fertilizer) and could help improve water quality.

All homeowners would benefit from being educated on proper yard maintenance, but homes directly adjacent to a stream or homes where run-off flows directly into a storm drain without any treatment should be the focus of the total audience. These homes could influence water quality more since their homes may be the homes contributing most to the current problem. Homeowners adjacent to streams should also be aware of how to maintain good riparian buffers for streams. Maintaining a buffer zone around a stream can reduce stream erosion and gives run-off one last “filter” before entering the stream system. Homeowners directly adjacent to storm drains, without any treatment, should also be educated about how the stormwater is treated in the City so they know the possible effects of the water that leaves their yard.

Several neighborhoods in the City of Lynchburg are directly adjacent to impaired streams. Enough neighborhoods are in close proximity to streams that the City should consider reaching out to all homeowners on their landscaping practices. This could have a huge impact on the city’s streams and could prevent currently pristine streams from becoming impaired. However, if the City did not feel it was economical to educate all homeowners, then contacting homeowners that have waterfront on impaired streams could impact them.

In order to narrow the target audience to those particular homeowners that may have high potential for yard waste impacts to City streams, an analysis was conducted using available City GIS information. Specifically, we evaluated residential properties that were located in close proximity to mapped waterways. Those properties are identified, mapped and listed. The listing has been transmitted to the City for use in targeted outreach. Additional evaluation of this potential target audience could be provided by the City, by subdividing or narrowing this audience to those residential properties with the following characteristics:

a. Single Family residences
b. Properties in close proximity to storm sewer inlets
c. Properties that are located in close proximity to impaired segments or water body segments where know yard waste issues are prevalent.

In this manner, the City can narrow the Yard Waste target audience to those that have the highest relation to impacts to receiving waters.
Figure 2-3: Residential Parcels with close proximity to stream network
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Identify and Analyze the Target Audience
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Erosion and sediment control is another topic that citizens should know and recognize. If a homeowner decides to do a large landscape project at his or her home and does not know the environmental impacts associated with that project, they may not install the proper controls to limit the amount of sediment that leaves their property. Another advantage, for citizens knowing some erosion and sediment control practices, is reporting bad practices when see at development and construction sites.

Similar to the previous outreach target audience, we recommend that the City work to refine this listing by identifying those areas where the residentially listed properties may be undeveloped or unoccupied. Further refinement should be performed to target a more narrow audience as the outreach program is implemented and refined.

Now that a variety of audiences and issues have been identified, a message to each about how they impact the watershed can be developed.
3.0 Create the Message

Once the water quality issues have been defined and the target audience have been identified and analyzed, we can move forward to creating the message. Each message is crafted to elicit a response from the identified target audience whose behavior contributes to the water quality issue. The messages have been crafted in order to be concise, specific, and directly tied to behavior change. Additionally, the messages are compatible with use in action items such as social media, print, newsletters.

<table>
<thead>
<tr>
<th>Water Quality Issue Being Addressed</th>
<th>Audience</th>
<th>Behavior to Change</th>
<th>Proposed Message Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria/Nutrients</td>
<td>Pet Owners</td>
<td>Pick-up and properly dispose of pet waste</td>
<td><em>We've all stepped in it... but we don't have to. Save the James and scoop the poop!</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>You'd only do it for your best friend... Love the James and scoop the poop!</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Your Choice: pick up the poop or drink it? Save the water and scoop the poop!</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Clean water. Clean yards. Clean shoes. Scoop the poop!</em></td>
</tr>
<tr>
<td>Bacteria/Nutrients</td>
<td>Homeowners with Septic Tanks</td>
<td>Maintain “healthy” tanks and fields: Pump tanks regularly to prevent overflow, utilize less water via stopping leaks or water efficient appliances/faucets</td>
<td><em>Do your part – be SepticSmart</em> Utilize EPA's established outreach campaign message to reach homeowners with septic tanks. <a href="http://water.epa.gov/infrastructure/septic/local-outreach-toolkit.cfm">http://water.epa.gov/infrastructure/septic/local-outreach-toolkit.cfm</a></td>
</tr>
<tr>
<td>Nutrients/Sediment</td>
<td>Yard Maintainers</td>
<td>Use fertilizer smarter, use erosion and sediment controls</td>
<td><em>Turning green? Learn more about how fertilizer feeds the algae and kills the fish.</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Don't pour your money in the river – Fertilize smart.</em></td>
</tr>
</tbody>
</table>
Graphically, we can represent this filtration to messaging as:
Create the Message  
May 27, 2014

From the proposed messaging, the City has selected to proceed with the following:

<table>
<thead>
<tr>
<th>WATER QUALITY ISSUE BEING ADDRESSED</th>
<th>AUDIENCE</th>
<th>BEHAVIOR TO CHANGE</th>
<th>MESSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria/Nutrients</td>
<td>Pet Owners</td>
<td>Pick-up and properly dispose of pet waste</td>
<td>Clean Water. Clean Yards. Clean Shoes. - Scoop the Poop</td>
</tr>
<tr>
<td>Bacteria/Nutrients</td>
<td>Homeowners with Septic Tanks</td>
<td>Maintain “healthy” tanks and fields: Pump tanks regularly to prevent overflow, utilize less water via stopping leaks or water efficient appliances/faucets</td>
<td>Do your part – be SepticSmart!</td>
</tr>
<tr>
<td>Nutrients/Sediment</td>
<td>Yard Maintainers</td>
<td>Use fertilizer smarter, use erosion and sediment controls</td>
<td>Don’t pour your money in the river – Fertilize smart.</td>
</tr>
</tbody>
</table>

Each message:

- is relevant and accessible to the target audience
- specific to the audience and will resound with the audience
- can be understood by the target audience
- is framed appropriately
- is vivid and memorable
- sets up a beneficial exchange
- motivates behavior change

### 3.1 BRANDING AND DELIVERY METHODS

A brand is used to create a consistent, memorable identity for each message. For each message, we’re developing a positive, action-motivating brand image. A logo, social media message, press release, etc is the tip of the ice burg. The brand is strategically developed from the research, audience profile in order to achieve the goal of the desired behavior change.
## FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

**Create the Message**  
May 27, 2014

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>PROPOSED BRANDING OPPORTUNITIES</th>
<th>PROPOSED DELIVERY METHODS</th>
</tr>
</thead>
</table>
| **Clean Water.**  
**Clean Yards.**  
**Clean Shoes.**  
- Scoop the Poop | “Sickly the Fish” - a Grumpy Cat like character that complains about the water quality and his health. The fish would be a caricature of a carp fish which is native to the James River. | Social Media  
T-shirts  
Mascot  
Signs in parks, dog-parks, popular trails  
Printed Material (flyers/brochures, poster, door hangers, inserts in water bills)  
Educational Materials (Water Quality Fun book for kids)  
City Website  
Lynchburg TV  
City Source Newsletter |
| **Alternatives:**  
“Grouchy the Dog” – complains about stepping in his friend excrement, getting sick from drinking the river water, etc. The dog would be a caricature of a famously “grouchy” looking breed like boxer, pug, or bulldog. | |
| **Do your part**  
– be SepticSmart | Utilize EPA Branding | Door hangers  
Mailer to audience  
City Website  
Lynchburg TV  
City Source Newsletter |
| **Don’t pour your money in the river**  
– Fertilize smart. | For consistency and increased exposure, the same character from the Pet Waste Message could be used here. The character’s narrative would change to address issues concerning the water quality and how it affects the character. | Same as Message #1 and Reminder Stickers for Calendar (both when to fertilize and when not to fertilize) |
Create the Message  
May 27, 2014  

From the proposed branding, the City has elected to proceed with the following:

<table>
<thead>
<tr>
<th>Message</th>
<th>Branding</th>
<th>Delivery Methods</th>
</tr>
</thead>
</table>
| *Clean Water. Clean Yards. Clean Shoes. - Scoop the Poop*              | Grover the Dog  | Social Media  
  T-shirts  
  Promotional Material  
  Signs in parks, dog-parks, popular trails  
  Printed Material (flyers/brochures, poster, door hangers, inserts in water bills)  
  Educational Materials (Water Quality Fun book for kids)  
  City Website  
  Lynchburg TV  
  City Source Newsletter                                                                 |
| *Do your part – be SepticSmart*                                        | EPA Published Materials | Door hangers  
  Mailer to audience  
  City Website  
  Lynchburg TV  
  City Source Newsletter                                                                 |
| *Don’t pour your money in the river – Fertilize smart.*                | Grover the Dog  | Reminder Stickers for Calendar (both when to fertilize and when not to fertilize)  
  Social Media  
  T-shirts  
  Promotional Material  
  Signs in parks, dog-parks, popular trails  
  Printed Material (flyers/brochures, poster, door hangers, inserts in water bills)  
  Educational Materials  
  City Website  
  Lynchburg TV  
  City Source Newsletter                                                                 |
4.0 Package the Message

4.1 Social Media

Using social media in a brand marketing campaign can help make your brand more tangible. The goal is to associate the message with call to action (CTA) using our brand image: “Grover the Dog”. Our CTA’s are designed to generate sustainable behavior changes that will protect and improve water quality.

<table>
<thead>
<tr>
<th>AUDIENCE</th>
<th>CTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pet Owners</td>
<td>Scoop the Poop</td>
</tr>
<tr>
<td>Homeowners with Septic Tanks</td>
<td>Be Septic Smart</td>
</tr>
<tr>
<td>Yard Maintainers</td>
<td>Fertilize Smart</td>
</tr>
</tbody>
</table>

The City currently maintains an active Facebook page with over 1,400 fans. Therefore, instead of starting a new page, we recommend posting to the City’s page in order to utilize the built in fan base. To show that the posts are coming from Grover – be sure to include his logo with each post.

**Frequency:** Post from Grover at least once each week. Preferably, Grover should have something to share 2-3 times each week. Keep in mind that content should be fun, timely, and interesting. If you are struggling to develop content, then err on the side of posting less so that you don’t lose relevancy.

**Ideas for future posts:**

- Follow the calendar for community events and make relevant posts. For example – do you have an upcoming rain barrel event? Post a snarky comment like the examples below and then the event details:

  *Sure... you’re over the ‘rain barrel’ for me.* Learn more about rain barrels at our upcoming meeting, Wednesday, May XX at XXpm.

  *I don’t joke about water conservation.* Learn more about rain barrels at our upcoming meeting, Wednesday, May XX at XXpm.
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Package the Message
May 27, 2014

- Posts can follow major and minor holidays like World Water Day (March 22), Earth Day (April 22), World Environment Day (June 5), and World Toilet Day (November 19th)

Earth Day: Free hugs... Go HUG A TREE!

- Use photoshop to insert Grover into photos with snarky comments. For example:
  - You proved me wrong... I couldn't be more disappointed (with photo of person not picking up pet waste or a photo of someone spreading lawn fertilizer in the spring)

Additional social media outlets:

4.2 PROMOTIONAL MATERIAL

Almost everyone loves getting free stuff! Giveaways are good for promoting simple actions and general awareness. In addition, they show that the participant is actively involved in the cause which helps create social norms and encourages others to get involved. Giveaways also serve as prompts that remind people to choose behaviors that protect and improve water quality.

Pet waste bag dispenser: Dog Bandanna with Logo:
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Package the Message
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Dog Frisbee:

4.3 PRINTED MATERIAL (FLYERS/ BROCHURES)

Trifold-Mailer – The tri-folds are also included in Appendix A. They are designed for mailing and can also be used at events, left in stores the audience would frequent (pet store, hardware stores, farm co-ops, etc), added to the website, and handed out as needed throughout the campaign. The first is designed to address pet waste and the second to address lawn care.

4.4 EDUCATIONAL MATERIALS

Water Quality Fun Book - Appendix B.
This activity book is a fun way for children of all ages to learn more about how their actions impact water quality. Additionally, the activity book teaches children the correct way to dispose of pet waste and maintain yards. This is a lesson that they will share with their families as well as carrying it with them into the future.

4.5 CITY WEBSITE

Currently, it is difficult to navigate to the Water Resources page within the City’s website. In order to increase exposure, we recommend coordinating with the site manager to add a “Grover the Dog” square to the scrolling menu on the City’s homepage, area shown below:

Stantec
Framwork for Public Education and Outreach Plan

Package the Message
May 27, 2014

Additionally, once on the Water Resources page, incorporate the new brand into the existing information:
4.6 LYNCHBURG TV

Lynchburg TV is a great resource to engage with the community using a video format. For example, the March on Litter was recently promoted on Lynchburg TV, both in a short news clip on Lynchburg News and a longer segment on Lynchburg 360. The City can use Lynchburg TV in a similar fashion for public outreach.

4.7 CITY SOURCE NEWSLETTER

The City Source Newsletter is published on even months. Including a column from Grover the Dog will help develop the brand and give a platform for specific messages to explored and expanded upon. Grover the Dog and will focus on a specific behavior change, and the City can leverage popular posts from social media in the columns. The consistent presence of Grover’s column will increase awareness and help build brand recognition. Two example columns are provided below:

Column Name: Grover the Dog’s Open Letter of Complaint

Entry One:
Pet waste is gross.

It’s June and the kids are out of school, so, I am now outside avoiding the loud noises. All I want is a nice patch of grass to roam and claim as my own. Instead I’m forced to endure a yard with land mines of pet waste. Euw. I even escaped down the street but the sidewalk held its own ‘surprises’ (not to mention the mulch beds around the street trees).

Humans- listen to your best friends and do your part. I’m tired of dirty water, dirty yards, and dirty shoes. Who has time for that? It just takes a few seconds too scoop the poop and make a big difference.

Want to learn more about the bacteria and gross things that poo-lute our water? Go to http://www.lynchburgva.gov/stormwater-management or join us at (enter event details).

Entry two:
The quality of this water makes me sick. Literally.

Yeah, you over fertilized your lawn and now there’s dirty water in the river. I’m a lawn snob in general, but your fertilizer didn’t help make it healthier. In fact, all that extra fertilizer just encouraged leaf growth at the expense of root development. It also fed weeds and can lead to disease and insect problems. Not to mention that you had to mow the lawn more frequently. So, I’ll say it again – Don’t pour your money in the river – Fertilize Smart (and buy me more treats instead). Now is even a good time to get your soil tested so you know exactly what nutrients it will need this fall.

Want to learn more about how the dirty water from over fertilization are killing fish and stinking-up the river? Go to http://www.lynchburgva.gov/stormwater-management or join us at (enter event details).
4.8 **TAKE THE PLEDGE**

Pledge cards can be used to gain small commitments that participants will change their behavior permanently. By taking the pledge, citizens feel more committed to the cause and obligated to hold-up their end of the pledge. Additionally, the City can enhance this feeling of commitment by giving out a promotional item when a citizen completes the pledge. The pledge card is also designed to capture the person’s name and address. They City can follow-up with a thank you note three to six months after the pledge is taken. The thank you note is designed so that the tri-fold on pet waste can be included.

Pledge Form is provided in Appendix C.
Pledge Follow-up Thank you Note is also provided in Appendix C.

4.9 **DO YOUR PART - BE SEPTIC SMART!**

Messaging material for “Do your part - be SepticSmart!” is provided in Appendix E. It can also be downloaded from: [http://water.epa.gov/infrastructure/septic/local-outreach-toolkit.cfm](http://water.epa.gov/infrastructure/septic/local-outreach-toolkit.cfm)
5.0 Distribute the Message

Taking the time to carefully research and select the right distribution method is a very important part of distributing your message. Consider your timeline, goals and objectives, and the target audience’s needs and interests, narrowing down and selecting the most appropriate distribution methods.

Reach the minimum percentage of the target required by the permit and keep going as budget allows. The mail delivery system is a good distribution vehicle since the target audiences can be defined geographically and the City databases include address information. We recommend selecting 20% of each target audience and sending the informational tri-folds designed in STEP 4 via direct mail. This will allow the City to quickly, efficiently, and effectively achieve its outreach goals required by the permit.

In the effort to continue to achieve water quality improvements through social behavior change, continue to reach out to the target audiences as budget and time allows. By incorporating free outlets, such as social media, City resources (newsletter, etc.) into the outreach plan the City can continue to successfully implement outreach materials at little to no cost.
6.0 **Evaluate the Outreach Campaign**

Evaluation provides a valuable feedback mechanism for ongoing improvement of the outreach effort. Track each delivery method on the spreadsheet in Appendix D (pictured below). Be sure to note any specific information regarding the delivery method that could be used to evaluate its effectiveness. In addition to tracking the percentage of the target audience reached, keeping track of the effectiveness of the delivery method can help you refine future public outreach methods.

Some outreach activities will reach a broad general audience. For example, views of a Facebook post from Grover will reach a broad audience. However, it is still important to keep track of the total number of people that received the outreach. Be sure to keep track of these outreach activities on the spreadsheet throughout the year in order to measure the total effectiveness of the overall campaign. The spreadsheet contains an estimated population of the City in the “Unknown” audience and this will enable the City to track total percentage of citizens reached.

![Spreadsheet Image](image-url)
Appendix A  Tri-folds
May 27, 2014

Appendix A  Tri-folds

Tri-fold-Mailer – The tri-folds are also included in Appendix A. They are designed for mailing and can also be used at events, left in stores the audience would frequent (pet store, hardware stores, farm co-ops, etc), added to the website, and handed out as needed throughout the campaign.

A.1  PET WASTE TRI-FOLD

The tri-fold is also provided in Adobe InDesign and pdf on the enclosed CD.
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Appendix A  Tri-folds
May 27, 2014


Grove the Dog says...
So, here’s how it works. You take a dog — like me — out for a walk and I poop on the grass or the street. My poop contains bacteria and viruses, and now a health risk to people and other pets. When it rains or storms, the poop is carried with surface water into storm drains and ditches, and eventually enters our streams, rivers, and lakes where people may come into contact with it.

We play in these waters, and drink it also if you think picking up dog poop is unpleasant, try drinking it.

Pet waste makes me grouchy!

I, too, have yard standards. Who needs all of the trouble that dog poop left in the yard can bring?

Did you know...?
One pound of dog poop can contain 10,000,000,000 fecal coliform bacteria.

Eww!
Yeah, it also:
• Increases loading of nitrogen and phosphorus that can lead to increased weed and algal growth in the river
• Increases organic matter that can reduce oxygen levels for fish and other aquatic animals when it decays
• Increases loading of bacteria and pathogens that can make people and other pet sick

Eww. Eww. Eww... and doubt! Eww!

Scoop the Poop.

I’ve never stepped in it, but I have the reflexes of a ninja. I’ve seen humans do it, and I just have to laugh as they try to scrape it off their shoes. It’s another reason pet waste is gross. Who has time to deal with a sappy owner and their dirty shoes? If I’m going to be forced to fetch their slippers, they had better be clean slippers!

How can you get rid of pet waste and help keep our waters clean?
Here are some options:
• SCOOP it up and flush it down the toilet. That’s best because then your community sewage treatment plant or your septic system treats the pet waste.
• SEAL the waste in a plastic bag and throw it in the garbage.
• BURY small quantities in several locations in your yard, away from vegetable gardens, where it can decompose slowly. Dig a hole 12 inches deep, deposit up to four inches of waste, and cover it with at least eight inches of soil.
A.2  LAWN CARE TRI-FOLD

The tri-fold is also provided in Adobe InDesign and pdf on the enclosed CD.
**FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN**

Appendix A  Tri-folds

May 27, 2014

---

**Grove the Dog says...**

I hate wasting money on fertilizer when you could be buying bacon. Let’s face it, a nice patch of grass can really be a dog’s best friend, yet so many lawns are over fertilized and polluting our water.

**So, here’s how it works...** Fertilizer contains three nutrients: nitrogen, phosphorus, and potassium. While these nutrients are needed by plants to grow and survive, too much is ending up in our local waterways via stormwater run-off. When there is too much nitrogen and phosphorus in a waterway, it fuels the growth of algal blooms. Algal blooms are dense clusters of algae that block sunlight from other organisms. When algae from the blooms die, the decay process consumes dissolved oxygen in the water, which is needed by fish, blue crabs, and other organisms for survival. It also smells bad and looks gross!

**Stop fertilizing in the spring...** This encourages leaf growth at the expense of root development. It also feeds weeds and can lead to disease and insect problems. In addition you will have to mow the lawn more frequently. Think you'll forget? Try adding this sticker to your calendar.

---

**Don’t pour your money in the river.**

---

**Fertilize Smart.**

---

**STO!**

No fertilizing needed in the spring.

---

Here are other great ideas to try to improve my mood about water and the general state of grass:

**Test your soil...** Sure, I can tell you just by sniffing it if you need more nitrogen, but I have the refined senses of a canine... get help because you need it.

**Plant more plants...** I want some more targets (waaaahahahahaha) and they play a critical role in managing stormwater run-off. Their intricate root structure stabilizes soil and absorbs pollutants that would otherwise go into the storm drain and directly into waterways.

**Scoop the poop...** Personally, I’ve never stopped, but I have the reflexes of a ninja. I’ve seen so many humans do it and I have to laugh as they try to scrape it off their shoe before they get in the car or walk in their house. It’s another reason I hate pet waste. Who has time to deal with a gummy worm and their dirty shoes? If I’m going to be fed to fetch their slippers, they better be clean slippers.
Appendix B  Activity Fun Book
May 27, 2014

Appendix B  Activity Fun Book

This activity book is a fun way for children of all ages to learn more about how their actions impact water quality. Additionally, the activity book teaches children the correct way to dispose of pet waste and maintain yards. This is a lesson that they will share with their families as well as carrying it with them into the future.

The Activity Fun Book is also provided in Microsoft Publisher and pdf on the enclosed CD.
Water Quality Fun Book

Join Grover in the fight against poo-lution!


Scoop the Poop!
Grover the Dog gets grouchy when he sees polluted waters. He is on a mission to teach us about improving our water quality.

A message from Grover:

The quality of this water is gross. So, let's do something about it! You can see in the picture to the right how water from rain can get dirty on its way to the river.

We play in these waters, and drink it also. Learn how you can help!
Help Grover clean-up the City by “picking out” these words. Just find and circle the words:

- SCOOP
- SMART
- FERTILIZER
- PLASTIC BAG
- NOW
- GRASS
- EACTERIA
- CIGARETTE
- TRASH
- OIL
- CAN
- TIRE

Stantec
Help Grover find his way to a treat and avoid poo-llutants:
Appendix B Activity Fun Book
May 27, 2014

Connect the dots to fill in Grover
You can learn a lot about water quality from a bug.

**Bugs that indicate Good Water Quality**

**A** - Stoneflies—sensitive to most types of pollutants. The presence of even a few stoneflies in a stream suggests good quality water has been maintained for several months.

**B** - Caddisflies—sensitive to pollutants, but some can be tolerant.

**C** - Backswimmers—can thrive under conditions of high organic content and very low oxygen levels.

**D** - Damsel flies—sensitive to pollutants, both young and adult stages.

**E** - Dragonflies—sensitive to pollutants, both young and adult stages.

**F** - Milges—can have a wide range of tolerances. The red ones (blood milges) are extremely tolerant to environmental stress, especially organic pollution.

**Bugs that indicate Poor Water Quality**

**C** - Crustaceans—can thrive under conditions of high organic content and very low oxygen levels.

**D** - Snails—Some snails, knowns lunged snails, can thrive in poor water quality and during low flows because they can breathe atmospheric oxygen. Most snails are tolerant to a wide range of stressors.

**E** - Worms—can thrive under conditions of severe pollution and very low oxygen levels, thus are valuable pollution indicators.

**F** - Mosquitoes—can have a wide range of tolerances. The red ones (blood milges) are extremely tolerant to environmental stress, especially organic pollution.
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Appendix B Activity Fun Book
May 27, 2014

Draw a line from the “Water Grade” to the group of bugs you would find at that level.

Very Good (A+)

Good (B)

Poor (C–)

Very Poor (F)
These are some of the bugs that Grover knows best.
Color in the bugs and learn what they can tell you about water quality.

*Stcnefly*
Mostly found in cool, well-oxygenated streams. They are sensitive to most of the same pollutants as mayflies except acidity. They may be less numerous than mayflies. The presence of even a few stoneflies in a stream suggests that good water quality has been maintained for several months.

*Perlodidae*
Patterned Stonefly

*source: Nymphs of North American Stonefly Genera*: © Kenneth W. Stewart & Bill P. Stark
**Hydropsychidae**  
Common Net-Spinner Caddis

**Perlidae**  
Golden Stonefly

**Caddisflies**  
May construct a portable case of sand, stones, sticks, or other debris or may spin nets that serve as a retreat and help them to collect and gather food. Many caddisfly larvae are sensitive to pollution, but this family (Hydropsychidae) can be abundant in nutrient-rich environments.

**Stonefly**  
Mostly found in cool, well-oxygenated streams. They are sensitive to most of the same pollutants as mayflies except acidity. They may be less numerous than mayflies. The presence of even a few stoneflies in a stream suggests that good water quality has been maintained for some time.
Mayflies

Mayfly nymphs are often the most numerous organisms found in clean streams. They are sensitive to most types of pollution, including low dissolved oxygen, chlorine, ammonia, metals, pesticides, and acidity. Most mayflies are found clinging to the undersides of rocks.
To learn more, visit www.lynchburgva.gov/stormwater-management
or call 434-485-RAIN (7246)

Remember, when we go on the lawn, it doesn’t just go on the lawn.
Appendix C Pledge Documents

May 27, 2014

Appendix C Pledge Documents

Pledge cards can be used to gain small commitments that participants will change their behavior permanently. By taking the pledge, citizens feel more committed to the cause and obligated to hold-up their end of the pledge. Additionally, the City can enhance this feeling of commitment by giving out a promotional item when a citizen completes the pledge. The pledge card is also designed to capture the person’s name and address. They City can follow-up with a thank you note three to six months after the pledge is taken. The thank you note is designed so that the tri-fold on pet waste can be included.

The pledge materials are also provided in Microsoft Publisher and pdf on the CD provided.

C.1 PLEDGE FORM

![Pledge Card Image]

The fight to end poop-lution starts with you.
Make the commitment to scoop the poop today.

Pet waste left on sidewalks and in yards is responsible for the death of thousands of fish and shellfish each year. Plus it stinks and it can make you sick.

I PLEDGE TO:

- Protect fish, water, and people by never leaving pet waste on the ground.
- Be a good neighbor by picking up pet waste and disposing of it properly so that people don’t step in it.

Signature: __________________________________________
Date: ________________________________________
Name: _______________________________________
Address: ______________________________________
City, State, Zip: ________________________________
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Appendix C  Pledge Documents
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C.2 PLEDGE THANK YOU

Thank You
Name of Pledge,

Thanks for joining the fight to stop poo-lution. You’ve heard me say it before, and I’ll say it again—pet waste makes me grouchy! Keep scooping so we can have clean water, clean yards, and clean shoes.

I’ve included my best work on the awful subject of pet waste for you to look over. Yeah, it has surprisingly helpful information.

- Grocer
Appendix D Evaluation Spreadsheet

Evaluation Spreadsheet is provided on the CD in Microsoft Excel.
Appendix E  Be Septic Smart

Materials are also provided on the CD in pdf format.

Did you know?
Common household leaks can add hundreds of extra gallons of water every day, stressing your septic system.
Appendix E  Be Septic Smart
May 27, 2014

Don’t Strain Your Drain!

Overloading your septic system with water is a leading cause of failure.

Save water and support your septic system’s health. For the long term care of your system, have your septic tank inspected and pumped out by a licensed septic tank contractor at least every three to five years.

Know your part, be Septic Smart!
Learn more at www.epa.gov/septicsmart

Contact your local Health Department for more information on servicing septic systems in your area.

EPA-532-E-12-009
September 2012
¿Sabía que...? Las pérdidas comunes que hay en la casa pueden agregar cientos de galones de agua adicionales todos los días, lo que puede sobrecargar el sistema séptico.
**FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN**

Appendix E  Be Septic Smart
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**No ponga a prueba su desagüe.**

El sobre cargar los sistemas sépticos con agua es una de las causas principales de mal funcionamiento.

Ahórre agua y ayude a mantener el sistema séptico. Para cuidar el sistema a largo plazo, cuando sea necesario (generalmente cada tres a cinco años), llame a un contratista matriculado para que inspeccione y bombee el tanque séptico.

**Sepa qué hacer. ¡Conozca SepticSmart!**

Obtenga más información en [www.epa.gov/septicsmart](http://www.epa.gov/septicsmart)

Comuníquese con el Departamento de Sanidad local para obtener más información acerca de mantenimiento de sistemas sépticos en su área.

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EPA-532-E-12-008
Septiembre de 2012
On a septic system?
When’s the last time you thought about it?

Your septic system is part of your home and your responsibility.

Don’t wait until you have issues with your septic system. Protect your home investment and avoid costly replacement—call a licensed septic tank contractor today.

- Have your septic tank inspected and pumped out by a licensed septic tank contractor as needed (on average every three to five years).
- Protect your system by practicing simple, daily tips (see reverse).
Appendix E  Be Septic Smart  
May 27, 2014

**SEPTIC TIPS**

- **Keep it Protected—Get it Inspected!**
  Have your septic tank inspected and pumped out by a licensed septic tank contractor as needed (on average every three to five years).

- **Don’t Stain your Drain!**
  Use water efficiently to avoid overloading your system. Fix household leaks, run the dishwasher and clothes washer only on full loads, and consider installing high-efficiency fixtures.

- **Think at the Sink!**
  Don’t pour grease, fats, or harmful chemicals like paint and solvents down your sink. They can clog or harm your system.

- **Don’t Overload the Commodity!**
  Do not flush non-degradable items such as dental floss, diapers, coffee grounds, or feminine hygiene products.

- **Shield your Field!**
  Care for your drainfield by only planting grass, not driving or parking on it, and reducing roof and surface water drainage near the drainfield.

**Know you part, be SepticSmart!**
Learn more at [www.epa.gov/septicsmart](http://www.epa.gov/septicsmart).
¿Tiene un sistema séptico?
¿Cuándo fue la última vez que pensó en eso?

El sistema séptico es parte de su casa y su responsabilidad.

No espere a tener problemas con el sistema séptico. Proteja la inversión de su casa y evite los emplazamientos costosos, llame a un contratista de tanques sépticos matriculado.

- Cuando sea necesario (en promedio, de cada tres a cinco años), llame a un contratista matriculado para que inspeccione y bombee el tanque séptico.
- Proteja el sistema con la práctica de consejos diarios y simples (ver el do so).

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U.S. Environmental Protection Agency
CONSEJOS ÚTILES

- **Protéjalo e inspeccióneb.** Cuando sea necesario (es promediado, de cada tres a cinco años), llame a un contratista maniaculíando para que inspeccione y bombee el tanque septic.

- **No ponga a prueba su desagüe.** Use el agua de la manera eficiente para evitar sobrecargar el sistema. Arregle pérdidas que haya en la casa, exienda el lavavajillas y el lavavajillas solo cuando estén llenos y considere la opción de instalar dispositivos de alta eficiencia.

- **Piense en el fregadero.** No vierta solo, grasas ni sustancias químicas dañinas, por ejemplo, pinturas o solventes. Pueden atascar o dañar el sistema.

- **No sobrecargue el inodoro.** No arroje elementos no degradables, por ejemplo, hilo dental, pañales, sedimento de café o productos de higiene femenina.

- **¡Proteja su área!** Cuida el drenaje. Solo planta césped, no estacione ni conduzca en esta área y mantenga los desagües de agua y de los techos alejados de ella.

Sepa qué hacer. ¡Conozca SepticSmart! Obtenga más información en www.epa.gov/septicsmart.

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EPA-832-E-12-004 Septiembre de 2012

E.29
Do your Part—Be SepticSmart!

A Homeowners’ Guide to Septic Systems

septicsmart
U.S. Environmental Protection Agency
Maintaining Your Septic System:

Good for your wallet. Good for your health. Good for the environment.

Did you know that one-quarter of all U.S. homes have septic systems? Yours may be one of them. If you’re not properly maintaining your septic system, you’re not only hurting the environment, you’re putting your family’s health at risk and may be flushing thousands of dollars down the drain.

First Things First:

What is a Septic System?
Common rural areas without centralized sewer systems, septic systems are underground wastewater treatment structures that use a combination of nature and time-tested technology to treat wastewater from household plumbing produced by bathrooms, kitchen drains and laundry.

Do You Have a Septic System?
You may already know you have a septic system. If you don’t know, here are tell-tale signs that you probably do:

- You use well water.
- The waterline coming into your home doesn’t have a meter.
- You show a “$0.00 Sewer Amount Charged” on your water bill.
- Your neighbors have a septic system.
How To Find Your Septic System
Once you've determined that you have a septic system, you can find it by:

- Looking on your home's "as built" drawing
- Checking your yard for lids and manhole covers.
- Contacting a septic inspector/pumper to help you locate it.

Why Should You Maintain Your Septic System?

Maintaining Your Septic System...

Saves You Money
Regular maintenance fees of $250 to $300 every three to four years is a bargain compared to the cost of repairing or replacing a malfunctioning system, which can cost between $3,000 and $7,000. The frequency of pumping required for your system depends on how many people live in your home and the size of the system.

Protects Your Property Value
An unusable septic system or one in disrepair will lower your property value, not to mention pose a potentially costly legal liability.

Keeps You and Your Neighbors Healthy
Household wastewater is loaded with disease-causing bacteria and viruses, as well as high levels of nitrogen and phosphorus. If a septic system is well-maintained and working properly, it will remove most of these pollutants. Insufficiently treated sewage from septic systems can cause groundwater contamination, which can spread disease in humans and animals.

Improperly treated sewage also poses the risk of contaminating nearby surface waters, significantly increasing the chance of swimmers contracting a variety of infectious diseases, from eye and ear infections to acute gastrointestinal illness and hepatitis.

Service provider coming? Here's what you need to know.

When you call a septic service provider, he or she will inspect for leaks and examine the scum and sludge layers in your septic tank.

Your septic tank includes a T-shaped outlet which prevents sludge and scum from leaving the tank and traveling to the drainfield area. If the bottom of the scum layer is within six inches of the bottom of the outlet or if the top of the sludge layer is within 12 inches of the outlet, your tank will need to be pumped. Remember to note the sludge and scum levels determined by the septic professional in your operation and maintenance records as this will help determine how often pumping is necessary.

The service provider should note any repairs completed and the tank condition in your system's service report. If additional repairs are recommended, be sure to hire someone to make them as soon as possible.

The National Onsite Wastewater Recycling Association (NOWRA) website has a septic locator that makes it easy to service professionals in your area. Visit www.septiclocator.com and enter your ZIP code to get started.
Appendix E Be Septic Smart
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Beware of septic tank additives!

Some makers of septic tank additives claim their products breakdown septic tank sludge in order to eliminate the need for pumping. But the effectiveness of additives has not been determined; in fact, many studies show that additives have no significant effects on a tank's bacterial populations. Septic tanks already contain the microbes they need for the effective breakdown of household wastewater pollutants. Periodic pumping is the only true way to ensure that septic systems work properly and provide many years of service.

Protects the Environment

More than four billion gallons of wastewater is dispersed below the ground's surface every day. That's a lot of water! Groundwater contaminated by poorly or untreated household wastewater doesn't just pose dangers to drinking water—it poses dangers to the environment. Malfunctioning septic systems release bacteria, viruses, and chemicals toxic to local waterways. When these pollutants are released into the ground, they eventually enter streams, rivers, lakes, and more, harming local ecosystems by killing native plants, fish, and shellfish.

Maintaining Your Septic System:

The Basics

Septic system maintenance isn't complicated, and it doesn't need to be expensive. Upkeep comes down to four important elements:

- Inspection and pumping
- Water efficiency
- Proper waste disposal
- Drainfield care

Inspect and pump frequently

The average household septic system should be inspected at least every three years by a septic service professional. Household septic tanks are typically pumped every three to five years. Alternative systems with electrical float switches, pumps, or mechanical components need to be inspected more often, generally once a year.

A service contract is important since alternative systems have mechanized parts.

Four major factors influence the frequency of septic pumping:

- Household size
- Total wastewater generated
- Volume of solids in wastewater
- Septic tank size
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

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Use water efficiently

Did you know that average indoor water use in a typical single-family home is nearly 70 gallons per individual, per day? And just a single leaky toilet can waste as much as 200 gallons of water per day?

All of the water a household sends down its pipes winds up in its septic system. This means that the more water a household conserves, the less water enters the septic system. Efficient water use can not only improve the operation of a septic system, but it can reduce the risk of failure as well. Learn more about simple ways to save water and water-efficient products by visiting EPA’s WaterSense Program at www.epa.gov/watersense.

- High-efficiency toilets: Toilets use 22 to 30 percent of household water use. Most older homes have toilets with 3.5- to 5-gallon reservoirs, while newer, high-efficiency toilets use 1.6 gallons of water per flush. Replacing existing toilets with high-efficiency models is an easy way to quickly reduce the amount of household water entering your septic system.
- Faucet aerators and high-efficiency showerheads: Faucet aerators help reduce water use as well as the volume of water entering your septic system. High-efficiency showerheads or shower flow restrictors also reduce water use.
- Washing machines: Washing small loads of laundry on your washing machine’s large-load cycle wastes water and energy. By selecting the proper load size, you’ll reduce water waste. If you’re unable to select a load size, run only full loads of laundry.

Another tip? Try to spread water use via washing machines throughout the week. Doing all household laundry in one day might seem like a time-saver, but it can be harmful to your septic system, as it doesn’t allow your septic tank time to adequately treat waste and could potentially flood your drainfield.

Consider purchasing an ENERGY STAR clothes washer, which uses 35 percent less energy and a whopping 50 percent less water than a standard model. Learn more about ENERGY STAR appliances by visiting www.energystar.gov

Small leaks can lead to big problems!

When it comes to water fixtures, a couple of quick fixes can save you serious problems down the road!

Check to see if your toilet’s reservoir is leaking into your toilet bowl by adding five cups of liquid food coloring to the toilet reservoir before bed. If the dye is in the toilet bowl the next morning, the reservoir is leaking and repairs are needed.

Think a leaky faucet is no big deal? Think again. A small drip from a faucet adds gallons of unnecessary water to your septic system every day.

To test how much a leak adds to your water usage, place a cup under the drip for 10 minutes.

Multiply the amount of water in the cup by 14 (the number of minutes in 24 hours, divided by 10). Just one cup of leaky faucet water every 10 minutes equals 36 wasted gallons of water a day—and they all end up in your septic system.

New fixtures and toilet reservoirs are easily accessible and inexpensive. Choose to make a small investment for a big difference in your septic system.
Proper waste disposal: Whether you flush it down the toilet grind it in the garbage disposal, or pour it down the sink, shower, or bath, everything that goes down your drains ends up in your septic system. And what goes down the drain can have a major impact on how well your septic system works.

Toilets Aren’t Trash Cans

Your septic system is not a trash can. An easy rule of thumb? Don’t flush anything besides human waste and toilet paper.

Never flush:

- Feminine hygiene products
- Condoms
- Dental floss
- Diapers
- Cigarette butts
- Coffee grounds
- Cat litter
- Household chemicals like gasoline, oil, pesticides, antifreeze, and paint
- Pharmaceuticals

For a complete list, visit water.epa.gov/septicsmart.

How does a septic system work?

This is a simplified overview of how a septic system works.

1. All wastewater runs out of your house from one main drainage pipe into a septic tank.
2. The septic tank is a sealed, watertight container usually made of concrete, fiberglass or polyethylene. Its job is to hold the wastewater long enough to allow solids to settle to the bottom forming sludge, while the oil and grease float to the top (as scum). Compartments and a T-shaped outlet prevent the sludge and scum from entering the tank and traveling into the mainfield area.
3. The liquid wastewater then exits the tank into the drain field. If the drain field is overloaded with too much liquid, it will flood, causing sewage to flow to the ground surface or create backups in toilets and sinks.
4. Finally, the wastewater percolates into the soil, naturally removing harmful bacteria, viruses, and nutrients.

Own an RV, boat or mobile home?

If you spend any time in recreational vehicles (RV) or boats, you probably know all too well the problem of odors from sewage holding tanks. Learn more about proper and safe wastewater disposal—download EPA’s factsheet at www.epa.gov/region9/water/groundwater/alc-pdfs/rv-wastewater.pdf or call the National Small Flows Clearinghouse’s Septic System Care hotline toll-free at 1-800-624-4301.

Take care at the drain

Your septic system contains a collection of living organisms that digest and treat household waste. Pouring toiletries down your drain can kill these organisms and harm your septic system. Whether you’re at the kitchen sink, bathtub, or utility sink:

- Avoid chemical drain cleaners for a clogged drain. Instead, use boiling water or a drain snake.
- Never pour cooking oil or grease down the drain.
- Never pour oil-based paints, solvents, or large volumes of toxic cleaners down the drain. Even latex paint waste should be minimized.
- Eliminate or limit the use of a garbage disposal, which will significantly reduce the amount of fat, grease, and solids that enter your septic tank and ultimately clog its drainfield.

Maintain your drainfield

Your drainfield—a component of your septic system that removes contaminants from the liquid that emerges from your septic tank—is an important part of your septic system. Here are a few things you should do to maintain it:

- Never park on your drainfield.
- Plant trees the appropriate distance from your drainfield to keep roots from growing into your septic system. A septic service professional can advise you of the proper distance, depending on your septic tank and landscape.
- Keep roof drains, sump pumps, and other rainwater drainage systems away from your drainfield area, as excess water slows down or stops the wastewater treatment process.
Failure Causes

Pouring household and home improvement chemicals down your drains, flushing garbage down toilets, excessive water use, and failure to provide proper maintenance aren’t the only culprits for septic system failure. Take note of these additional causes of septic failure:

**Hot tubs**

Hot tubs may be a great way to relax, but when it comes to emptying them, your septic system should avoid it. Emptying a hot tub into your septic system stirs the solids in the tank, pushing them into the drainfield, causing it to clog and fail.

Drain cooled hot tub water onto turf or landscaped areas far away from your septic tank and drainfield, and in accordance with local regulations. Use the same caution when draining swimming pools.

**Water purification and softening systems**

Some freshwater purification systems, including water softeners, unnecessarily pump water into septic systems. Such systems can send hundreds of gallons of water to septic tanks, causing agitation of solids and excess flow to drainfields. When researching water purification and softening systems, check with a licensed plumbing professional about alternative routing for such treatment systems.

**Garbage disposals**

Consider eliminating or limit the use of garbage disposals. While convenient, frequent use of garbage disposals significantly increases the accumulation of sludge and scum in septic tanks, resulting in the need for more frequent pumping.

**Improper design or installation**

The proper design and installation of a septic system is essential for it to correctly function. A home’s groundwater table, soil composition, and a properly leveled drainfield are just a few factors to ensure a well-functioning septic system.

**Failure symptoms: Mind the signs!**

A foul odor isn’t always the first sign of a malfunctioning septic system. Call a septic professional if you notice any of the following:

- Wastewater backing up into household drains.
- Bight green, spongy grass on the drainfield, even during dry weather.
- Proling water or septic system odor in your basement.
- An airborne odor around the septic tank and drainfield.

Mind the signs of a failing system. One call to a septic professional could save you thousands of dollars!
Appendix E  Be Septic Smart
May 27, 2014

For more information on how you can be SepticSmart, please visit:
www.epa.gov/septicsmart

IPA-832-B-12-008
September 2012
Ponga de su parte: ¡Conozca SepticSmart!

Una guía sobre los sistemas sépticos para propietarios de casas
**Mantenimiento de su sistema séptico:**

**Bueno para su bolsillo. Bueno para su salud. Bueno para el medio ambiente.**

¿Sabía que una cuarta parte de todas las casas de los EE.UU. tienen sistemas sépticos? Su casa puede ser una de ellas. Si no mantiene su sistema séptico de manera adecuada, no solo está dañando el medio ambiente, sino que también está poniendo en riesgo la salud de su familia. Además, puede estar ignorando miles de dólares por el desagüe!

**Lo primero es lo primero:**

**¿Qué es un sistema séptico?**

Los sistemas sépticos, comunes en zonas rurales donde no existen sistemas centralizados de alcantarillado, son estructuras de tratamiento de aguas residuales subterráneas que usan una combinación de agentes naturales y ecología de eficacia demostrada en el tiempo que tratan las aguas residuales provenientes de las tuberías de baños, esguías de cocinas y fregaderos y el lavado de ropa de una casa.

**¿Tiene un sistema séptico?**

Quizás ya sepa que tiene un sistema séptico. Si no lo sabe, estos son algunos indicios que señalan que probablemente tenga uno:

- Usa agua de pozo.
- La tubería de agua que ingresa a su casa no tiene un medidor.
- En su impuesto de servicio de agua, el monto cobrado por el alcantarillado es de $0.00.
- Sus vecinos tienen sistema séptico.
¿Cómo encontrar su sistema séptico?
Una vez que haya determinado que tiene un sistema séptico, puede encontrarlo de la siguiente manera:
- Mire el plano de la construcción de su casa.
- Verifique si en el jardín hay tapas o cubiertas de boca de alcantarilla.
- Llame a un inspector de sistemas sépticos para que lo ayude a ubicar el sistema.

¿Por qué debe mantener su sistema séptico?
Mantenimiento de su sistema séptico...
Le permite ahorrar dinero
Los cargos de mantenimiento regular van desde los $250 hasta $500 cada tres o cuatro años; un precio inmenso en comparación con los costos de reparación o de cambio de un sistema dañado, que pueden ser entre $3,000 y $7,000. La frecuencia de bombeo que su sistema necesita depende de la cantidad de personas que viven en su casa y del tamaño del sistema.

Protege el valor de su propiedad
Un sistemaséptico que no puede usarse o que no funciona correctamente desvalorará su propiedad, sin mencionar que puede generar responsabilidades legales costosas.

Le mantiene a usted y a sus vecinos saludables
Las aguas residuales domésticas están llenas de bacterias y virus que causan enfermedades y tienen altos niveles de nitrógeno y fósforo. Un sistema séptico mantenido adecuadamente y en buen funcionamiento, elimina la mayoría de estos contaminantes. Las aguas residuales de los sistemas sépticos que no se tratan lo suficientemente bien pueden contaminar el agua subterránea y propagar enfermedades que pueden afectar tanto a humanos como a animales.

Las aguas residuales que no se tratan de forma apropiada también pueden contaminar las aguas superficiales cercanas, lo que aumenta significativamente el riesgo de que nadadores contraigan diversas enfermedades contagiosas, desde infecciones en los ojos y oídos hasta enfermedades gastrointestinales, severas y hepatitis.

¿Llamó al proveedor de servicios? Esto es lo que debe saber.
Cuando llama a un proveedor de servicios sépticos, éste verificará si hay pérdidas y examinará las capas de materia espumosa o escoria y lodo en su tanque séptico.

El tanque séptico tiene un desagüe en forma de T que impide que el lodo y materia espumosa o escoria salgan del tanque y circulen hacia el área de diésel. Si la parte inferior de la capa de materia espumosa se encuentra a 12 pulgadas o menos del desagüe, su tanque necesita bombearse. Recuerde tomar nota del nivel de lodo y materia espumosa determinado por el profesional en sistemas sépticos en su registro de funcionamiento y mantenimiento, ya que ese le ayudará a determinar con qué frecuencia su tanque debe bombearse.

El proveedor de servicios deberá tomar nota de cualquier reparación realizada y las condiciones en las que esté en el tanque en el registro de mantenimiento del sistema. Si le recomienda realizar reparaciones adicionales, asegúrese de contratar a un profesional para que las realice tan pronto como sea posible.

El sitio web de la Asociación Nacional del Reciclaje de Aguas Negras Tratadas en Sitio (National Onsite Wastewater Recycling Association, NOWRA) posee un localizador de servicios de sistemas sépticos que facilita la búsqueda de un profesional que provea estos servicios en su área. Visite www.septiclocator.com o ingrese su código postal para comenzar.
Tenga cuidado con los aditivos para tanques sépticos.

Algunos fabricantes de aditivos para tanques sépticos afirman que sus productos decomponen el hato en el tanque séptico, lo que diría que bombee. Sin embargo, la efectividad de los aditivos no se ha determinado de hecho, varios estudios muestran que los aditivos no producen cambios significativos en la población bacteriana del tanque.

Los tanques sépticos ya contienen los microbios que necesitan para descomponer los contaminantes de aguas residuales domésticas. El bombeo periódico es la única forma efectiva de garantizar el funcionamiento correcto del sistema séptico y brindar muchos años de vida útil.

Protege el medio ambiente
Diariamente se vuelcan más de cuatro mil millones de galones de agua residual por debajo de la superficie de la tierra. Eso es mucha agua. El agua subterránea contamina por aguas residuales domésticas que no se tratan o se tratan de forma inapropiada. No solo puede contaminar el agua potable, sino que también pone en riesgo el medio ambiente. Los sistemas sépticos que funcionan mal libran bacterias, virus y tóxicos químicos en los canales fluviales locales. Cuando estos contaminantes se liberan en la tierra, al tiempo ingresan en arroyos, ríos, lagos, entre otros, y dañan los ecosistemas locales al matar plantas, peces y crustáceos autóctonos.

Cómo mantener su sistema séptico

Lo fundamental
El mantenimiento de los sistemas sépticos no es una tarea complicada ni necesariamente costosa. El mantenimiento consta de estos cuatro elementos importantes:
- Inspección y bombeo
- Eficiencia del agua
- Adecuada eliminación de agua
- Cuidado del drenaje

Realice inspecciones y bombeos con frecuencia
El sistema séptico de una casa promedio debe ser inspeccionado por un profesional en sistemas sépticos por lo menos cada tres años. Los tanques sépticos de las casas generalmente se bombean cada tres o cuatro años. Los sistemas alternativos con interruptores de nivel de agua eléctricos, bombean o componentes mecánicos deben inspeccionarse con más frecuencia, por lo general, una vez al año. Además, es importante tener un contrato de servicio para que los sistemas alternativos posean piezas mecanizadas.

Estos cuatro factores principales tienen influencia sobre la frecuencia de bombeo del sistema séptico:
- Tamaño de la casa
- Cantidad total de aguas residuales generadas
- Cantidad de elementos sólidos presentes en el agua residual
- Tamaño del tanque séptico
FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

Appendix E  Be Septic Smart
May 27, 2014

Una guía sobre los sistemas sépticos para propietarios de casas | www.epa.gov/septicsmart

Use el agua de manera eficiente
¿Sabías que el promedio de consumo interno de agua en una vivienda unifamiliar es de 70 galones por persona diarios? ¿Sabías que tan solo un inodoro que tenga fugas puede desperdiciar hasta 200 galones de agua diarios?

Toda el agua de una casa que asciende a través de las tuberías termina volcándose en el sistema séptico. Esto significa que cuanta más agua se conserve en la casa, menor será la cantidad que ingrese al sistema séptico. El consumo eficiente del agua no solo puede hacer que el sistema séptico funcione mejor, sino que también puede reducir los riesgos de mal funcionamiento. Para obtener información sobre cómo ahorrar agua de manera sencilla y sobre productos que utilizan el agua de forma eficiente, visite el programa WaterSense de la Agencia de Protección Ambiental (EPA, por sus siglas en inglés) en www.epa.gov/watersense.

- Inodoros de alta eficiencia: el agua que se usa en los inodoros representa entre un 25 y un 30 por ciento del consumo de agua de una casa. La mayoría de las casas más antiguas tienen inodoros con tanques de 35 a 5 galones de agua, mientras que los inodoros más nuevos y de alta eficiencia usan 1.6 galones de agua o menos por cada descarga. Por ello, cambiar un inodoro viejo por un modelo de alta eficiencia es una manera sencilla y rápida de reducir el volumen de agua que entra al sistema séptico desde la casa.

- Aireadores para grifos: cabezales de ducha de alta eficiencia: los aireadores para grifos ayudan a reducir e consumo de agua y el volumen de agua que ingresa al sistema séptico. Los cabezales de ducha de alta eficiencia o los limitadores de caudal para ducha también reducen el consumo de agua.

- Lavadoras: cuando lava una cantidad de ropa con el programa para carga completa de la lavadora, derrocha agua y energía. Seleccionando el programa de carga adecuado, reducirá el consumo de agua. Si su lavadora no tiene diferentes opciones de programación según la carga, ponga a lavar la ropa solo cuando haya completado su carga máxima.

Otro consejo: trate de dividir el consumo de agua de la lavadora a lo largo de la semana. Si bien lavar toda la ropa en un solo día puede parecer un ahorro de tiempo, también puede dañar su sistema séptico. Esto se debe a que el tanque séptico no logra tratar de forma adecuada toda esa cantidad de agua en tan poco tiempo y, en consecuencia, puede inundar el drenaje.

Las pequeñas pérdidas pueden ocasionar grandes problemas
En el caso de instaciones de agua, algunos arreglos rápidos pueden evitar problemas serios en el futuro.

Verifíquese si el tanque del inodoro pierde por la taza del inodoro agregando cinco gotas de un colorante alimenticio líquido en el tanque del inodoro antes de acostarse. Si la taza del inodoro aparece teñida por el colorante a la mañana siguiente, el tanque del inodoro pierde y debe repararse.

¿Piensa que un grifo que tiene un goteo no es algo tan grave? Piense de nuevo. El pequeño goteo de un grifo agrega galones de agua innecesarios a su sistema séptico diariamente.

Para saber cuánto agua puede agregar una pérdida de agua, coloque la taza debajo del grifo durante 10 minutos. Multiplicue la cantidad de agua en la taza por 144 (la cantidad de minutos en 24 horas divididos por 10). Tan solo una taza de agua es un grifo que pierde que se llene cada 10 minutos equivale a 36 galones de agua perdida por día, y toda esta agua se deposita en su sistema séptico.

Los tanques de inodoros + los grifos nuevos son fáciles de conseguir y económicos. Elija hacer una pequeña inversión y marca una gran diferencia en su sistema séptico.
Le recomendamos comprar una lavadora con calificación ENERGY STAR®, ya que usa un 35 por ciento menos de energía y consume un 80 por ciento menos de agua que un modelo estándar. Para obtener más información acerca de emares eléctricos con calificación ENERGY STAR, visite www.energystar.gov.

- Adecuada eliminación del agua: todo lo que pasa a través del desagüe se deposita en su sistema séptico, ya sea que provenga de las desagües de inodoro, de las trituradoras de basura, o de fregaderos, la ducha o la bañera. Logre arrojar por el desagüe tan menor un gran impacto sobre el funcionamiento de su sistema séptico.

**Los inodoros no son contenedores de basura**

Su sistema séptico no es un contenedor de basura. Una regla general y sencilla:

*No arroje nada que no sean desechos humanos o papel higiénico.*

Nunca arroje lo siguiente:

- Productos de higiene femenina
- Preservativos
- Hilo dental
- Pañales
- Colillas de cigarrillo
- Sedimento de café
- Arena sanitaria para gatos
- Sustancias químicas de uso doméstico como gasolina, aceite, pesadillas, anticonceptivos y pintura.
- Medicamentos

Para obtener una lista completa, visite www.epa.gov/septicsmart.

**¿Cómo funciona un sistema séptico?**

Este es un resumen de cómo funciona un sistema séptico.

1. El agua de su casa se disipa a través de un **tubo de desagüe** principal que conduce a un tanque séptico.

2. El **tanque séptico** es un recipiente hermético que está enterrado, y que generalmente está fabricado con hormigón, fibra de vidrio o polietileno. Su función es contener el agua residual durante un periodo lo suficientemente prolongado como para permitir que los sólidos se asienten en el fondo (y formen un capa de sedimento), mientras que el aceite y la grasa flotan en la superficie (como materia espumosa de aguas cocínicas). Compartimientos y un desagüe en forma de T impiden que el capa de sedimento y la materia espumosa sigan el curso de la contaminación y se pongan en la superficie de la tierra o generen ascensores en muros y fregaderos.

3. El agua residual luego del tanque y se dirige hacia el drenaje. Si el drenaje está sobrecargado de líquido, se manda againd abajo que los aguas reductores llegan hacia la superficie de la tierra o generen ascensores en muros y fregaderos.

4. Finalmente, el agua residual se filtra por el suelo, lo que permite que se eliminen naturalmente las bacterias, los virus y nutrientes.
¿Pcsee una autocaravana, un bote o una casa rodante?

Si para algo de tiempo eres una autocaravana, un bote, probablemente sabes que los tanques contenedores de aguas residuales de estos vehículos despiden olores desagradables. Para obtener más información sobre cómo eliminar las aguas residuales de manera adecuada y segura, descarga la ficha técnica de EPA desde www.epa.gov/region9/water/groundwater/uvicpdfs/rv-wastewater.pdf o comunícate sin cargo a la línea directa de Guías de Sistemas Séricos de la Cámara Nacional de Comunicaciones de Caudales Pequeños al 1-800-624-8301.

Proteja el desagüe
Su sistema séptico contiene una variedad de organismos vivos que asimilan y tratan los desechos. Si vierte toxinas en los desagües, mata estos organismas y daña el sistema séptico. Haga lo siguiente ya sea en el fregadero de la cocina o en el lavadero, o en la bañera:

- Evite usar productos para desatar cañerías a base de sustancias químicas en los desagües atascados. En cambio, use agua virando o una sonda para cañerías.
- Nunca introduzca aceite de cocina o grasa por el desagüe.
- Nunca arroje pinturas a base de aceite, solventes o limpiadores tóxicos en grandes cantidades por el desagüe. Incluso debe reducir al mínimo los desechos de pintura al látex.
- No use límite el uso del triturador de lasara y así reducirá significativamente la cantidad de grasa, sebo y sólidos que ingresan al tanque séptico y que, en última instancia, atascan el drenaje.

Mantenga su drenaje
El drenaje, un componente del sistema séptico que sirve para eliminar los contaminantes del líquido que emerge del tanque séptico, es una parte importante del sistema séptico. Estos son algunos consejos simples que le ayudarán a mantener el drenaje:

- No estacione ni corduzca sobre su área de drenaje.
- Plante árboles a una distancia apropiada del drenaje para evitar que las raíces crezcan en el sistema séptico. Para saber a qué distancia debe para plantar árboles, consulte un profesional en sistemas sépticos, quien lo determinará teniendo en cuenta su tipo de tanque séptico y el área adjacente.
- Mantenga los desagües del tijado, las bombas del pozo séptico y otros sistemas de desagüe de agua de lluvia abajo del área del drenaje; el exceso de agua animará la velocidad o detiene el proceso de tratamiento.
Causas de un mal funcionamiento

Verter productos químicos de uso doméstico para limpieza del hogar por los desagües, tirar basura al lodo, consumir agua en exceso y no realizar un mantenimiento adecuado no son los únicos culpables de provocar un mal funcionamiento del sistema séptico. Tenga en cuenta estos factores adicionales que pueden provocar que su sistema séptico funcione mal:

**Baños de hidromasaje**
Las bañeras de hidromasajes pueden ser sensacionales para relajarse, pero deben evitarse ya que el sistema séptico puede dañarse al variarlas. Vaciar una bañera en el sistema de desagüe revuelve los sólidos en el tanque y los empuja hacia el drenaje, lo que puede causar que este se atasque y funcione mal.

Vacíe el agua de la bañera una vez que esté fría en zonas con césped o jardinadas lejos del tanque séptico y el drenaje, según las normativas locales. Siga estas mismas medidas de precaución al vaciar piscinas.

**Sistemas de ablandamiento y purificación de agua**
Algunos sistemas de purificación de agua dulce, entre los que se incluyen los de ablandamiento, bombean agua al sistemaséptico innecesariamente. Estos sistemas pueden enviar cantidades de galones de agua al tanque séptico, lo que causa que los derrames sólidos se agiten y que haya un flujo excesivo hacia el drenaje. Al adquirir sistemas de ablandamiento y purificación de agua, consulte un profesional especialista en plomería matriculado para saber si puede utilizar una rutina de drenaje alternativa para este tipo de sistemas de tratamiento.

**Trituradoras de basura**
Considere la opción de no usar o limitar el uso de las trituradoras de basura. Si bien es conveniente, el uso frecuente de las trituradoras de basura aumenta de forma significativa el nivel de acumulación de sedimento y materia orgánica en el tanque séptico, lo que provoca que se deba realizar bombeo con más frecuencia.

**Instalación o diseño inapropiados**
La instalación y el diseño apropiados del sistema séptico son esenciales para un buen funcionamiento. La tabla de agua subterránea, la composición del suelo y un drenaje nivelado correctamente son solo algunos de los factores que deben tenerse en cuenta para garantizar el buen funcionamiento del sistema séptico. Alcontrar un profesional en sistemas sépticos, asegúrese de que este sea idóneo para realizar el trabajo.

**Síntomas de mal funcionamiento: preste atención a los indicios**

No siempre los olores desagradables son el primer indicio de un mal funcionamiento de un sistema séptico. Comuníquese con un profesional en sistemasépticos si nota alguno de los siguientes indicios:

- Agua residual que se oxida hasta los desagües de la casa.
- Césped mullido y de color verde brillante en el drenaje, incluso durante tiempo seco.
- Cúrcos de agua o burbuja alrededor del sistema séptico o en el sótano.
- Olor fuerte alrededor del tanque séptico o del drenaje.

Preste atención a los indicios de un mal funcionamiento de su sistema. ¡Una llamada a un profesional en sistemas sépticos podría ahorrarle miles de dólares!
Appendix E  Be Septic Smart
May 27, 2014

Para obtener más información sobre SepticSmart, visite:
www.epa.gov/septicsmart
IPA-832-B-12-004
Septiembre de 2012
Appendix E Be Septic Smart
May 27, 2014

FRAMEWORK FOR PUBLIC EDUCATION AND OUTREACH PLAN

How does a septic system work?
This is a diagram illustrating how a septic system works.

SepticSmart Helps Protect Your Home and Family
If you have a septic system, it's extremely important to keep up with its proper care and maintenance.

Do your Part—Be SepticSmart!
A simple guide to the proper care and maintenance of your septic system.

Why is it important to properly maintain my septic tank?

Do I have a septic system? If so, how can I find it?

What can I do to help maintain my system?

Protector and Protect It.
A properly maintained system should last at least 20 years. To maintain your septic system:

Think at the Source.
Keep your drain field away from your property line. Your neighbors have a septic system.

Inspections, maintenance, and repairs are necessary for optimal performance.

Don’t Oversew the Compost.
A lagoon of household products can accumulate and potentially damage your septic system.

Mind the Signals.

Stantec
Appendix E  Be Septic Smart
May 27, 2014

Rest easy this summer with a properly maintained septic system.
Having the neighbors over for a BBQ? Planning the perfect staycation?

Placing too much stress on your septic system could lead to problems.

Make sure your system is up for all your summer fun.

Have your septic tank inspected and pumped out by a licensed septic tank contractor as needed (on average every three to five years).

Learn what you can do to help ensure your system is fully functioning all season long. Visit www.epa.gov/septicsmart.

EPA-532-E-12-008
September 2012
Este verano, quedése tranquilo con un sistema séptico bien mantenido.
¿Invitó a los vecinos para una barbacoa? ¿Planea las vacaciones perfectas en casa?

Sobrecargar el sistema séptico puede ocasionar problemas.

Asegúrese de que su sistema funcione correctamente para su diversión de verano.

Cuando sea necesario (en promedio, de cada tres a cinco años), llame a un contratista matriculado para que inspeccione y lleve el tanque séptico.

Conozca qué puede hacer para ayudar a que el sistema funcione correctamente durante toda la temporada. Viste www.epa.gov/septicsmart.

EPA-532-E-12-008
Septiembre de 2012
Do Your Part, Be SepticSmart:
The Do’s and Don’ts of Your Septic System

Learn these simple steps to protect your home, health, environment and property value:

Protect It and Inspect It:
Do:
• Have your system inspected (in general) every three years by a licensed contractor and have the tank pumped, when necessary, generally every three to five years.

Think at the Sink:
Don’t:
• Pour cooking grease or oil down the sink or toilet.
• Rinse coffee grounds into the sink.
• Pour household chemicals down the sink or flush them.

Do:
• Eliminate or limit the use of garbage disposal.
• Properly dispose of coffee grounds & food.
• Put grease in a container to harden before discarding in the trees.

Don’t Overload the Commode:
Don’t:
• Flush non-degradable products or chemicals, such as feminine hygiene products, condoms, dental floss, diapers, cigarette butts, cat litter, paper towels, pharmaceuticals.

Do:
• Dispose of these items in the trash can!

Shield Your Field:
Don’t:
• Park or drive on your drain field. The weight can damage the drain lines.
• Plant trees or shrubs too close to your drain field, roots can grow into your system and clog it.

Do:
• Consult septic service professional to advise you of the proper distance for planting trees and shrubs, depending on your septic tank location.

Don’t Strain Your Drain:
Don’t:
• Concentrate your water use by using your dishwasher, shower, washing machine, and toilet at the same time. All that extra water can really strain your septic system.

Do:
• Stagger the use of water-generating appliances. This can be helpful especially if your system has not been pumped in a long time.
• Become more water efficient by fixing plumbing leaks and consider installing bathroom and kitchen faucet aerators and water-efficient products.

For more SepticSmart tips, visit: www.epa.gov/septicsmart

EPA 832-R-13-002 • September 2013