



Improving Water Quality

R E S I D E N T S ' G U I D E

Barataria-Terrebonne National Estuary Program



BTNEP

BARATARIA-TERREBONNE
NATIONAL ESTUARY PROGRAM

What is BTNEP?

The Barataria-Terrebonne
National Estuary Program

(BTNEP) works
to protect and
preserve the
culture and
land located
between the
Mississippi

and Atchafalaya Rivers
in Southeast Louisiana.

BTNEP was established in
1991 in recognition of the
national significance of this
estuary system. An estuary
is classified as an area
where freshwater from rivers,
streams, or bayous meets
the saltwater of the sea.
The range of habitat types
found in estuaries makes
them some of the most
ecologically productive
systems in the world.

The Residents' Guide series
was developed to promote
awareness and good
stewardship of the great
natural resources
of our estuary.



Water in Louisiana

Water is arguably the most valuable resource we have on the planet and in the State of Louisiana. As humans search for extra-terrestrial life in the solar system, scientists estimate that the best predictor of life in the universe is the presence of water. In Louisiana, we have a great abundance of water. In the Barataria-Terrebonne National Estuary Program (BTNEP) area, surface water provides all our needs for drinking, bathing, washing, nourishing habitats, and use in coastal restoration and protection.

Try to be mindful about water. Where does the rainwater go after it leaves your property? What can you do on your land to help protect the Estuary or prevent flooding? Look around your home and use this booklet to try to figure out ways you can improve the water quality in the Barataria-Terrebonne National Estuary.

Water as a connector in the ecosystem

Water is a connector in an ecosystem. All organisms on the planet need water and seek it out. It connects the skies, the land, and the oceans and spends part of its cycle in each media. In this way, it connects all parts of the ecosystem. As water travels in its cycle it picks up and carries a variety of gases, nutrients, toxic compounds, and pollutants, all of which ends up in waterways, watersheds, and the oceans.



Cover Photo: Andrew Barron

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Watersheds

When we think about how to protect and restore all of the water and wetland areas within an estuary, we have to use the concept of a watershed. A watershed is a drainage area where all of the precipitation flows to a single waterbody. A watershed can be as big as the Mississippi River Drainage Basin or as small the puddle in your driveway. The concept of a watershed helps us to think about the connection between the land and the water. When it rains, the water moves over the land carrying sediment and pollutants to a single waterbody. Likewise, positive things we do to improve the water on the land, in our communities, and around our homes can improve water quality in our local watershed and waterbodies.

Intent of the Booklet

As a resident and citizen of the Barataria-Terrebonne National Estuary, you can make a choice to protect our water resources and the environment. This booklet offers a few simple ways in which residents of BTNEP can do their part to protect our water resources, habitats and wetlands.

www.epa.gov/hwp
www.epa.gov/nps/watershed-approach

Photos: Andrew Barron



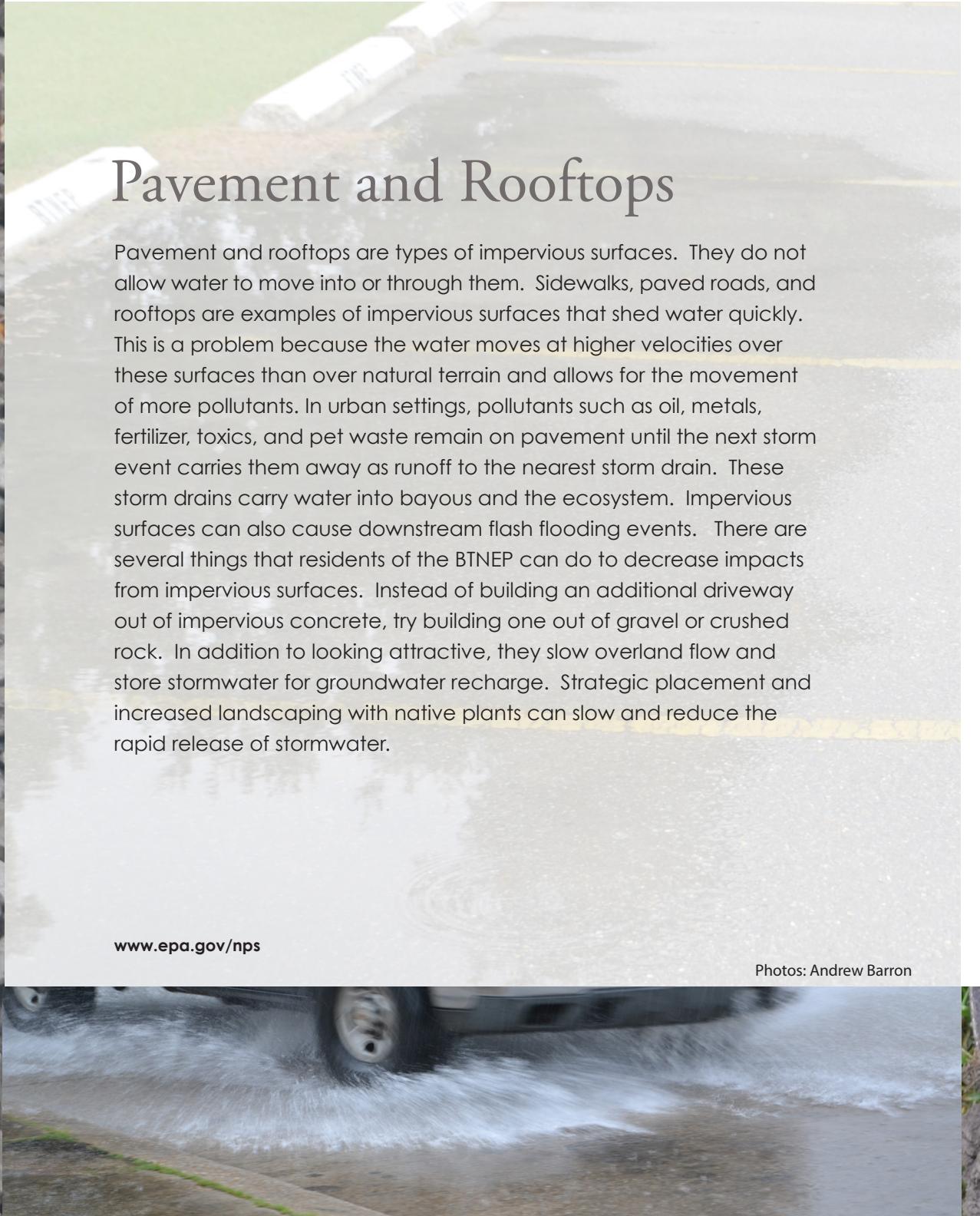
A close-up photograph of a gravel surface. The gravel consists of numerous small, irregularly shaped stones of various shades of grey and brown. A few dry, brown leaves are scattered among the stones. The texture is rough and uneven.

Pavement and Rooftops

Pavement and rooftops are types of impervious surfaces. They do not allow water to move into or through them. Sidewalks, paved roads, and rooftops are examples of impervious surfaces that shed water quickly. This is a problem because the water moves at higher velocities over these surfaces than over natural terrain and allows for the movement of more pollutants. In urban settings, pollutants such as oil, metals, fertilizer, toxics, and pet waste remain on pavement until the next storm event carries them away as runoff to the nearest storm drain. These storm drains carry water into bayous and the ecosystem. Impervious surfaces can also cause downstream flash flooding events. There are several things that residents of the BTNEP can do to decrease impacts from impervious surfaces. Instead of building an additional driveway out of impervious concrete, try building one out of gravel or crushed rock. In addition to looking attractive, they slow overland flow and store stormwater for groundwater recharge. Strategic placement and increased landscaping with native plants can slow and reduce the rapid release of stormwater.

www.epa.gov/nps

Photos: Andrew Barron

A photograph showing a car driving through a flooded street. The water is up to the bottom of the car's wheel. The water is turbulent and splashing around the wheel. The background shows a grassy area and a curb.

Soil Samples and Fertilization

Soil is a media that provides rooting structure, chemical nutrition, and biological activity to plants. Soils vary in chemical, physical, and biological properties. The combination of these three characteristics in optimum levels determines how well your plants will grow. Whether you are growing food crops to eat or grass for a lawn, you should know your plant requirements.

One characteristic which is easily adjusted in soils and has great impact on water quality is nutrients. Humans add nutrients as fertilizer to soil to make plants grow. However, fertilizer is wasted if it runs off into water ways during rain events where it can cause problems. Over-application of nitrogen and phosphorus fertilizers can cause eutrophication in rivers and lakes which upsets the natural balance in the biology and chemistry of the water. Nutrients can cause excessive algae production, high turbidity and low dissolved oxygen, which can result in fish kills.

A good way to prevent water quality problems and optimize your plant nutrition is to collect and send soil samples to the LSU AgCenter for soil testing. A soil test will tell you how much fertilizer and other amendments to add to your soil for the types of plants you want to grow. This is an easy way to have more productive plants and to protect your local waters.

www.lsuagcenter.com

Photos: Andrew Barron

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Joy Stewart



Brianni Mann

Alternative Landscaping

Everything we do on the land affects the quality of the water that moves off of it. This is true for large landscapes like farms as well as for small landscapes like the ones around our homes. The types of plants and the surfaces installed can make a difference in the quality of water leaving your property during a rainstorm event. Try to minimize the amount of lawn you need to water by using water-friendly landscaping arrangements around your home. Xeriscaping basically mimics a desert landscape with rocks and sticks that is appealing to the eye but does not require any watering. In fact, any sort of gravel landscape surface will help to decrease runoff, treat pollutants in stormwater, and increase groundwater recharge. Native plants are another great way to do water-friendly landscaping. Native plants are adapted to a local area so they require less water, fertilizer, pesticides, and maintenance to thrive in your landscape.



Dianne Madden



Joy Stewart

Check out EPA's website showcasing various water wise landscapes:
www.epa.gov/watersense/landscape-photo-gallery



Brandy Maher

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Andrew Barron

Rain Barrels

Rain barrels are a simple concept in water conservation that might save you a little money. Rain barrels are a way to collect and store rainwater that can be used later for watering your garden and landscape. Many of the people in our grandparents' generation used cisterns to collect and store rainwater captured from rooftops that was used for drinking, cooking, and cleaning. Rain barrel water is soft and free of chlorine-containing chemicals found in municipal water supplies, which can be harmful to certain plants. Another benefit of rain barrels is that they conserve city water and prevent runoff from leaving your property. With less runoff, there is less water to carry nutrients, sediment, and pesticides into local waterways.



Andrew Barron



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To get started, all you need is a plastic trash can, used syrup container, or fertilizer drum.

Add a fine screen on top to keep mosquitoes out and filter the water from your downspout.

Add a spigot on the bottom to connect to a hose for use of the water of your lawn or garden.

Decorate it as you like. That's all it takes to conserve water like our ancestors and protect our future.



Photos: Alma Robichaux



Watering

Watering around the home can be a tricky thing. It seems simple, but if you don't water enough, your plants and lawn might die and the soil might wash away when the next big storm comes along. If you water too much, then you are wasting water and money and creating runoff that carries away the fertilizer, soil, and pesticides you just applied. The key to watering is timing. Generally, you want to water at times of the day when you have the least evapotranspiration. This is basically during the cooler, early morning or evening hours. So, water in the early morning or the early evening. Automatic water sprinklers can be set to water at strategic times. Avoid watering when the soil is saturated after rains. It is a waste of money and water. Remember, "timing is everything," especially when it comes to watering your plants.

Watering Tips

- Water in the early morning to a depth of $\frac{1}{2}$ - $\frac{3}{4}$ inches
- Use calibrated automatic sprinklers combined with a rain sensor shutoff system
- Use native plants that are drought tolerant
- Allow soil to dry out between watering

For more information see:
A Guide to Louisiana-Friendly Landscaping, LSU AgCenter
www.lsuagcenter.com

Photos: Andrew Barron



Bioswales, Rain Gardens and Infiltration Basins

Water pollution from rainfall runoff is a function of accumulation. As more runoff gets into streams, pollutants accumulate downstream. As we build more neighborhoods, we build more streets, sidewalks and rooftops, called impervious surfaces, which do not allow water to penetrate and move into soil like a natural planted landscape. The more impervious surfaces that are within a watershed, the more runoff and less groundwater recharge occurs. Groundwater recharge is very important for water storage and plants, but it is especially important in our Estuary where groundwater holds up the land.

One way to help is to build a rain garden in a low spot around your home. Rain gardens, bioswales and infiltration basins decrease runoff and increase groundwater recharge. Water naturally moves into these low areas and “stacks up.” The low spot helps to store water in the soil and recharge the groundwater. All you have to do is dig a shallow hole that gently slopes down to about one foot in depth, then plant your favorite native, wetland plants in the swale. If you place them strategically under the downspouts of your house, you probably will want to cover the surfaces of your rain gardens with crushed rock or gravel to decrease erosion. Rain gardens are a great way to improve water quality, increase groundwater recharge, and create beautiful, vibrant places around your home.

www.epa.gov/soakuptherain





Photos: Andrew Barron

Composting

Composting is a way to create topsoil and save landfill space. By making compost you can improve your soil. Soil is composed of inorganic mineral and organic materials. Organic matter from compost stores nutrients and holds soil together. It forms from the breakdown of dead materials. The more water and nutrients you store in the soil, the less runoff and pollutants go into local waterways.

Composting saves landfill space because it uses yard wastes, such as vegetable scraps, sticks and leaves; instead of sending it to landfills (27% of landfill space).



You can purchase a commercial composter or make your own from a trash can or fenced-off square with chicken wire. Add only plant materials and egg shells to your compost and no fats or meat. Dried sticks and leaves are referred to as high carbon or "brown" sources. Lawn clippings and vegetable scraps from your kitchen are referred to as high nitrogen or "green" sources. Mix one part brown to one part green sources to make your compost. Add egg shells and agricultural lime to balance the pH and provide calcium. Don't forget to turn and water your compost pile frequently. By mixing the browns, greens, lime and water at the right combinations, the naturally-occurring bacteria, fungi, insects, and worms will decompose your vegetable wastes into valuable compost in a short time. Your plants and the ecosystem will appreciate this valuable soil amendment.

www.wikipedia.org

www.epa.gov/recycle/composting-home

www.epa.gov/landfills

Storm Drains

Storm drains are drainages installed along the sides of streets. Often times, storm drains are built in developed neighborhoods that have a lot of impervious surfaces where people need efficient drainage of rainwater. Sometimes people refer to them as "storm sewers." However, don't confuse them with sanitary sewers. Storm drains carry rain water. They don't go to sewage treatment plants; they drain directly to local bayous and waterways.

Avoid putting any types of pollutants and wastes into storm drains, such as waste oil, plastics, trash, fertilizer, soil, lawn clippings, leaves, or seafood boil water. It is illegal and can cause your neighborhood to flood. By keeping your storm drains clear you can help to protect your family, your neighbors and the Estuary.



Before cleaning storm drain



After cleaning storm drain

Photos: Andrew Barron

Keep storm drains clear of debris, sticks, leaves and trash to prevent flooding problems on your street.



Where does
all of this
misplaced
litter end up?
It usually
ends up
in our
waterways.

Photos: Alma Robichaux



Litter

Litter is the most visible water quality problem we have. It is a reflection of modern life and modern technology. As a society, we have been able to produce very cheap containers made of various types of paper and plastic. However, many plastics last for 10s, 100s, and 1000s of years.

Where does all of this litter end up? It ends up in our waterways. Whether it's the plastic shopping bags in your shopping cart, plastic potato chip bags in your driveway, or soda cans in the back of your pickup truck, it all finds its way to the local bayou.

Litter can be detrimental to our wildlife. Balloons and water bottles can be dangerous to sea turtles. Plastic soda and beer can rings can trap and kill birds and other wildlife. Plastics degrade over time and turn into micro-plastics that are consumed by filter feeding fish, upsetting food chains.

Be mindful of litter. Make the effort to put it in the right place. Reduce, Reuse, and Recycle as many household plastic, papers, aluminum, glass, electronic, and hazardous products as you can. Participate in cleanups, like the BTNEP Bayou Lafourche Cleanup and marine debris cleanups. Do your part to protect and cleanup our Estuary!

www.epa.gov/trash-free-waters

Photo: Dianne Madden



Home Sewage and Maintenance

For many of us, flushing our toilet is as much as we know about our home sewage system. That is, until something goes wrong. Humans produce wastes that are harmful and need proper treatment. When you flush your toilet all of the wastes travel out of your house and into the collection tank of your sewage system. This begins the process of waste treatment. The first step involves trapping the floating and sinking solids behind baffles or walls. These solids are then decomposed by naturally occurring bacteria in the tank, while liquids are allowed to flow through the tank. With a septic tank, the liquid flows out into a drain field or sand filter where disease-causing bacteria die off and nutrients are used by natural soil bacteria; whereas with an aerated treatment unit, an aerator pumps air into the tank to kill off the bacteria and treated water flows out through a perforated pipe.

Never put harsh chemicals, such as bleach, into a home sewage system. Do add commercial bacterial blends to your system each month. Keep your sewage system clear of vegetation. Investigate any excess liquid in your yard or foul smells coming from your sewage system. If there is a problem, call a professional to check it, have it pumped out or fix it. Remember, protecting the Estuary begins in our back yards!

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www.ldh.louisiana.gov
www.epa.gov

Photos: Louisiana Department of Health



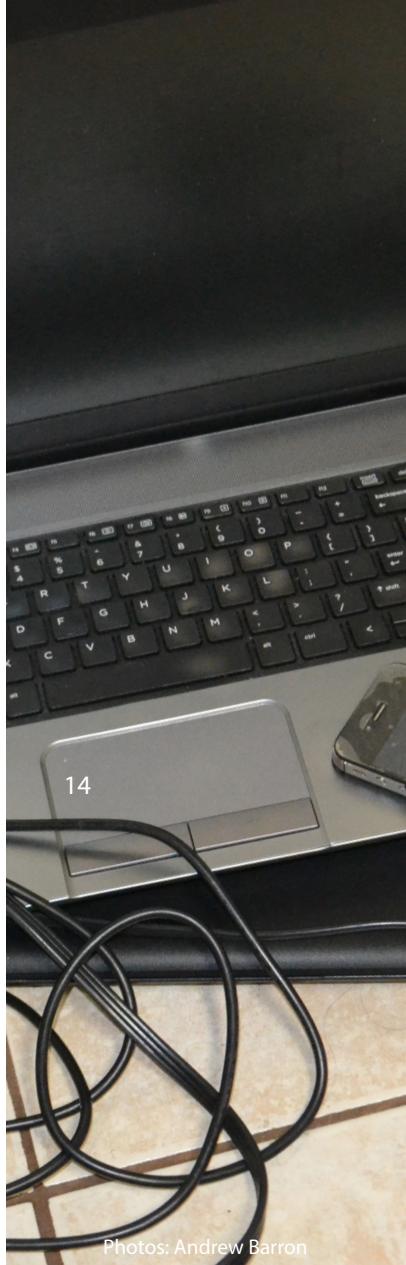
Household Hazardous and Electronic Wastes

Perhaps it's a bag of old unlabeled pesticide powder that the previous owners left behind or the old Commodore 64 Computer that you used to play video games on back in eighth grade. Household hazardous wastes can be any unwanted household products that contain corrosive, toxic, ignitable, or reactive ingredients. Likewise, electronic devices contain lead and other hazardous constituents and should not be thrown in the trash.

These wastes have the potential to do harm to our families and to the environment. Storing them in our homes or around our property is just a problem waiting to happen. Frequently, the Louisiana Department of Environmental Quality or the local municipality will work in partnership with local industry to host household hazardous waste and electronic collection days. Look for information in local news sources and on the internet about the next collection day going on in your community. This is a great way to protect your family and to protect our Estuary!

www.deq.louisiana.gov
www.epa.gov

Photos: Andrew Barron



Recycling

There are so many good reasons to recycle. First, it's an easy way to protect the environment and our Estuary and it just makes good sense to reuse plastics, aluminum and glass products as resources. Besides, by adopting a recycling mindset, you are helping to keep plastics, aluminum, and glass out of our waterways. If we recognize that these materials are resources with value, we are going to be less likely as individuals and as a society to toss them out of a window.

To make it easy for citizens, cities and towns will often have curbside pickup for materials to be recycled.

Schools and Universities often have recycling bins that accept paper, aluminum, plastic, glass and cardboard.

www.deq.louisiana.gov
www.epa.gov/recycle



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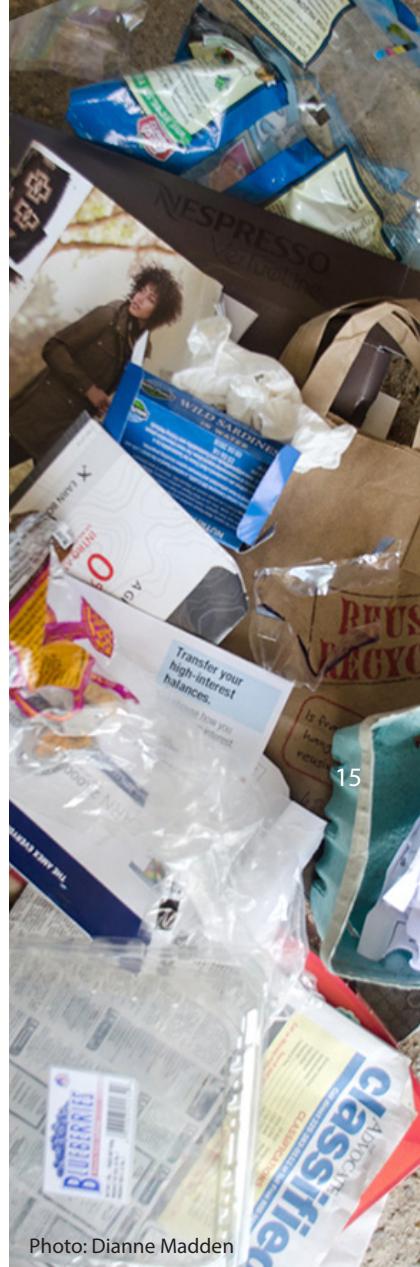
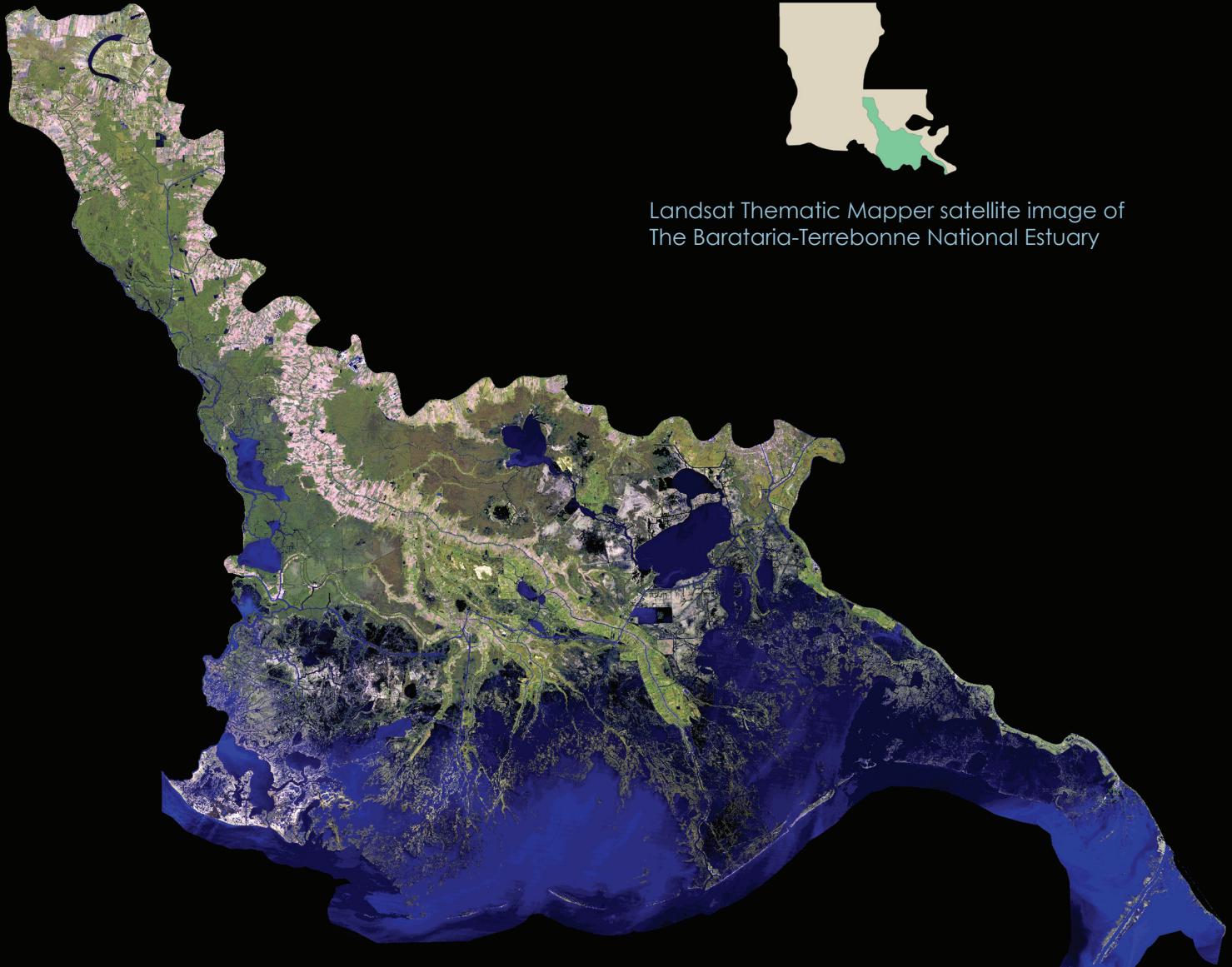


Photo: Dianne Madden

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Landsat Thematic Mapper satellite image of
The Barataria-Terrebonne National Estuary



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