



THE ISLAND Blue Pages



A Guide to Protecting
Martha's Vineyard Waters...

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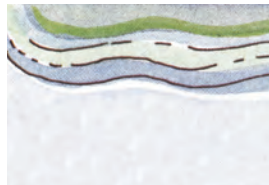


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Protecting the Waters of Martha's Vineyard

Together we can make a difference!

When we think of Martha's Vineyard, we think of water. We are an island. Water dominates our landscape and our history. The Vineyard's landscape was shaped by multiple glacial ice ages. Humankind's history on the Island traces back through the Wampanoag Tribe to over 10,000 years ago. Archeological evidence of shoreline campsites, extensive shell mounds, and water-centered legends attest to the central importance of water in the lives of the Vineyard's first inhabitants.

Early settlers from Europe also built their villages around the Vineyard's harbors or along freshwater streams that provided water for livestock, shallow wells, and dams to harness the water's energy for mills. Like the Wampanoag, they depended heavily on fish and shellfish harvested from the great ponds and the ocean. In later years, marine commerce, fishing, boat building, and whaling became the Island's economic mainstays.

Today the well-being of our Island is still intimately linked to the health of its waters. We Vineyarders are never far from our ponds and beaches. Many of us fish local waters for sustenance or sport. Seasonal residents and tourists flock to the Island to bask and hike on its beaches, swim in its waters, catch and eat local fish and shellfish, and go boating on its sparkling bays.

All these activities require clean water and a healthy marine ecosystem. We share the Island with a vast array of aquatic plants and animals. We depend on them to maintain the ecological balance that keeps our Island paradise intact. They need our help to survive.

During the past several decades, the people of Martha's Vineyard have noticed that the water quality of our ponds, harbors, and shorelines has been deteriorating. The water grows greener and murkier in the summer months. Slime algae proliferate on rocks and dock ladders; the numbers of valued fish and shellfish are declining. Studies by local scientists and shellfish wardens confirm that areas in some ponds lack enough oxygen to sustain life.

Many of our current water quality problems result from the Vineyard's rapid development and population growth. Every additional septic system and newly fertilized lawn further pollutes the Island's waters. Each house may seem unimportant by itself, but multiply the impact of a single household by thousands of households and it becomes clear why our irreplaceable water resources are deteriorating before our eyes.

The good news is that it's not too late to save our Island waters — if each of us plays our part.

The Legend of Moshup

The history of Martha's Vineyard reaches back to a time before the Island was an island - when glaciers scraped over the earth, leaving behind a dramatic display of cliffs, rocks, and ponds. There, it is said, a benevolent being named Moshup roamed the land. One day, Moshup was making his way across the mainland to the headlands of the Aquinnah Cliffs. Weary from his journey, Moshup dragged his foot heavily, leaving a deep track in the mud. At first, only a silver thread of water trickled in the track. But gradually, the ocean's force of wind and tides broadened and deepened the opening, creating an island named Noepe (Martha's Vineyard).



Courtesy of the Aquinnah Cultural Center, Inc.

We all want to protect the water resources of our Island home, but often we do not know what we can do. The [Island Blue Pages](#) will give you some ideas. It begins with the big picture — everything you need to know about the Vineyard's water cycles — and then identifies actions that each of us can take to safeguard our Island's waters. Many of the solutions are simple; many will even save you money. Join us to protect the health of our waters.

Please keep this booklet near your phone book as a handy reference. Share it with members of your household, or lend it to a neighbor or friend. If you are a landlord, give your tenants a copy; most likely they too will want to know what they can do to protect our Island waters.

The Legend of Tashmoo Spring

Among the respected people of Aquinnah was Quampechi, whose son Tashmoo was known as a swift runner. Quampechi had a dream - believed to be a gift from Manitou, the Great Spirit - where she saw Tashmoo discover a beautiful, clear spring, such as none had ever been known before. For many days, Tashmoo searched for the spring. But none he found were like the one his mother had seen in her dream. Finally, as he was about to give up his quest and head back to Aquinnah, he stopped to rest. Here he looked about and saw the land sloped gently to a shore of a small lake whose blue waters sparkled in the sunlight. He had found the water of his mother's dream. Joyously he gave gratitude to Manitou, to the sun, to the moon, and to the stars and then began to run swiftly back to Aquinnah. Today, the spring still flows at the head waters of Lake Tashmoo.

Courtesy of the Aquinnah Cultural Center, Inc.

VINEYARD NEIGHBOR

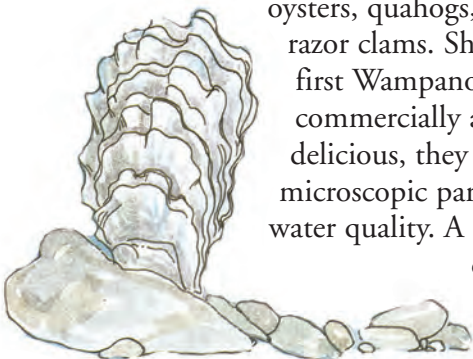
Bivalves: Nature's Water Filters

If you have taken a walk on the beach, you've noticed the incredible diversity of shells that wash up on the Vineyard shores. Those shells are the remains of many species of bivalve mollusks

that populate the shallows of our ponds, harbors and bays. These species include

oysters, quahogs, soft shell clams or steamers, bay scallops, mussels, and razor clams. Shellfish harvesting on the Island can be traced back to the first Wampanoags. Today, the Island beds continue to be fished both commercially and recreationally. Those amazing creatures are not only delicious, they are also great for the environment. As they feed by filtering microscopic particles from the water, they act as natural filters to improve water quality. A full-sized oyster can filter more than 25 gallons of water per

day! Because of their incredible filtering ability, bivalves are also the first to suffer from pollution and poor water quality. They are the "canaries in the coal mine" of the marine environment.



Chapter 1

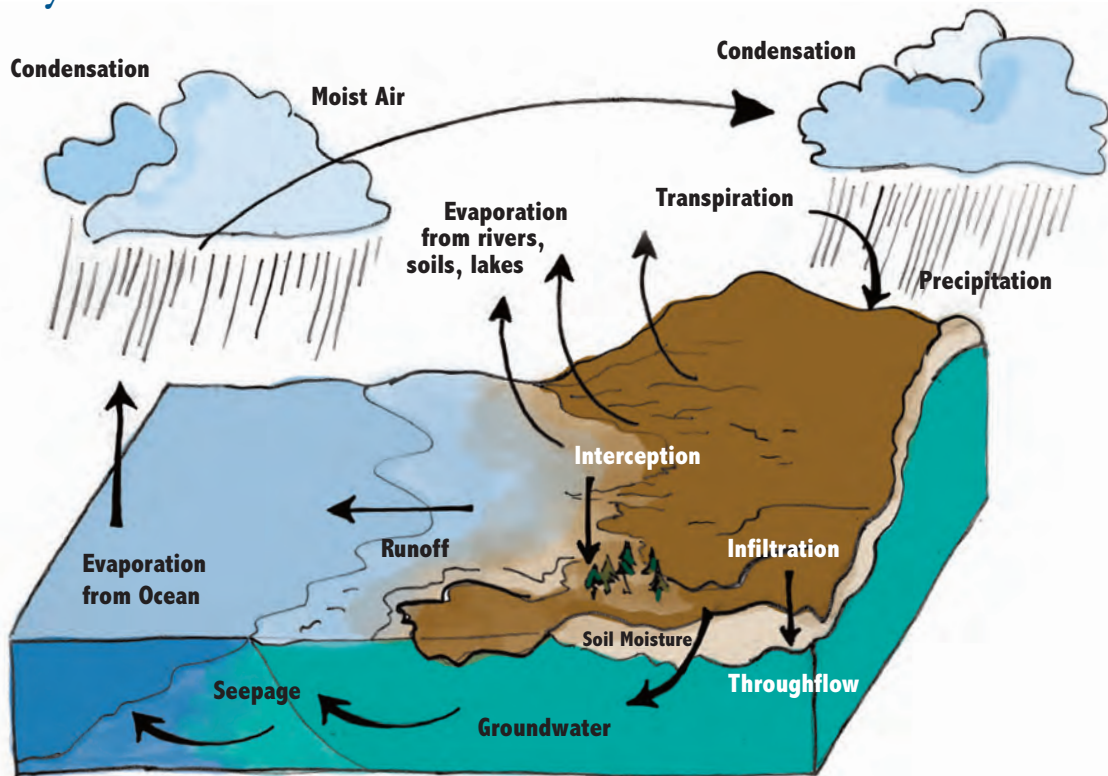
A Water Primer

Our Beautiful Blue Planet



From outer space, the earth appears blue. Over three-quarters of its surface area is covered with water. Water is a miraculous substance. It is the universal solvent: just about every other element can mix or dissolve in it. Over most of the globe, water exists in its liquid state. In constant motion and dissolving everything in its path, water is the lifeblood of our dynamic planet. This vast cycling and recycling process is called the water cycle.

The Water Cycle: What Goes Around Comes Around!



If 5 gallons represented all the water in the world, all of it except for 2 cups would be found in the oceans. The remaining 2 cups break down as follows:

Glaciers	1 ¹ / ₂ cups
Groundwater	a tad under 1/2 cup
Inland seas	1/2 teaspoon
Freshwater lakes	1/2 teaspoon
Rivers	less than one drop
Water vapor	less than one drop



The human body is 70% water. Our eyes are 99% water. Plants contain from 70% to 90% water.



Earth never gets any new water; it just changes form. The water you drink today might have watered the gardens of ancient Egypt.

ARE YOU FLUID IN WATER TERMINOLOGY?

Aquifer: Underground sediments saturated with water.

Watershed: Area of land in which all water, whether above or below the ground, is constantly moving downhill towards the same body of water. A watershed may include thousands of acres and water may travel many miles from the highest elevation point to the body of water at or near sea level.

Runoff: Downhill movement of rainfall, over impervious surfaces or slowly permeable soils, to a discharge point: a wetland, a fresh or coastal pond, or the ocean.

Groundwater: Water stored in or moving through the **aquifer**.

Recharge: Process where precipitation moves through the soil and reaches the groundwater, replenishing the aquifer.

Vineyard Aquifers

All of our drinking water, whether from private wells or municipal water supplies, comes from the rain that falls on Martha's Vineyard. Contrary to folklore, there is no underground stream from the mainland.

Most of the Island's drinking water is drawn from one large connected aquifer that lies beneath the towns of Edgartown, Oak Bluffs, Tisbury and most of West Tisbury. In this area, the soil types and the geologic deposits are relatively continuous and allow water to move through them.

In the hilly parts of West Tisbury, Chilmark, and Aquinnah, small aquifers are isolated from each other by impermeable layers of clay and till.

The Chappaquiddick aquifer is separate from the rest of the Vineyard and feeds groundwater to Katama and Cape Poge Bays, Pocha and Caleb's Ponds.



In 1987, the Environmental Protection Agency designated the Vineyard's water supply as a "Sole Source Aquifer." This designation recognizes that the Island's groundwater is our only source of drinking water.



About 40% of the annual rainfall seeps into the ground to replenish our aquifer.



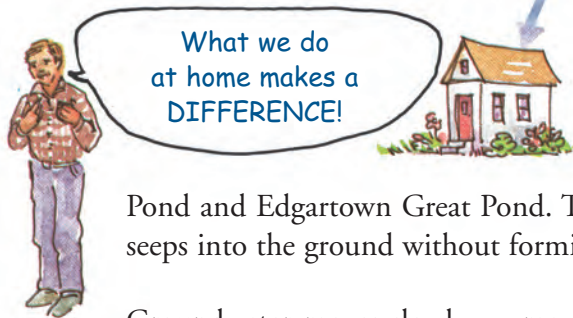
Our main aquifer contains about 150 billion gallons of water. Each year this aquifer receives nearly 18 billion gallons of recharge and loses a similar amount to the ocean. We use about 2 billion gallons of water each year and return over 1 billion to the ground through our wastewater disposal systems.

Watersheds: Pathways to Our Ponds

As you can see from the map on pages 6 and 7, Martha's Vineyard has over sixteen major watersheds. Each coastal pond is the primary destination for all the ground and surface freshwater flowing downhill through its watershed. In the smaller watersheds, water may travel underground only a mile or so to reach its destination. In the largest ones, the distance traveled may be ten miles or more.

The Vineyard includes 27 salt and brackish ponds that cover 8,800 acres, 60 fresh water ponds that total 615 acres in area, and 13 substantial streams that together are 20 miles long. Add to this the extensive salt and fresh marshes and wetlands, as well as the Vineyard and Nantucket Sounds, and the role that water plays in our lives becomes clear.

The largest watershed on our Island, over 11,000 acres in area, is shared by Chilmark and West Tisbury. All the water falling on this watershed eventually ends up in Tisbury Great Pond. Eel Pond in Edgartown is the destination for water in one of the smallest Island watersheds, which comprises less than 150 acres.



The starting point for water, in several major Island watersheds, is near the intersection of Indian Hill Road and State Road in West Tisbury's business district. From that point, all water percolating into the aquifer flows downhill toward the coastline, to discharge into Tisbury Great Pond, Lake Tashmoo, Sengekontacket Pond, Katama Bay, Lagoon

Pond and Edgartown Great Pond. The soil is so sandy in most of these areas that rainfall quickly seeps into the ground without forming streams or runoff.

Groundwater moves slowly — maybe one to two feet a day. Water entering the groundwater in West Tisbury may take 30 years to arrive at Lagoon Pond, but arrive it will. With it will come pollutants applied to lawns or flushed down toilets and sinks. Even though it takes years, contaminated groundwater will eventually reach our coastal waters.

In the hilliest parts of West Tisbury, Chilmark, and Aquinnah, clay deposits make the soil less permeable. Rain and melting snow flow over the surface as runoff, forming numerous small streams. The watersheds for Menemsha, Squibnocket, and Chilmark Ponds are determined by the topography of the surrounding land which directs streams to the ponds, Vineyard Sound, or the Atlantic Ocean.

Salt or Brackish Pond	Pond Surface Area	Watershed Area ²	Pond Condition
Caleb's Pond	40 acres	204 acres	Impaired ^{1A}
Cape Poge Pond	1560 acres	816 acres	Good
Chilmark Pond	241 acres	3137 acres	Impaired ¹
Eel Pond	115 acres	194 acres	Impaired ^A
Edgartown Great Pond	890 acres	4505 acres	Impaired
Farm Pond	42 acres	402 acres	Impaired
James Pond	40 acres	400 acres	Impaired ^{1A}
Katama Bay	1700 acres	4500 acres	Compromised ^A
Lagoon Pond	573 acres	3889 acres	Impaired
Menemsha Pond	670 acres	1840 acres	Good
Oak Bluffs Harbor	36 acres	382 acres	Impaired (Sunset Lake)
Oyster Pond	200 acres	2800 acres	Compromised ^{1A}
Pocha Pond	115 acres	900 acres	Compromised ¹
Sengekontacket Pond	716 acres	4440 acres	Impaired (Majors Cove & Trapps Pond)
Squibnocket Pond	600 acres	1229 acres	Compromised ¹
Tashmoo Pond	269 acres	2658 acres	Impaired
Tisbury Great Pond	845 acres	11,102 acres	Impaired ¹

1 - Reduced water quality largely due to limited tidal circulation.
A - Estimated as the pond has very little or no data available.
2 - Watershed Area does not include pond surface area.

Impacted: Implies a decline of water quality, including eelgrass beds, very likely from man-made nitrogen sources including wastewater, fertilizers and acid rain.

Impacted*: As above but the cause is a natural condition enhanced by, but only partly caused by, man.

Somewhat impacted: Intermediate decline in water quality and decrease in eelgrass with probable man-made cause.

Good: Implies water quality parameters are mostly in the desirable range, eelgrass beds are largely intact and shellfish yields continue.

Vineyard Sound



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Watersheds of Martha's Vineyard Island

You are a part of the larger environment. Even if you don't live right on the water, you impact the water bodies in your watershed via the flow of pollutants through runoff and groundwater. The groundwater beneath your property may make a 20-year journey to one of our coastal ponds carrying along your contributions in the form of nutrients or hazardous compounds. Find your watershed address.



Use the suggestions in this booklet to change your behavior and protect our ponds. Barry Commoner's First Law of Ecology states that: "Everything is connected to everything else." What you do on your land may have a widespread impact beyond the boundaries of your property. In a sense, each and every one of us 'live on the water.'

WAMPANOAG PLACE NAMES ON NOEPE

Aquinnah:	(formerly known as Gay Head) The shore or end of the island
Kehtashimet:	(Lake Tashmoo in Tisbury) Place of a great spring
Kuppiauk:	(Head of Deep Bottom; part of Tisbury Great Pond watershed) Heavily-wooded expanse of land
Manitouwatootan:	(Christiantown) God's town (headwaters of many Island watersheds)
Massapootocauke:	(near Quansoo) Land of great blowing (whales)
Msquepunauket:	(Squibnocket) At the place of the red cliff or bank
Nashaquitsa:	(between Menemsha and Squibnocket Ponds) At the little divided island
Noepe:	(the island of Martha's Vineyard) Dry place
Nunnepog:	A pond (body of unsalted water); literally means "when there is water there"
Paquahauke:	(near Sengekontacket Pond) Quahaug land
Sakunket:	(end of Long Cove, Tisbury Great Pond) Skunk place
Sengekontacket:	Place where the brook flows into the river
Squibnocket:	at the place of the red cliff or bank
Tchepiaquidenet:	(Chappaquiddick) Place of separate island
Ukquieset:	Tisbury Great Pond
Wampanoag:	People of the First Light
Wawitukq:	(Menemsha Creek before being made into a channel) Winding, twisting river
Winnetakqet:	(Edgartown Great Pond) Place of good river



We all live downstream!



Many of our watersheds include parts of several towns. This makes the protection of our water resources a regional issue.

Why Should We Care About Watersheds?

Water is the universal solvent. While dissolving essential minerals, it makes them available to the microscopic life that forms the base of the food chain. But water also dissolves and carries pollutants into the ground, our coastal ponds and offshore waters. These pollutants range from the fuel additive MBTE to the nitrogen in our fertilizers and sewage.

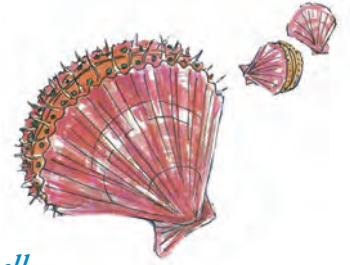
How Does a Watershed Affect a Coastal Pond's Ecosystem?

In a coastal pond, the water plants at the base of the food chain require nitrogen in order to grow and reproduce. When a watershed supplies too much nitrogen, the algae growth takes off:

- Microscopic phytoplankton increase dramatically, causing the water to become "cloudy" and, in extreme cases, green or brown.



- Slime algae increases on the surfaces of pilings, rocks, and eelgrass blades.
- Drift algae grow to excess, break loose and pile up onto shore or eelgrass beds.



Eelgrass is a rooted marine plant that provides habitat for bay scallops, blue crabs, tautog, winter flounder, and tomcod, among others. Because eelgrass is very sensitive to poor water quality, its decline is a warning bell that must be heeded.



Shellfish improve water quality as they feed by filtering microscopic particles from the water. One study has calculated that 100,000 rapidly growing oysters can cancel the nitrogen pollution from 27 people living in the watershed.

Fertilize Your Pond with Nitrogen Only if You Like it Green!

The rampant growth of microscopic algae causes the green, murky look that makes pond and sea water uninviting and unhealthy. This excess plant material takes oxygen out of the water, suffocating aquatic life. Algae blooms also reduce the amount of sunlight that can penetrate the water. Valuable aquatic plants like eelgrass cannot photosynthesize in cloudy water and soon die off. In the last decade, eelgrass meadows have nearly disappeared from Edgartown Great Pond and Sengekontacket Pond and are also in decline in Lake Tashmoo and Lagoon Pond. In addition to its impact on aquatic life, poor water quality affects property values and the overall Island economy.



The Vineyard is blessed with 27 salt and brackish coastal ponds that encompass more than 10 square miles. The water quality in every one of these ponds is affected by the addition of nitrogen from their watersheds and from acid rain.

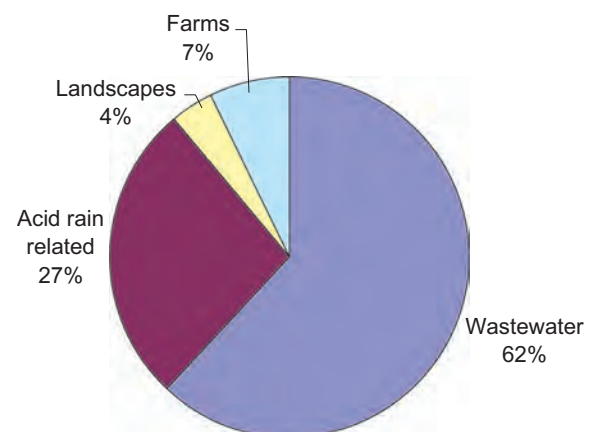
Where Does Nitrogen Come From? Us!

One source of nitrogen is acid rain, which is polluted with auto exhaust and smokestack emissions from power plants and heavy industry. These contaminants travel from as far away as the Ohio Valley and from as near as Five Corners, where cars idle in traffic jams. Depending on the pond, this source may make up from 30 to 60% of the annual nitrogen pollution of our coastal ponds.

An even more significant source is wastewater from human waste. Although your septic system takes out about a third of the nitrogen present in urine, the wastewater that leaves your leaching field is still highly concentrated with nutrients — 10,000 times more concentrated than the desired levels of nitrogen in a coastal pond. **For most coastal ponds, wastewater is the source of more than half the annual nitrogen input.**

The breakdown of nitrogen sources for Lagoon Pond is typical of the proportions found in many Vineyard ponds.

**Lagoon Pond
Nitrogen Sources—2010**

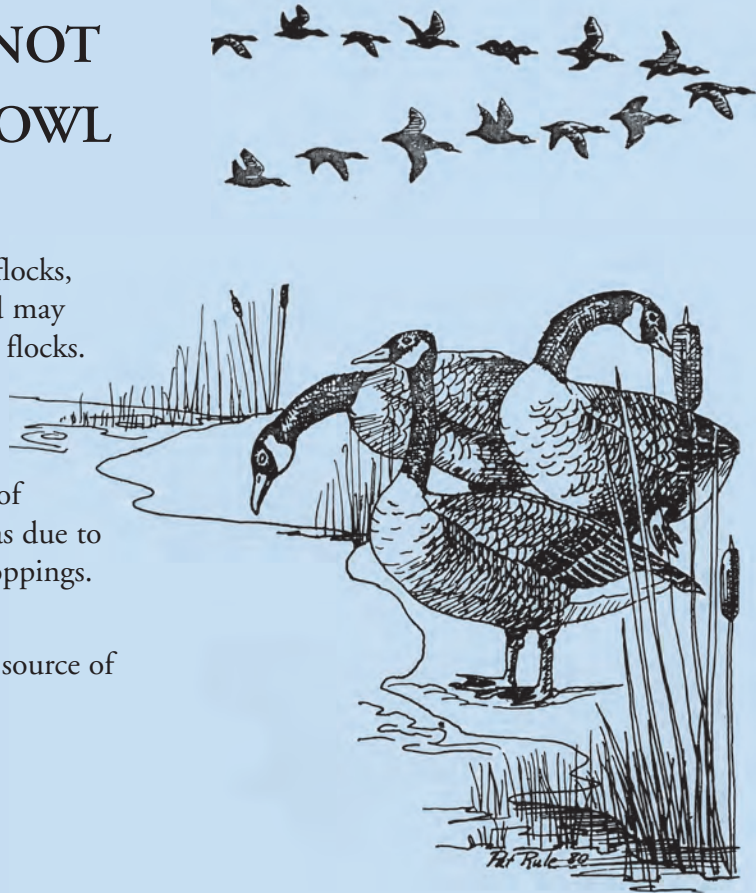


Fertilizers used on lawns, gardens, and farms are also sources of nitrogen. If too much is applied or if the ground is heavily irrigated after being fertilized, the nitrogen will dissolve in the water and travel beyond the reach of the crops' roots into the groundwater.

Another source of nitrogen is runoff water which carries animal droppings, street litter, and dust. In addition runoff carries oils, metals, bacteria, sediments, and a myriad of chemical residues used in building, cleaning, and landscaping projects.

WHY WE SHOULD NOT FEED OUR WATERFOWL

- Feeding causes waterfowl to concentrate in unnaturally large flocks, interrupts migration patterns and may create non-migratory, permanent flocks.
- The overpopulation of wild waterfowl may cause the closure of shellfish beds and swimming areas due to bacterial pollution from their droppings.
- Large bird populations are also a source of nitrogen pollution to the ponds.

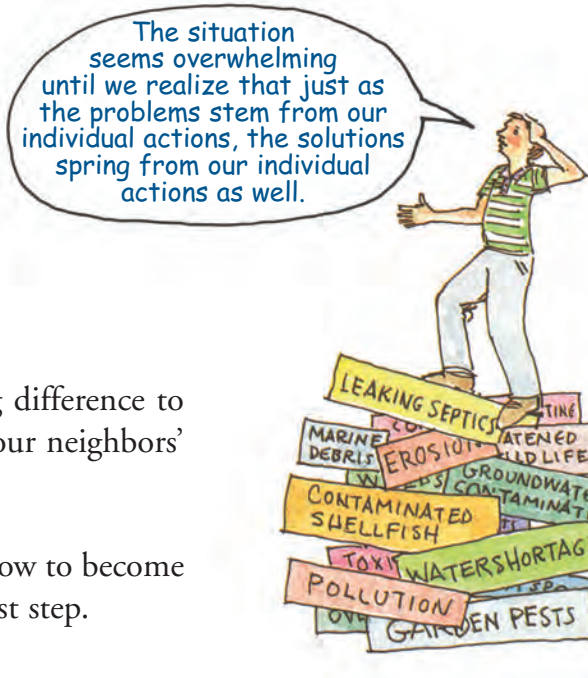


Phosphorus, Another Nutrient that Affects Our Ponds

As saltwater plants need nitrogen, freshwater plants thrive on phosphorus. To control the growth of freshwater algae, phosphorous inputs should be restricted. Phosphorus is also a concern in salt ponds that are over-supplied with nitrogen. Phosphorus sources include wastewater, acid rain, street runoff, and the erosion of soil from residential and agricultural lands. Phosphorus has been removed from laundry detergents but is still found in most automatic dishwasher detergents. It is usually the wastewater systems within a few hundred feet of the pond that may be phosphorus sources.



Just because you don't see it doesn't mean it won't hurt you!



A small change in your habits can make a big difference to our ponds and may save your own well and your neighbors' wells from contamination.

Spend a few minutes with this guide to learn how to become a good watershed citizen, and then take the first step.

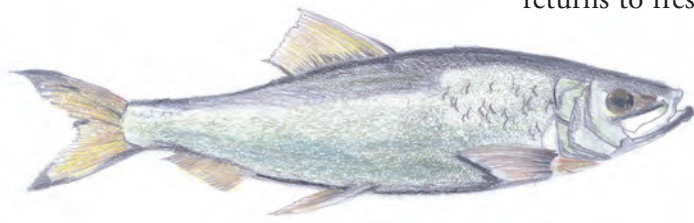
Climate change is threatening Vineyard waters

Warmer water, ocean acidification and the loss of salt marshes are a threat to shellfish. Warmer water will increase algae blooms. Low lying wells and septic systems are at risk of salt water intrusion. Changes in precipitation patterns will bring more and heavier rains in winter and longer droughts in summer. Sea level rise will change the dynamics of the coastal ponds and barrier beach systems. For an in-depth look at how climate change will impact the Island and what can be done see Oak Bluffs conservation agent Liz Durkee's 15-part series on the Vineyard Conservation Society website at www.vineyardconservation.org. (Originally published in the Vineyard Gazette.)

VINEYARD NEIGHBOR

Herring: Swimming Against the Flow


Small silver fish, herring spend much of their lives in the open ocean. They eat plankton and swim in large schools, covering great distances throughout the Atlantic. But, as an anadromous fish (one that lives most of its life in the salty ocean but returns to freshwater to spawn), herring return each year



to some of the Island's freshwater ponds. A great place to witness this mass migration is at the Richard Madeiras Herring Run on Barnes Road in Oak Bluffs during April when the run is active and the fish are moving upstream.

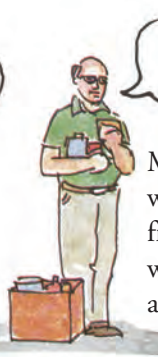
A Quick Start for the Water-Wise

Changing our behavior is tough. Start slowly; begin by incorporating three new actions into your daily life. Don't expect miracles overnight, but do expect miraculous change over time.




Choose one action that relates to conservation of water or reduction of waste.

Preventing pollution by conserving water and reducing waste is far cheaper than cleaning up afterwards.



Choose one action that relates to household hazardous waste.

Many of the products we use around the home find their way into our waters. So use the safest alternatives.



Add new actions as your first choices become part of your daily life.

If you like to garden, choose an action from the Chapters 7 and 8 on soil erosion and landscaping. If you're a boater, choose an action from Chapter 10, on good boating practices.

Ten Simple Things you Can Do Right Now to Begin Caring for our Island Waters.

1.

Conserving water at home and in the office can reduce the volume treated by your septic system or sewage treatment plant.

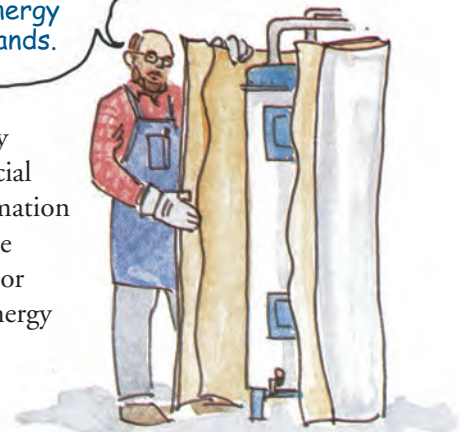
Saving water is as important as keeping it clean. Chapters 3 & 4 offer many ideas about how to avoid wasting water.



2.

Insulate your hot water heater, caulk or replace leaky windows, upgrade to Energy Star rated appliances, and insulate your home to reduce its energy demands.

For a free energy audit and financial assistance information contact the Cape Light Compact or the Vineyard Energy Project.



3.

Dispose of your hazardous wastes during special collection days rather than in your regular garbage pickup or down storm drains.



For information about hazardous waste see Chapter 5. Call the Edgartown Wastewater Treatment Plant for collection days schedule.

4.

Use your car less!

Motor vehicles are the biggest contributor to air pollution and one of the biggest to water pollution. Plan ahead to do several errands in one trip. Car-pool or use public transportation whenever possible. Encourage our local transit authority to meet your needs.



5.

Recycle used motor oil

One gallon of oil can foul one million gallons of freshwater. That's a year's water supply for 30 people! There are only two ways to safely dispose of waste oil: return it to the place you bought it (along with the receipt), or bring it to the hazardous waste collection site in Edgartown.



6.

Pre-cycle by considering product packaging when purchasing.

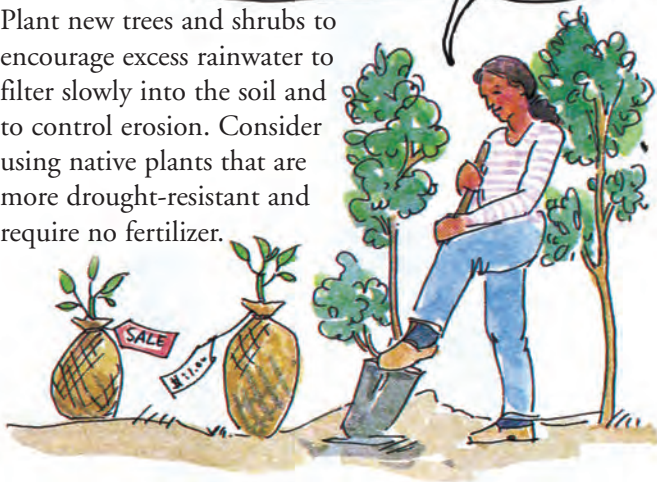
Packaging makes up 33% of our household waste, and all of it must be shipped off-Island for disposal. Look for products with limited, recycled, or reusable packaging. Buy foods in glass and aluminum containers. See Chapter 6 on recycling for more hints.



7.

Preserve the established trees around your home and in your neighborhood.

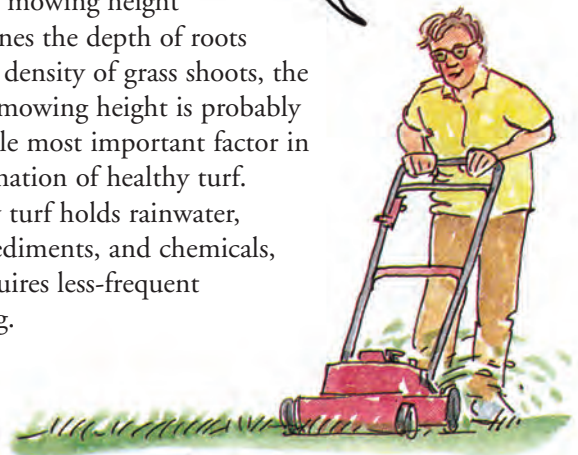
Plant new trees and shrubs to encourage excess rainwater to filter slowly into the soil and to control erosion. Consider using native plants that are more drought-resistant and require no fertilizer.



8.

Reduce runoff from lawns by properly adjusting your lawn mower.

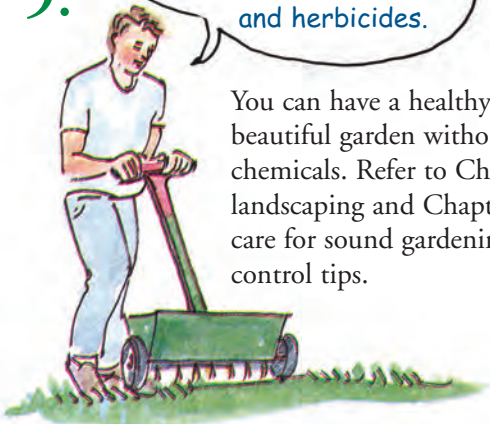
Because mowing height determines the depth of roots and the density of grass shoots, the correct mowing height is probably the single most important factor in the formation of healthy turf. Healthy turf holds rainwater, filters sediments, and chemicals, and requires less-frequent watering.



9.

Eliminate your use of lawn fertilizers, pesticides, and herbicides.

You can have a healthy lawn and a beautiful garden without using toxic chemicals. Refer to Chapter 8 on landscaping and Chapter 9 on lawn care for sound gardening and pest control tips.



10.

Rinse and scrub your boat hull and decks with a brush instead of using soap. You will be helping to keep our waters clean.

If your boat is stained, use phosphate-free soap or any of the alternatives listed in Chapter 5 on Hazardous Waste. See Chapter 10 on boating for more hints.



Chapter 3

Water Water Everywhere Sound Water Use



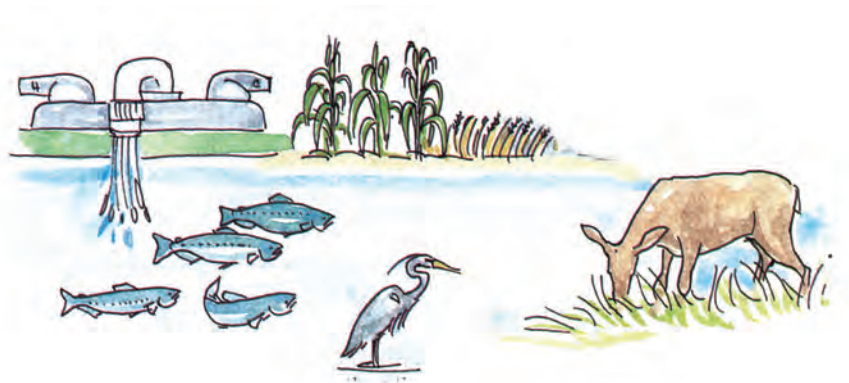
Most of the Earth's water is not readily available for human use; 97% forms our oceans and 2% is frozen. We depend on the remaining 1% which is contained in streams, rivers, ponds, and in the groundwater.

Saving water is as important as keeping it clean.

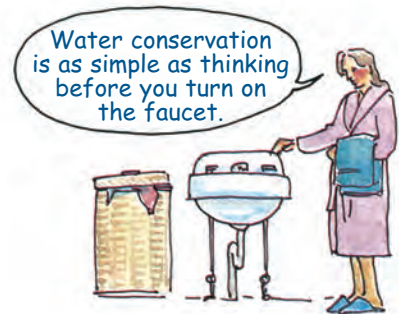
The Vineyard's water comes from its aquifer. Although the population grows and the need for services increases, the capacity of the aquifer remains finite. Yet we expect clean, clear water in our homes, irrigating our crops, and allowing fish and wildlife habitats to thrive.

Using less water saves more than just the water, it also saves you money.

Conserving water helps protect our ponds by reducing the demand on septic systems and sewage treatment plants, thereby reducing the need for new or expanded sewage treatment facilities. If your sewage treatment costs are based on water consumption, water conservation can save you even more money. And saving hot water also means saving energy.



Every day, each person who is not already conserving water uses some 80-100 gallons of water at home. How much of this do you actually drink? Most of us can decrease water consumption in our homes by 15 to 20% without much discomfort or expense. All we have to do is acquire good water-use habits.



 *Less than 1% of the Earth's water is available for drinking.*

Here are some tips to get you started ...



1. Check for leaks. Check your water meter or your well pump while no water is being used. If the dial moves, or if the pump comes on, you have a leak. A hole in your water line $\frac{1}{32}$ of an inch in size wastes 750 gallons of water a day.



2. Install low-flow faucet aerators. Your water pressure will seem stronger, but you'll actually be saving water while reducing flow as much as 50%.

3. Check toilets for leaks by adding food coloring to the toilet tank. If color appears in the bowl, without flushing, there is a leak. A leaking toilet can waste 200 gallons of water a day without making a sound.

4. Flush only when necessary. Each flush in older toilets uses about 6 gallons of water. Never use the toilet as a wastebasket.

5. For older toilets, try placing one or two half-gallon plastic bottles in your tank to reduce water used for each flush. Or consider replacing the old one with a new, lower flow toilet which only uses 1 1/2 gallons per flush.

in the bathroom



6. A shower or a bath? Only the shortest shower saves more water than a partially filled tub. A full tub, however, can use 30–50 gallons of water: more than a short shower. Consider bathing small children together.

7. Recycle gray water: Use water from baths and dishwashing to water plants. Plug the tub when you shower and reuse the water.

8. Install water-saving shower heads or flow restrictors. Shower heads with an on/off valve are also available, allowing the water flow to be stopped and restarted without readjusting the temperature.

9. Don't let the water run in the sink while shaving, brushing your teeth, or lathering your face and hands.

in the kitchen and laundry

1. Fill your dishwasher. Only use it when you have a full load. Use the cycles with the least number of washes and rinses.

2. Avoid running water continuously when washing dishes in the sink. If possible, use two dishpans when washing dishes by hand: one to wash and one to rinse.

3. Wash dishes once a day.

4. Keep a bottle of drinking water in the refrigerator to avoid running the tap to get a glass of cool water.



5. Fill your washing machine. Pre-soak clothes only when absolutely necessary. Set the water control level appropriately. Permanent press cycles may use an extra 10-20 gallons of water.

6. Buy a front loading washing machine when you replace your present machine, it saves water and energy.

7. Avoid garbage disposals. Many towns on the Vineyard do not allow the use of garbage disposals because they use a great deal of water and can add grease and solids to your already hard-working sewage and septic systems.



1. Lawns – the Vineyard way. Plush, green lawns are not the norm here, and for good reason: they require too much water. It's better to decrease the size of your lawn and landscape with native, drought-resistant plants.

2. Water your garden only when necessary. Water only in the early morning or at night to avoid rapid evaporation. Keep in mind that watering the sidewalk and street wastes water.

3. Use a broom, not a hose, when cleaning driveways and walkways.

4. Water root areas of your plants, Preferably with a drip irrigation system which can save up to 60% over other watering techniques.

5. Wash your car only when necessary, with a bucket and a hose with a shut-off nozzle. Use a high-pressure, low volume hose that has a pistol-grip nozzle.

outdoors...



6. Locate and label the master water supply valve for ease of response in case of a major leak or broken pipe. Consider turning off your water and hot water heater when going on a trip.

7. Be aware of contaminating your water source through back siphoning. A drop in water pressure in the municipal or private water system could cause a reverse in water flow, sending contaminants back into the water system. This can be prevented using a house-to hose connection called a “hose bib atmospheric vacuum breaker.”

8. Install a rain barrel. A great way to conserve water and its free water for landscaping.

All Municipal Water providers welcome any related water inquiries. Also, see Chapters 8 and 9 on landscaping and lawns for more ideas.

VINEYARD NEIGHBOR

Eelgrass: Lean and Green

Eelgrass is often mistaken for a seaweed. Unlike seaweed, it has roots and even flowers underwater. One of the most important roles of eelgrass is to provide underwater shelter for species of fish and shellfish, especially bay scallops. Young scallops that attach themselves to the eelgrass leaves are less vulnerable to bottom predators like crabs and starfish. When eelgrass washes up on the beach, its brown piles provide cover for the small invertebrates that nourish wandering shorebirds. Decreased scallop populations followed the decline of eelgrass beds in the 1930s. While eelgrass populations have increased since then, they are now in jeopardy again due to poor water quality.

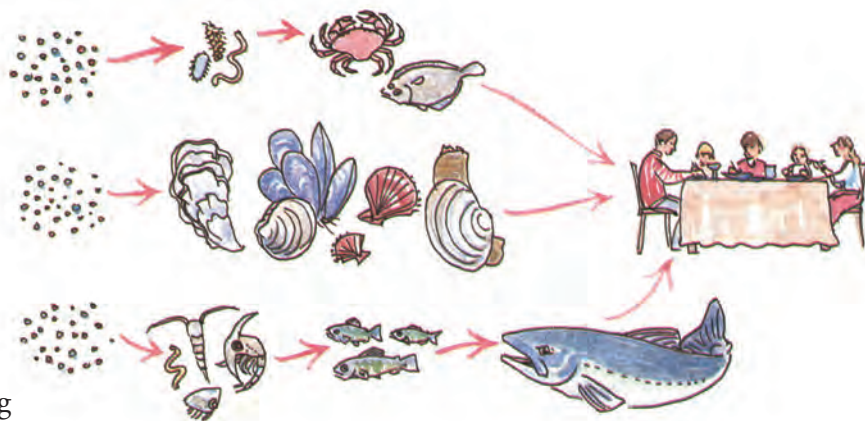
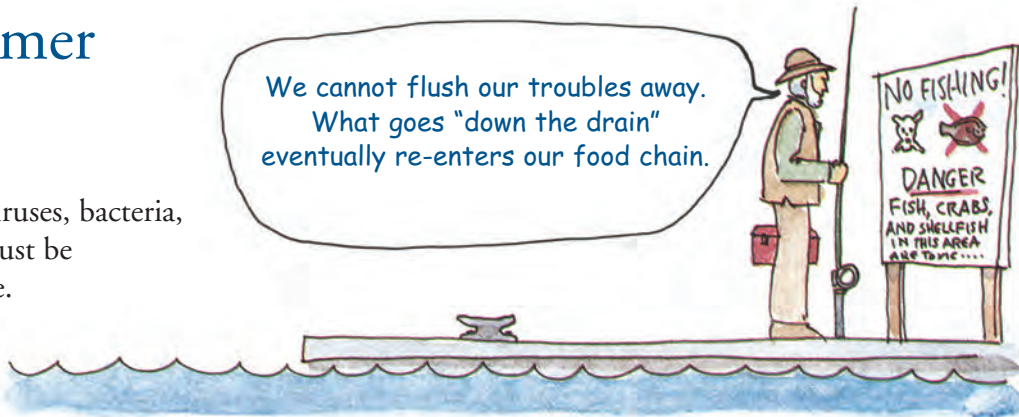


Out of Sight, Out of Mind: A Wastewater Primer

Human wastes carry viruses, bacteria, and nutrients and must be disposed of with care.

These bacteria are not suited to survive for long outside the human body; however, the viruses and nutrients can persist. If not carefully disposed of, wastes can contaminate drinking water. The nutrients contained in wastewater, especially nitrogen, can also affect the quality of drinking water and cause a serious decline in coastal pond habitat quality, wiping out eelgrass and shellfish beds.

Toxic materials should never be disposed of in your septic system. They may seep into the groundwater contaminating drinking water and the food chain.



Find out what treatment the waste-water from your household receives before it re-enters the environment.



Wastewater Treatment: A Brief History

The goal of treatment is to remove the disease-causing pathogens and dissolve the solids enough to be able to dispose of the wastewater in the soil. Human beings have a long history of disposing of their wastes into the ground. This method isolated wastes and allowed chemical and biological processes to break down solids and destroy the pathogens. But this only worked as long as the population remained small. The addition of clean water to carry the waste out of the dwelling and into cesspools was a natural next step. However, the water also leached nutrients, viruses, and, to a lesser extent, bacteria away from the cesspool, posing a possible threat to drinking water sources.



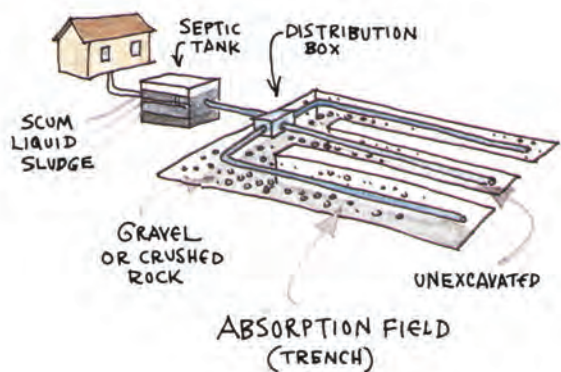
Modern wastewater systems contain two components: the tank and the soil absorption field. The septic tank was a step forward from the cesspool because it provided a watertight tank to store the solid wastes and release the liquid slowly to infiltrate into the ground. Separating the solids from the liquids is called *primary treatment*. It helped prolong the life of the soil absorption system by removing grease and solids that once clogged the soil around cesspools.

Wastewater collection and treatment solved the problem of inadequate room: Eventually densely settled areas needed wastewater management for aesthetic as well as health reasons. Wastewater was collected and piped out of town to a facility that separated the solids from the liquids, killed almost all of the human waste bacteria, while using other bacteria to further digest the waste and release a clear effluent into the ground. This is known as *secondary treatment*. In 1973, the first Vineyard wastewater treatment plant was built in Edgartown.

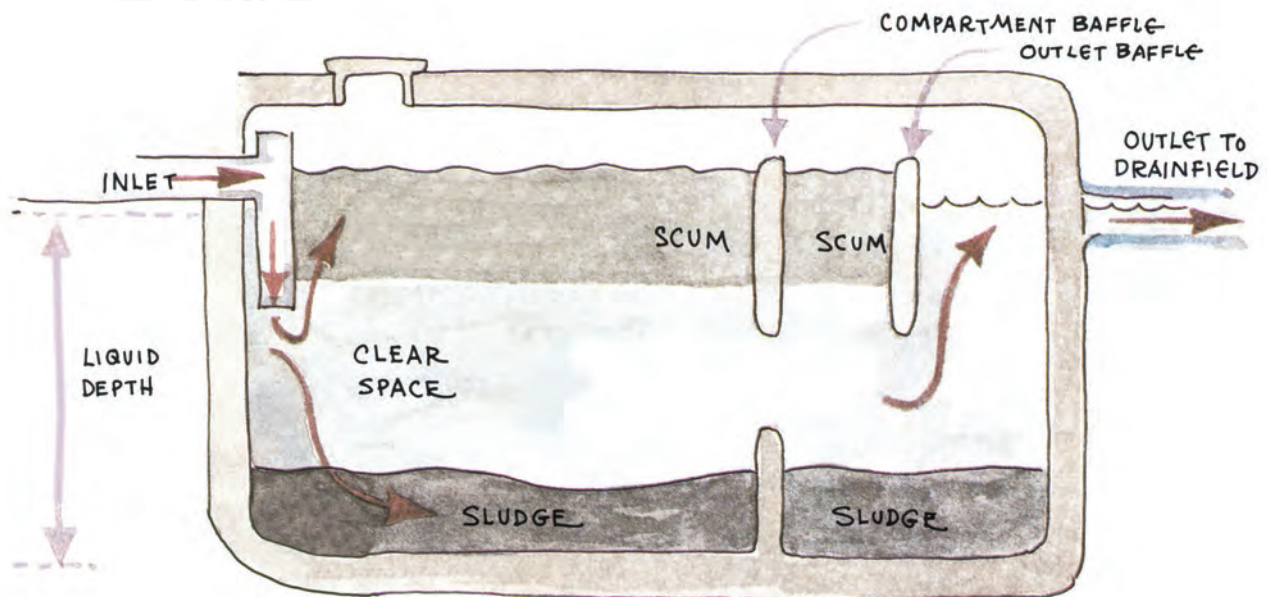
The Edgartown plant was later upgraded to *tertiary treatment*, which removes the bacteria as well as 80% to 90% of the nitrogen to meet drinking water standards. The Edgartown plant can treat 750,000 gallons of wastewater per day, dropping the daily discharge of nitrogen from 200 pounds to 18 to 19 pounds. Oak Bluffs and Tisbury have also installed tertiary treatment systems to collect and treat the sewage generated in their downtown areas.

Backyard disposal: The septic system and how it works

The septic system is an adequate disposal technique where housing density is low. It is still used by the vast majority of the Island. Each system consists of the tank — a cement or fiberglass container with a T-shaped outlet pipe that keeps the floating grease layer in the tank — and a soil absorption system that infiltrates the liquid portion of the wastes into the ground. Your board of health oversees this process and enforces the state sanitary regulations within Title V.



Of the approximate 15,000 housing units on the Vineyard, more than 90% utilize backyard wastewater systems. These systems release well over 100,000 pounds of nitrogen into the environment each year.



Septic systems effectively eliminate almost all bacteria and many viruses. The effluent leaving the tank contains tens of thousands of fecal bacteria, but after percolating through four feet of soil, the bacterial count is reduced to one per gram of soil. But nutrients like nitrogen are not removed during their transit through the soil. Because nitrate and clay both have negative electrical charges they repel each other. The soil does not “trap” the nitrate to make it available for root systems of plants. So it proceeds into the groundwater and eventually into the Island’s ponds. The septic tank of a family of three releases enough nitrogen to contaminate nearly four million gallons of marine salt water.

Excess nitrogen entering a coastal pond in the form of nitrate leads to:

- Phytoplankton blooms, causing cloudy or greenish coloring.
- Excess growth of macroalgae.
- Decline or outright loss of eelgrass beds.
- Decrease of shellfish like scallops and soft shell clams.
- Odors from decay of excess vegetation.

As the density of housing development increases, so does the risk of nitrate contaminating the drinking water. **Here are some things you can do to minimize that risk.**

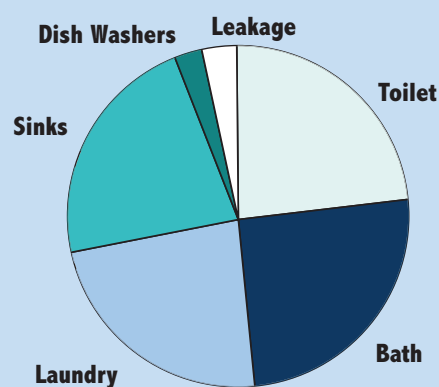
Take Care of your Septic System:

- **Have it Pumped Out Regularly:** The system should be regularly pumped to remove the sludge and the floating scum. The frequency depends on how you use your system and what goes down the drain. All systems should be pumped every three to five years to avoid septic system failure.
- **Conserve water:** Reducing the flow through your system will reduce the movement of solids and scum into the soil absorption system.
- **Don’t overload the system:** A dripping faucet or a leaky toilet can add hundreds of gallons of water to the system each week. If you are going to have a large gathering, rent a portable toilet to reduce the demand on your septic system. Stagger your use of washing machine and dish washer to spread out the flow.
- **Don’t install or use a garbage disposal:** These devices add large amounts of grease and organic matter to the system and will shorten the life of your soil absorption field.
- **Don’t kill the bugs:** Flushing chemicals down the drain can kill bacteria in your septic tank. When these bacteria stop working, the sludge accumulates and is more likely to escape the tank and clog your leaching system.
- **Don’t flood the soil absorption system:** Roof drains and stormwater runoff should be diverted away from your system to prevent periodic flooding.

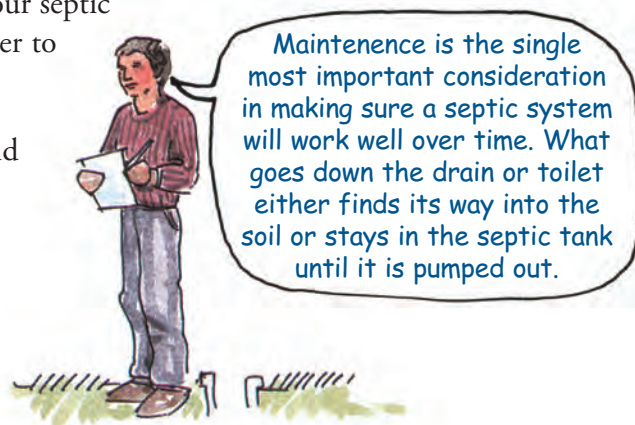
How much water do we use?

The average person uses about 60 gallons each day. With household water conservation, EPA estimates water use at 45 gallons per person per day. This is how the water is used:

Household Water Use (with conservation)



Source: U.S. Environmental Protection Agency



- **Don't compact the soil absorption area:** Don't park your car on or drive over the system. The compaction of the soil from the weight of the vehicle will reduce the system's capacity.
- **Compost it:** Don't use the sink as a garbage disposal. This will add solids and grease to the tank that may exceed the ability of the bacteria to digest it. Compost what you can and dispose of greasy waste in your regular trash.
- **Don't flood the system with Hot Tub water:** Releasing a large volume of hot, chlorinated water into the septic system will kill the bacteria that are busily breaking down the sludge. If you must drain your Hot Tub, do it over a period of three days. This will allow the water temperature and the chlorine levels to drop, and the abrupt passage of hundreds of gallons of water won't flush solids out into your leaching field.



*A septic system pump-out costs usually between \$300 and \$800.
Replacing a septic system may cost over \$10,000!*

Signs of a septic system failure:

- The toilet flushes slowly or backs up.
- The lawn is bright green over the leaching field when the rest of the lawn is brown.
- The lawn over the soil absorption system floods after you do laundry or during other activities that generate a lot of wastewater.
- Water and foul odor appear over the drainage area.

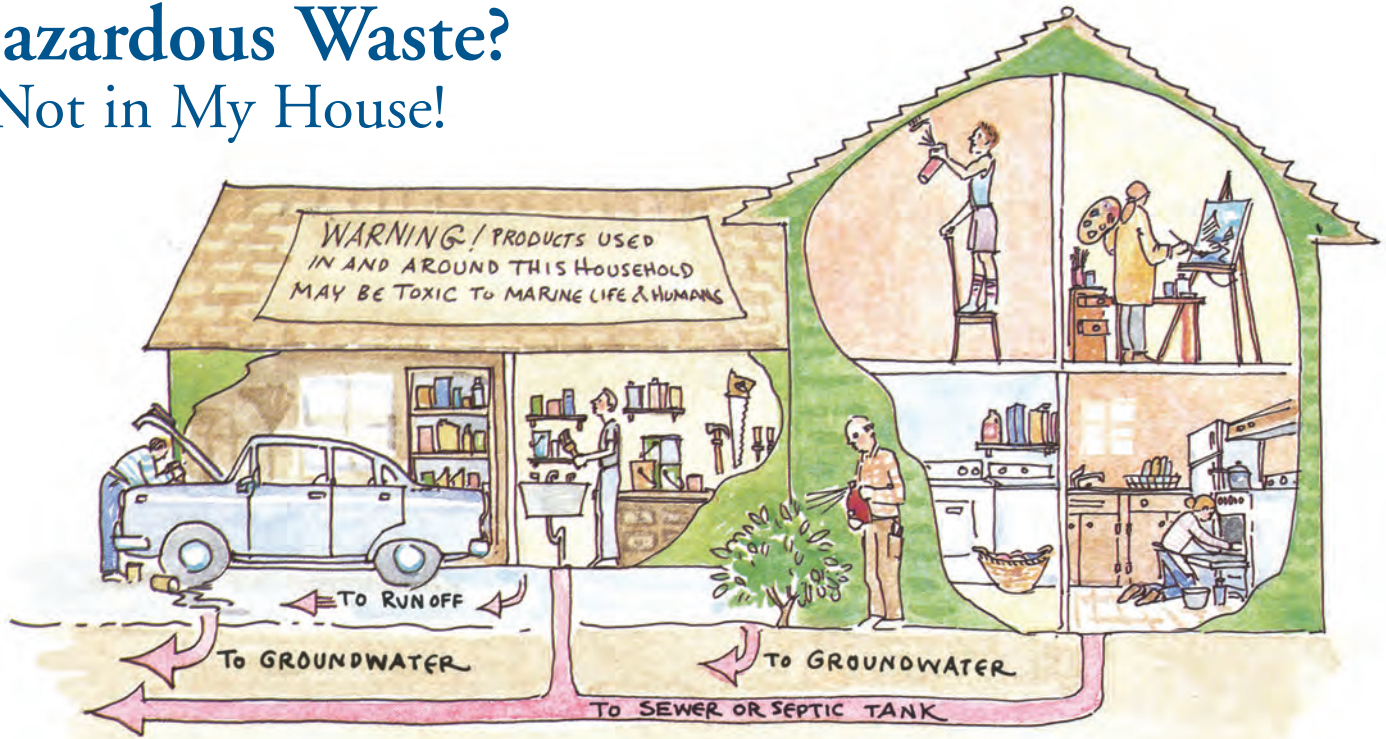


Alternatives to reduce your impact on the environment:

Alternatives to the typical backyard wastewater systems fall into two categories; units that do not produce any wastewater such as composting toilets that reduce the nitrogen output by over 90%, and units that treat the wastewater before it goes into the ground by encouraging bacterial breakdown, removing up to 60% of nitrogen.

For more information on alternative systems go to your local board of health, the Department of Environmental Protection, the Alternative Septic System Test Center or the National Small Flows Clearinghouse. (See the Resources Chapter).

Hazardous Waste? ...Not in My House!



Thousands of common household products contain toxic ingredients that should be kept out of our waters. If we bring hazardous products into our homes, it is our responsibility to use, store, and dispose of them safely.

Never pour toxic materials down your drain. They will flow into your septic tank or your town's sewer system where they can destroy essential bacteria and pass into the groundwater that supplies our drinking water. If buried in the ground or dumped into storm drains, the toxins may flow straight into our Island's creeks and ponds, or into the Atlantic Ocean.

To help Islanders dispose of these substances, the Edgartown Wastewater Treatment Plant holds special hazardous waste collection days four times a year, in May, July, August, and October. The waste is then shipped off-Island to an approved disposal site. Don't hesitate to call them for scheduled collection dates.

If you are unsure of how to dispose of any material found around your home, phone the Massachusetts Environmental Protection Agency's Household Hazardous Products Hotline.



Household Cleaners



Most soaps and detergents are meant to be washed down the drain. They are biodegradable and, if the wastewater from your home is properly treated,

they pose no problem to the environment. Other household cleaners are a different story. Most drain openers, oven and toilet bowl cleaners, and bleach are poisonous. Furniture polish and spot removers are flammable, and ammonia-based cleansers and disinfectants contain strong chemicals which may be harmful.

Read the labels of products in your cleaning closet. Do they contain such toxic components as *lye*, *phenols*, *petroleum distillates*, *chloride* and *dichlorobenzene*? Note also the words *danger*, *warning*, *toxic*, *corrosive*, *flammable*, or *poison*. These identify products that may contain hazardous materials.

Use and store these substances carefully. Keep them in their original containers. Do not remove their labels. Never mix them with other products. Incompatible products might react, ignite, or explode. Corroding containers require special handling. Call your town's board of health or fire department for instructions on transporting these safely to a hazardous waste disposal site.

Chlorine is such a common ingredient in household cleaners that many people are surprised to learn that it is highly toxic. Chlorine is corrosive and a strong irritant to the lungs and mucous membranes. Chlorine-based cleaning products can also destroy essential bacteria in septic tanks, eventually causing system failures. Chlorine can also combine with

other materials present in the home and environment to form new toxic substances. NEVER mix chlorine (or products that contain chlorine) with ammonia products: the resulting chemical reaction creates a poisonous gas that can be fatal.

Phosphates may boost cleaning power but, in bodies of fresh water, they act as a fertilizer, stimulating excessive plant growth. Ultimately this growth reduces oxygen available to support other aquatic life forms. Laundry detergents are now required to be phosphate-free. Dishwasher detergents are not. When you shop, read the labels and try to buy only low-phosphate or phosphate-free products.

Fluorescent whitening agents, also known as optical brighteners, are ultraviolet dyes contained in many laundry detergents that make fabrics seem brighter and whiter. These brighteners are toxic to fish and other aquatic life and are extremely slow to biodegrade. Laundry products are not required to list individual ingredients so choose one that does not boast a brightening feature.



Disposal

Avoid dumping cleaners or wash water down your drain. Instead dilute well with water and toss onto a gravel driveway or around deep-rooted plants to be absorbed slowly. If you must put it down the drain, flush with PLENTY of water. Then start fresh with a nontoxic, inexpensive alternative.

CONTAINS NO PHOSPHOROUS

Solvents and Paints



Oil-based paints and preservatives, paint thinners and removers, rust removers, furniture strippers and even nail polish and polish remover are highly toxic to aquatic life and can contaminate groundwater.

Disposal

These products should never be incinerated or put down any drain, sewer or septic system. Bring oil-based paint to a hazardous waste collection or use it up on a basement wall or inside a closet. Give away partly filled cans - they make a good freebie at garage sales! To dispose of latex paints, just take the lid off the can and let the liquid evaporate. Or fill it with kitty litter and put the dried solids in your regular trash. You can also dry it by painting a piece of plywood, and peeling it off and disposing of dried paint; latex paint can go in the regular garbage, but oil-based should go to the hazardous waste collection. Set aside used paint thinner in a closed jar until the paint particles settle out, then pour off the clear liquid and reuse. When the remaining paint sludge is dry, wrap it in plastic for hazardous waste disposal.

Alternatives

Choose latex paints instead of oil-based. Latex cleans up with soap and water and does not require thinner. Use whitewash — a nontoxic mixture of limestone, milk, and linseed oil — for fences, barns and basements. Buy unused paint from garage sales. Use a citrus-based solvent to clean up oil paint and brushes. Look for citrus-based removers. They work well without the fumes and don't require hazardous waste disposal.



Herbicides and Pesticides

SUCH AS:
Mothballs
flea powders
pet shampoos
slug bait
wood preservatives
weed killers

Since many of these compounds are especially harmful to fish and other aquatic creatures, they are not approved for use near water. Choose traps over sprays for household insects. For pet care, buy ecologically responsible brands of products. You'll find more on disposal and alternatives to pesticides and herbicides in Chapter 8, the landscaping section of this booklet.

Pesticides can harm more than just the pest you're after; they often kill the natural predators that keep them in check.

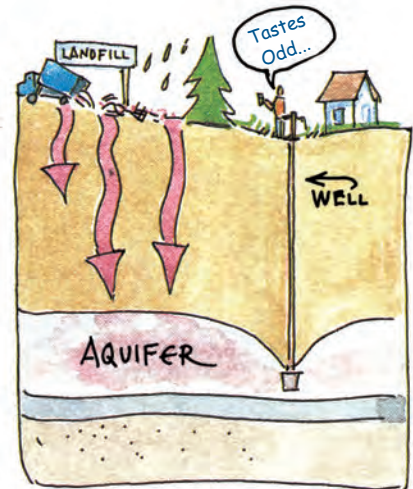


Car Care Products

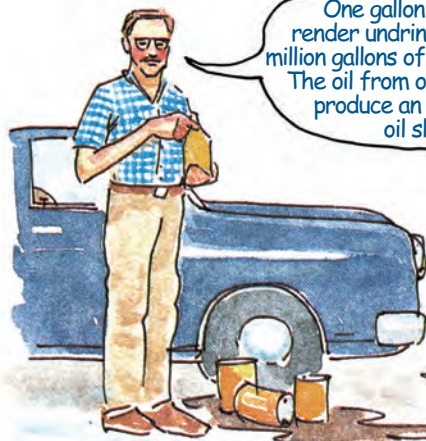


Our vehicles require a lot of toxic chemicals to run and maintain; nontoxic alternatives are far in the future. **Never dispose of these substances yourself.** When these fluids are poured down storm drains they flow directly into Island waters. When put into

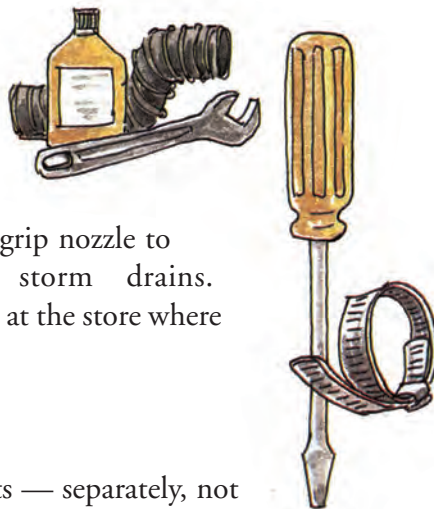
the trash stream they can contaminate groundwater. The archaic practice of applying oil to dirt roads for dust control results in over 90% of the oil being carried off the road surface into the environment on dust particles and rain-water runoff.



One gallon of oil can render undrinkable up to a million gallons of drinking water. The oil from one engine can produce an eight-acre oil slick.



Keep your car and other motorized equipment in good running order. Fix leaks promptly. When washing or servicing your car, park on grass or gravel. Use soap and water rather than detergents, and use a bucket or pistol-grip nozzle to minimize runoff into storm drains. Exchange used car batteries at the store where you buy a new one.



Disposal

Store your car care products — separately, not mixed — in sturdy, lidded containers, out of the reach of children. Dispose of them at a hazardous waste collection. When you purchase oil at a garage or auto parts store, save the receipt. The store is required by law to accept the same amount of waste oil, free of charge, to recycle. Call the state EPA motor oil info line for more information.

Other Car Care Products

Treat antifreeze as hazardous waste. It contains ethylene glycol, which is poisonous to wildlife and people. Many cats and dogs have died after drinking the sweet-tasting puddles of antifreeze left on driveways. Buy an ecologically responsible brand for your car and boat. Winterize your plumbing with “plumber’s antifreeze.” It is made with propylene glycol and is non-toxic to your septic system.

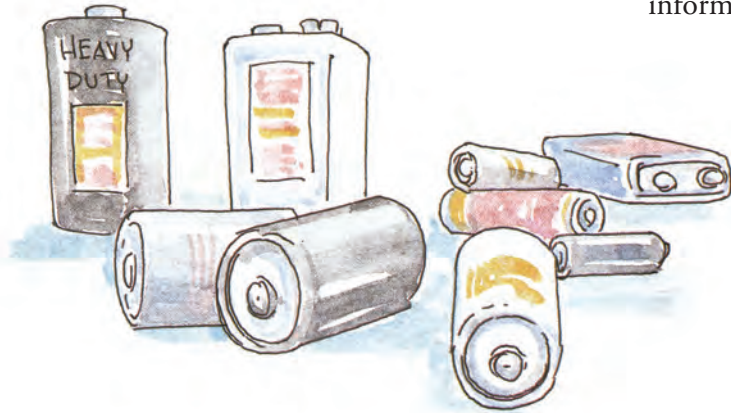
- SUCH AS:**
- antifreeze
 - battery acid
 - brake fluid
 - degreasers
 - engine cleaners
 - gasoline & diesel
 - liquid car wax
 - motor oil
 - radiator flushes
 - rust preventatives


Items That Contain Heavy Metal

Many common items in our homes contain heavy metals like mercury, cadmium, arsenic, and lead. These metals are dangerous, particularly to fetuses and children. They should also be treated as hazardous waste. Alkaline batteries can be disposed of in your regular trash but not the rechargeable or small button-type batteries. Bring them to the Martha's Vineyard Refuse Disposal and Resource Recovery District. Contact the National Recycling Technology Project for

information on recycling your computer and other electronic equipment. Also, you can easily recycle your empty printer cartridge using the postpaid envelopes available at your local post office.

SUCH AS:
computers
home thermostats
computer monitors
smoke detectors
televisions
energy-saving bulbs
fluorescent bulbs
mercury thermometers
rechargeable batteries



 Above ground oil tanks are also a threat to groundwater. These tanks rust from the inside. Every year many tanks fail and leak into the underlying soil and groundwater. The costs of cleanups are staggering. If your tank shows signs of corrosion or is over twenty years old, it should be replaced with a new safer stainless steel tank.

Taking Action

Our households have a serious impact on water quality. Many of the products we find in our home are toxic, and the list keeps growing as more research is done.

- Become informed.
- Read labels so you know what you are buying and what the potential hazards are.
- Follow the directions on the label.
- Use the least toxic product you can find and buy only what you need.
- Never use more of the product than the manufacturer recommends.
- Dispose of your unwanted household chemicals properly.
- Use alternatives (see following page)

Well, what's a person to do?



And Lastly...

Consider walking, bicycling, car-pooling, or taking the Island's public transportation system.



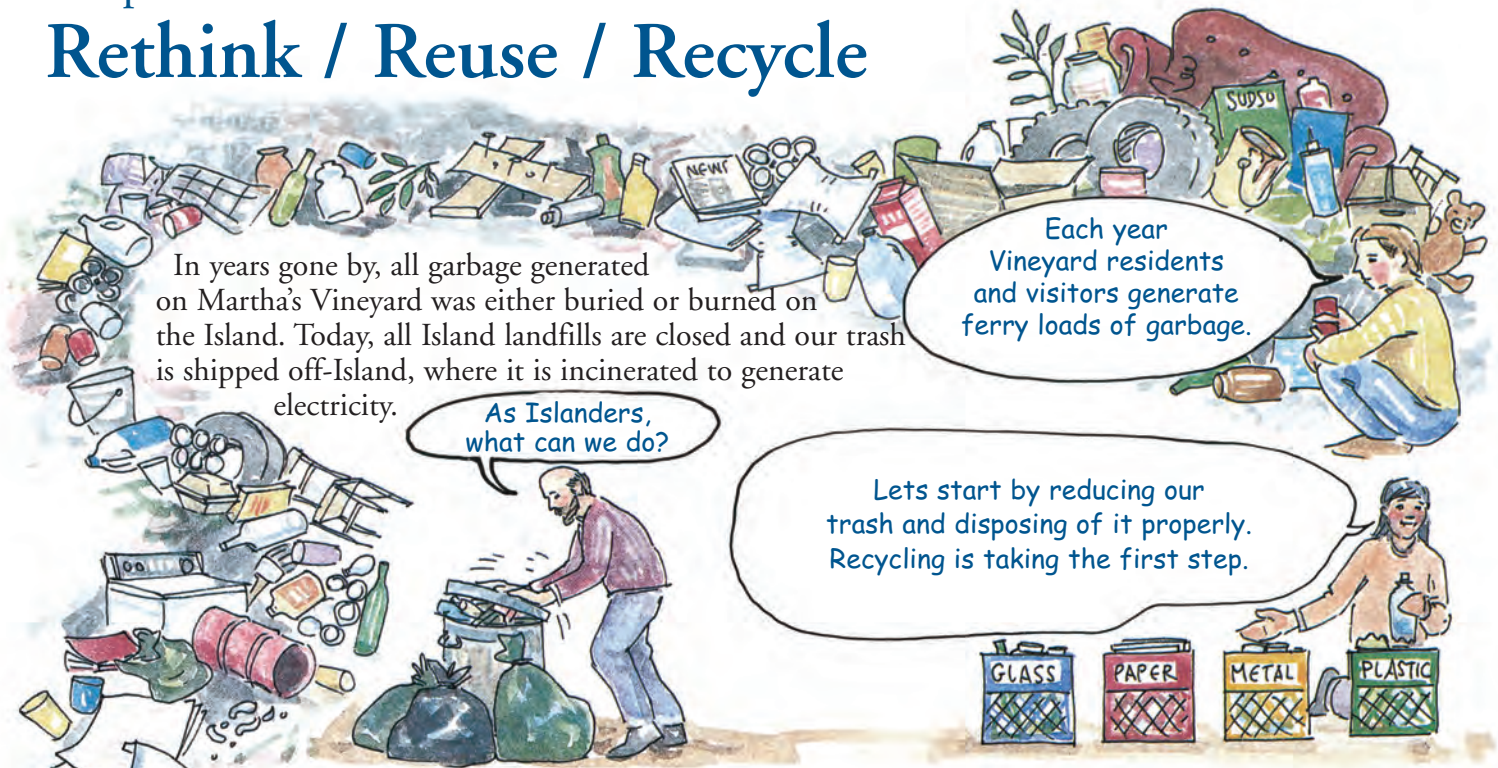
Water-Kind Cleansers for your Home

“Make Your Own Non-Toxic Cleaning Kit!”

Assemble a few spray bottles, empty jars, and the basic ingredients: baking soda (for scouring & deodorizing), white vinegar (removes mildew, odors, bacteria, & scale from hard water), borax & washing soda (degreases, cleans), citrus solvent (cleans oils and grease, some stains), lemon juice (removes gums, tarnish & dirt), and lemon & tea tree oil (disinfectant). Any of the above ingredients can be safely mixed together. Label clearly and store out of the reach of children. Note: There are also many non-toxic commercial cleaners available on the market made with these same ingredients.

- All purpose cleanser:** Mix $\frac{1}{4}$ cup white vinegar, 2 tsp borax and 1-2 tsp. tea tree oil or lemon in 1 quart spray bottle of: very hot water. Shake vigorously. Add more borax for disinfecting.
- Bleach:** Use oxygen bleaches, borax, or let the sun bleach your fabrics on an outdoor clothesline. Also try an old-fashioned bluing product to whiten whites.
- Carpet Stains:** Immediately apply club soda or equal parts white vinegar and water, blot dry, repeat, then clean with a brush or sponge using warm soapy water.
- Deodorizers:** In your refrigerator and other closed spaces, use an open box of baking soda. Sprinkle it on carpets and upholstery, wait 15 minutes, then vacuum. Simmer cinnamon and cloves, or place white vinegar in open dishes.
- Drain Cleaners:** Instead of chemical cleaners, use a plunger or a plumber's "snake." Then add $\frac{1}{4}$ cup baking soda followed by $\frac{1}{4}$ cup vinegar. Wait 15 minutes, and rinse with 2 quarts of boiling water. *Caution: do not use this method after trying a commercial drain opener-the vinegar can react with the chemicals to create dangerous fumes.*
- Dusting:** Use $\frac{1}{4}$ cup white vinegar per quart of water and apply with a tightly wrung soft cloth. Or use a micro-fiber dusting cloth.
- Floor Cleaner:** Add $\frac{1}{4}$ cup baking soda and $\frac{1}{4}$ cup borax to hot mop water, rinse with $\frac{1}{2}$ cup white vinegar in clear water. For vinyl floors, simply add 1 cup vinegar to mop water.
- Glass Cleaner:** Mix 2 Tbsp. vinegar and 2 tsp. lemon juice & 1 tsp. liquid soap in 1 quart warm water. Shake well, spray on, then buff with crumpled newspapers.
- Metal Polish:** *Silver:* Line a pan with aluminum foil and fill with water; add 2 tsp each of baking soda and salt. Bring to a boil and immerse silver. Polish with soft cloth. *Brass or Bronze:* polish with a soft cloth dipped in a lemon juice and baking soda solution. *Copper:* soak a cotton rag in a pint of boiling water with 1 tablespoon salt and 1 cup white vinegar. Apply to copper while hot; let cool, then wipe clean
- Mildew Remover:** Make a solution with $\frac{1}{2}$ cup vinegar, $\frac{1}{2}$ cup borax and 1 quart of very hot water. Spray on and leave for 10 minutes. Wipe clean. Or add 2 tsp tea tree oil in 2 cups hot water in a spray bottle, shake to blend, and spray on problem areas. Do not rinse. For grout, mix one part hydrogen peroxide (3%) with two parts water in a spray bottle and spray on mold. Wait at least one hour before rinsing.
- Paint Brush Cleaner:** For oil-based paints, use citrus-based solvents available commercially.
- Scouring powder:** Make a paste of baking soda and vinegar. Rub gently.
- Toilet Bowl Cleaner:** Mix $\frac{1}{4}$ cup baking soda and $\frac{1}{2}$ cup vinegar, pour into bowl, let stand, and brush well.
- Wood Polish:** Rub with 1 tbsp. of lemon oil mixed with one-pint olive oil. Buff with soft cloth.

Rethink / Reuse / Recycle



In years gone by, all garbage generated on Martha's Vineyard was either buried or burned on the Island. Today, all Island landfills are closed and our trash is shipped off-Island, where it is incinerated to generate electricity.

Island towns simply operate drop-off facilities where trash and recyclables are collected. These are then transported to one of two transfer stations on the Island where the solid waste is processed and prepared for shipment. Each town's drop-off facility is set up for efficient collection of your glass, paper, cans, and plastic. The Town of Tisbury even offers curbside pickup!

Paper and Cardboard account for one-third of our trash

Here is where we can make a big difference! The pulp paper industry, source of new paper, is one of the largest water polluters in the world. The production of paper using recycled fibers reduces water pollution by roughly a third and air pollution by over half.

Fortunately, **all** paper is now recyclable **except** for food-contaminated paper, waxed paper, waxed cardboard milk containers, oil-soaked paper, carbon paper, tissues and sanitary products, thermal fax paper, stickers and plastic laminated paper. So bag, box, or tie up your paper recyclables and bring them in!

Reduce the flow of paper coming into your household. Get on the "DO NOT MAIL" list, contact catalogue sources, and "opt out" of credit card offers, and you will see a dramatic drop in your direct mailings. For more information, see our Resources Chapter.



Plant Debris and Food Wastes

contributes some 20% of what we throw away

Consider composting in your own back yard or start a worm bin in your basement. See Chapter 8 on landscaping for guidelines to help you turn these wastes into food for your plants. Or bring them to Morning Glory Farm's compost collection site to contribute to their beautiful vegetables and flowers. Please omit any dairy products, meat, bones, and plant debris over a quarter inch thick.



Metals

contribute about 9% of our garbage

Making products from recycled metals uses far less water and energy, causing far less water and air pollution than the mining and processing of the raw materials. Ferrous metals (those containing iron) and nonferrous metals (like aluminum cans) are easily recycled on the Island. Clean "deposit" cans are redeemable at various Island stores; schools, fire departments, and non-profit groups sometimes hold can drives to raise funds. Other metals, like copper and lead, are also recyclable.

Check out the Resources Chapter for more info on recycling!



Glass

contributes about 9% of our garbage

All glass food and beverage containers can be recycled at the local drop-off facilities; deposit bottles may be returned to stores. Glass should be rinsed and sorted by color. Ceramics, light bulbs, and window glass are not accepted.



Recycling in these five categories of waste will decrease your contribution and significantly benefit water quality.

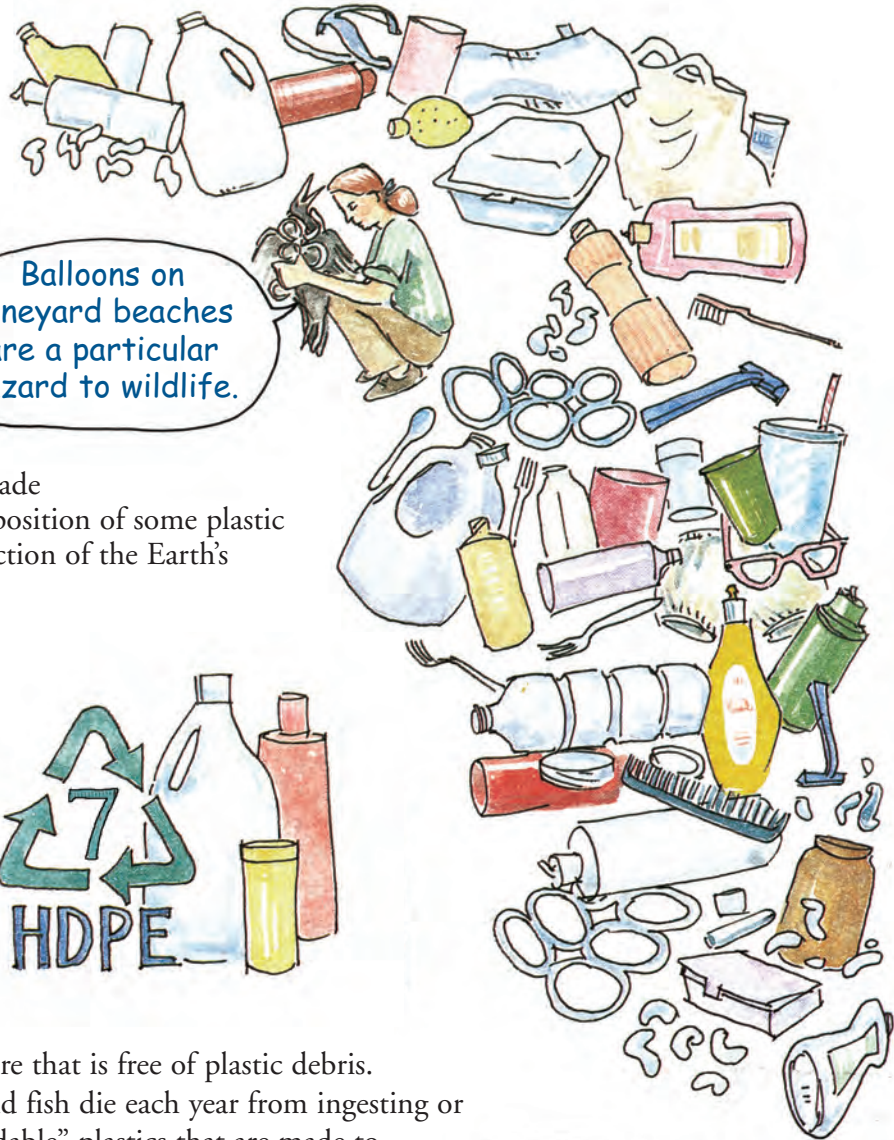




Plastics
contribute about 10%
of our total garbage

Plastics present some of the biggest challenges for householders. They take 300 years or longer to decompose and are made from non-renewable petroleum. The decomposition of some plastic foams is believed to play a role in the destruction of the Earth's ozone layer.

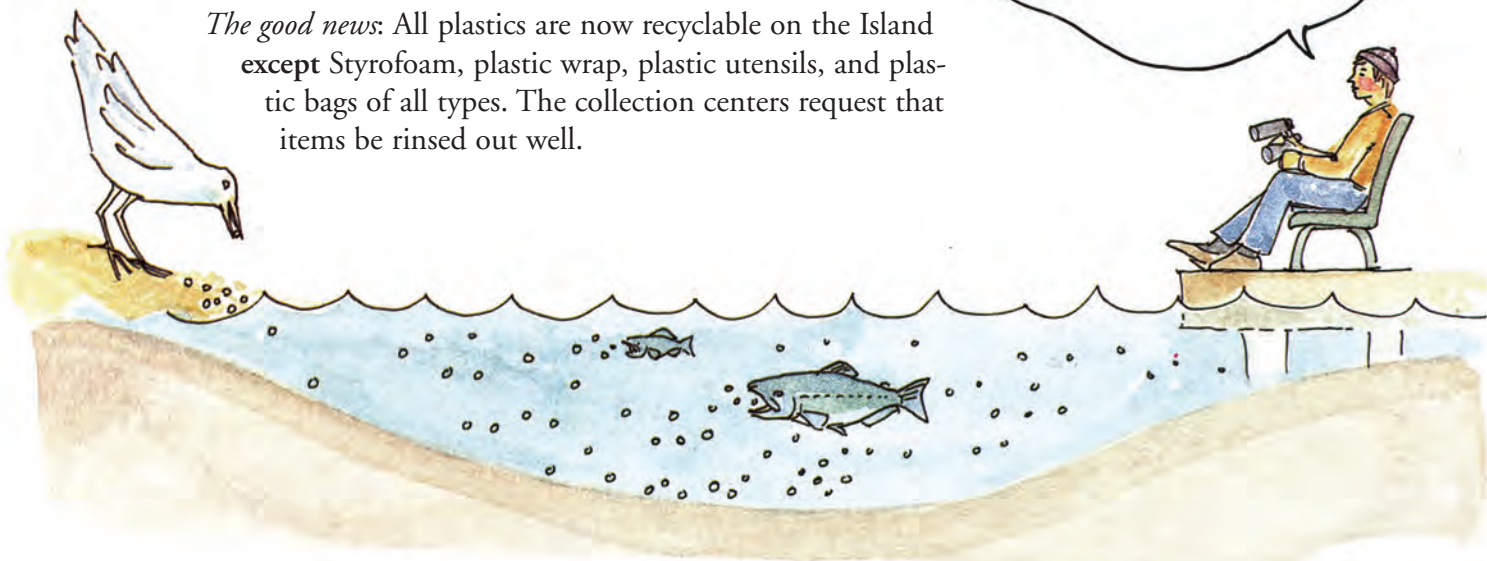
Balloons on Vineyard beaches are a particular hazard to wildlife.



It's hard to find an Island beach or pond shore that is free of plastic debris. Numerous water birds, marine mammals, and fish die each year from ingesting or becoming entangled in plastic. Even "Degradable" plastics that are made to break into small particles in sunlight or in the soil raise concerns. While these products may lessen the danger of animal entanglement, many environmental scientists fear that the small particles pose a greater hazard than the larger, more unsightly plastic discards. Martha's Vineyard towns have responded to animal entanglement concerns by banning single-use plastic bags.

Eighth grade science students at the Oak Bluffs School have discovered microscopic plastic particles in sand samples taken from all Vineyard beaches.

The good news: All plastics are now recyclable on the Island **except** Styrofoam, plastic wrap, plastic utensils, and plastic bags of all types. The collection centers request that items be rinsed out well.





...and lastly: Reusable Goods

Find a home for your intact or repairable home appliances, household goods, clothing, building materials, or any other items that can be repaired or used again. Have a yard sale, put items the *M.V. Times* Bargain Box or the Goodies & Giveaways column in the *Vineyard Gazette*, donate them to the Dumptique at the West Tisbury drop-off facility, the Red Cross, or one of our local thrift stores. The Mailroom in Edgartown accepts clean Styrofoam “peanuts” and bubble wrap for reuse.

Six Simple Actions

to help improve water quality by recycling and reusing...

1. Recycle

When you shop, look for products with limited or reusable packaging. Buy foods in recyclable containers or buy in bulk. Buy concentrates and items in refillable containers.



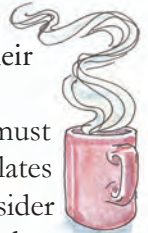
2. Use Cloth Diapers

The average baby uses nearly 4,500 diapers before being toilet trained. Unrinsed and improperly disposed of plastic diapers can contaminate our surface and ground waters. A week's worth of cloth diapers adds one or two extra loads of laundry a week.



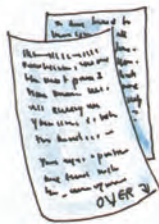
3. Avoid Disposable

By toting your own lidded travel mug and water bottle, you can buy hot and cold beverages without adding to the thousands of foam and plastic cups that find their way onto our beaches. If you must use disposable plates and utensils consider compostable products.



4. Reuse Writing Paper

Use both sides of paper sheets, make two-sided copies, and use blank sides for scratch paper and rough drafts. Buy and use paper products made from recycled paper.



5. Tote Bags

Telling the clerk “I don’t need a bag” is a better solution than “paper or plastic.” Choose a size you can easily carry when full.



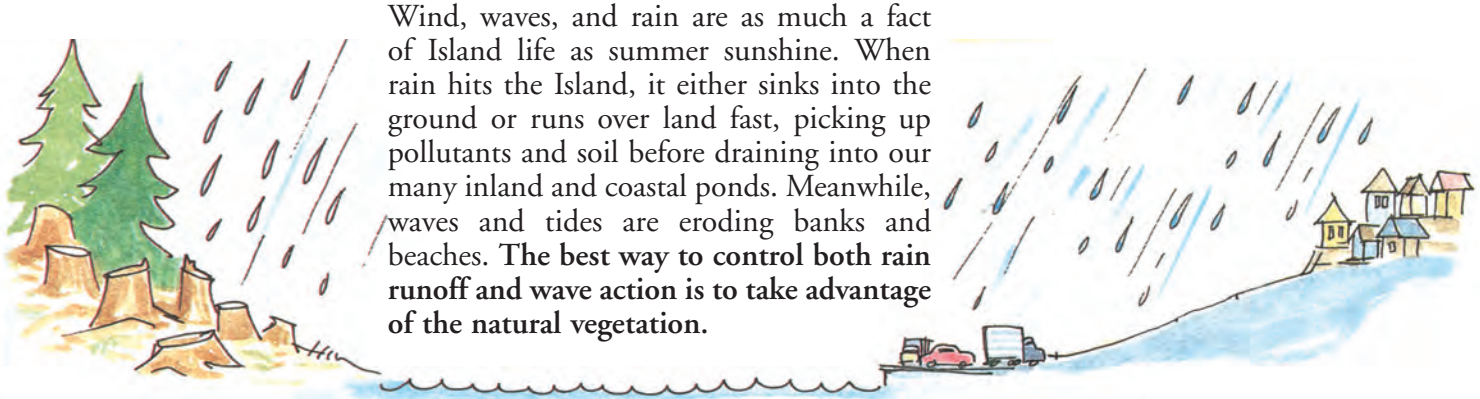
6. Buy Smart

Choose quality products that last a long time and don't have to be thrown out and replaced frequently.

Chapter 7

Spare that Shrub!

Do Your Part to Control Runoff and Erosion



Wind, waves, and rain are as much a fact of Island life as summer sunshine. When rain hits the Island, it either sinks into the ground or runs over land fast, picking up pollutants and soil before draining into our many inland and coastal ponds. Meanwhile, waves and tides are eroding banks and beaches. **The best way to control both rain runoff and wave action is to take advantage of the natural vegetation.**

On natural landscapes most rain soaks slowly into the ground and gradually seeps into the aquifer, eventually draining into nearby surface waters. But as more land is cleared for development, and more solid surfaces are built such as roofs, roads, parking areas, and driveways, more of the water is carried straight into the ponds and streams like Fulling Mill Brook, Black Brook, and the Tiasquam River.

Runoff damages the Island's water bodies in many ways. As the runoff is swept towards the ponds it carries a wide variety of pollutants such as metals, paints, oils, grease, nutrients from lawn fertilizers, detergents, animal waste, and litter. It also carries soil sediments that, once they reach the ponds, smother eelgrass beds which are prime spawning grounds for shell and finfish, as well as other aquatic habitats.

Dealing with Surface Runoff

The Power of Plants and Shrubs

We can't control the wind and rain but we can minimize the damage caused by runoff and erosion by taking advantage of the land's natural vegetation. Native species of shrubs, trees, and some grasses slow down runoff, hold soil particles in place, help maintain the soil's capacity to absorb water, and, on the shoreline, absorb wave energy. The roots of plants also help filter pollutants from the water before it enters the ponds.



Natural wetlands such as salt marshes, swamps, and bogs are especially good at slowing down the flow of runoff and filtering pollutants from the water passing through them. Our coastal wetlands also defend against flooding and storm damage. The salt marshes surrounding the ponds act like sponges to absorb and contain floodwaters and buffer upland areas from waves. This is why it is essential to preserve the Island's wetlands.

At home, you can help runoff absorption by decreasing the size of your lawn and paved surfaces, and adding more native plants and shrubs. Support town efforts to control road runoff by installing catch basins that detain and filter the water before it enters the ponds or groundwater.

Tips for decreasing household surface runoff problems:



Where impermeable surfaces are already in place, divert rain from the paved surfaces onto grass or into vegetation to allow gradual absorption.



Preserve established trees and shrubs and plant new ones to encourage excess rainwater to filter slowly into the soil. Plant and maintain a vegetated buffer strip at the base of steep slopes and along water bodies.



Landscape with less lawn area and more natural vegetation.



When removing unhealthy trees leave the stump and roots in place to hold the soils.



Don't throw Christmas trees or yard debris over banks or onto dunes or beaches; they smother the vegetation that holds the soil in place. (Some Island towns have chippers and will take Christmas trees.)



Reduce your use of impervious surfaces. Use spaced paving stones instead of concrete, groundcover instead of grass, and pervious asphalt instead of standard. Many Island driveways feature crushed quahog shells.



Avoid using chemical fertilizers, pick up litter and animal waste, and keep your car in good shape to avoid leaks.

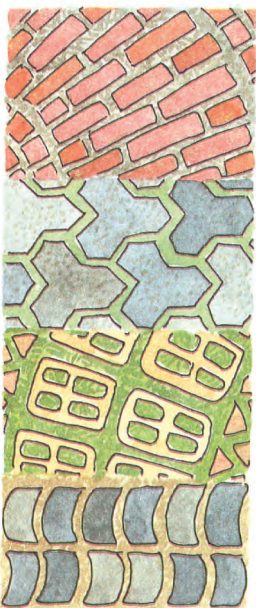


Install gravel trenches along driveways and patios to collect water and allow it to filter into the soil.



Use grass-lined swales, berms, and basins to control runoff on your property, reduce its speed, and increase the time over which the runoff is released.

If you build a new home, ask your builder to leave as much of the original vegetation as possible on site. Before the start of construction make sure that hay bales and a silt fence are installed around the work site to contain sediment and control erosion.



Discover "Soft" Paving Surfaces

Because so many of human landscape features are impervious, a few words about using permeable surfaces seem in order. There are many paving surfaces that provide the durability of concrete while allowing rainwater to soak into the ground. Bricks and flat stones, for instance, make an attractive, durable driveway and, if placed on well-drained soil or on a sand or gravel bed, allow rainwater to filter into the ground.

Wood decks, usually installed for their functional good looks, can serve as a form of porous pavement. Redwood and cedar, for example, are as durable as most other paving surfaces. The space between the deck boards allows rainwater to drain directly onto the soil surface and soak into the ground. Maintaining a distance between the soil surface and the decking will minimize the risk of wood rot.

New porous materials are also becoming available; for an example stop by the Agricultural Hall in West Tisbury and look at the paved entryways.



Pond and Streamside Erosion

Dozens of creeks and streams, like Fulling Mill Brook, Black Brook and the Tiasquam River, form the network which drains into the Island coastal ponds. They carry runoff from lawns, fields, roads and parking lots that are charged with pollutants and soil particles. Sediments from runoff and from eroding stream and pond banks can smother aquatic life, clog fish gills and cut off the light needed by underwater plants. We can manage the quantity and quality of water entering our ponds by using the natural vegetation.



Vegetation is vital to both the stability of the shoreline and the health of the water body. Trees and low bushes as well as large snags and other natural structures protect the banks from severe erosion.

Even the smallest stream, creek, or ditch is important!

They also make great habitats for many fish species and help regulate water temperatures by providing shade.

If you live on a pond or stream, always avoid large scale removal of natural ground covers. As much as possible, leave the banks and channels in their natural unaltered condition. It is also important to maintain a buffer of natural vegetation between the water body or wetlands and your yard to filter pollutants and help control erosion. Buffer strips also discourage geese from loitering on lawns.

Before you start any work near a wetland or water body call your town Conservation Commission for guidance and for the necessary permitting information.



Controlling Waterfront Erosion

Coastal erosion caused by wind and wave energy is a natural geological process and is the primary source of sand and cobble for our beaches, dunes, and barrier beaches. However, we can inadvertently accelerate this process by clearing shorefront and building too close to the shoreline.

For controlling coastal erosion, scientists recommend natural vegetative solutions over hard structures like sea walls. Hard structures like jetties, sea walls and rock bulkheads were built to protect against erosion but often have the opposite effect. Natural structures like salt marshes, beaches, dunes, and vegetated banks are more efficient in dissipating wave action and protecting against severe erosion. When enjoying the beach, look for dune grass. It is the primary protector of our beaches. It traps sand and holds the beach in place which is why it is never a good idea to walk or drive over it.



When water and land wrestle, the water always wins.



Walking over coastal dunes or sliding down coastal bluffs accelerates erosion.

The key to success is using the right types of plants. Plants with strong root systems help stabilize banks while salt-tolerant plants work best on dunes. Only a few plants can thrive on the coast and each one has its place in the shoreline environment. These are some plants that help absorb surface runoff and stabilize coastal banks: *Beach Plum*, *Bayberry*, *Rosa Rugosa*, *Highbush/Lowbush Blueberry*, *Seaside Goldenrod*, *Winterberry*, *Bearberry*.



- Contact your town conservation commission for help in designing and permitting a shoreline vegetation plan.
- Join your neighborhood pond association
- Ask your town selectmen and highway superintendent these questions: "Is it possible to use less asphalt, more pervious surfaces?" "Why not let that roadside vegetation grow to reduce runoff rate and filter pollutants rather than cut it down?"

VINEYARD NEIGHBOR

Blue Crab: Beautiful Swimmers

The scientific name of the blue crab, *Callinectes sapidus*, means beautiful swimmer. This name comes from its two paddlelike back appendages that help the blue crab glide gracefully through the water. A common denizen of our south shore ponds, it prefers brackish waters to open bays. Martha's Vineyard is at the northernmost edge of the blue crab's East Coast habitat.



VINEYARD NEIGHBOR

Plankton: The Ocean's Pasturage

Plankton may be small, but they are mighty. Little known and nearly invisible, these exquisite organisms exist in astounding numbers and are the foundation of life in our waters. Plant plankton (phytoplankton) produce the lion's share of the earth's oxygen. Phytoplankton is eaten by animal plankton (zooplankton), which in turn is eaten by many other animals in the food web. Most of the animals in our oceans, including fin-fish, shellfish, and crustaceans, begin their lives as plankton. Without plankton, our water ecosystems would collapse. Viva plankton!



Landscaping for Healthy Watersheds



From the cliffs of Aquinnah to the dunes of Chappy, from the hills of Menemsha to the shores of Sengekontacket, most of the rainfall that reaches our Island eventually finds its way into our ponds, lakes, and harbors. We can manage this flow and keep our waters clean by landscaping wisely.

Thoughtful landscaping can change the volume, the velocity and the quality of the water that flows from our properties. Trees, shrubs, and groundcover help reduce runoff, which transports excessive sediments and pollution to local waters, minimize erosion, and enhance the appearance and value of your property.

Getting Started...

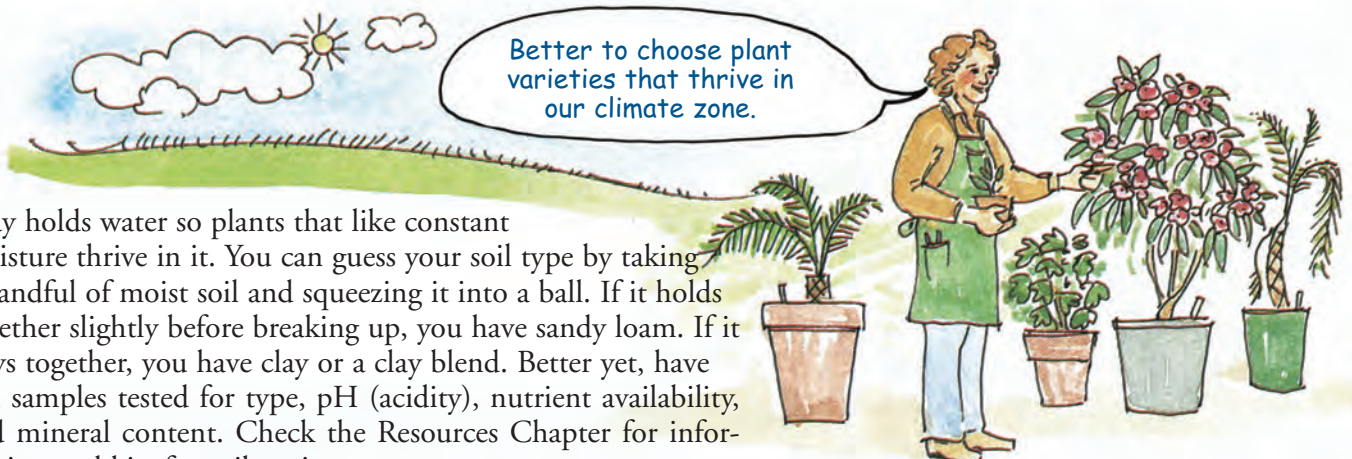
If you are building a new home, retain as much of the native vegetation as possible. This will not only reduce runoff and pollution, it will give you a head start on your final landscaping and may save you money. Before you start work on the site, consult your town conservation commission to learn if there are guidelines governing landscaping in your location.

Lawns do not belong next to water: wetlands regulations control the cutting of vegetation adjacent to water bodies. If you abut a pond, stream, or harbor, it is particularly important to leave a vegetation buffer to absorb excessive runoff and prevent erosion. Without a buffer, nutrients transported from the land flow directly into the ponds, stimulating the excessive proliferation of algae blooms and seaweeds. These plants can dramatically reduce oxygen levels in the water making it impossible for the local fish and shellfish to survive. Vegetative buffers also provide natural habitat for native insects and animals.

Well-planned landscaping offers other benefits. You can reduce your heating and cooling costs by as much as 30% just by planting and clearing wisely. This can be done by planting trees to shade your house, adding shrubbery that provides an extra layer of insulation to your house, and avoiding altering vegetation that shades your house. Trees, shrubs, and groundcover also attract wildlife and require much less maintenance, fertilizers and pesticides than grass.

Appropriate Plants for Vineyard Landscapes

Before you head to the nursery, consider the growing conditions that define your land. Different plants require different kinds of soil, nutrients, and exposure to the sun. Parts of your property may also be subject to wind, foot traffic, salt spray... Check the soil. Plants that require good drainage grow well in sandy loam.



Clay holds water so plants that like constant moisture thrive in it. You can guess your soil type by taking a handful of moist soil and squeezing it into a ball. If it holds together slightly before breaking up, you have sandy loam. If it stays together, you have clay or a clay blend. Better yet, have soil samples tested for type, pH (acidity), nutrient availability, and mineral content. Check the Resources Chapter for information and kits for soil testing.

How to Choose? ...Go Native!

Matching the needs of your plants to the conditions of your landscape decreases the need for extra water and fertilizer and increases your plant's resistance to disease and pests. Plants native to the Vineyard are well adapted to our climate, soil, and water supply; they are less bothered by salt, disease, and pests than plants introduced from other areas. Visit the Wakeman Center for plant lists produced by local organizations such as the Martha's Vineyard Garden Club. Other sources of information include the Polly Hill Arboretum, the Nature Conservancy and the Vineyard Conservation Society. The University of Massachusetts Cooperative Extension provides additional publications. Island nurseries will help you select plants appropriate to your yard and soil type.



Plants to Avoid

Some plants introduced to the Island are invasive and spread quickly, choking out the indigenous plants. These include autumn olive, purple loosestrife, pampas grass, porcelain berry, phragmites, Asian bitter-sweet, Japanese knotweed, knapweed, Japanese honeysuckle, Scotch broom, tree of heaven, multiflora rose, bamboo, and barber-y. (For a complete list, see Polly Hill Arboretum or the MV Garden Club in the Resources Chapter.)

Gardening

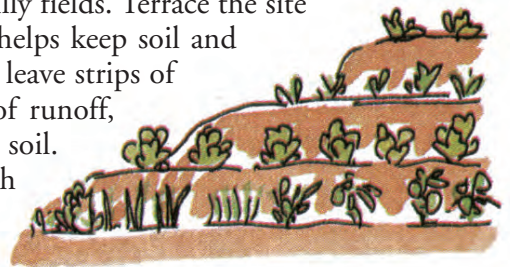


Whether our garden is in a window box or on a large farm, many of us enjoy growing our own vegetables, fruits, flowers, and herbs. By using effective gardening techniques, we can produce plants to be proud of while preserving the soil, enhancing the absorption of rainfall, and protecting local streams and ponds from sediments and chemicals.

Start by picking the right spot for planting. Choose a sunny location with good natural drainage. Whenever possible, avoid sloping areas and drainage channels that let topsoil wash away during heavy rains.

If your garden is on a slope, use the same techniques that farmers use on hilly fields. Terrace the site or plant across the slope, not up and down the hill. Each terrace or row helps keep soil and plant nutrients from washing downhill. On long slopes, it's a good idea to leave strips of groundcover or grass running across the slope. This will slow the flow of runoff,

allowing it to soak into the soil. Make your strips wide enough to allow easy access to your plants and vegetables



We're used to thinking that the perfect garden is one with weed-free bare soil surrounding our chosen plants. It's time we re-think that picture.



Mulching

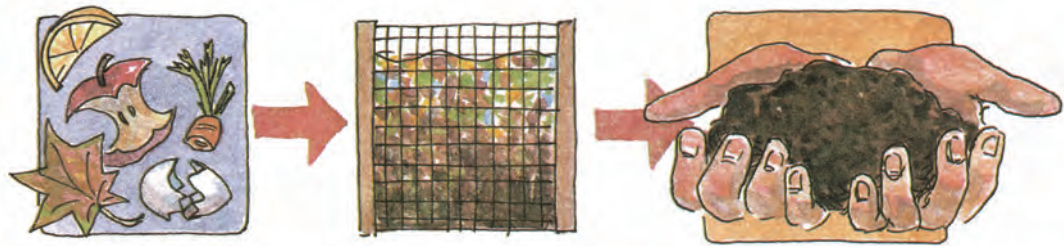
Mulch is a protective covering of compost, straw, grass clippings, or leaves placed around plants. Many Vineyarders also like to use seaweed. Mulch can add nutrients, make the soil more workable, aid rainwater penetration, help control weeds, and improve the moisture-retaining capacity of the soil near roots. Mulch also minimizes losses of nutrients and topsoil.

Avoid using landscaping plastic beneath decorative rock or bark. The plastic prevents water from entering the soil. Instead use woven materials that accomplish the task of weed control while permitting water penetration.



Composting

Compost is a dark, crumbly, and earthy-smelling form of decomposing organic matter. Perfect for mulch, compost enriches soil and improves plant growth. Composting is a practical way to transform yard, kitchen, and garden wastes into a valuable resource.

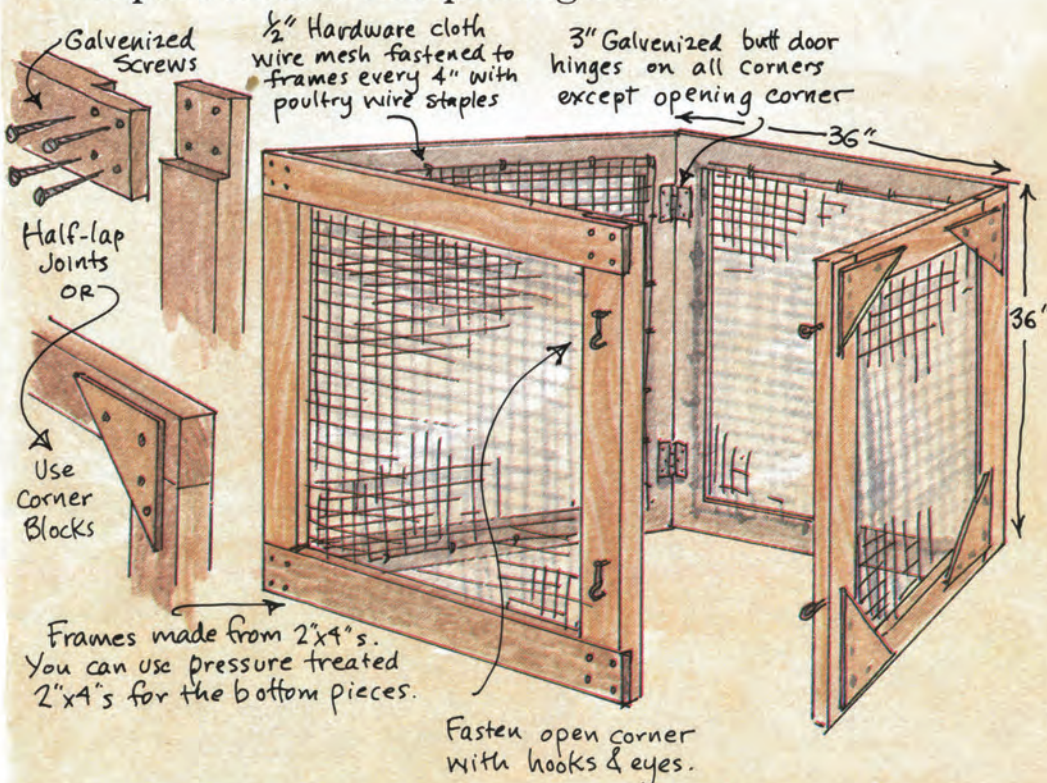


Leaves, cuttings and other yard wastes contribute some 10% to the average household's garbage. Since it is illegal to dispose of yard wastes near water bodies or by burning, and because all Island landfills are now closed, composting lawn and garden wastes has become the perfect way to save money and protect our environment. It is particularly damaging to dispose of yard wastes in or near shorelines and pond banks. When the waste enters these environments it will compete with marine animals for the limited oxygen dissolved in our waters. Some plant materials contain chemical components that can alter the balance in the marine environment. These unsightly wastes can create obstructions and dangers to boats, divers, and swimmers, and most often end up on your neighbor's beach. Check with your local town/newspaper for disposal sites. Some local farmers accept material for composting.

Until we have the option of municipal composting, homeowners should consider the option of creating their own compost system. Composting is also the answer for up to 10% of your garbage created by food wastes other than meat, bones, and fatty foods.

A compost pile is really a teeming microbial farm that breaks down anything left over from your gardening activities. Great joy can be had from a properly working compost pile that produces wonderful soil conditioner from garden and household waste.

A Simple Portable Composting Bin...



Add yard wastes to bin as they are generated. With no effort besides occasional watering, compost will be ready in six months to two years. If you cover the bin with heavy fabric to keep the heat and moisture in and turn the compost occasionally, it will be ready even sooner.

Many composting efforts, both large and small, are improved by using red worms that consume nitrogen. For more information on other compost designs or where to purchase worms, see the Resources Chapter.

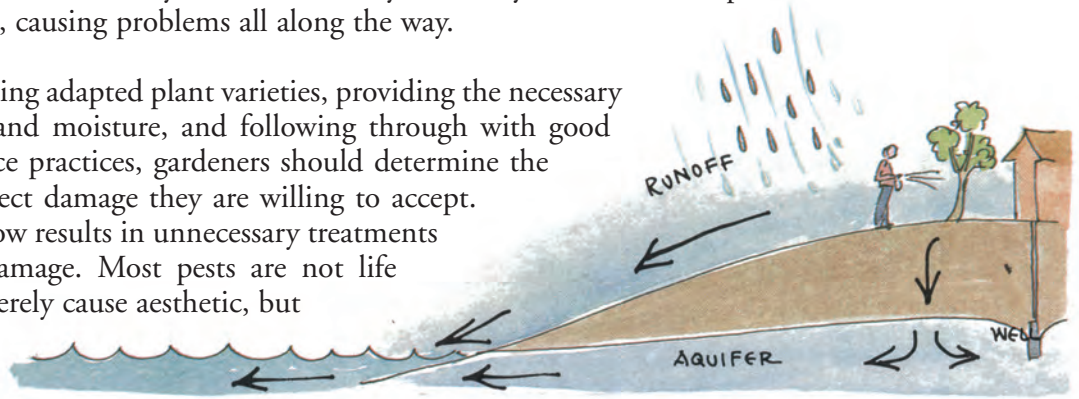


Pesticides poison wildlife and contaminate surface and groundwater

Pest Management

For years, pest control has meant chemicals. Once viewed as safe and effective for insect control, chemical pesticides are now considered ecologically harmful. They poison wildlife, contaminate water and soil, and harm humans, especially children, and pets. Many pesticides last a long time. When they enter the water system, they can move from place to place, causing problems all along the way.

After planting adapted plant varieties, providing the necessary nutrients and moisture, and following through with good maintenance practices, gardeners should determine the threshold level of weeds or insect damage they are willing to accept. Setting our pest tolerance too low results in unnecessary treatments and possible environmental damage. Most pests are not life threatening to the plant and merely cause aesthetic, but not permanent problems.



When considering a treatment, the goal is not to eradicate the pest, but to use the least toxic treatment that will drop the pest level below whatever threshold we have established.

Here are some simple things we can do:

- Encourage natural predators like the lacewing, ladybug, praying mantis, dark ground beetle, and spiders.
- Prune out infested areas.
- Use water spray to physically remove some pests from plants.
- Set out pans of beer or brewer's yeast to attract slugs and snails.
- Cut down on the number of mosquitoes breeding in your area by removing old tires and other areas of standing water.
- Avoid planting and harvesting when insects are most abundant and damaging.
- Buy plants that are resistant and free of pests and diseases.
- Provide plants with the growing conditions that they like best. This helps them resist pests and diseases.
- Remember that gardens with a variety of plant types are less susceptible to insect damage.
- Use organic products if possible. Your local garden center can suggest useful products.
- Encourage insect-eating birds by providing bird houses and baths.

For more information on nontoxic alternatives to pest control, visit the Resources Chapter.





What Else Can I Do?

- Promote municipal composting on the Vineyard.
- Request and buy organically grown food. This will help encourage the many farmers who want to use non toxic pest control techniques.
- Find out how public areas are treated such as in roadside spraying, municipal parks or golf course treatments.
- Research alternatives and suggest improvements through your local conservation commission, highway department or parks department.

VINEYARD NEIGHBOR

Great Blue Heron: Walking in the Wetlands

That large graceful bird that you see walking among the marsh grass is undoubtedly a Great Blue Heron. Note its long legs and beak, grayish blue color, and its S-shaped neck. In flight, the heron's wingspan exceeds six feet from tip to tip. The great blue catches fish by standing quietly and then spearing them with its sharp beak. The survival of this beautiful bird relies on healthy wetlands.



VINEYARD NEIGHBOR

Osprey: Famous Fish Hawk

An Island superstar, the osprey's resurgence on Martha's Vineyard is a success story. In 1968, there were only three surviving nesting pairs on the Island. The osprey's decline resulted from the disruption of nesting sites and the use of the chemical DDT, which thinned their eggshells. With the banning of DDT and the construction of nesting poles, the population of Island ospreys has swelled to over 85 nesting pairs. Ospreys rely on our waters for food and habitat. An osprey family of four requires more than six pounds of fish a day!



Chapter 9

Recovery from Lawn Obsession



Are you or someone you love addicted to a dream lawn? You are not alone...

The perfect suburban lawn has become an American obsession, turning us into lawn-chemical junkies who require increasing amounts of pesticides, herbicides, and fertilizers to satisfy our cravings for immaculate turf. Billions of dollars are spent on television advertising to convince us to buy the latest lawn care products and to look with alarm at stray dandelions or clover.

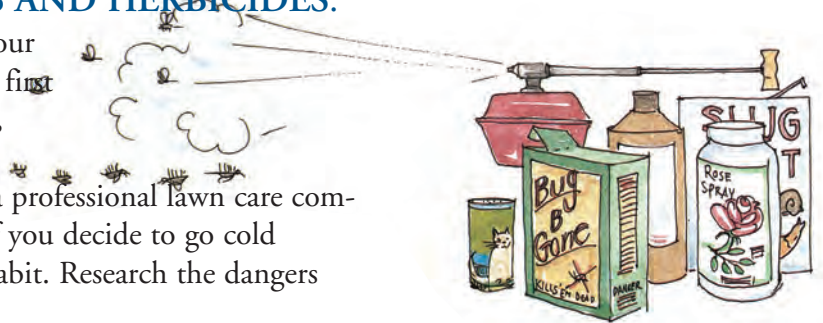
But there's a catch. **Dream lawns are not safe for people, pets, or the countless wild things that normally inhabit our yards.** Lawn chemicals poison our drinking water and contribute to the deteriorating health of our Island's ponds and bays — artificially green lawns produce green water.

Right here on our Island, there is an easy and inexpensive remedy for the American lawn habit: the traditional Vineyard yard, a natural habitat that includes a variety of indigenous grasses, mosses, lichens, and wildflowers. These native ground covers survive summer heat and drought without pampering, poisoning, or polluting. They also feed birds, bees, butterflies, and are safe for children and pets.

12 Step Program for Dream Lawn Addicts

Step 1 – JUST SAY NO TO PESTICIDES AND HERBICIDES.

Make a firm commitment to protect your family, your pets, and your neighbors from lawn chemicals. The first step is to dispose of all your old cosmetic pesticides, herbicides and fungicides at the Vineyard's next hazardous waste collection day. If you plan to use a professional lawn care company, hire one of the Island's organic landscapers. If you decide to go cold turkey, get support for kicking the lawn chemical habit. Research the dangers of these substances or consider the following:



- By state law, all schools on the Vineyard must now restrict pesticide use to protect children. It's up to you to protect them at home.
- The risk of canine malignant lymphoma doubles with the use of herbicide 2,4-D on a dog owner's lawn.
- Many Canadian municipalities have banned or severely restricted the use of common lawn-care pesticides including the herbicides 2,4-D and MCPP.
- So called "inert" ingredients in lawn chemicals can amount to 95% of the product and be more toxic than active ingredients.
- Golf course maintenance crews working with toxic lawn chemicals face elevated risks of dying from brain cancer, lymphoma, prostate cancer, and large-intestine cancer.



67 million pounds of pesticides are used on American lawns every year.



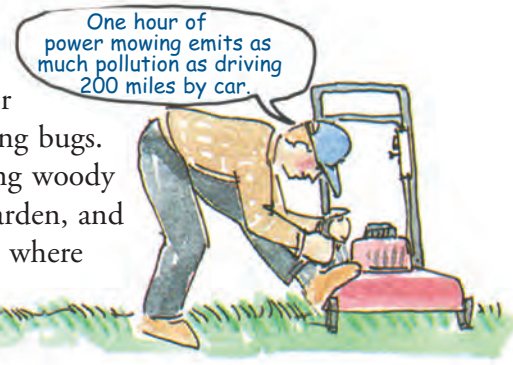
Lawn pesticides get carried indoors on shoes and paws and can persist for months in your home and the air or trapped in carpets, dust, toys....

Step 2 – BE PATIENT, POISONED SOILS NEED TIME TO HEAL

The sooner you stop using toxic chemicals, the faster your soil will regain its natural health. Past use of lawn chemicals may have destroyed the microbiotic life that exists in healthy soil; it may take three years for your soil to recover its natural defenses. Meanwhile, there are nonpoisonous methods to treat for pests; consult resources listed in [The Island Blue Pages](#).

Step 3 – REDUCE THE SIZE OF YOUR LAWN

Reduce your grass area enough to allow hand-powered reel mowing. It will provide you with a good cardiovascular workout without gym fees or air and noise pollution. In surrounding yard areas, create a Vineyard meadow for native grasses and wildflowers that will sustain butterflies, bees, and lightning bugs. Mow your meadow only once a year, in early May, to eliminate encroaching woody plants. Replace other lawn areas with native bushes and trees, a vegetable garden, and fern and moss beds for shady places. Plant groundcovers on steep slopes where mowing is dangerous. If the above steps seem too extreme for you, reduce your lawn gradually; simply mow a few less rows each year.



Step 4– LET THE CLIPPINGS FALL WHERE THEY MAY


Keep mower blades sharp and mow to a height of 3 inches. Mow often enough so that no more than 1/3 of the grass height is removed with each cutting. Forget raking. If left on the ground, grass clippings provide more than a third of the nutrients your lawn needs. They decompose quickly thanks to earthworms and microorganisms. Clippings also conserve water by shading the soil from the sun and reducing moisture loss from evaporation. If you end up with extra grass clippings use them in the compost pile.

 *A 1/2 acre lawn in New England produces over 3 tons or 260 black garbage bags of grass clippings each year.*

Step 5 – LAWN FERTILIZERS ARE REGULATED ON THE ISLAND

The best and safest alternative for the Vineyard lawn is no fertilizer. Native grasses and wildflowers have always done well on their own. If you enjoy working on your patch of grass, feed it compost made from your own kitchen and yard wastes. In 2015 lawn fertilizer regulations went into effect on the Vineyard for all homeowners and lawn care companies. Pamphlets outlining the regulations are available at Town Halls and the regulations are on the Martha's Vineyard Board of Health website, www.mvboh.org, Lawn Fertilizer Initiative section. If you hire a lawn care company make sure they abide by the regulations.



 *3 million tons of fertilizers are used annually on American lawns to keep them greener than normal or necessary.*

Step 6 – LEAVE WATERING TO THE CLOUDS

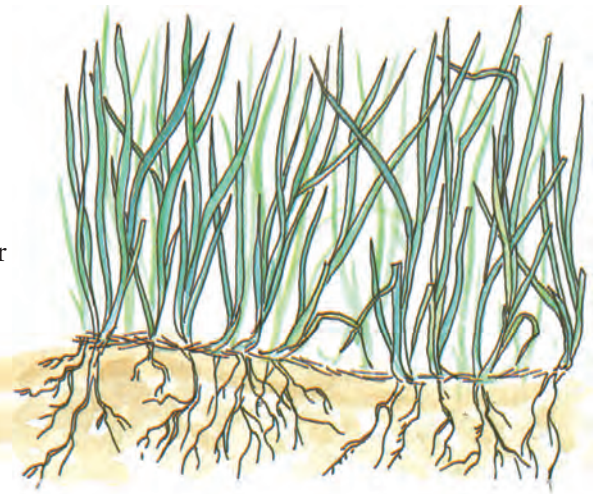
Summer dormancy is a natural rest period for your lawn. When hot dry weather turns your grass golden, don't fret; it will recover with autumn rains. Lawn irrigation systems waste water and the run-off pollutes the ponds. Save summer watering for your favorite places in the yard and water early in the morning to cut down on evaporation.



 *30% of the water consumed on the East Coast goes to watering lawns.*

Step 7 – MIX THOSE SEEDS

If you must have an all grass patch of lawn, use fescue, rye and clover. These are hardier and more drought resistant than bluegrasses. Clover sets nitrogen in the soil that will naturally fertilize your lawn. Look for seed containing fungi that are repellent to certain lawn pests. Seed in the fall when cooler and wetter days provide ideal conditions for germination and deeper root growth.



Step 8 – FORGET THE LIME

Vineyard soils are naturally acidic allowing a wide variety of mosses to thrive. Celebrate moss in your lawn as it stays green all summer and won't need mowing. For creative ways to landscape with moss see the Resources Chapter.

Step 9– LEAVE THATCH AND AERATING WOES TO THE MICROBES

Organically managed lawns are alive with earthworms and beneficial microbes that naturally recycle thatch and aerate your lawn. If you must toil over your grass, get down on your knees, break up and aerate compacted areas by hand and apply compost before reseeding.



Step 10 – CELEBRATE DIVERSITY

Train your eye to appreciate variety in your lawn. As many as 50 species of plants may grow in a typical non-herbicided lawn. Daisies will naturally adjust to bloom below the height of a cutter bar; so will other wildflowers. Yellow wood sorrel adds texture and makes refreshing summer soups. You'll never have to mow patches of moss and lichens. As your dream-lawn addiction subsides, you will begin to appreciate additions of color and texture to your lawn. When weeding mania hits, do it by hand, or, if you must apply something, use products such as nonchemical, plant based pre-emergent for weed control.

Step 11 – TAKE A WALK ON THE WILD SIDE



Feeling seduced by the perfect turf on TV? Suffering from lawn envy? Take a walk in any of the Vineyard's nature preserves and appreciate the beauty of diverse grasses, wildflowers, lichens, and mosses that support bees, butterflies, and wildlife of all kinds. Find a field full of fireflies and you know you're in the right place. Try replicating that environment in your own yard.

Step 12 – BECOME AN ADVOCATE FOR THE VINEYARD LAWN

How will you know when you and your lawn have completely recovered? You will be spreading the word and not the poison. Share the good news with dream-lawn addicts, landscapers who use lawn chemicals, or the stores that sell them. If you play golf, find out what chemicals are being used on your greens; alert the groundskeepers to their increased risk of cancer. Help monitor what goes into the lawns of local parks, businesses, schools, and municipal greens. We can all help keep our Island environment healthy and beautiful, our water drinkable, and our shellfish beds thriving.

VINEYARD NEIGHBOR

Bluefish and Striped Bass: The Angler's Favorite

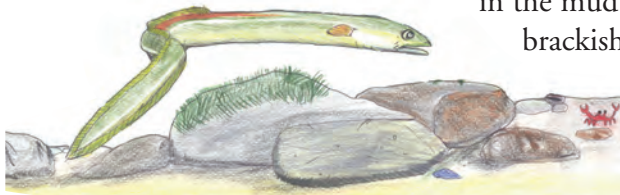
Bluefish and Striped Bass are the most sought-after Vineyard fishes providing great sport through catch and release fishing, and great eating when you catch a “keeper”. Striped Bass is the largest fish available to the nearshore angler ranging from 1 to over 60 pounds. Bluefish are usually ravenous and will strike at just about anything you give them. Watch out for those teeth! The MV Striped Bass and Bluefish Derby, along with other seasonal derbies, attract experienced fishermen from all over the world and add a real boost to the Island economy. Whatever your favorite fishing spot, remember that only healthy waters provide the ideal habitat for your future dinner.



VINEYARD NEIGHBOR

American Eel: A Well-Traveled Fish

Since there are no sea snakes in Martha's Vineyard waters, the long, slimy animal you might encounter is the American eel. This fish has a narrow, streamlined body that helps it swim rapidly. Quenames, the name of an area in Chilmark, is a Wampanoag word that means “a place to catch the long fish.” Eels are nocturnal; they spend their days buried



in the mud. Part-time residents, eels leave the fresh and brackish waters of our local ponds in the fall for a long voyage to the Sargasso Sea, off the coast of the Bahamas, where they gather in great numbers with eels from around the world to reproduce.

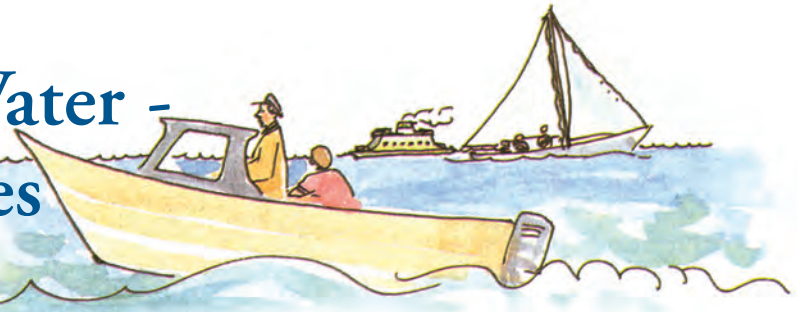
VINEYARD NEIGHBOR

Lobsters: Life on the Ledge

Once known as poor man's food, lobster has made a comeback at dinner tables. Nearly 90% of legal-sized adult inshore lobsters are harvested every season. The heart of the Island's lobster fleet is based in Menemsha as the lobsters prefer the rocky ledges and crevasses off the North Shore. Nocturnal scavengers, lobsters eat almost anything they can find by crushing and ripping food with their large claws. Most lobstering in New England occurs during the spring, summer, and fall.



Getting Out on the Water - Good Boating Practices



Recreational boating provides relaxation and enjoyment for thousands of Vineyard residents and visitors. It contributes to the Island economy by providing jobs in boat manufacturing and service. Unfortunately, boating also contributes to the pollution of Vineyard waters. All of us — especially boaters — have a lot to lose if the quality of our waters deteriorates. As a boater, there is much you can do to help protect the waters that bring you so much pleasure.

Maintaining Your Boat

Many of the cleaning, dissolving, and painting agents used for boat maintenance are toxic to marine and aquatic life. A few simple precautions can prevent these chemicals from harming our coastal ponds, sounds, and harbors.

Bottom Paints

The more traditional copper and tributyltin (TBT) bottom paints that are used to prevent fouling cause environmental damage. “Fouling” refers to the whole host of organisms that can attach to and grow on the hulls of boats, affecting their performance. TBT has been shown to damage our shellfish populations; and has been banned nationally. Other environmentally friendly alternatives are now available. These work by producing peroxides that kill the fouling organisms while they are still microscopic. The peroxide quickly breaks down into water and oxygen, so it is safe to use and does not hurt the environment. When scraping the boat bottom, catch the scrapings with a drop cloth. Use sanders with vacuum attachments and sweep up any scrapings or dust that may escape your drop cloth. Store them for your next hazardous waste collection day.



Cleaning Your Boat

Rinse and scrub your boat with a brush or power washer after each use instead of using soap. If your boat is stained, use phosphate-free soap or laundry detergent, or any of the alternatives suggested in Chapter Five on hazardous waste. When possible, avoid products that remove stains and make your boat shine. They are extremely toxic. As a rule, avoid any products with a “Toxic” warning on the label: they can kill marine life if washed overboard or accidentally spilled into the water.



Bilge Wastes

Bilgewater presents a major challenge for boaters. Since bilgewater often contains oily wastes, boaters are often tempted to add detergent to it and pump it overboard. The detergent, already harmful on its own, breaks the oil into small floating droplets spreading the area of impact on the larval stages of the many marine creatures that inhabit the surface water. This practice is not only environmentally damaging, it is *illegal* and can be fined up to \$10,000.

Is the best solution to take the oil/water mixture to the oil recycling container at the local marina? Unfortunately, no: the signs indicate “Oil only — no bilge wastes.” What can a conscientious boater do? First, fix any leaks that might contribute oil to the bilges. Next, before pumping the bilgewater overboard, capture the floating surface oil with oil-absorbent pads, paper towels, or old nylon stockings. A product called a “bilge sock” can be used to sop up oily bilgewater. Bilge socks are available at local marinas and through the various harbormasters.

Fuel

The traditional method for determining a full tank is watching for fuel spilling from the tank over-flow vent. Fuel overflows are dangerous to people and toxic to fish and other aquatic life. Small fuel spills are subject to federal fines of up to \$5,000! Several commercial products



are available from marine supply stores to help you prevent these overflows. The most simple is a container that attaches to the fuel vent to capture overflows. A more sophisticated tank vent surge protector works with automatic nozzles to shut off the fuel flow when your tank is full and with non-automatic nozzles it gurgles when it is time to stop pumping. Another similar product changes pitch when the tank is full. Even small spills need to be wiped up immediately to keep them from reaching the water.



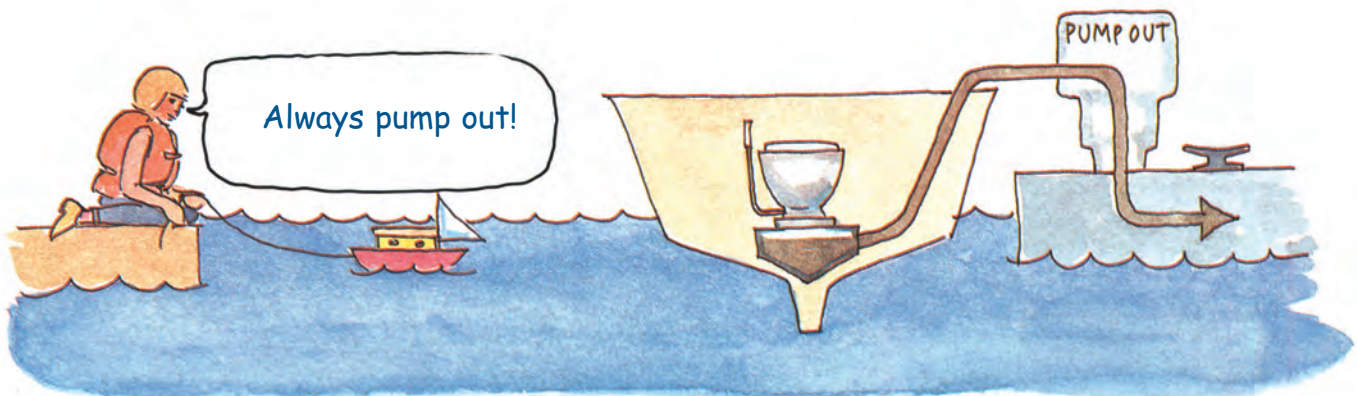
Sewage

Human waste contains disease-causing bacteria and viruses that compromise safe public swimming and contaminate shellfish beds. Sewage may also be a source of nutrient enrichment in coastal salt ponds, bays, and inlets around the island. Nutrient enrichment “fertilizes” the waters and contributes to algae blooms and oxygen depletion, which kills marine life.



Be responsible with your waste. It is *illegal* to dump untreated sewage into the water, and violators are subject to a \$2,000 fine. If you have a toilet on your boat, it must be equipped with a Marine Sanitation Device (MSD). Acquaint yourself with the use and maintenance of the type of MSD on your boat. If your boat does not have an installed toilet, consider using a portable toilet. Many marinas have dump stations to empty portable toilets.

Regardless of what type of MSD your boat has, sewage pump-out stations or portable pump-out units should be used when moored or docked in marinas and harbors and to empty holding tanks. This service is FREE in many harbors, including those of Edgartown, Oak Bluffs, Tisbury, and Menemsha.



Trash

Trash is the most visible pollution in our waters. Designate a storage area on your boat specifically for trash and regularly take the trash to shore for proper disposal. Beer cans, Styrofoam cups, plastic bags, fishing line fragments, and other debris can trap, injure, and kill aquatic life and birds. Most of this debris doesn't disintegrate; instead it remains in the water for years and continues to kill wildlife, foul propellers, and clog engine-cooling water intakes. It is *illegal* to dispose of trash in the water. Call the Coast Guard if you see any boat, commercial or recreational, dumping plastics or other trash overboard.



Erosion

Boat wakes contribute to shoreline erosion, especially in narrow streams and inlets. This loss of land is a problem for shoreline property owners, and also affects boaters. Eroded sediments can cause unwanted shoals and shallows, cut off light to underwater life, especially plants, and create tremendous problems for the aquatic ecosystem.

The extent of shoreline erosion caused by boat wakes depends on the wake's energy. This energy is based on four factors: distance from the shore, hull size, speed, and water depth. The closer to the shore, the greater the hull size, and the shallower the water, the more damage a boat wake can cause. To minimize shoreline erosion, boats should reduce wakes within 500 feet of the shore.

Many habitats near shore and the animals and plants that inhabit them are sensitive to disturbance. Boaters, skiers, and jet skiers should avoid speed and excessive traffic in these fragile areas.

Erosion from boat prop wash (agitation produced by the boat's propeller while the engine is in gear) is very often seen along docks and piers. If the boat is run in gear while tied up, sediments are stirred up and washed away, creating an artificial dredged area beside the dock. As these sediments resettle, they suffocate marine life in the surrounding area.




Docks and Piers


In addition to being unaesthetic, excessive numbers of private docks collectively have negative impacts on our coastal ponds and ultimately depreciate the value of water front homes. They may impair water circulation, alter bottom sediments, shade eelgrass and restrict access to shellfish beds. Rather than imperil the water body you live on with a new dock, consider sharing a communal pier or keeping your boat on a mooring. Further, many docks and piers are constructed with pressure-treated wood. The toxic materials used to help the wood last longer in the marine environment leach out slowly over time, killing marine plants and animals. Alternatives such as heart wood and many new plastic construction materials should be considered for new structures, repairs or replacements.

Chapter 11

Not Just for Kids



1. Goin' Fishing. When you're trying to catch a big one, consider that lead sinkers and fishing lines are a hazard to wildlife. Water birds can swallow the sinkers lost from your line and die from lead poisoning. Lead sinkers are illegal, so instead use plated steel sinkers or washers and plated steel hooks. And be sure to properly dispose of your fishing lines so it won't entangle wildlife.



2. Beach Trash Pickup. Always carry out your own trash and any other trash you find on the beach. The Vineyard Conservation Society hosts an annual Earth Day Beach Cleanup; call them for more information.


3. Watershed Address. Find your Watershed Address on the map on pages 6 & 7 of this booklet.

Where does the rain that falls in your yard go?

4. Water Watch. Who's wasting water in your house? Be a water detective; check for leaky faucets and turn off the water while brushing your teeth or washing dishes. Learn about water-saving devices such as low-flow shower heads and appliances and talk to your parents about installing them.

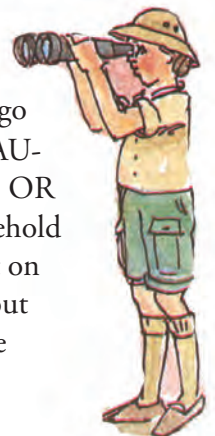
5. Reduce, Reuse, and Recycle. We make a lot of unnecessary trash. Reduce the amount of trash you make: buy things with less packaging, fix things instead of buying new ones, recycle, and compost organic wastes. Donate to or find a treasure at the West Tisbury Dumptique or local thrift store.

6. Adopt a Storm Drain. Stencil storm drains with "Dump No Waste – Drains to Ponds and Harbors" signs. Stenciling kits or medallions are available to increase awareness of pollution caused by storm water runoff. For more information, contact Felix Neck Wildlife Sanctuary or The Trustees of Reservations.



7. Get Your School Involved. Talk to your teacher about taking a field trip to a local pond, bay, or harbor and learn all you can about the waters around you. Felix Neck and The Trustees of Reservations provide outings for students.

8. Take Out the Toxics. With your parents, read the section on hazardous waste, then go on a toxics hunt around your house. Look for these warnings on the labels: DANGER, CAUTION, WARNING, POISON, CORROSIVE, CAUSTIC, INERT, FLAMMABLE, OR EXPLOSIVE. When these items are ready for disposal, they should go to the Harmful Household Materials Collection Station at the Martha's Vineyard Refuse and Resource Recovery District on one of the four hazardous waste disposal days held each year. Why not go along and find out how these hazardous wastes are collected? Learn about alternatives to these products and use them when you can.



Chapter 12

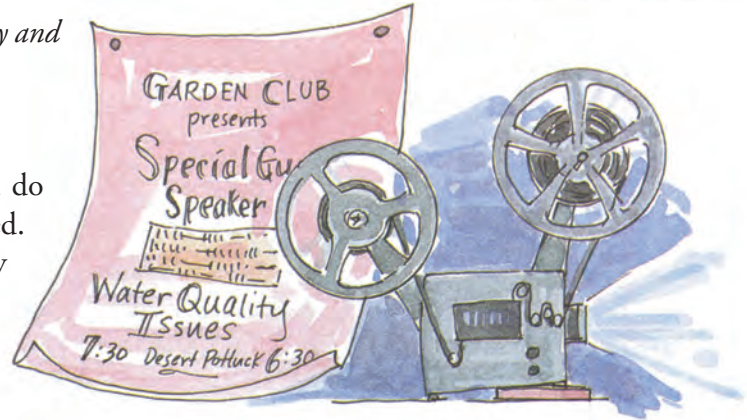
Taking Action: the Big Picture

If we make healthy choices for our bodies, the chances are we'll be healthier. The same goes for our environment. We, Vineyard residents and visitors alike, are stewards of the Vineyard's phenomenal water resources; its lakes, ponds, streams, tidal estuaries, wetlands, harbors, and great ponds - and most precious of all, the *ground-water aquifer*. The health of these resources depends on the choices we make.



What can you and I do to preserve these resources today and for the generations to come?

First: Everyone lives on the water. Check out the map on pages six and seven. What watershed do you live in? Become familiar with your watershed. Think about what its resources mean to your daily life. How would your life be changed if you didn't have clean water to drink and swim in, and fish and shellfish to eat?



Second: Put into practice as many of the suggestions

offered here as you can. You don't have to adopt them all at once. Start with one, or maybe several, and when they become part of your routine, add a few more. Talk with your family, friends, and neighbors about what you're doing "waterwise". Spread the "water word"!

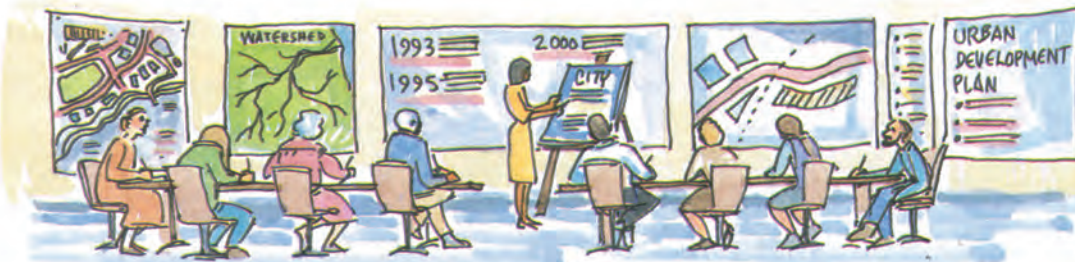
After you've had one or two meetings about the issues, tackle a project that will impact water quality in your neighborhood. For example, you may choose to begin with a stream walk.



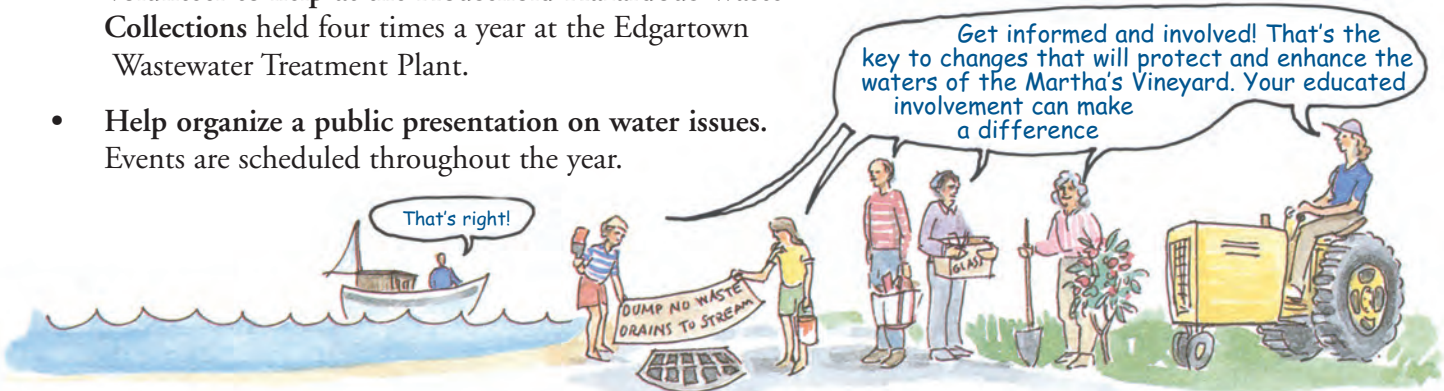
Third: Individual actions are important, but organizations are also essential. If you already belong to a group that is active in protecting our water resources — *TERRIFIC!* If you don't, remember, *there are many ways to get involved.* No matter what your interests and skills, no matter how little time you think you can offer, there's a place for you. Serve on a town board, join a conservation group or volunteer at a special event. No matter what you do, you'll be joining other Vineyarders who share your concerns and want to make *a real contribution* to safeguard the Island's water resources. Here are

some activities you may wish to consider:

- **Join your local watershed group** such as the Lagoon Pond Association, Tisbury Waterways, Great Pond Foundation, or Friends of Sengekontacket, *If there is no watershed group in your area, start one!*
- **Participate in one of the Island beach cleanups.** The main one is on Earth Day each year. There are others. Visit the website of the Vineyard Conservation Society for information on Earth Day events.



- Volunteer to help at the Household Hazardous Waste Collections held four times a year at the Edgartown Wastewater Treatment Plant.
- Help organize a public presentation on water issues. Events are scheduled throughout the year.



stewardess flight attendant...
Stewardship (stō'ard ship, the care, protection, and wise use of natural resources.
 Stewart (stō'art) 1. a masculine name: see STUART 2. Jame (Maitland)

But why should I help when others continue to pollute?



- Become an advocate for alternative septic treatment technology for both home and municipal facilities. You can help inform others about new technologies that remove nitrogen from our waste and can help save our ponds.
 - Help educate the next generation about the importance of protecting our water by volunteering with school field trips to water resource areas, wastewater treatment facilities, and town wells.
 - Start your own initiative! There are new approaches to water-related issues appearing daily. Maybe you have an idea no one has thought of. Every step forward counts. The goal is to protect our precious water resources, any way we can. Everyone has a stake in the Vineyard's water resources.

Although it takes time for these changes to take place, we cannot wait until everyone else has cleaned up before we do our part. We all need to do our share to protect the quality of our waters, and we can take pride in our efforts. We can make a difference for Martha's Vineyard. Use the suggestions in this guide at home, first. Then employ the same information at work and in your community. All the actions you take to benefit Martha's Vineyard will benefit you, your family, and your community. Seems like a deal we can't refuse!



Chapter 13



Where to Go for Help....

Resources for taking the next steps

Check www.mvcommission.org/node/46152/attachment for Blue Pages resources updates.

Pond Groups

Chappaquiddick Island Association (CIA), Web: www.Chappaquiddickislandassociation.org
Chilmark Pond Riparian Owners (508) 645-2260, Web: www.chilmarkpond.org
East Chop Association (508) 693-0630, Web: www.eastchopbeachclub.com/Oak-Bluffs-Marina
Friends and Neighbors of Sunset Lake (FANS), Email: Sunsetlakemv@yahoo.com
Friends of Farm Pond, Web: www.friendsoffarmpond.net/
Friends of Sengekontacket, Inc. Email: FOSPresident@gmail.com Web: www.sengekontacket.org
Great Pond Foundation (508) 627-7222, Web: www.greatpondfoundation.org
Lagoon Pond Association, Inc. Web: www.lagoonpondassoc.org, Email: info@lagoonpondassoc.org
Riparian Owners of Tisbury Great Pond (508) 645-2260, Email: rotgpond@gmail.com
Squibnocket Pond District Advisory Committee (508) 645-3199
Tisbury Waterways Inc. (774) 563-5616, Web: www.tisburywaterways.org

Sustainable Energy

Cape Light Compact (508) 375-6644, Web: www.capelightcompact.org
Community Solar Greenhouse (508) 693-2019, Web: www.mvgreenhouse.org
Vineyard Energy Project (508) 693-3002, Web: www.vineyardpower.com

Regional Planning

Dukes County MA Web: www.dukescounty.org/Pages/conservation
Martha's Vineyard Commission (508) 693-3453, Web: www.mvcommission.org

Conservation Groups

Dukes Conservation District, Natural Resource Conservation Service (508) 771-6476
Martha's Vineyard Land Bank Commission (508) 627-7141, Web: www.mvlandbank.com
Martha's Vineyard Preservation Trust (508) 627-4440, Web: www.mvpreservation.org
Massachusetts Audubon Society (781) 259-9500, Web: www.massaudubon.org
Sheriffs Meadow Foundation (508) 693-5207, Email: smf@vineyard.net, Web: www.sheriffsmeadow.org
The Nature Conservancy (508) 693-6287,
Web: www.nature.org/ourinitiatives/regions/northamerica/unitedstates/massachusetts
The Ocean Conservancy (800) 519-1541, Web: www.oceanconservancy.org
The Trustees of Reservations (978) 921-1944, Web: www.thetrustees.org
Vineyard Conservation Society (508) 693-9588 Email: info@vineyardconservation.org
Web: www.vineyardconservation.org
Vineyard Open Land Foundation (508) 693-3280, Email: office@vineyardopenlandfoundation.org
Web: www.vineyardopenlandfoundation.org
Wampanoag Tribe of Gay Head Web: www.wampanoagtribe.net, www.wampnrd.com

Environmental Education

Biodiversity Works (800) 690-0993, Email: info@biodiversityworksmv.org Web: www.biodiversityworksmv.org
EPA Climate Change Adaptation Training Web: www.epa.gov/arc-x/climate-change-adaptation-training
EPA Watershed Academy Web: www.epa.gov/watershedacademy
EPA Water Quality Standards Academy Web: www.epa.gov/wqs-tech/water-quality-standards-academy
Felix Neck Wildlife Sanctuary (508) 627-4850
Martha's Vineyard Agricultural Society (508) 693-9549, Email: admin@mvasmv.org
Web: www.marthasvineyardagriculturalsociety.org
Martha's Vineyard Environmental Education Alliance Web: www.mveea2016.wixsite.com/mveea
Martha's Vineyard Garden Club (508) 693-5334, Web: www.marthasvineyardgardenclub.org
Martha's Vineyard Rod & Gun Club (508) 627-3537, Web: www.mvrodandgunclub.com
Martha's Vineyard Water Alliance (508) 693-3453, meetings held monthly all are welcome

Massachusetts Clean Water Toolkit Web: prj.geosyntec.com/npsmanual
 Native Earth Teaching Farm (508) 645-3304, Web: www.nativeearthteachingfarm.org
 Sail Martha's Vineyard 508-696-7644, Web: www.sailmv.org
 The Trustees of Reservations (978) 921-1944, Web: www.thetrustees.org
 Vineyard Conservation Society (508) 693-9588 Web: www.vineyardconservation.org
 Woods Hole Research Center (508) 540-9900 Email: info@whrc.org, Web: www.whrc.org

Citizen Advocacy Group

POW (Protect Our Water) (508) 693-6987, Email: grip@ix.netcom.com

General Environmental Information

Buzzards Bay Coalition, New Bedford (508) 999-6363, Woods Hole (508) 540-6222,

Web: www.savebuzzardsbay.org

Dukes County MA (508) 696-3840, Web: www.dukescounty.org

Manuel F. Correllus State Forest (508) 693-2540

MA Coastal Zone Management Web: www.mass.gov/eea/agencies/czm/program-areas/stormsmart-coasts/coastal-landscaping

Massachusetts Environmental Police Dispatch: Emergency 24 hour, 7 days Statewide Dispatch (800) 632-8075
 or (617) 626-1665

Martha's Vineyard Commission (508) 693-3453, Web: www.mvcommission.org

Martha's Vineyard Refuse and Resource Recovery District (508) 627-4501, Web: www.mvrefusedistrict.com

Wampanoag Tribe of Gay Head (Aquinnah) (508) 645-9265 ext170 Web: www.wampanoagtribe.net

Water Quality Testing

Wampanoag Environmental Laboratory (508) 645-2903 or visit Web: www.wampweather.org or www.wampnrd.com

Fisheries and Shellfish Groups

East Coast Shellfish Growers Association Web: www.ecsga.org

Martha's Vineyard Shellfish Group, Inc. (508) 693-0391, Web: www.mvshellfishgroup.org

Massachusetts Division of Marine Fisheries, Field Station (508) 990-2860

National Shellfisheries Association Web: www.shellfish.org

South East Massachusetts Aquaculture Center (SEMAC) Web: www.capecodextension.org/semac

Agricultural/Horticultural Research

Community Solar Greenhouse COMSOG (508) 693-2019 Web: www.mvgreenhouse.org

FARM Institute (508) 627-7007, Web: <http://www.farminstitute.org>

The Polly Hill Arboretum (508) 693-9426, Web: www.Pollyhillarboretum.org

University of Massachusetts Cooperative Extension Web: www.ag.umass.edu

Island Grown Initiative (508) 687-9062, Web: <http://www.igimv.org>

Town Information

	Aquinnah	Chilmark	Edgartown	Oak Bluffs	Tisbury	West Tisbury
General Information	(508) 645-2300	(508) 645-2100	(508) 627-6100	(508) 693-3554	(508) 696-4200	(508) 696-0100
Board of Health	(508) 645-2309	(508) 645-2105	(508) 627-6120	(508) 693-3554	(508) 696-4290 Ext. 293	(508) 696-0105
Conservation Commission	(508) 645-2300	(508) 645-2114	(508) 627-6165	(508) 693-3554 Ext. 118	(508) 696-4260	(508) 696-6404
Shellfish Department	(508) 645-2300	(508) 645-2100 Ext. 2145	(508) 627-7570	(508) 693-0072	(774) 563-1279	(508) 696-0102
Water District			(508) 627-4717	(508) 693-5527	(508) 696-4230	
Solid Waste	(508) 645-2319	(508) 645-3760	(508) 627-4501	(508) 693-0072	(508) 696-4220	(508) 696-0105
Waste Water District			(508) 627-5482	(508) 693-0343	(508) 696-4220	
Website	www.aquinnah-ma.gov	www.chilmark-ma.gov	www.edgarto-ma.us	www.oakbluff-ma.gov	www.tisbury-ma.gov	www.westtisbury-ma.gov

Chapter Reference Material

Chapter 1 – A Water Primer

Basics of Groundwater, Oregon State University: www.wellwater.oregonstate.edu/understanding-groundwater
EPA Wetlands, Oceans and Watersheds: www.epa.gov/owow/
Massachusetts Department of Environmental Protection (private wells):
www.mass.gov/eea/agencies/massdep/water/drinking/private-wells.html
United States Geological Survey groundwater information: www.water.usgs.gov/ogw/

Chapter 2 – Quick Start for the Water Wise

Cape Light Compact: (800) 797-6699, www.capelightcompact.org
Edgartown Wastewater Treatment Plant: (508) 627-4501
Vineyard Energy Project: www.vineyardpower.com

Chapter 3 - Water, Water Everywhere

Save Our Planet: 750 Everyday Ways You Can Help Clean Up the Earth, MacEachern
Oak Bluffs Water District: (508) 693-5527, see Newsletters 2002-2003
Tisbury Water Works: (508) 696-4230

Chapter 4 – Out of Site Out of Mind

Homeowner's Guide to Title V, Association for the Preservation of Cape Cod, P.O. Box 636, Orleans, MA 02653
Community-based environmental protection: www.epa.gov/sites/production/files/2015-04/documents/communitybasedenvironmentalprotection.pdf
Massachusetts Department of Environmental Protection (septic systems):
www.mass.gov/eea/agencies/massdep/water/wastewater
Tips for proper septic system use: www.epa.gov/septic/how-care-your-septic-system
For more information on alternative systems go to:
Alternative Septic System Test Center: www.buzzardsbay.org/etimain.htm
Department of Environmental Protection:
www.mass.gov/eea/agencies/massdep/water/wastewater/summary-of-innovative-alternative-technologies-approved.html
National Small Flows Clearinghouse: www.nesc.wvu.edu/subpages/septic.cfm

Chapter 5 - Hazardous Waste – Not in my House

Martha's Vineyard Refuse and Resource Recovery District: (508) 627-4501
EPA Household and Hazardous Waste: www.epa.gov/hw/household-hazardous-waste-hhw
Massachusetts EPA Motor Oil Information: (617) 556-1022, www.mass.gov/eea/docs/dep/recycle/hazardous/autowoil.pdf

Chapter 6 – Rethink/Reuse/Recycle

For recycling information www.mass.gov/eea/agencies/massdep/recycle or www.epa.gov/hw/household-hazardous-waste-hhw, also check the Island Book “green pages” in the County/Regional section.
National Center for Electronics Recycling: www.electronicrecycling.org
Get on “DO NOT MAIL” lists: send a letter with your name, home address, and signature to Mail Preference Service, Data and Marketing Association, P.O. Box 643, Carmel, NY 10512, www.thedma.org/accountability/dma-choice
Stop receiving unsolicited credit offers: (888) 567-8688, www.optoutprescreen.com.
For more tips on reducing your junk mail visit www.globalstewards.org/stop-junkmail.htm.

Chapter 7 – Spare that Shrub

Save Our Planet: 750 Everyday Ways You Can Help Clean Up the Earth, MacEachern
Sea Grant Woods Hole, “Focal Points” Newsletters:
“Cape Cod Coastal Erosion: A Case Study”, April 1998
“Shoreline Change and the Importance of Coastal Erosion”, April 2000
“Sustaining Coastal Landforms”, January 2001
“Evaluation of Coastal Erosion Hazards: Results from a National Study and a Massachusetts Perspective”, August 2001
“Coast Lines,” the annual magazine of the Massachusetts Office of Coastal Zone Management (CZM), 2003
Commonwealth of Massachusetts, Department of Environmental Protection brochure: “Clean Water Tips – Nonpoint Source Pollution and What Can You Do To Help”

Massachusetts Wetlands Protection Act and Regulations, contact your town conservation commission.
DEP Nonpoint Source Program: (508) 792-7470, www.mass.gov/eea/agencies/massdep/water/watersheds/nonpoint-source-pollution.html
DEP Southeast Regional Office: (508) 946-2714
Massachusetts Coastal Zone Management: www.mass.gov/czm
Sea Grant Program, Woods Hole Oceanographic Institution: www.whoi.edu/seagrant

Chapter 8 - Landscaping for Healthy Watersheds

The Gardener's Guide to Common-Sense Pest Control, William Olkowski

Integrated Pest Management, K.S. Erusha

Community Solar Greenhouse COMSOG (508) 693-2019

For testing soil samples: (413) 545-2311, www.ag.umass.edu/services/soil-plant-nutrient-testing-laboratory/ordering-information-forms, www.wampweather.org Polly Hill Arboretum: (508) 693-9426, www.pollyhillarboretum.org

Martha's Vineyard Garden Club: (508) 693-5334

Compost designs and suggestions: www.extension.umn.edu/garden/yard-garden/soils/structures-for-backyard-composting, www.cwmi.css.cornell.edu/smallscale.htm, <https://www.epa.gov/recycle/composting-home>, and www.composttumbler.com

Morning Glory Farm: (508) 627-9003

Red worms in composting: www.cityfarmer.info, www.victoryseeds.com

Pest Management: www.epa.gov/managing-pests-schools/introduction-integrated-pest-management

The benefits of insect-eating birds:

Felix Neck Wildlife Sanctuary (508) 627-4850

The Massachusetts Audubon Society: www.massaudubon.org

Chapter 9 - Recovery From Lawn Obsession

The Encyclopedia of Organic Gardening, Rodale Books, 1993

Redesigning the American Lawn: A Search for Environmental Harmony, F. Bormann et al., 2001 The Chemical Free Lawn, W. Schultz, 1989

Alternative Pest Controls for Lawns, Rachel Carson Council, www.members.aol.com/rccouncil/ourpage

Handbook of Successful Ecological Lawn Care, Paul Sachs, 1996

"Don't Trash Grass," "Lawns and Landscapes in your Watershed," and other publications prepared by the Massachusetts Department of Environmental Protection: www.mass.gov/eea/agencies/massdep/.

Visit the following websites:

US Environmental Protection Agency: www.epa.gov

www.chem-tox.com/pesticides, www.grassrootsinfo.org, www.ecochem.com/pesticides.html,

www.organicconsumers.org

For ways to landscape with Moss: www.mossacres.com

Martha's Vineyard Board of Health: www.mvboh.org

Chapter 10 - Getting Out on the Water

RecyclingWorks hotline: (888) 254-5525

Call (800)-cleanup (253-2687) or visit www.earth911.com

Chapter 11 – Not Just for Kids

Vineyard Conservation Society: (508) 693-9588, www.vineyardconservationsociety.org.

The Ocean Conservancy: www.oceanconservancy.org

The Trustees of Reservations (978) 921-1944, www.thetrustees.org

Felix Neck Wildlife Sanctuary: (508) 627-4850

Edgartown Wastewater Treatment Plant: (508) 627-5482

Chapter 12 – Taking Action

Vineyard Conservation Society Web: www.vineyardconservationsociety.org

What to do if you encounter a stranded marine animal:

Call the New England Aquarium's 24-hour Marine Animal Rescue Hotline: (617) 973-5247, or call the Massachusetts Audubon Sanctuary at Wellfleet Bay (508) 349-2615.

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Sincerely,

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Aquinnah

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