

# Louisiana Clean Marina Guidebook

# Louisiana Clean Marina Guidebook



A product of the Louisiana Clean Marina Initiative

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for the Louisiana Department of Natural Resources  
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## Foreword

The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 require all coastal states to develop Coastal Nonpoint-Source Programs to address polluted runoff within the coastal zone. Nonpoint-source pollution is the name for the disparate droppings of our society. It is the grease from our cars; fertilizers, herbicides and pesticides from our fields and yards; and exhaust from our lawn mowers. It also includes stormwater runoff from marinas, drips from fuel docks, discharges from marine heads and fish waste from recreational anglers.

The Louisiana Clean Marina Initiative seeks to protect the state's air and water resources by reducing nonpoint-source pollution associated with marinas and the boating industry. Louisiana marinas have been given an opportunity to avoid future regulation by voluntarily adopting pollution prevention practices.

## Introduction

The Louisiana Clean Marina Initiative is an effort to assist marina operators to protect the resources that provide their livelihood: clean water and fresh air. These natural assets are essential features of the boating industry. Ironically, it is the enjoyment of these natural wonders that may lead to their decline.

The maintenance, operation and storage of recreational vessels have the potential to pollute adjacent waters and to impair air quality. Contaminants include dust from hull maintenance operations, solvents from engine repair shops, petroleum from careless fueling practices, sewage discharges from boats, and heavy metals from antifouling paints. These pollutants may be deposited directly into waterways, or they may be carried to the marine environment by stormwater runoff. Marina design and location may also contribute to environmental degradation by disturbing sensitive habitat areas.

This is not to say that marinas and boaters are the only contributors to environmental degradation. Quite the contrary is true. Water quality is impacted by fertilizers and pesticides applied by land owners (residential, commercial and agricultural), by industrial discharges and by our choices of home cleaning products. It is affected by sediment washed from cleared land, stormwater runoff that collects oil and heavy metals deposited by our cars and the litter that is washed from our streets and roadways. Environmental degradation is not the result of any particular industry or user group. It is the consequence of all of our activities. As such, we all have an obligation to do what we can to minimize the negative environmental impacts of our actions. If we each take responsibility for that part of the problem which we can control – even if it seems insignificant – the cumulative result will be a cleaner, healthier environment.

By adopting many of the best management practices recommended throughout this guidebook, you will demonstrate your commitment to environmental stewardship. You can be proud that you are doing your share to protect the natural resources upon which we all depend. Additionally, your marina will be a safer, healthier place to work. You may be able to save money by reducing your costs for materials and for waste cleanup and disposal. You may increase your income by renting out equipment such as vacuum sanders and by selling recyclable materials such as batteries and scrap metal. Similarly, cleaner, more efficient equipment will increase your staff's productivity. Your liability associated with waste handling may also be reduced. Finally, your facility will be more attractive to those who care about the health of our water, land and air.

The Louisiana Clean Marina Initiative seeks to promote clean water and fresh air by providing technical advice and educational material to marina operators and boaters. The goal is to encourage informed decision making that leads to a reduction in boating-

related pollution. The *Louisiana Clean Marina Guidebook* provides an overview of actions that marine industry professionals can take to protect water and air quality. It is written for managers of full-service marinas. The recommendations contained within, however, are equally applicable to marinas with limited services as well as marine contractors. The guidebook provides advice on the following topics:

- siting considerations for new or expanding marinas
- marina design and maintenance
- stormwater management
- vessel maintenance and repair
- petroleum control
- sewage handling
- waste containment and disposal
- marina management
- laws and regulations

Marinas that adopt a significant proportion of the best management practices suggested within this guidebook will be eligible to be recognized as a Louisiana Clean Marina. As such they will receive a certificate acknowledging their environmentally responsible actions, authorization to use the Louisiana Clean Marina logo on their letterhead and in their advertising, a flag to fly on their property, and promotion by the Clean Marina Initiative in publications, on the World Wide Web and at public events.

Now is the time to take a leadership role in protecting and enhancing the quality of Louisiana's natural resources. Please, consider doing your part.

## **How to Use this Guidebook**

This guidebook is intended to be used as a reference document. Refer to selected chapters as needed.

Six "Clean Boating Tip Sheets" are included in the guidebook in Appendix VI. They address vessel cleaning and maintenance, bottom paint selection, underwater hull cleaning, petroleum control, vessel sewage, and waste containment and disposal. These tip sheets are meant to be photocopied and distributed to boaters. There is space on each sheet to include your marina's name and logo.

Throughout the book you will find references to additional sources of information. Contact information and brief descriptions of services offered by each authority are listed in Appendix I. Contact information for parish sanitarians is listed in Appendix II. Subsequent appendices contain information on environmentally sensitive landscaping, recycling contacts, waste gasoline haulers, sample contract language, spill response companies, templates of commonly needed plans and a training guide.

## Acknowledgements

The *Louisiana Clean Marina Guidebook* was adapted from: *Maryland Clean Marina Guidebook*, prepared by the Maryland Department of Natural Resources, 2002; *Texas Clean Marinas Guidebook*, prepared by the Texas Sea Grant College Program, 2001; and *Florida's Clean Boatyard Program*, prepared by the Florida Department of Environmental Protection, 2000.

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## Acronyms

BMP	best management practice(s)
CMD	Coastal Management Division of DNR
COE	United States Army Corps of Engineers
CUP	Coastal Use Permit
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments of 1990
EPA	United States Environmental Protection Agency
LCRT	Louisiana Department of Culture, Recreation and Tourism
LDAF	Louisiana Department of Agriculture and Forestry
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
LDNR	Louisiana Department of Natural Resources
LDOA	Louisiana Division of Administration
LDOTD	Louisiana Department of Transportation and Development
LDWF	Louisiana Department of Wildlife and Fisheries
LPBF	Lake Pontchartrain Basin Foundation
LPDES	Louisiana Pollutant Discharge Elimination System
MPPRCA	Marine Plastics Pollution Research and Control Act
MSD	Marine Sanitation Device
MSDS	Material Safety Data Sheet
NDZ	No Discharge Zone
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PWC	personal watercraft
RCRA	Resource Conservation and Recovery Act
SAV	submersed aquatic vegetation
SLCRMA	State and Local Coastal Resources Management Act
TBT	tributyl tin
UL	Underwriters' Laboratories
USC	United States Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
VOC	volatile organic compounds





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# Chapter 1

## Siting Considerations for New and Expanding Marinas

### Environmental Concerns

### Background

### Ideas for Your Marina

- Redevelop existing sites.
- Characterize project sites.
- Identify rare and endangered species.
- Avoid submersed aquatic vegetation.
- Minimize disturbance to wetlands.
- Avoid shellfish beds.
- Avoid critical migration, nesting and spawning periods.
- Avoid colonial nesting and staging areas.
- Avoid geographic and hydrographic impediments.
- Consider bottom configuration.
- Follow natural channels.

### Regulatory Requirements



# Chapter 1 Siting Considerations for New and Expanding Marinas

## Environmental Concerns

The natural plant and animal communities of Louisiana's coastal areas serve multiple functions. Wetlands, for example, provide habitat for fish and fowl. They form a natural buffer against incoming storms and act as a filter to purify stormwater runoff from the land. Wetlands also minimize erosion and support tourism, hunting and fishing. Because of the ecological, economic, recreational and aesthetic values inherent in coastal resources, it is important that shoreside development not diminish these features.

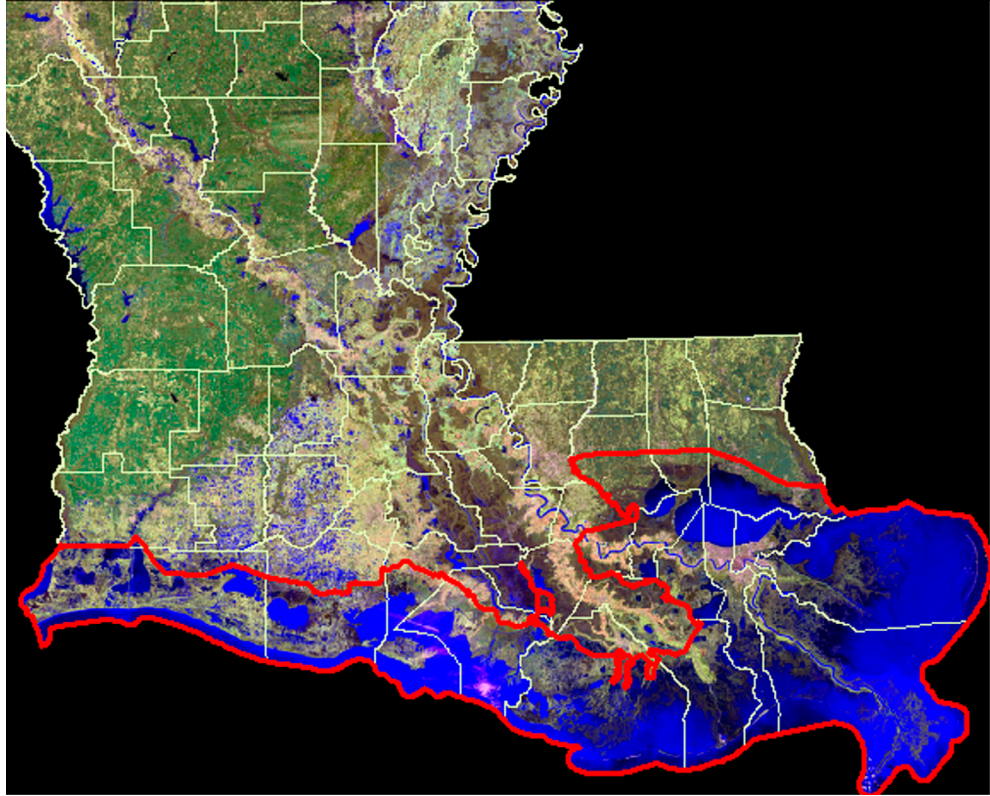
## Background

Louisiana enacted the State and Local Coastal Resources Management Act (SLCRMA, La. R.S. 49:214.21, et seq.) in 1978 with the goals of protecting, restoring and enhancing the resources of the state's Coastal Zone, while fostering responsible development that maximizes renewable resources while minimizing adverse effects on those resources. Another goal of the SLCRMA is to enhance recreational enjoyment of the Coastal Zone.

Activities in the Coastal Zone are regulated either by the state or a state-approved local coastal management program, under the Louisiana Department of Natural Resources (LDNR). The state or local coastal management program issues Coastal Use Permits (CUPs), which are required when an activity, such as the construction of a marina, will have a direct or significant effect on the Coastal Zone. These CUPs are issued according to state guidelines.

The majority of marina development and expansion projects, including dredging, will also require a permit from the U.S. Army Corps of Engineers (COE). Section 10 of the Rivers and Harbors Act of 1899 gives the COE authority to regulate all work and structures in navigable waters of the United States.

Section 404 of the Federal Water Pollution Control Act (the Clean Water Act) regulates discharges of dredged or fill materials into navigable waters, including wetlands.



### Louisiana's Coastal Zone

Any activities in the Coastal Zone should avoid to the greatest extent possible:

- reductions in the natural supply of sediment
- adverse economic impacts on the local area
- detrimental discharges of inorganic nutrient compounds in coastal waters
- alterations in the natural concentration of oxygen in coastal waters
- adverse alterations of streams, wetlands, inshore water and waterbottoms, beaches, barrier islands and other natural biologically valuable areas or protective coastal features
- adverse disruption of existing social patterns
- alterations of the natural temperature of coastal waters
- detrimental changes in the salinity of coastal waters
- detrimental changes in littoral and sediment transport processes
- adverse cumulative impacts
- detrimental discharges of suspended solids into coastal waters, including turbidity resulting from dredging
- reductions or blockage of water flow or natural circulation patterns within or into an estuarine system or a wetland forest
- discharges of pathogens or toxic substances into coastal waters

- adverse alteration or destruction of archaeological, historical or other cultural resources
- fostering detrimental secondary impacts in undisturbed or biologically highly productive wetland areas
- adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers or other areas of public use and concern
- adverse disruptions of coastal wildlife and fishery migratory patterns
- land loss, erosion and subsidence
- increases in the potential for flood, hurricane and other storm damage, or increases in the likelihood that damage will occur from such hazards
- reduction in the long-term biological productivity of the coastal ecosystem

New or expanding marinas should be located to avoid and minimize impacts to tidal wetlands and other aquatic resources. Furthermore, they should be on waterways with strong flushing characterized by:

- a bottom that slopes from headwaters to mouth without sumps or other features that inhibit complete water exchange
- an unstricted entrance with few branches, coves and other features that inhibit complete water mixing

New or expanding marinas should not be located in water that is equal to or less than 4.5 feet deep at mean low water or in areas where their presence would adversely impact:

- submersed aquatic vegetation
- productive macroinvertebrate communities
- oyster beds
- fish spawning or nursery areas
- rare, threatened or endangered species, or species in need of conservation
- historic waterfowl staging areas

## Ideas for Your Marina

### 1. Redevelop existing sites.

- Rather than disturb pristine areas, place new facilities in previously developed waterfront sites.
- Expand an existing marina rather than develop a new one.
- Encourage placement of boating facilities in developed areas.

### 2. Characterize project sites.

- Identify habitat types and seasonal use of the site by fish, shellfish, waterfowl and other organisms.
- If necessary, hire a consulting firm to perform the site assessment.

**3. Identify rare and endangered species.** Rare and endangered species may not be disturbed (Federal Endangered Species Act, Natural Resources Article Section 4-2A-01 et seq., Natural Resources Article Section 10-2A-01 et seq. and La. R.S. 56:1901, et. seq.).

**4. Avoid submersed aquatic vegetation.** Submersed aquatic vegetation (SAV) provides habitat for shellfish and finfish and food for waterfowl. It is an indicator of good water quality.

- Strive for minimum SAV disturbance as a condition for locating water-dependent facilities.
- Site new or expanded marinas such that navigation over SAV beds is not necessary.
- Avoid depositing dredged material in a location or manner that will interfere with SAV.

**5. Minimize disturbance to wetlands.**

- Minimize disturbance to wetlands and indigenous vegetation in riparian areas.
- Obtain a Coastal Use Permit from LDNR CMD for any construction that extends into coastal wetlands.
- Plan for mitigation, which is required in cases where loss of wetlands is unavoidable.

**6. Avoid shellfish beds.**

- Locate new or expanded marinas away from areas that may adversely impact oyster beds. Oysters can be contaminated easily by discharges associated with boating and marina activities.
- Avoid harvesting shellfish from the waters of marinas, as they are likely contaminated.

**7. Avoid critical migration, nesting and spawning periods.**

- Schedule construction to avoid critical migration, nesting and spawning periods of important species of finfish, shellfish and wildlife.
- Consult with the Louisiana Department of Wildlife and Fisheries (LDWF) for site-specific determinations of the potential effects of activities on wildlife populations.

**8. Avoid colonial waterfowl nesting and staging areas.** Regional waterfowl populations converge in certain areas to breed and feed during certain times of year.

- Locate marinas so that increased boating activities do not deter waterfowl from using historic staging and concentration areas.
- Locate marina facilities away from historic nesting and staging areas vital to the continued existence of many waterbird species.
- Consult with birding experts or the LDWF to accurately identify these areas.

**9. Avoid geographic and hydrographic impediments.** Flushing is impeded at the head of tide and in areas where salinity or temperature differences produce variations in water density. These variations cause the water column to separate into distinct layers that do not readily mix.

- Locate marinas on well-flushed waterways to naturally move debris and silt. Debris and silt tend to collect in poorly flushed areas and will eventually settle to the bottom.
- Consider mechanical means, such as a bubbler, to encourage consistent or balanced oxygen supply in the water column of poorly flushed marinas. As debris is decomposed by bacteria, oxygen is removed from the water. Water quality may suffer if oxygen is not replaced as quickly as it is removed.

**10. Consider bottom configuration.**

- Remember that a continuous, gradual downward slope from the berthing area into deeper water is ideal.
- Avoid canals, irregular pockets and sumps that are deeper than adjacent channels.
- Avoid square corners in marina basins and dead-end channels to the greatest extent possible.

**11. Follow natural channels.**

- Align entrance channels with natural channels to increase flushing.
- Design boat lanes to progressively widen toward the seaward end and narrow toward the inland end to allow water to flow freely and maintain its velocity within the marina.
- Avoid locating the entrance channel perpendicular to the natural channel to reduce the likelihood of shoaling and the need for dredging.
- Avoid using long, winding channels to connect marinas to open water.
- Establish openings at opposite ends of the marina to promote flow-through currents, where possible.

## Regulatory Requirements

In Louisiana, the regulation of marina-related activities is handled by a host of federal and state agencies: U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Coast Guard, National Oceanic and Atmospheric Administration (NOAA), Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, NOAA Fisheries, and the Louisiana Department of Health and Hospitals.

The majority of marina development and expansion projects, including dredging, will require a permit from the COE. Section 10 of the



Rivers and Harbors Act of 1899 gives the COE authority to regulate all work and structures in navigable waters of the United States. Section 404 of the Clean Water Act regulates discharges of dredged or fill materials into navigable waters, including wetlands.

As stated in the background section of this chapter, activities in Louisiana's coastal zone are regulated by the Coastal Management Division under LDNR. The state or local coastal management program issues Coastal Use Permits (CUPs), which are required when an activity, such as the construction of a marina, will have a direct or significant effect on the Coastal Zone. These CUPs are issued according to state guidelines.

A COE permit and a CUP are required in wetland areas in the state's Coastal Zone. While permission is needed from both agencies independently, the application forms are the same so the process is streamlined. DNR regulates activities in the coastal zone, while the COE has statewide jurisdiction in wetland issues.

# Chapter 2

## Marina Design and Maintenance

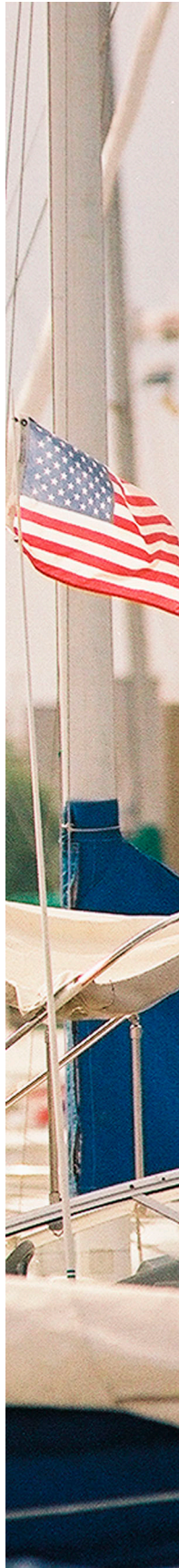
Marina Design and Maintenance

Environmental Concerns

Background

Ideas for Your Marina

- Use fixed or floating piers to enhance water circulation.
- Use environmentally neutral materials.
- Minimize the need for dredging.
- Minimize the impact of dredging.
- Employ nonstructural shore erosion control measures.
- Conserve water.
- Maintain structures using Clean Marina practices.
- Minimize impervious areas.
- Use upland and inland areas.
- Expand upward.
- Conserve sensitive land.
- Practice water-wise landscaping.
- Adopt integrated pest management practices.
- Maintain and/or develop vegetative areas.



## Chapter 2

# Marina Design and Maintenance

## Environmental Concerns

Marinas are the gateways between land and water. These transitional areas are often critical habitat and nurseries for aquatic species and birds. Development encroaches on habitat and also serves as a gateway for man-made pollutants. Marinas should work to minimize their impacts on the surrounding land and water upon which they depend.

## Background

Land management decisions, operating procedures and structural improvements may all contribute to, or detract from, the quality of the land and water surrounding a marina. Roads and parking areas may convey polluted storm water directly into adjacent waterways. Dredging may resuspend toxic compounds such as heavy metals, hydrocarbons and synthetic chemicals. Hazardous chemicals may leach into the water from piers and other similar structures. Broken or degraded floats may release buoyant debris, which birds and fish mistake for food.

Finally, the location and installation of shoreside and in-water structures may lead to accelerated coastal erosion and sedimentation. Sedimentation is the settling of soil particles through the water column. It may bury bottom dwelling organisms, block sunlight, reduce the feeding efficiency of visual feeders and clog fish gills.

## Ideas for Your Marina

### 1. Use fixed or floating piers to enhance water circulation.

Although the major consideration when designing pier/dock systems is open access for both routine and emergency operations, an equally important consideration should be unobstructed water circulation.

- Select an open design for new or expanding marinas. Open marina designs have no fabricated or natural barriers to restrict the exchange of ambient water and water within the marina area.
- Install wave attenuators to reduce the force of incoming water, if protection is necessary. Wave attenuators do not restrict water exchange nor do they interfere with bottom ecology or aesthetic view. Furthermore, they are easily removed and do not significantly interfere with fish migration and shoreline processes.

- Design new or expanding marinas with as few segments as possible to promote circulation within the basin.
- Use a bubbler system to aerate areas with poor circulation.

## **2. Use environmentally neutral materials.**

- For new pilings and other structures that are in or above the water, use materials that will not leach hazardous chemicals into the water and that will not degrade in fewer than 10 years, e.g., reinforced concrete, coated steel, recycled plastic or vinyl sheet piling.
- Be sure to contain shavings when field cutting plastic pilings and timbers.
- Avoid using wood treated with creosote for pilings and similar structures in or above the water. Wood pressure-treated with chromated copper arsenate (CCA), ammoniacal copper zinc arsenate (ACZA) or ammoniacal copper arsenate (ACA) is a better option. There is concern that these pressure-treated timbers may also contribute to water pollution, however.
- Purchase floatable foams that have been coated or encapsulated in plastic or wood. As these floats age, degraded foam is contained by the covering.

## **3. Minimize the need for dredging.** New marinas must be located in areas where deep-water access can be obtained with a minimum of excavation, filling and dredging. Operators of existing marinas that require maintenance dredging more frequently than once every four years should investigate practicable options to increase circulation or reduce sediment accumulation.

- Extend piers and docks into naturally deep waters.
- Locate slips for deep-draft boats in naturally deep water.
- Dredge channels to follow the course of the natural channel.
- Provide dry storage for smaller boats.

## **4. Minimize the impacts of dredging.**

- Avoid waterbird nesting areas and waterfowl staging and concentration areas.
- Be certain that your dredging contractor selects an appropriate disposal site and containment design for dredge spoils. The disposal site must have minimal impact on public safety, adjacent properties and the environment. Disposal of dredged material must follow specific guidelines.
- Obtain the required Waterway Construction Permit from the COE and Clean Water Act Section 404 Permit for all dredging projects.
- Use dredging methods, like hydraulic dredging, that minimize environmental impacts.
- Use turbidity curtains to contain suspended sediments.

## 5. Employ nonstructural shore erosion control measures.

Nonstructural measures, such as beach nourishment, marsh creation and other methods that encourage the preservation of the natural environment are the preferred methods of shore erosion control.

- Use revetments, breakwaters or groins to stabilize and ensure the long-term viability of the nonstructural controls if nonstructural measures alone are not sufficient to control erosion.
- Use structural controls as a last resort in this order of preference: shoreline revetments, breakwaters, groins and bulkheads.
- Minimize the adverse effects of erosion control projects on adjacent properties, navigation, threatened or endangered species, significant historic or archaeological resources and oyster reefs.

## 6. Conserve water.

- Equip all freshwater hoses with automatic shutoff nozzles.
- Fix leaks and drips.
- Install low-flow faucets, toilets and shower heads.

## 7. Maintain structures using Clean Marina practices.

- Scrape, sand and paint in-water and land-side structures according to the same management principles applied to vessels. (Refer to Chapter 4, “Vessel Maintenance and Repair.”)
- If feasible, move floating structures to shore for scraping, painting and major repairs.

**8. Minimize impervious areas.** As rainwater flows over the landscape, it picks up and carries a variety of pollutants to the marine environment, e.g., petrochemicals, heavy metals, sediment, fertilizer, pesticides, animal waste and sewage. Plants and soil can absorb and diffuse many of these pollutants, while paved areas cannot. Paved areas also deliver stormwater runoff to receiving waterbodies at a faster rate than natural areas, thereby accelerating shoreline erosion.

- Keep paved areas to an absolute minimum, e.g., only designated work areas and roadways used for heavy equipment.
- Use shell, gravel or permeable paving for parking lots and roads whenever possible.

## 9. Use upland and inland areas.

- Locate buildings, workshops and waste storage facilities in upland areas, away from fragile shoreside ecosystems. Upland areas also provide the facilities a measure of protection against flood waters and storm surge.
- Locate parking and vessel storage areas away from the water, where feasible.
- Consider using inland areas for boat repair activities and winter storage. Use hydraulic trailers to quickly and easily move boats to inland storage locations.

## 10. Expand upward.

- Rather than adding wet slips, expand storage capacity by adding dry-stack storage. Boatels provide the following environmental benefits:
  - Dry-stacked boats do not accumulate marine growth. Consequently, toxic antifouling paints are not necessary and the associated need to wash, scrape and paint is eliminated.
  - Dry-stacked boats are less likely to accumulate water in their bilges. This makes them less likely to discharge oily bilge water.
- Control stormwater runoff from dry-stack areas, as well as from any expanded parking areas.
- Keep forklifts well tuned to prevent grease or oil from dripping onto staging areas or into the water.
- When possible, locate boatels away from the shore, as they are not water-dependent facilities.

**11. Conserve sensitive land.** Provide a serene setting for your marina by placing adjacent, sensitive land in a conservation trust. Income, estate and property tax benefits are available.

**12. Practice water-wise landscaping.** Save on water bills, reduce your maintenance activities, and protect water quality by minimizing your water use.

- Landscape with noninvasive plants only. Select plants that are suited to the existing conditions (i.e., soil, moisture and sunlight) so that they will require little care in terms of water, fertilizer and pesticides. Use ornamental grasses instead of shrubs because they require less water. (Refer to Appendix III for a sampling of beneficial plants.)
- Water only when needed. Shrubs will wilt and grass will lie flat and show footprints. Water in the early morning or early evening when temperatures are cooler. Plants will not be shocked, and water loss to evaporation will be minimized.
- Water deeply and infrequently rather than lightly and often. Deep watering promotes stronger root systems, which enable plants to draw on subsurface water during hot spells and droughts.
- Select equipment that delivers water prudently. Sprinklers work well for lawns. Soaker hoses or drip irrigation systems deliver water directly to the roots of shrubs, flowers and vegetables with minimal loss to evaporation.
- Place mulch (wood chips, bark, grass clippings, pine straw, etc.) to a depth of 2" to 4" around plants to keep water in the soil, prevent weeds and reduce the amount of sediment picked up by storm water. Planting ground cover at the base of trees serves the same function.

- Group plants with similar water needs together. This practice will ease your maintenance burden, conserve water and benefit the plants.
- Replace lawn areas with ground covers and shrubs.
- Collect rainwater by directing downspouts into covered containers. Use the collected water on your landscaped areas.

**13. Adopt integrated pest management practices.** Because of your marina's proximity to the water, it is important to avoid toxic lawn and garden chemicals to the greatest extent possible. Instead, deter unwanted plants or animals with integrated pest management practices. Integrated pest management employs preventive, cultural, biological and chemical methods to control pests while minimizing impacts to nontarget species, wildlife and water quality.

- Select plants that are disease and insect resistant, that will out-compete common weeds and that can thrive on your property. Consider the degree of sun exposure, slope, drainage, amount of shade, wind, volume of foot traffic, soil type, temperature variations and other environmental factors.
- Mow lawn areas properly and frequently to prevent weeds. Bermuda grass should be mowed to a height of 1" to 5"; centipede to 1.5" to 2"; and St. Augustine to 2" to 3".
- Pull weeds by hand and mulch to reduce reliance on herbicides.
- Increase your own tolerance for pests. If it is not causing major damage or threatening the life of plants, leave it alone.
- Foster natural predators such as spiders, praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards and certain snakes and toads by minimizing pesticide use.
- Use natural agents such as milky spore disease for grubs and Japanese beetles and *Bacillus thuringiensis* (BT) to control mosquito larvae and caterpillars.
- Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Use the least toxic, most environmentally friendly product that will do the job.
- Rather than broadcasting pesticides, apply them directly to problem areas and plants only. Do not treat the entire landscape.
- Purchase the least toxic chemical in the smallest amount practical.
- Do not use pesticides just before a rainfall or on a windy day.
- Apply insecticides during the evening when honeybees and other beneficial insects are less active.
- Do not apply pesticides near water, e.g., shore, wells, streams, ponds, bird baths, swimming pools, etc.
- Contact your local parish office of the LSU AgCenter for help in diagnosing pest problems and recommending controls. (See Appendix IV for the telephone number of the LSU AgCenter Cooperative Extension office in your parish.)

**14. Maintain and/or develop vegetated areas.** Vegetation filters and slows the flow of runoff, stabilizes shorelines and provides wildlife habitat, flood protection and visual diversity.

- Maintain vegetated buffers (grassy or wooded) between all impervious areas (e.g., work areas, parking lots, boat storage areas) and the water.
- Plant vegetated areas with “beneficial” plants – those that require minimal care in terms of trimming, watering, fertilizer and pesticides. Properly sited native (indigenous) plants demand little care since they are adapted to the local climate and soil types. Also, many horticultural varieties and imported plants may be considered beneficial if they have few maintenance requirements and if they do not displace naturally occurring vegetation (that is, if they are not invasive).
- Always choose a plant that is suitable for the location you want to landscape, e.g. don’t landscape a shaded area with plants that require full sun. (Refer to Appendix III.)
- Select perennial plants instead of annuals. Perennial plants are only planted once, tend to shade out most weeds and seldom require additional water or maintenance.
- Choose plants that bear flowers, fruit, nuts and seeds to attract birds, small mammals and other wildlife.
- Submit a soil sample to the LSU AgCenter’s Office to determine fertility, pH, application rates for soil amendments and to determine which plants might thrive at your marina. (See Appendix IV.)
- Foster beneficial critters. For example, as earthworms move through the soil feeding on microorganisms, they aerate the soil to improve the flow of water and air to plant roots.
- Compost leaves, branches, grass trimmings and other organic matter. Use the mature compost to nourish your soil. Alternatively, chip branches and leaves and use as mulch to discourage weeds and to conserve moisture. More complete information on composting is available from the LSU AgCenter offices. (See Appendix IV.)



# Chapter 3

## Stormwater Management

Environmental Concerns

Background

Ideas for Your Marina

- Practice low impact development.
- Plant it.
- Minimize the amount of paved area.
- Use structural controls as necessary.
- Control sediment from construction and marina activities.
- Mark storm drains.

Regulatory Requirements



## Chapter 3

# Stormwater Management

### Environmental Concerns

Stormwater runoff is rainwater that has not been absorbed by the ground. It washes over roads, parking lots and other land surfaces picking up pollutants as it travels. Stormwater runoff may collect soil particles, petroleum products, heavy metals, residue from industrial activities, litter, sewage and pet waste. It can also pick up pollutants from marina activities like construction and boat repair and maintenance. All of these pollutants are carried with the runoff into the marina basin where they reduce water quality.

### Background

The volume of stormwater runoff increases as natural filters like forests and fields are replaced with hard surfaces such as buildings, parking lots, driveways and roads. Without any plants to disrupt the flow, storm water moves across the land more quickly than under predevelopment conditions. This greater, faster flow of storm water can accelerate erosion, which leads to flooding, destruction of plant and animal life and loss of habitat.

Pollutants carried by storm water impair water quality by increasing levels of nitrogen, phosphorous, suspended solids, biological oxygen demand and chemical oxygen demand. Temperatures and levels of toxic metals and hydrocarbons tend to increase; dissolved oxygen decreases; and the acidity/alkalinity of the water typically changes. The result is that near-shore areas are less able to support wildlife like young fish and crabs. Using the water for human recreation becomes less desirable.

### Ideas for Your Marina

**1. Practice low-impact development.** The goal of low-impact development is to develop a site without altering the existing hydrologic cycle. The approach takes advantage of a site's natural features, including vegetation, to minimize the need to build expensive stormwater control devices. It is counter to traditional stormwater management, which uses structures like curbs, gutters and storm drains to move water offsite as efficiently as possible. Traditional structures cause unnatural volumes of runoff to move into waterbodies at high velocity.

- Capture and treat storm water on-site. For example, direct the runoff from your parking lot to a bioretention area rather than a storm drain. A “rain garden” is an example of a bioretention area. It is planted with native vegetation and sited to collect storm water. Water, nutrients and pollutants are taken up by soil and plants within 24 to 48 hours after a storm. Rain gardens are also attractive and can provide shade and wildlife habitat, act as wind breaks and muffle noise.
- Grade land leading to the waterway to create a more gradual slope to reduce stormwater velocity.

**2. Plant it.** Healthy soil, grasses and plants capture, treat and slowly release storm water. When you cultivate vegetated areas, they clean storm water through a combination of microbial action in the soil, vegetative uptake, evaporation and transpiration.

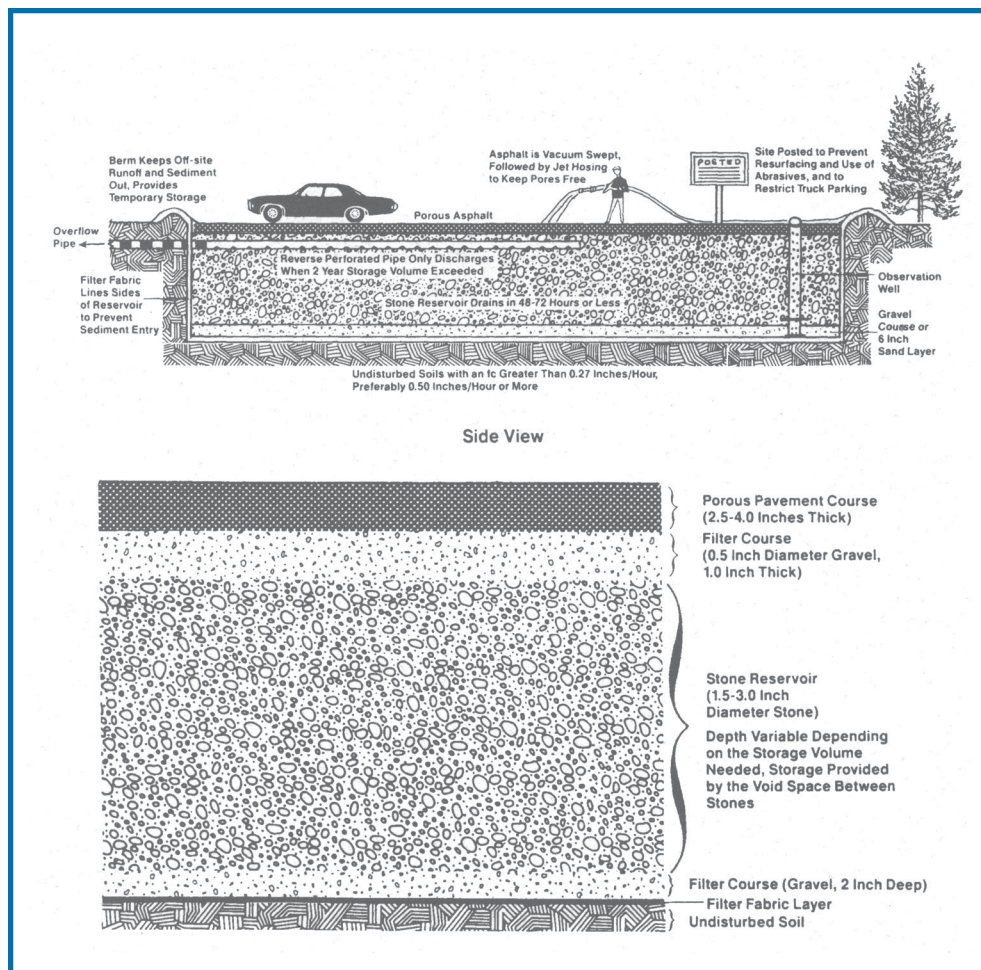
- Plant environmentally friendly landscapes at the edge of parking lots and within islands in parking lots. (Refer to Appendix III for a list of appropriate landscape plants.)
- Plant vegetated buffers between your upland property and the water’s edge.
- Position downspouts so that they drain into vegetated areas. Avoid draining to concrete or asphalt surfaces, which only add pollutants to the runoff.
- Construct wetlands to remove pollutants, protect the shore from storms and provide habitat for aquatic species and birds.
- Use grassed swales to direct storm water on your property. Grassed swales are low-gradient channels planted with erosion-resistant vegetation. Water generally moves more slowly over a grassed swale than it would in a pipe, and the plants can filter a variety of nutrients and particles. Grassed swales are not practical on very flat land, steep slopes or in wet or poorly drained soils.

**3. Minimize the amount of paved area.** Paved areas result in more runoff that may require management.

- Pave only those areas that are absolutely necessary, such as vehicle maintenance areas.
- Minimize the length of new roadway required to serve new or expanding marinas.
- Plan roads so they do not cross sensitive areas such as tidal wetlands.
- Consider alternatives to asphalt for parking lots and vessel storage areas such as grass, dirt, gravel, oyster shells or engineered porous pavement. (See Figure 1.)
- Investigate a nontoxic, organic soil binder derived from the *Plantago* plant family. When this binder is combined with crushed aggregate (e.g., gravel, shells) and soil, it creates a somewhat permeable surface that will not erode. This product costs less than

or about the same as asphalt; it is resilient; and it can be repaired by tilling more into the damaged surface. Additionally, holes can be dug in the surface of the material to plant trees and shrubs.

**Figure 1. Porous Pavement**



Source: Schueler, T.R. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices*. Washington, DC: Metropolitan Washington Council of Governments.

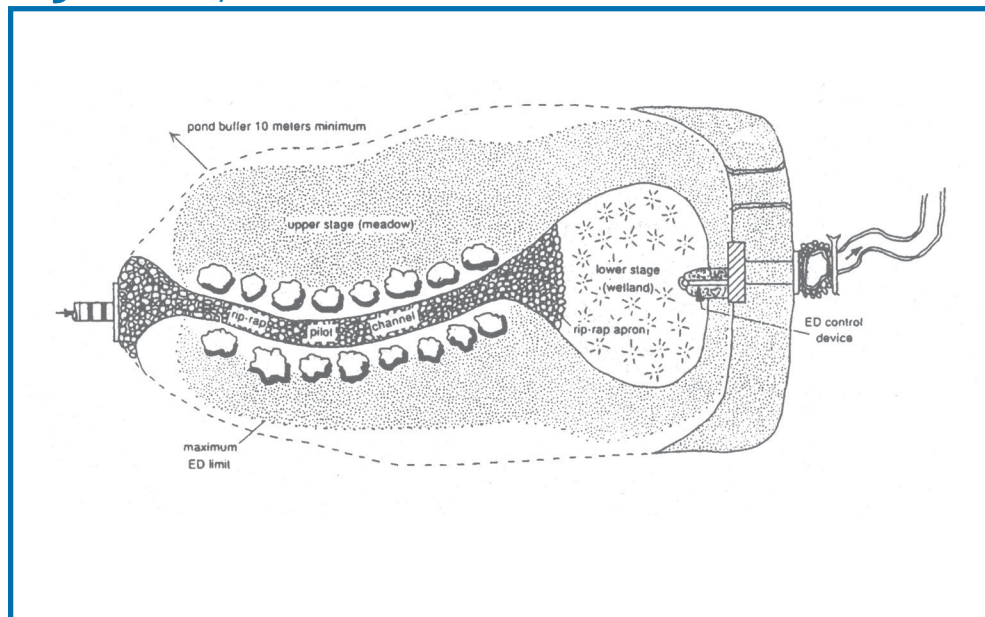
**4. Use structural controls as necessary.** Because of space limitations or other constraints, it may be necessary to adopt more traditional practices such as pond systems, wetland systems, infiltration systems and filter systems.

- **Stormwater pond systems** capture and slowly release storm flows. Ponds may be permanent (retention ponds) or may hold water only temporarily (detention ponds). A dry extended detention pond (Figure 2) is an example of a stormwater pond system. It

holds runoff for up to 24 hours after a storm. Water is slowly released through a fixed opening. The pond is normally dry between storms. This type of structure is effective for sites that are 10 acres or greater in size.

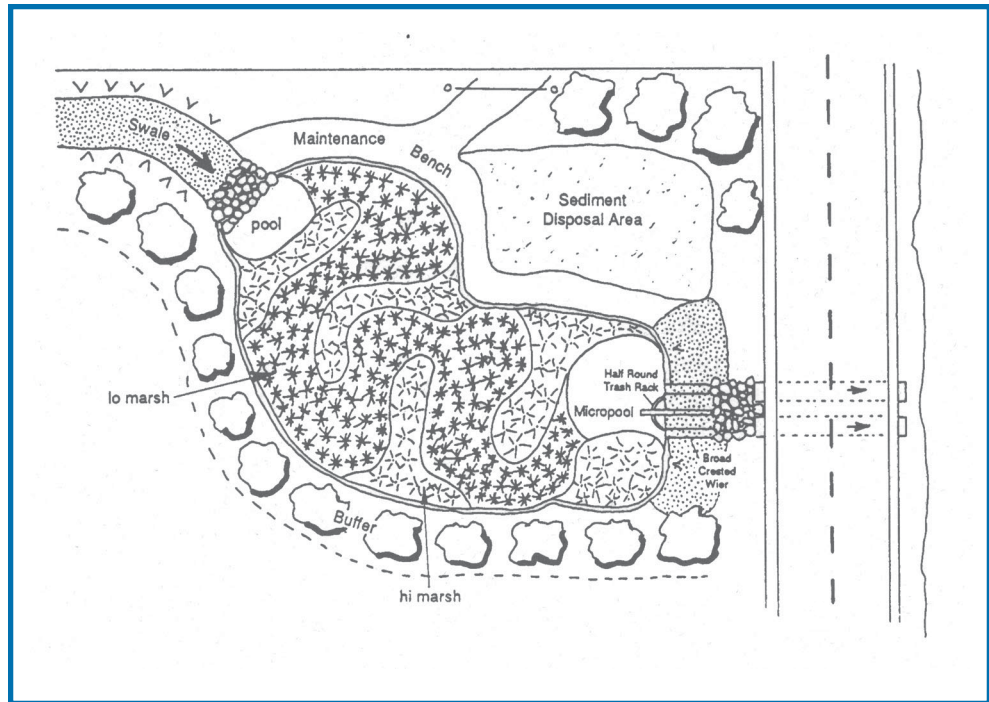
- **Stormwater wetland systems** are designed to mimic the ability of natural wetlands to cleanse and absorb storm flows. A pocket wetland (Figure 3) is created by excavating to the high water table elevation. Pocket wetlands can serve drainage areas of 5-10 acres.
- **Infiltration systems** are designed to take advantage of soil's natural infiltration capacities and pollutant removal characteristics. A dry well (Figure 4) is an infiltration system designed to treat roof-top runoff. Water is collected in downspouts and directed into a filter composed of crushed stone and fabric. Rain gardens and porous pavement are other examples of infiltration systems.
- **Filter systems** "strain" runoff to remove pollutants. Conventional sand filter systems (Figure 5) are constructed of layers of sand, from most coarse on top to most fine below. The sand overlies either a gravel bed (for infiltration) or perforated underdrains (for discharge of treated water).
- **Oil/grit separators** (Figure 6) are another form of filter system. Water from parking lots and other areas likely to have hydrocarbons should be directed through oil/grit separators (or oil-absorbent fabric) before entering any other management structure.
- Remember that ALL stormwater management structures must be maintained in order to be effective.

**Figure 2. Dry Extended Detention Pond**



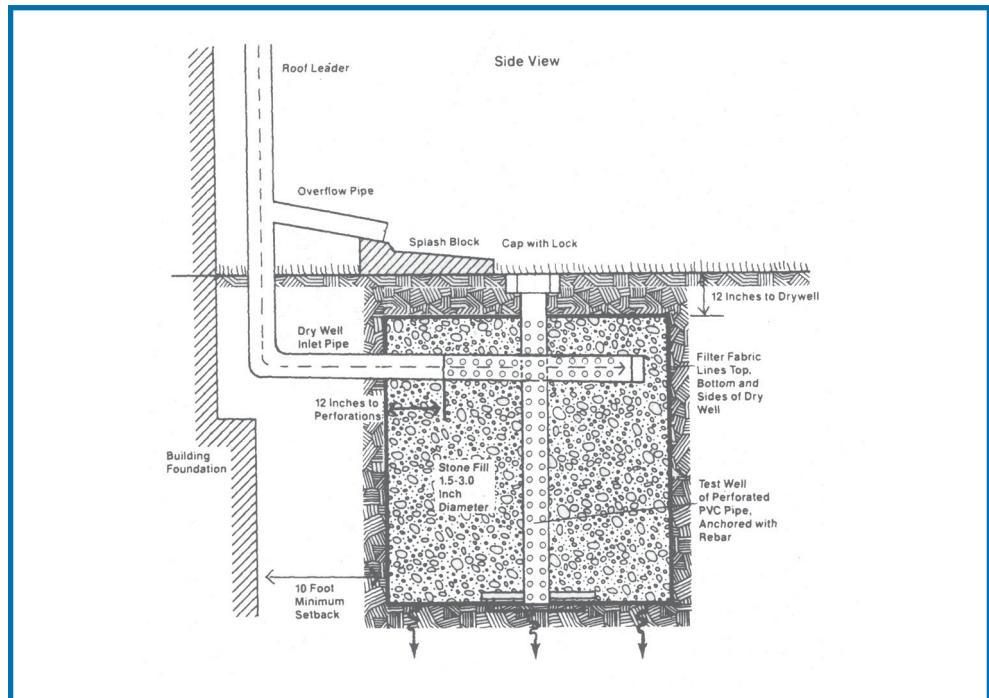
Source: Schueler, T.R. 1991. "Mitigating the Adverse Impacts of Urbanization on Streams: A Comprehensive Strategy for Local Governments," *Proceedings of the National Conference Integration of Stormwater and Local Nonpoint Source Issues*. Northern Illinois Planning Commission.

**Figure 3. Pocket Wetland**



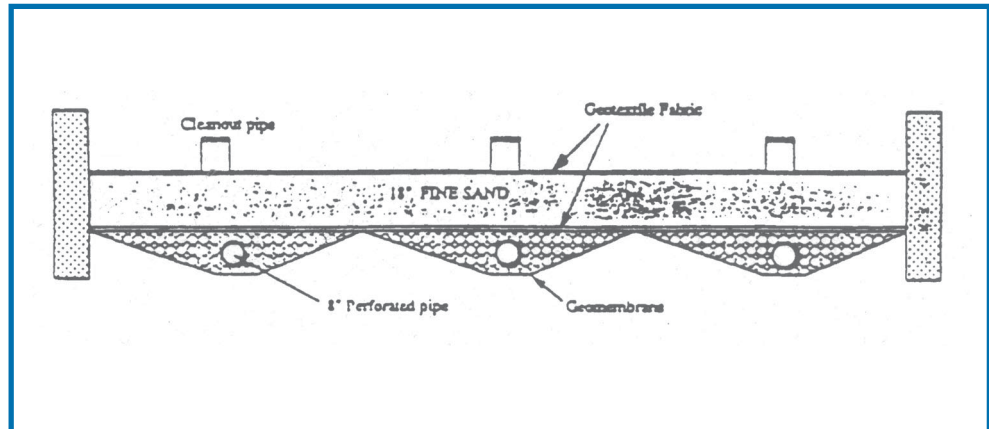
Source: Schueler, T.R. 1992. *Design of Stormwater Pond Systems*. Washington, DC: Metropolitan Washington Council of Governments.

**Figure 4. Dry Well**



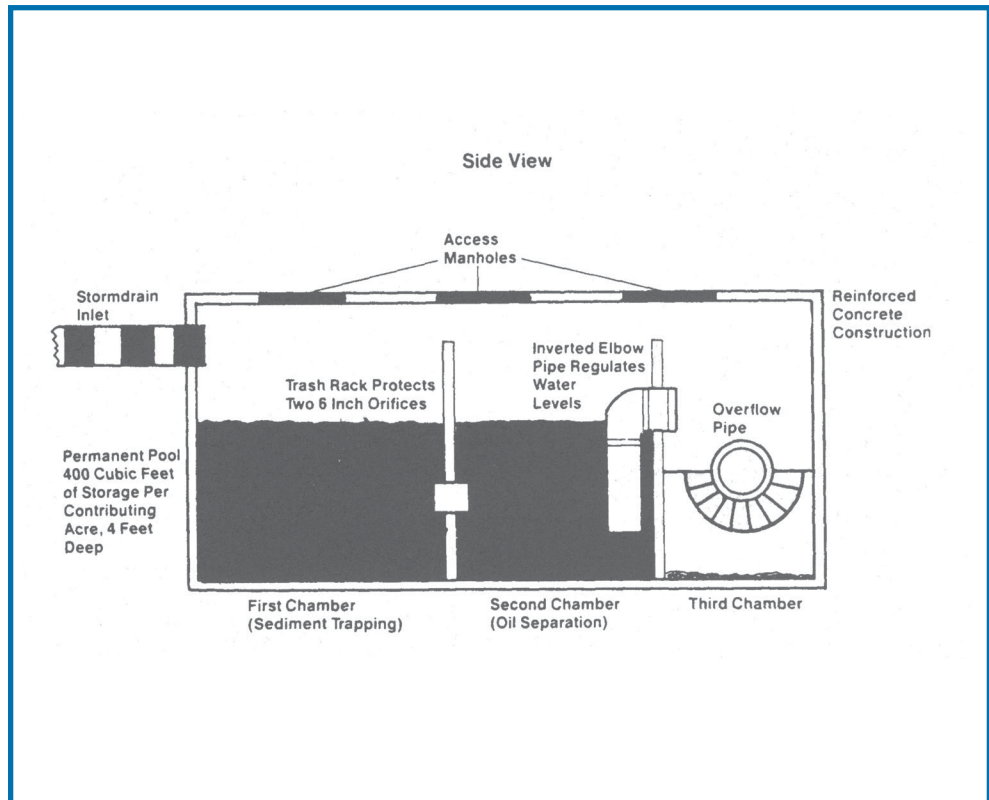
Source: Schueler, T.R. 1987: *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices*. Washington, DC: Metropolitan Washington Council of Governments.

Figure 5. Sand Filter



Source: City of Austin. 1991. *Design Guidelines for Water Quality Control Basins*. Austin, Tx:Public Works Department.

Figure 6. Oil/Grit Separator



Source: Schueler, T.R. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices*. Washington, DC: Metropolitan Washington Council of Governments.

### 5. Control sediment from construction and marina activities.

- Use devices such as hay bales, silt fences, storm drain filters, sediment traps and earth dikes to prevent sediment from leaving construction areas.
- Confine parking and hull maintenance to specific areas as far away from the water as possible.
- Install a roof over designated repair and maintenance areas to prevent rain from picking up waste from these activities.
- Pave work areas to prevent chemicals from leaching into the ground. Ideally, the pavement should be sloped to take runoff to a holding area where it can be treated and have pollutants removed prior to discharge.

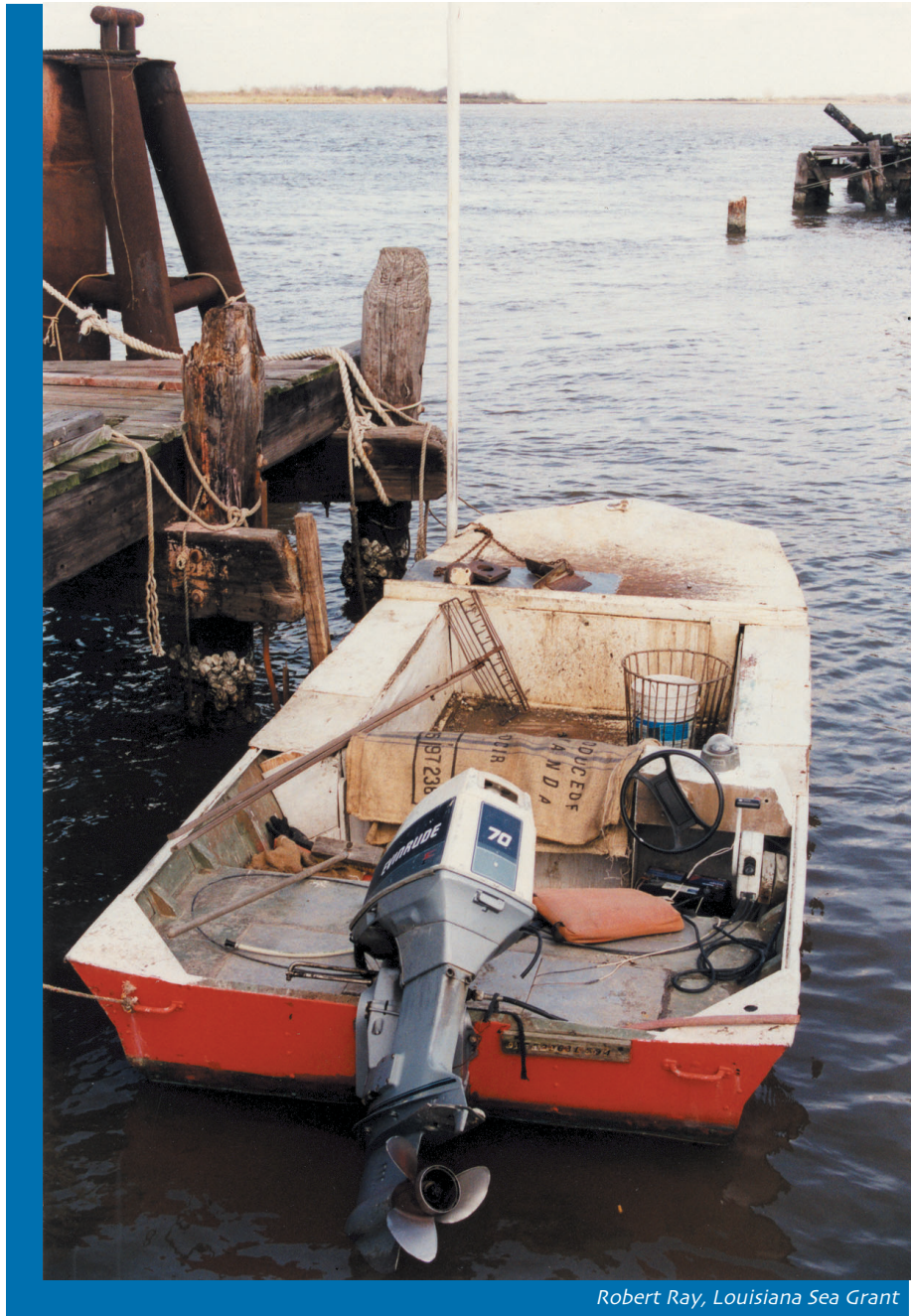
### 6. Mark storm drains.

- Mark storm drains with the words “Don’t Dump” and “Lake \_\_\_\_\_ Drainage” (if appropriate). “Lake Pontchartrain Drainage” is an example. Stickers or adhesive buttons may be available from your parish’s environmental services department.
- Get permission from the parish or city department that maintains storm drains in your community before you mark them. Generally, it is the department or office of public works.

## Regulatory Requirements

Boatyards and other facilities that conduct outdoor boat cleaning or repair operations must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Louisiana Department of Environmental Quality (LDEQ). NPDES permits regulate direct discharges from identifiable sources, but do not regulate storm water directly. The LDEQ may regulate storm water if it becomes a point source pollutant.





*Robert Ray, Louisiana Sea Grant*

# Chapter 4

## Vessel Maintenance and Repair

### Environmental Concerns

### Background

### Ideas for Your Marina

- Don't allow vessel maintenance in your marina.
- If you allow marine maintenance, designate work areas.
- Contain dust from sanding.
- Contain debris from blasting.
- Minimize impacts of pressure washing.
- Minimize impacts of paints.
- Minimize impacts of painting operations.
- Reduce overspray.
- Handle solvents carefully.
- Repair and maintain engines with care.
- Winterize safely.
- Conduct in-water maintenance wisely.
- Educate boaters.

### Regulatory Requirements

### Extra Information

- Bottom paints



## Chapter 4

# Vessel Maintenance and Repair

### Environmental Concerns

Vessels require a great deal of attention. They must be scraped, painted and cleaned. Their engines need to be lubricated and otherwise tended. Each of these activities has the potential to introduce pollutants into the environment.

### Background

Sanding, blasting and pressure washing are meant to remove paint and marine growth. In the process, toxic heavy metals such as copper and tin may be released. Particles of heavy metals in the water may be consumed by oysters, worms and other bottom-dwelling creatures and passed up the food chain to fish, birds and humans. Heavy metals that are not incorporated into living tissue will remain in the sediments, where they will substantially increase the cost of dredge materials disposal.

Paints, solvents, thinners and brush cleaners generally are toxic and may cause cancer. If spilled, they may harm aquatic life and water quality. Additionally, the fumes – known as volatile organic compounds (VOCs) – released by some paints and solvents contribute to air pollution. Likewise, oil and grease from maintenance areas threaten aquatic life.

Many of the cleaning products meant to be used in boat shops are also toxic. Many contain caustic or corrosive elements. They may also contain chlorine, phosphates, inorganic salts and metals. Even nontoxic products are harmful to wildlife. For example, detergents found in many boat cleaning products will destroy the natural oils on fish gills, reducing their ability to breathe.

### Ideas for Your Marina

- 1. Don't allow vessel maintenance in your marina.** This is the first and most important practice for ensuring that your marina's waters remain free of harmful compounds associated with maintenance and repair.
  - Specify any particular regulation or prohibition against maintenance in your lease agreements with boat owners and spell out consequences for noncompliance. (See Appendix V for sample contract language.)
  - Encourage boaters to conduct maintenance in boatyards offsite.

**2. If you allow marine maintenance in your marina, designate work areas.** One of the easiest ways to contain waste is to restrict the area where maintenance activities may be performed.

- Perform all major repairs, such as stripping, fiberglassing and spray painting, in designated areas or not in the marina at all.
- Collect all maintenance debris. Remove sandings, paint chips, fiberglass, trash, etc., after completing each operation or at the end of the day, whichever comes first. Ensure that these materials are not released into the environment.
- Locate the maintenance area as far from shore as possible.
- Establish vessel maintenance areas over an impervious surface (e.g., asphalt or cement) and, where practical, place a roof. Sheltering the area from rain will reduce the possibility of storm water carrying debris into surface waters.
- If asphalt or cement is not practical, perform work over filter fabric or canvas or plastic tarps. Filter fabric will contain paint chips and other debris yet, unlike plastic or to a lesser extent canvas, filter fabric will allow water to pass through. Tarps may be reused multiple times.
- Surround the maintenance area with a berm or retaining wall.
- Use vegetative or structural controls described in Chapter 3 to treat stormwater runoff.
- Establish a schedule for inspecting and cleaning stormwater systems.
- Remove paint chips, dust, sediment and other debris. Clean oil/water separators.
- Prohibit extensive maintenance or repair work outside of the designated maintenance areas.
- Clearly mark work areas with specific signs detailing what work may be performed in a given location, e.g., “Maintenance area for stripping, fiberglassing and spray painting.”
- Post signs throughout describing best management practices that boat owners and contractors must follow, e.g., “Use tarps to collect debris.”
- Develop procedures for managing requests to use the work space, move boats to and from the site, and ensure the use of best management practices.

**3. Contain dust from sanding.**

- Do not allow dust to fall onto the ground, in the water or become airborne.
- Invest in vacuum sanders and grinders. These tools collect dust as it is removed. Vacuum sanders allow workers to sand a hull more quickly than conventional sanders. Additionally, because paint is collected as it is removed, health risks to workers are reduced.
- Require tenants and contractors to use vacuum sanders. Rent or loan the equipment to tenants and contractors.

- Post signs indicating the availability of vacuum sanders and grinders.
- Bring vacuum sanders to tenants if you see them working with nonvacuum equipment.
- Conduct shoreside sanding in the hull maintenance area or over a drop cloth.
- Restrict or prohibit sanding on the water.
- When sanding on the water is unavoidable, use a vacuum sander and keep dust out of the water.
- Use a damp cloth to wipe off small amounts of sanding dust.
- Collect debris.

#### 4. Contain debris from blasting.

- Prohibit uncontained blasting.
- Perform abrasive blasting in the vessel maintenance area within a structure or under a plastic tarp enclosure. Do not allow debris to escape from the enclosure.
- Investigate alternatives to traditional media blasting. Hydroblasting and mechanical peeling essentially eliminate air quality problems. Debris must still be collected, however. Consider using a filter cloth as ground cover.
- Avoid dust entirely by using a stripper that allows paint to be peeled off. These products are applied like large bandages, allowed to set and then stripped off. When the strips are removed, paint is lifted from the hull. Dust and toxic fumes are eliminated.
- Invest in a closed plastic medium blast (PMB) system. These systems blast with small plastic bits. Once the blasting is completed, spent material and paint chips are vacuumed into a machine that separates the plastic from the paint dust. The plastic is cleaned and may be reused. Paint dust is collected for disposal. A 50-foot vessel will produce about a gallon of paint dust, which is substantially less than the many barrels full of sand and paint that must be disposed of with traditional media blasting methods.
- Collect debris.

#### 5. Minimize impacts of pressure washing.

- Visible solids should be removed from wash water before it is discharged. At a minimum, allow large particles to settle out. More thorough treatment involves filtration, chemical or physical techniques to treat rinse water.
  - **Filtration** uses devices such as screens, filter fabrics, oil/water separators, sand filters and hay bales to capture particles.
  - **Chemical treatment** relies upon the addition of some type of catalyst to cause the heavy metals and paint solids to settle out of the water.

- **Swirl concentrators** are examples of physical structures that can be used to concentrate pollutants. They are small, compact soil separation devices with no moving parts. Water flowing into a concentrator creates a vortex that centralizes the pollutants. Clean water is discharged.
- Discharge treated wash water to surface water if no detergents or other chemical cleaning agents were used. If detergents were used, the waste water must be directed into a sewer system.
- Alternatively, reuse wash water. For example, recycle it through the power washing system (a closed water recycling operation).
- Pressure wash over a bermed, impermeable surface that allows waste water to be contained and filtered to remove sediments.
- When pressure washing ablative paint, use the least amount of pressure necessary to remove the growth but leave the paint intact. Where practical, use a regular garden-type hose and a soft cloth.
- Collect debris.

#### 6. Minimize impacts of paints.

- Recommend that your customers use antifouling paints that contain the minimum amount of toxin necessary for the expected conditions.
- Avoid soft ablative paints.
- Use water-based paints whenever practical. Touch up areas under jack stands with quick-drying, solvent-based paints. Ask your sales representative to recommend compatible paints.
- Stay informed about antifouling products like Teflon, silicone, polyurethane and wax that have limited negative environmental impacts. Pass the information along to your customers.
- Store boats out of the water, where feasible, to eliminate the need for antifouling paints.

#### 7. Minimize impacts of painting operations.

- Use brushes and rollers whenever possible.
- Reduce paint overspray and solvent emissions by minimizing the use of spray equipment.
- Prohibit spray painting on the water.
- Limit in-water painting to small jobs. Any substantial painting should be done on land, in the vessel maintenance area and/or over a ground cloth.
- If painting with brush or roller on the water, transfer the paint to the vessel in a small (less than one gallon), tightly covered container. Small containers mean small spills.
- Mix only as much paint as is needed for a given job.
- Mix paints, solvents and reducers in a designated area. It should be indoors or under a shed and far from the shore.
- Keep records of paint use to show where too much paint was mixed for a job. Use the information to prevent overmixing in the future.

**8. Reduce overspray.** In some cases, spray painting is the only practical choice in terms of time and money. Minimize the impact of spray painting by adopting the following recommendations:

- Conduct all spray painting on land, in a spray booth or under a tarp.
- Use equipment with high transfer efficiency. Tools such as high-volume, low-pressure (HVLP) spray guns direct more paint onto the work surface than conventional spray guns. As a result, less paint is in the air; fewer volatile organic compounds are released; less paint is used; and clean-up costs are reduced. Air-atomizer spray guns and gravity-feed guns are other types of highly efficient spray equipment.
- Train staff to use spray painting equipment properly in order to reduce overspray and minimize the amount of paint per job.

**9. Handle solvents carefully.** Refer to Chapter 7, “Waste Containment and Disposal,” for further information about requirements for handling, storing and transporting hazardous wastes.

- Store open containers of usable solvents, as well as waste solvents, rags and paints, in covered, UL-listed or Factory Mutual-approved containers.
- Hire a licensed waste hauler to recycle or dispose of used solvents. (See Appendix VII for a 2004 list of companies in Louisiana.)
- Direct solvent used to clean spray equipment into containers to prevent evaporation of volatile organic compounds. A closed gun cleaning system will save money on cleaning materials.
- Use only one cleaning solvent to simplify disposal.
- Use only the minimal amount of solvent (stripper, thinner, etc.) needed for a given job.
- For small jobs, pour the needed amount of solvent into a small container in order to avoid contaminating your entire supply.
- Use soy-based solvents and other similar products with no or low volatility.
- Plan your spray painting jobs to minimize coating changes. Fewer changes mean less frequent purging of the spray system. Order your work from light to dark colors.
- Allow solids to settle out of used strippers and thinners so you can reuse the solvents.
- Keep records of solvent and paint usage so you have an idea of the amount of hazardous waste generated onsite.

**10. Repair and maintain engines with care.**

- Store engines and engine parts under cover on an impervious surface like asphalt or concrete.
- Do not wash engine parts over the bare ground or water.
- Use dry precleaning methods, such as wire brushing.
- Avoid unnecessary parts cleaning.

- Adopt alternatives to solvent-based parts washers, such as bioremediating systems that take advantage of microbes to digest petroleum. Bioremediating systems are self contained; there is no effluent. The cleaning fluid is a mixture of detergent and water. Microbes are added periodically to “eat” the hydrocarbons.
- If you use a solvent to clean engine parts, do so in a container or parts washer with a lid to prevent evaporation of volatile organic compounds. Reuse the solvent. Once the solvent is completely spent, recycle it.
- Use drip pans when handling any type of liquid. Use separate drip pans for each fluid to avoid mixing. Recycle the collected fluid.
- Use funnels to transfer fluids.
- Drain fluid from all parts prior to disposal.
- Clean engine repair areas regularly using dry cleanup methods, e.g., capture petroleum spills with oil-absorbent pads.
- Prohibit the practice of hosing down the shop floor.

#### 11. Winterize safely.

- Use propylene glycol antifreeze for all systems. It is much less toxic than ethylene glycol antifreeze.
- Use the minimum amount of antifreeze necessary for the job.
- Never use antifreeze in potable water systems. It is highly toxic and cannot be reliably purged.
- Add stabilizers to fuel to prevent degradation. Stabilizers are available for gasoline and diesel fuels and for crankcase oil. These products protect engines by preventing corrosion and the formation of sludge, gum and varnish. The problem of disposing of stale fuel in spring is also eliminated.
- Be sure fuel tanks are 85 percent to 90 percent full to prevent flammable fumes from accumulating and to minimize the possibility of condensation leading to corrosion. Do not fill the tank more than 90 percent full. The fuel will expand as it warms, and fuel will spill out the vent line of a full inboard tank.
- Use the highest rated octane recommended by the engine manufacturer; premium fuels are more stable than regular.
- Be sure the gas cap seals tightly.
- Promote reusable canvas or recyclable plastic boat covers. Some manufacturers will clean and store canvas covers during the boating season.
- Recycle used plastic covers.

#### 12. Conduct in-water maintenance wisely. No debris should be allowed to fall in the water.

- Remove boats from the water if the impacts of cleaning or maintenance activities (regardless of area involved) cannot be contained or mitigated.
- Keep containers of cleaning and maintenance products closed.



- Restrict or prohibit sanding on the water. When it is absolutely necessary to sand on the water, use vacuum sanders to prevent dust from falling into the water. Do not sand in a heavy breeze.
- Plug scuppers to contain dust and debris.
- Do not spray paint on the water.
- Discourage underwater hull cleaning in your facility. Given the concentration of boats, underwater cleaning is dangerous to divers, and the heavy metals that are released are harmful to aquatic life. Insurance to cover divers is also expensive.
- Offer incentives, like reduced mid-season haul-out rates, so boaters can have their hulls cleaned on land where contaminants may be contained.

### 13. Educate boaters.

- Copy the “Vessel Cleaning and Maintenance,” “Selecting a Bottom Paint” and “Underwater Hull Cleaning” tip sheets from Appendix VI, and distribute them to your customers. There is room on each sheet to add your marina’s name and logo.
- Check the Louisiana Department of Environmental Quality’s Web site, [www.deq.state.la.us](http://www.deq.state.la.us), for information on Household Hazardous Materials Collection Day in your area. Post notices informing your tenants when and where they can take their hazardous wastes for disposal.
- Distribute informational pamphlets such as “Louisiana’s Waters: Our Responsibility” (available from Louisiana Sea Grant) to boaters.

## Regulatory Requirements

All marinas that perform vessel maintenance and repair (including pressure washing) must obtain a General Permit for Discharges from Marinas. The permit requires marina operators to control pollutants from vessel maintenance and wash areas. The permit also requires that marinas prevent or minimize contamination of stormwater runoff from all areas used for engine maintenance and repair. It further requires that spill prevention and response procedures be developed for all areas where spills can contribute to stormwater discharge.

As a condition of the General Permit for Discharges from Marinas, operators must “consider containing all blasting and painting activities to prevent abrasives, paint chips and overspray from reaching the receiving water or the storm sewer system.”

## Extra Information

### Bottom Paints

Antifouling bottom paints protect hulls from barnacles and other types of fouling organisms that can interfere with vessel performance. Pesticides within them also harm fish and other nontarget species. Most paints work by slowly releasing a biocide, generally cuprous oxide (Cu<sub>2</sub>O).

Copper-based paints are not used on aluminum hulls; the interaction of copper and aluminum leads to corrosion. Instead, tin-based paints (tributyl tin or TBT) are often used on aluminum-hulled vessels. Because tin is extremely toxic, it must be applied cautiously. Concentrations of TBT as low as a few parts per trillion have caused abnormal development and decreased reproductive success in oysters, clams and snails (EPA, 1993). Tin is easily absorbed by fish through their gills and accumulates to high levels in sediments.

For these reasons, federal law restricts the use of tin-based paints to aluminum vessels, boats larger than 82 feet (25 meters) and outboard motors and lower drive units.

Antifouling paints can be separated into three general categories:

- **Leaching paints.** Water-soluble portions of leaching antifouling paints dissolve slowly in water, releasing the pesticide. The insoluble portion of the paint film remains on the hull. The depleted paint film must be removed before the boat is repainted. Most leaching paints are solvent based, so fumes are a concern.
- **Ablative paints.** Ablative antifouling paints also leach some toxicant into the water. The major difference is that as the active ingredient is leached out, the underlying film weakens and is polished off the hull as the boat moves through the water. As the depleted film is removed, fresh antifouling paint is exposed. There are several water-based ablative paints on the market that are up to 97 percent solvent free. As a result, levels of volatile organic compounds are substantially reduced as compared to solvent-based paints. Ease of clean up is another advantage of water-based paints.
- **Nontoxic coatings.** Teflon, polyurethane and silicone paints are nontoxic options. All deter fouling with hard, slick surfaces.

# Chapter 5

## Petroleum Control

### Environmental Concerns

#### Background

#### Ideas for Your Marina

- Put limits in your slip lease.
- Protect petroleum storage tanks.
- Avoid waves and wakes.
- Maintain fuel transfer equipment.
- Install environmental controls on all pumps.
- Supervise fueling.
- Minimize spills and leaks from machinery.
- Educate boaters.
- Maintain Material Safety Data Sheets.

#### Regulatory Requirements

- Oil discharge
- Spill notification
- Dispersing agents

#### Did You Know?

#### Extra Information

- Fuel spills
- Oil-absorbent material



## Chapter 5

# Petroleum Control

### Environmental Concerns

Even small quantities of petroleum products in or on the water are harmful and, in some cases, fatal to aquatic life. Every effort should be made to contain these products and to avoid spills and leaks.

### Background

Gasoline contains benzene, a carcinogen. Oil contains zinc, sulfur and phosphorous. Once petroleum is introduced into the water, it may float at the surface, evaporate into the air, become suspended in the water column or settle to the bottom. Floating petroleum is particularly noxious because it reduces light penetration and the exchange of oxygen at the water's surface.

Floating oil also contaminates the microlayer, the uppermost portion of the water column. The microlayer is home to thousands of species of plants, animals and microbes. Much of Louisiana's blue crab larvae feed in the microlayer, which also serves as a nursery for larval fish. The abundance of life in the microlayer attracts predators like seabirds from above and fish from below. Therefore, pollution in the microlayer has the potential to poison much of the aquatic food web.

### Ideas for Your Marina

- 1. Put limits in your slip lease.** Put provisions in your slip lease detailing how petroleum products are to be handled by boaters. Include clear, enforceable consequences for violations. (See Appendix V for sample contract language.)
- 2. Protect petroleum storage tanks.** Fuel storage tanks at marinas typically hold from 1,000 to 10,000 gallons of fuel. If a tank ruptures or develops a leak, the consequences could be devastating.
  - A. Above-ground tanks**
    - Install double-walled or vaulted above-ground fuel tanks.
    - Tanks installed after April 21, 1978, should meet the following conditions (National Fire Protection Association 30):
      - The capacity of the tank shall not exceed 12,000 gallons (45,420 L).
      - All piping connections to the tank shall be made above the normal maximum liquid level.

- Means shall be provided to prevent the release of liquid from the tank by siphon flow.
- Means shall be provided for determining the level of the liquid in the tank. This means shall be accessible to the delivery operator.
- Means shall be provided to prevent overfilling by sounding an alarm when the liquid level in the tank reaches 90 percent of capacity and by automatically stopping delivery of liquid to the tank when the liquid level in the tank reaches 95 percent of capacity. In no case shall these provisions restrict or interfere with the proper functioning of the normal or emergency vent.
- Spacing between adjacent tanks shall be not less than three feet (0.9 m).
- The tank shall be capable of resisting the damage from impact of a motor vehicle, or suitable collision barriers shall be provided.
- Where the interstitial space (the space between the inner and outer tank walls) is enclosed, it shall be provided with emergency venting.
- Alternatively, locate above-ground fuel tanks within a dike or over an impervious storage area with containment volumes equal to 1.1 times the capacity of the storage tank(s). Design containment areas with spigots to drain collected materials. If possible, cover the tank with a roof to prevent rainwater from filling the containment area.

**B. Underground oil storage tanks (USTs)**

- All existing and new USTs should include corrosion protection and spill and overfill prevention equipment.
- Install a leak detection system on all new and existing USTs and piping.
- Maintain daily product inventory. Using a stick or electronic method, measure the liquid level in the tank and reconcile the results with pump meter readings and receipt of product.
- Monitor USTs on a monthly basis for leaks.
- Install a readily accessible shut-off valve on shore to halt, when necessary, the flow of fuel through a pipeline from the oil storage facility to a wharf, pier or dock.
- All motor fuel USTs must meet federal financial responsibility requirements (i.e., insurance) for environmental pollution liability.
- Drop tubes are required on all USTs containing gasoline or diesel. A drop tube is a PVC pipe that runs from the surface fill to within six inches of the bottom of the tank. It is intended to prevent static build-up.

### **3. Avoid waves and wakes.**

- Locate new fuel docks in areas protected from wave action and boat wakes. For safety reasons, all fueling stations should be accessible by boat without entering or passing through the main berthing area.
- Provide a stable platform for fueling personal watercraft (PWC). You may purchase prefabricated drive-on docks or modify an existing dock by cutting a V-shaped berth and covering it with outdoor carpeting. Consider placing the PWC fueling area at the end of the fuel pier to reduce conflict with larger boats.

### **4. Maintain fuel transfer equipment.**

- Inspect transfer equipment regularly, and fix all leaks immediately.
- Maintain transfer equipment and hoses in good working order. Replace hoses, pipes and tanks before they leak.
- Hard connect delivery nozzles.
- Hang nozzles vertically when not in use so that fuel remaining in hoses does not drain out.

### **5. Install environmental controls at the pumps.**

- Do not install holding clips. The use of holding clips to keep fuel nozzles open is not advised at marina fuel docks.
- Install automatic back-pressure shut-off nozzles on fuel pump discharge hoses to automatically stop the flow of fuel into a tank when sufficient reverse pressure is created.
- Consider installing vapor control nozzles that capture fumes or fuel nozzles that redirect blow-back into vessels' fuel tanks.
- Maintain a supply of oil-absorbent pads and pillows at the fuel dock to mop up spills on the dock and on the water.
- Place plastic or nonferrous drip trays lined with oil-absorbent material beneath fuel connections at the dock to prevent fuel leaks from reaching the water.
- Post instructions at the fuel dock directing staff and patrons to immediately remove spilled fuel from the dock and/or water with oil-absorbent material. Indicate the storage location of the absorbents.
- Place small gas cans in oil-absorbent-lined drip pans when filling.
- Secure oil-absorbent material at the waterline of fuel docks to quickly capture small spills. Look for oil-absorbent booms that are sturdy enough to stand up to regular contact with the dock and boats.
- Offer your services to install fuel/air separators on boats.

## 6. Supervise fueling.

### A. Environmental recommendations

- Always have a trained employee at the fuel dock to oversee or assist with fueling.
- Train employees to clarify what the boater is asking for. For example, as your employee passes the fuel nozzle to the boater, have him or her say, “This is gasoline. You asked for gasoline.”
- Train employees to hand boaters oil-absorbent pads with the fuel nozzle.
- Request that boaters use the oil-absorbent pads to capture backsplash and vent-line overflow.
- Attach a container to the external vent fitting to collect overflow. There are products on the market that may be attached to the hull with suction cups. A rubber seal on the container fits over the fuel vent allowing the overflow to enter the container. Fuel captured in this manner can be added to the next boat’s fuel.
- Instruct fuel dock personnel and boaters to listen to filler pipes to anticipate when tanks are nearly full.
- Encourage boaters to fill their fuel tanks just before leaving on a trip to reduce spillage due to thermal expansion and rocking. If the fuel is used before it warms up, it cannot spill overboard.
- If boaters prefer to refuel upon their return to port, encourage them to fill their tanks to no more than 90 percent of capacity.
- Instruct boaters to pump fuel slowly at the start of fueling and when the tank is almost full in order to reduce the risk of spills.
- Require boaters to stay with their craft during fueling.

### B. Safety recommendations

- Always have a trained employee at the fuel dock to oversee or assist with fueling.
- Remind boaters that gasoline vapors are heavier than air; they will settle in a boat’s lower areas.
- Require all passengers to step off gasoline powered vessels before fueling.
- Instruct boaters to:
  - Stop all engines and auxiliaries.
  - Shut off all electricity, open flames and heat sources.
  - Extinguish all cigarettes, cigars and pipes.
  - Close all doors, hatches and ports.
  - Maintain nozzle contact with the fill pipe to prevent static spark.
  - Inspect bilge for leakage or fuel odors after fueling .
  - Ventilate all compartments after fueling until fumes are gone.
- Train dock staff to carefully observe fueling practices. Make sure fuel is not accidentally put into holding or water tanks.

- 7. Turn down the pressure.** Problems with backsplash and vent-line overflow are often due to the high pressure flow of fuel from the pump.
- Ask your fuel company representative to set the delivery rate to 10 gallons per minute, especially if you cater to small boats.

**8. Advocate the use of oil-absorbent materials.**

- Distribute pads, pillows or booms to your customers.
- Require tenants to use oil-absorbent materials as part of your lease agreement.

**9. Provide an oil/water separator.**

- Invest in a portable or stationary oil/water separator to draw contaminated water from bilges, capture hydrocarbons in a filter and discharge clean water.

**10. Offer spill-proof oil changes.**

- Purchase a nonspill pump system to draw crankcase oils out through the dipstick tube. Use the system in the boat shop and rent it to boaters who perform their own oil changes.
- Slip a plastic bag over used oil filters prior to their removal to capture any drips. Hot drain the filter by punching a hole in the dome end and draining for 24 hours. Recycle the collected oil. Recycle the metal canister, if practical. If not, dispose in your regular trash.
- Encourage the use of spill-proof oil change equipment as a condition of your slip rental agreement.

**11. Minimize spills and leaks from machinery.**

- Use nonwater-soluble grease on Travelifts, fork lifts, cranes and winches.
- Place containment berms with containment volumes equal to 1.1 times the capacity of the fuel tank around fixed pieces of machinery that use oil and gas. The machinery should be placed on an impervious pad. Design containment areas with spigots to drain collected materials. Dispose of all collected material appropriately. Refer to Chapter 7, "Waste Containment and Disposal." If possible, cover the machinery with a roof to prevent rainwater from filling the containment area.
- Place leak-proof drip pans beneath machinery. Empty the pans regularly and dispose of the material properly. Uncontaminated oil and antifreeze may be recycled.
- Place oil-absorbent pads under machinery.



## 12. Educate boaters.

- Photocopy the “Petroleum Control” tip sheet from Appendix VI, and distribute it to your customers. There is room to add your marina’s name and logo.
- Distribute educational materials such as “Louisiana’s Waters: Our Responsibility,” available from Louisiana Sea Grant.

## 13. Maintain Material Safety Data Sheets.

- Keep a file of Material Safety Data Sheets (MSDS) for all products used at your facility, as required by the Occupational Safety and Health Act of 1970 (29 USC Sec. 657). Store the file in an office away from materials storage areas.
- Keep in mind during an emergency that this file will not tell you what quantity is on site or even whether all the materials listed are present.
- Inform the Local Emergency Planning Committee about the materials you store and what is released when they burn.

# Regulatory Requirements

## Oil Discharge

Because of the harm associated with petroleum, the discharge of oil is absolutely prohibited. The Federal Water Pollution Control Act (Clean Water Act) prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone, if such discharge causes a film or sheen upon, or discoloration of, the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5,000.

## Spill Notification

The United States Coast Guard must be notified any time a spill produces a sheen on the water. Call the National Response Center at (800) 424-8802. Report the location, source, size, color, substance and time of the spill. Failure to report a spill may result in fines.

## Dispersing Agents

The Clean Water Act (33 CFR 153.305) also prohibits the use of soaps or other dispersing agents to dissipate oil on the water or in the bilge without the permission of the Coast Guard. Soaps, emulsifiers and dispersants cause petroleum to sink in the water column and mix with sediments, where it remains for years. Also, the soaps themselves are pollutants. You may be fined up to \$25,000 per incident for the unauthorized use of soap or other dispersing agents on the water or in the bilge.

## Did you know?

- Careless engine maintenance, refueling habits and improper disposal of oil and contaminated bilge water release more oil into the marine environment each year than did the Exxon Valdez spill (Clifton, et al., 1995a).
- A single pint of oil can cover one acre of water surface area (Buller, 1995).

## Extra Information

### Fuel spills

- What do you do when oil, gas or diesel is spilled on the water?
  1. Stop the flow.
  2. Contain the spill.
  3. Call the U.S. Coast Guard's National Response Center at (800) 424-8802.
- Failure to report spills to the Coast Guard may result in civil penalties. If less than a gallon is spilled and you clean it up immediately, the Coast Guard will probably not send anybody to your facility. The spill is still a violation, however.
- Call the Coast Guard if a slick floats into your marina from an unknown source. The Coast Guard will clean up the spill with its own resources. It will also investigate and try to eliminate the source of the spill. You will not be held liable for a slick that did not originate at your facility.
- Many marinas contract with oil spill response companies that are prepared to provide rapid response in the event of a spill. There is generally no charge for this service unless a spill occurs. (See Appendix VIII for a 2004 list of spill response companies.)

### Oil-absorbent material

- Oil-absorbent pads, booms and pillows absorb hydrocarbons and repel water. Depending upon the type, they may hold up to 25 times their weight in oil. These types of products are useful for capturing spurts at the fuel dock, cleansing bilge water and wiping up spills in engine maintenance areas.
- There are a number of new developments regarding basic oil-absorbent materials. One variety of oil-absorbent boom captures oil from the bilge and solidifies into a hard rubber bumper.
- Other types contain microbes that digest the petroleum. The oil is converted to carbon dioxide and water. Because the microbes take two to three weeks to digest the oil, it is not appropriate to use these types of products for a spill of any significant size. Rather, they are designed to control the minor drips associated with routine operations. Care must still be taken so that free-floating oil is not discharged overboard.

- Yet another type of oil-absorbent product is a boom constructed out of oil-absorbent polypropylene fabric filled with dehydrated microbes. These booms hold the petroleum in the fabric until it is digested by microbes. Threats associated with free-floating petroleum are thereby minimized.
- How you dispose of used oil-absorbent material depends on the type of product and how it was used.
  - Standard absorbents that are saturated with gasoline may be air dried and reused.
  - Alternatively, they should be double-bagged (one plastic bag sealed inside of another) and tossed in your regular trash.
  - Bioremediating bilge booms may be disposed in your regular trash as long as they are not dripping any liquid. Because microbes contained in these booms need oxygen to function, do not seal these booms in plastic bags.



*Paula Ouder, Louisiana Sea Grant*

## Emergency Response Plans

Establish a single binder for all of your emergency response plans. Give it a bright cover and spine so that it stands out. Make sure each employee knows where it is and what type of information it contains. It should include the following:

- **Site Plan:** Show valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations (*e.g.*, solvents, fuels, pool chemicals, pesticides –indicate quantities), location or response materials, and telephones.
- **Individual Plans:** Individual site plans: Show all equipment associated with each likely threat such as fuel spills, health emergencies, fires, hurricanes, etc. Keep the plans SIMPLE. Include the following information in each:
  - **Personnel:** Identify who is responsible for taking what action, (*e.g.*, deploying equipment, contacting emergency agencies, etc.) Designate one person on the marina staff as the official spokesperson for the facility. Designate one person as leader for each threat.
  - **Phone Numbers:** When calling an emergency response agency, be prepared to describe the nature of the emergency, the location and the address of the marina, and the exact location within the complex. Write these in the plan so anyone can give out this information to a response agency. Include the following numbers in your plan:
    - U.S. Coast Guard National Response Center (fuel spill), 800-424-8802
    - Louisiana Poison Control Center, 800-222-1222
    - Fire department
    - Police department
    - Local hospital
    - Marina owner
    - Spill response contractors
    - Neighboring marinas that have emergency response equipment
  - **Action:** State what action should be taken during a specific emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available onsite and what its characteristics and capabilities are. Explain how the equipment should be used and disposed. Be certain to update locations of this equipment periodically.

The following information should be posted in prominent locations throughout the marina:

## MARINA NAME

1234 Bayou Lane, LA 12345; (504)123-4567

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### In case of fuel or chemical spill:

1. Stop the flow.
2. Contain the spill. (*Indicate where oil absorbent material is stored.*)
3. Notify marina manager/owner. (*Include home and cell phone numbers.*)
4. Call the U.S. Coast Guard's National Response Center at (800) 424-8802.
5. Contact spill response company if necessary.

# Chapter 6

## Sewage Handling

### Environmental Concerns

#### Background

- Marine Sanitation Devices (MSD)
- No Discharge Zones (NDZ)

#### Ideas for Your Marina

- Install a pumpout system.
- Choose the right pumpout and operate it properly.
- Discourage discharge from Type I and II MSDs at the slip or mooring.
- Provide shoreside restrooms.
- Maintain individual waste treatment systems.
- Provide facilities for live-aboards.
- Offer MSD inspections.
- Encourage compliance.
- Educate boaters.

#### Extra Information

- Pumpout stations



## Chapter 6

# Sewage Handling

### Environmental Concerns

Raw or poorly treated boat sewage is harmful to human health and water quality. Care must be taken to ensure it is handled properly and is not discharged into waterways.

### Background

Typhoid, hepatitis, cholera, gastroenteritis and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other microorganisms contained in sewage discharge.

Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any sewage effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When algae die they create another problem bacteria decompose algae in a process that reduces levels of dissolved oxygen in the water, leading to hypoxia or anoxia.

### Marine Sanitation Devices (MSD)

For all of the reasons stated above, it is illegal to discharge raw sewage from a vessel within U.S. territorial waters, i.e., anywhere other than three or more miles out into the open ocean. The Federal Clean Water Act requires that any vessel with an installed toilet be equipped with a certified Type I, Type II or Type III MSD.

**Type I** systems mechanically cut solids, disinfect the waste with a chemical additive or with chlorine disassociated from saltwater with an electronic jolt and discharge the treated sewage overboard. The fecal coliform bacteria count of the effluent may be no greater than 1,000 per 100 milliliters, and effluent may not contain any floating solids.

**Type II** systems are similar to Type I systems, except Type IIs treat sewage to a higher standard. Effluent fecal coliform bacteria levels may not exceed 200 per 100 milliliters, and total suspended solids may not be greater than 150 milligrams per liter. Type IIs also require more space and have greater operating energy requirements.

**Type III** systems do not allow sewage to be discharged. The most common form of a Type III system is a holding tank. Other forms include recirculating and incinerating systems.

- Vessels 65 feet and shorter may have any of the three types of MSDs. Vessels longer than 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.
- State law allows a vessel with an installed toilet to have a “Y” valve or other means to bypass the sanitation system. Within state waters, all pathways for overboard discharge of raw sewage must be secured. The “Y” valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.
- It should be noted that MSD requirements do not apply to vessels with portable toilets. Portable toilets should be emptied properly on shore.
- Remember, it is illegal to discharge raw sewage to any state waterway. Most pumpout facilities have wand attachments to empty portable toilets. Some marinas have portable toilet dump stations.

### No Discharge Zones (NDZ)

A NDZ is an area of water that requires greater environmental protection and where even treated sewage may not be discharged from a boat. When operating in an NDZ, Type I and Type II systems must be secured to prevent discharge. All freshwater lakes, reservoirs and rivers not capable of interstate vessel traffic are defined by the Federal Clean Water Act as NDZs. States, with the approval of the U.S. Environmental Protection Agency, may establish NDZs in other state waters. Some marinas may be NDZs.

## Ideas for Your Marina

- 1. Install a pumpout system.** Help boaters to meet the requirements of the law by providing a convenient, reliable marine sewage disposal facility, i.e., a pumpout station. Your marina may benefit from the installation of a pumpout in several ways:
  - The presence of the pumpout facility promotes a public perception that you are environmentally responsible.
  - The need for holding tanks to be pumped out regularly will draw a steady stream of customers to your dock. Each arriving vessel represents an opportunity to sell fuel, hardware, repair services, etc.
  - Any public or private marina in Louisiana is eligible to apply for up to a 75 percent reimbursement grant from the U.S. Fish and Wildlife



Service to cover the cost of installing a pumpout station. To apply for a Pumpout Station Grant, contact the Louisiana Department of Wildlife and Fisheries (LDWF) for an application. Please be aware that the grants are strictly reimbursable. You must pay for the equipment and installation up front. LDWF will then reimburse you for pre-approved expenses.

- In exchange for grant funding, marina owners agree to maintain pumpout systems in operating condition for a minimum of 10 years and agree not to charge more than \$5 per pumpout. The pumpout system must be able to accept waste from portable toilets as well as from holding tanks and must be available to the general public during reasonable business hours. Although most marinas choose to use grant funding, there is no requirement to do so.

## **2. Choose the right pumpout and operate it properly.**

- Select a system that best meets the needs of your clients and that can move the expected volume of sewage over the required distance. Ask the manufacturer for a written assurance that its system will operate effectively given the specific conditions at your marina.
- Remember that there are several types of pumpout systems available: systems permanently fixed to a dock, mobile systems mounted on a golf cart or hand truck, direct slipside connections and pumpout boats. Please note that grant funding is not available for direct slipside connections, as these types of systems generally are not available for public use.
- Choose an accessible location. If you select a fixed system, consider where the pumpout will be placed. It should easily accommodate the types of boats that frequent your marina. Fuel docks are often good locations. Try to locate the pumpout system such that a vessel being pumped out does not prevent another boat from fueling.
- Dispose of collected waste. The best option for disposing of the collected waste is to connect directly to a public sewer line. If sewer is not available in your area, you will need a holding tank. The contents of the tank must be pumped periodically and trucked to a treatment plant. Holding tank size and location is generally determined by the Louisiana Department of Health and Hospitals.
- Handle collected waste with care. For health reasons, workers should take precautions to avoid coming into direct contact with sewage. Workers should wear rubber gloves and respirators when maintaining or repairing MSDs.
- Decide if the pumpout will be staffed. It is a good idea to have an attendant operate the pumpout. Consider installing a buzzer or

paging system so boaters at the pumpout station can easily locate the attendant. If the station is unattended, be sure that clear instructions for use are posted.

- Decide whether a fee will be charged. If a fee is charged, how much will it be? Will tenants and live-aboards be charged, or just transients?
- Remember, no more than \$5 may be charged per pumpout if grant funds were accepted for the purchase and/or installation of the system. If the pumpout system is not regularly staffed, you will have to make arrangements to collect the fee. Token systems have been used with success in many locations, such as Maryland.
- Post signs. Provide information about use and cost of the pumpout station, hours of operation and where to call for service if the system is out of order. Also, post signs that are visible from the channel so passing boaters are aware of the facility. If you do not have a pumpout system, post directions to the closest public pumpout.
- Maintain the pumpout system. Develop regular maintenance schedules. Contact the pumpout manufacturer for specific maintenance recommendations. During heavy boating season, test the efficiency of the pump weekly by measuring the length of time required for the system to empty a five-gallon bucket of water. In order to quickly address any malfunctions, establish a maintenance agreement with a contractor qualified to service and repair pumpout facilities. Maintain a dedicated fund for the repair and maintenance of pumpout facilities.
- Do not allow waste to drain into the water. Do not allow rinse water or residual waste in the hoses to drain into receiving waters. Keep the pump running until it has been re-primed with clean water.
- Educate staff. If boaters are going to use pumpout systems, the experience must be as simple and convenient as possible. As the manager of a marina with a pumpout, you are demonstrating your commitment to clean water. It is imperative that your staff exhibit this same level of care.

**3. Discourage discharge from Type I and Type II MSDs at the slip or mooring.** Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It probably contains pathogens as well. While many pass-through systems are capable of treating sewage to much higher levels, recall that the standard for Type I systems is a fecal coliform bacteria count of 1,000 per 100 milliliters. Although Louisiana does not have many bathing beaches, they may be closed at levels of 200 per 1,000 milliliters. Thus, discharges from Type I and Type II systems in crowded, protected areas, such as marinas, pose a real threat to human health and water quality.

- Prohibit discharge of head waste in your marina as a condition of your lease agreement.
- Post signs prohibiting the discharge of head waste and directing people to use shoreside restrooms.
- If your marina is located within a No Discharge Zone, boaters must secure their Type I and Type II MSDs by locking the door to the head or disabling the seacock.

#### 4. Provide shoreside restrooms.

- Provide clean, functional restrooms to encourage people not to use their heads while in the marina.
- Make restrooms available 24 hours a day.
- Install a security system on restroom doors so people will feel safe using them, particularly late at night.
- Provide lights, air conditioning and heating.

**5. Maintain individual waste treatment systems.** If your marina is not connected to a municipal or private sewer system and you have a septic or mechanical system, be alert for signs of trouble: wet areas or standing water above the absorption field, toilets that run slowly or back up and odor. Septic failures can contaminate drinking water and shellfish beds. The following tips will help you to avoid the health risks and nuisance associated with an overburdened system (Miller and Eubanks, 1992):

- Post signs in the restrooms informing patrons not to place paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins or tampons in the toilets. These items can clog the septic system.
- Post signs in the laundry room encouraging patrons to use minimal amounts of detergents and bleaches.
- Do not dump solvents such as paint thinner or pesticides down the drain, and post signs prohibiting customers from doing the same.
- Do not pour fats and oils down drains.
- Do not use a garbage disposal. Disposals increase the amount of solids entering the system. Capacity is reached more quickly. As a result, more frequent pumping is necessary.
- Use only small amounts of drain cleaners, household cleaners and other similar products.
- Do not use “starter enzyme” or yeast. These products can damage the system by causing the infiltration bed to become clogged with solids that have been flushed from the septic tank.
- Direct downspouts and runoff away from the septic field in order to avoid saturating the area with excess water. For stormwater management reasons, do not direct the flow toward paved areas.
- Do not compact the soil by driving or parking over the infiltration area.
- Hire a licensed professional to pump the tank every two to five years.

**6. Provide facilities for live-aboards.** Boaters who make their homes aboard vessels pose a tricky problem. It is not reasonable to expect that they will regularly untie in order to use a fixed pumpout facility. It is also unwise to assume that people living on their boats will always use shoreside restrooms. Furthermore, it is undesirable to allow a resident population to discharge from Type I or II systems. Your obligation as marina owner/manager is to provide a convenient sewage disposal system for live-aboards while maintaining good water quality. Keep in mind that most live-aboards expect and are willing to pay a premium for extra services and more convenient slips.

- Provide a portable pumpout system or require that live-aboards contract with a mobile pumpout service.
- Reserve slips closest to shoreside restrooms for live-aboards. Be sure that the dock and route to the bath house are well lit at night.
- Stipulate in the lease agreement that vessels used as homes may not discharge any sewage.
- Offer to board vessels to demonstrate the proper way to secure the “Y” valve.
- As a condition of the lease agreement, require that live-aboards place dye tablets in holding tanks to make any discharge clearly visible.
- If possible, install direct sewer hookups for live-aboards.

**7. Offer MSD inspections.**

- Service patrons’ MSDs annually to ensure that their Type I and II systems are functioning properly.
- Encourage boaters to run dye tablets through their Type I or Type II systems outside of the marina. If a system is operating properly, no dye will be visible. Maintenance is required if dye can be seen in the discharge.

**8. Encourage compliance.**

- Include information about MSD requirements and sewage laws in contracts for slips rentals, transients and live-aboards.
- State that failure to comply with the MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees.
- If a customer fails to observe the law or honor your contract:
  1. Discuss the matter with him or her.
  2. Mail a written notice asking that the offending practice stop immediately. Keep a copy for your records.
  3. Evict the boater.

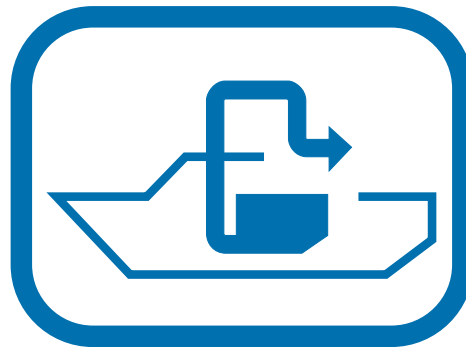
**9. Educate boaters.** As the generators and conveyors of sewage, boaters need to be educated about the impacts of sewage and its proper disposal.

- Encourage boaters to properly maintain their MSDs and to purchase environmentally friendly treatment products for their heads and holding tanks.
- Photocopy the “Sewage Handling” tip sheet from Appendix VI and distribute it to your customers. There is room to add your marina’s name and logo.

## Extra Information

### Word your signs carefully.

Shortly after installing a pumpout system, a marina owner hung a large sign declaring the availability of his new facility. Over the course of the next week, he noticed a significant drop in fuel sales. One evening he watched one of his regular customers head to a competitor’s fuel dock. The marina manager called out to ask why the boater was bypassing his marina. The boater gestured toward the sign hung over the dock shared by the pumpout system and the fuel pumps. It read, “Pump out.” The boater thought “pump out” meant that the fuel pumps were out of order! A better choice for signs might be “Pumpout Station,” “Sewage Pumpout” or simply to display the national pumpout symbol.



National pumpout symbol



*Jessica Schexnayder, Louisiana Sea Grant*

# Chapter 7

## Waste containment and disposal

### Environmental Concerns

### Background

### Ideas for Your Marina

- Reduce waste.
- Control the disposal of fish waste.
- Manage trash.
- Recycle.
- Minimize your use of hazardous products.
- Store solvents and hazardous materials with care.
- Follow recommended disposal methods.
- Educate boaters.

### Extra information

- How do you know if a substance is hazardous?

### Regulatory Requirements

- Marine Plastics Pollution Research and Control Act of 1987 (MPPRCA)
- Resource Conservation and Recovery Act of 1976 (RCRA)
- State laws



## Chapter 7

# Waste Containment and Disposal

## Environmental Concerns

The host of activities centered in and around marinas all generate some waste – waste that could threaten human health, be hazardous to wildlife, and be costly to coastal communities and your marina.

## Background

Solid waste, particularly plastics, must be contained. There are many well-documented instances of marine mammals, fish, turtles and seabirds that have become entangled in or choked on plastic marine debris. Plastics also represent a hazard to navigation, as they can snare propellers and clog engine intake systems. Divers are also susceptible to entanglement. Furthermore, solid waste that washes up on shore is unattractive and may be costly to remove.

In addition to solid waste, marina operators must be concerned about the proper collection and disposal of liquid wastes and corrosive, reactive, toxic and/or ignitable materials, i.e. hazardous wastes. Fuel, oil, paint and varnish used by the boating industry require special attention. Never dispose of any hazardous substance by dumping it into a sink, floor drain, storm drain or onto the ground.

## Ideas for Your Marina

### 1. **Reduce waste.** Less waste means lower disposal costs.

- Avoid having leftover materials by sizing up a job, evaluating what your actual needs are and buying just enough product for the job. Encourage boaters to do the same.
- Minimize office waste. Make double-sided copies, use scrap paper for notes and messages, purchase recycled office paper, and reuse polystyrene peanuts or give them to companies that will reuse them, e.g., small-scale packing and shipping companies.
- Request alternative packing material from vendors such as paper, potato starch peanuts, popcorn, etc.
- Discourage the use of plastic and polystyrene cups, food containers, utensils and other non-biodegradable products.
- Encourage boaters to share or exchange excess paints, thinners, varnishes, etc. To facilitate this type of activity, provide a bulletin



board where boaters can post notices that they are seeking particular materials or have an excess of a substance.

- Post the names of local schools or theater groups that are willing to accept excess, nontoxic paints.

**2. Control the disposal of fish waste.** When large amounts of fish scraps are deposited in an enclosed area, they can produce foul odors and cause a decrease in levels of dissolved oxygen. Disposal in waterbodies is only advisable in areas with adequate flushing.

- Instruct boaters to dispose of fish scraps offshore over deep water.
- Establish fish cleaning areas.
- Prohibit fish cleaning outside of designated areas.
- Post signs directing people to clean their fish at a fish cleaning station or at home.
- Provide a stainless steel sink equipped with a garbage disposal that is connected to a sanitary sewer. A sanitary sewer carries waste water to a municipal or private central plant for treatment. Garbage disposals are NOT appropriate for marinas with individual septic or mechanical wastewater treatment systems.
- Compost or grind fish waste. Proper composting will control the odor and, over time, produce an excellent soil conditioner that can be used for your landscaping needs. Finely ground fish waste is more easily absorbed into the environment.
- Instruct boaters to place fish scraps in plastic bags and dispose in Dumpsters or at home.

**3. Manage trash.**

- Develop your waste management strategy based on the number of patrons, the types of waste generated, the layout of your marina and the amount of staff time you can devote. Ask boaters specifically what their needs are.
- Promote your image as a responsible business by providing adequate and reasonably attractive trash receptacles such as cans, bins and Dumpsters.
- Locate trash receptacles in convenient locations. Select high-traffic areas such as the landside foot of the dock, near bathrooms and showers, alongside vending machines, adjacent to the marina office or on the path to the parking lot.
- Do not place trash containers on docks, as waste may inadvertently be tossed or blown into the water.
- Select containers that are large enough to hold the expected volume of trash. On average, four to six gallons of reception capacity is needed per person, per vessel, per day. A cubic yard of Dumpster space holds 216 gallons of trash.
- Provide lids or some other means to trap waste inside and to prevent animals and rainwater from getting in.

- Post signs indicating what may not be placed in the Dumpster: engine oil, antifreeze, paints, solvents, varnishes, pesticides, lead batteries, transmission fluid, distress flares and polystyrene peanuts (loose peanuts tend to blow away).
- Require all employees to be involved in policing the facility for trash and vessel maintenance wastes. Do not allow litter to mar your grounds or near-shore areas.
- Use a pool skimmer or crab net to collect floating debris that gathers within your marina.
- Post signs directing people to trash receptacles if they are not in plain view.
- Provide lights around trash receptacles so the area is easy to find and safe.
- Plant or construct a windscreen around trash receptacles to make the area more attractive and to prevent trash from blowing away.

**4. Recycle whenever possible.** A recycling program is an easy, highly visible means to demonstrate environmental stewardship. Recycling programs are also a good way to introduce patrons to pollution prevention practices. In fact, many are likely to already be in the habit of recycling at home and may expect to see recycling bins. The added cost of providing recycling facilities may be offset by income derived from the sale of some high-quality recyclable items such as lead batteries, office paper, aluminum and cardboard. Also, you may realize cost savings due to less frequent tipping of your Dumpster(s) thanks to the reduced volume of trash.

- Contact a waste hauler or your local solid waste recycling coordinator to learn what materials are collected in your area. See Appendix VII.
- The following materials may be recycled: antifreeze, oil, metal fuel filter canisters, solvents, glass, shrink wrap, Type 1 and 2 plastics, aluminum, steel, tin, lead batteries, newspaper, corrugated cardboard, mixed paper, scrap metal, tires and appliances.
- Post information about local recycling services if you are not able to provide all of the desired services at your facility.

**5. Recycle solid waste.**

- Provide containers to collect, at a minimum, plastic, glass and aluminum.
- Clearly mark each container so people know what may and may not be put in it.
- Provide lids or some type of restricted opening to prevent collected material from being lifted out by the wind and to prevent rainwater from collecting inside.

- Place the collection bins for solid recyclables in convenient locations. High-traffic areas near trash receptacles are best.
- Make the recycling bins look different from the standard trash cans by using a different color or material.

#### 6. Recycle liquid waste.

- Provide separate containers to collect oil and antifreeze. Also, collect solvents, if applicable, according to hazardous waste regulations.
- Surround tanks with impervious, secondary containment that is capable of holding 110 percent of the volume of each tank.
- Try to shelter tanks from the elements.
- Attach funnels to tanks to reduce chances of spills. Funnels should be large enough to drain portable containers and oil filters.
- Check with your recycler to learn what materials may be mixed. Generally, engine oil, transmission fluid, hydraulic fluid and gear oil may all be placed in a waste oil container. Some haulers will also take diesel and kerosene. Ethylene glycol and propylene glycol antifreeze are often collected in the same used antifreeze tank. As a precaution, CHECK WITH YOUR RECYCLER BEFORE MIXING ANY MATERIALS.
- Post signs indicating what may and may not be placed in each tank.
- Do not allow patrons to pour gasoline, solvents, paint, varnishes or pesticides into the oil or antifreeze recycling containers. The introduction of these materials creates a hazardous waste. If this happens, the whole tank must be disposed of as hazardous waste, which can become a very expensive undertaking.
- Consider locking the intake to oil and antifreeze recycling containers to prevent contamination. Instruct your patrons to get the key from the appropriate staff person or to leave their oil or antifreeze next to the collection tank. If you select the second option, assign a member of your staff to inspect the collection site daily for any material that may have been dropped off.
- Be aware that recycling liquid materials is a long-term obligation. Investigate waste haulers to ensure that they do actually recycle the collected material.
- Maintain shipping manifests for solvents and other hazardous wastes for a minimum of three years. Manifests are not required for used oil and antifreeze that is being recycled.

**7. Minimize your use of hazardous products.** By minimizing your use of hazardous products, you can reduce health and safety risks to your staff, tenants and contractors; lower disposal costs; decrease liability; and limit chances that you will be responsible for a costly clean-up of inappropriately disposed material.

- Avoid using products that are corrosive, reactive, toxic or ignitable to the greatest extent possible.
- Adopt an inventory control plan to minimize the amount of hazardous material you purchase, store and dispose of.
- Do not store large amounts of hazardous materials. Purchase hazardous materials in quantities that you will use up quickly.
- Establish a “first-in, first-out” policy to reduce storage time. Dispose of excess material every six months.

**8. Store solvents and hazardous materials with care.**

- If you have more than a couple small cans of solvents or other hazardous materials, store them in fire-safe containers that are UL listed or Factory Mutual approved. Containers must meet U.S. Department of Transportation standards for protecting against the risks to life and property inherent in the transportation of hazardous materials. Approved containers will carry specification markings (e.g., DOT 4B240ET) in an unobstructed area.
- Small quantities of solvents may be stored in the containers they were purchased in. Keep the storage area neat.
- Clearly label all stored and containerized material. For hazardous waste, mark the date accumulation begins and ends on each container.
- Store containers on pallets in a protected, secure location away from drains and sources of ignition. Inspect routinely for leaks.
- To minimize air pollution, cap solvents and paint thinners whenever not in use. Store rags or paper saturated with solvents in tightly closed, clearly labeled containers.
- Separate hazardous chemicals by hazardous class.
- Assign control over hazardous supplies to a limited number of people who have been trained to handle hazardous materials and understand the first-in, first-out policy.
- Routinely check the expiration dates of materials to ensure they have not outlasted their shelf life.
- Call the State Fire Marshal’s Office to schedule a basic fire inspection. The inspection will determine whether you are meeting the state fire code, including hazardous material storage requirements.

**9. Follow recommended disposal methods.** The following table contains information about recommendations for the proper disposal of wastes typically found at marinas.

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Antifreeze <ul style="list-style-type: none"> <li>• Propylene glycol</li> <li>• Ethylene glycol</li> </ul> <i>Contact your waste hauler to confirm that they will accept mixed antifreeze</i>	✓ Recycle <ul style="list-style-type: none"> <li>• Hire a waste hauler to collect and dispose</li> <li>• Purchase an on-site recovery unit. Distillation systems are more expensive than filtration systems but are more efficient at renewing used antifreeze</li> </ul>
Waste Oil <ul style="list-style-type: none"> <li>• Engine oil</li> <li>• Transmission fluid</li> <li>• Hydraulic oil</li> <li>• Gear oil</li> <li>• #2 Diesel</li> <li>• Kerosene</li> </ul> <i>Contact your waste hauler to confirm that they will accept mixed oil</i>	✓ Recycle <ul style="list-style-type: none"> <li>• Take small quantities to a household hazardous waste collection day</li> </ul>
Quart Oil Cans	✓ Drain completely and dispose in regular trash. They cannot be recycled.
Non-terneplated Fuel Filters or Oil Filters	✓ Puncture and completely hot drain for at least 12 hours. Recycle the oil and the metal canister. <ul style="list-style-type: none"> <li>• If you do not recycle the canister, double bag it in plastic and place it in your regular trash.</li> </ul>
Terneplated Fuel Filter (used in heavy equipment and heavy duty trucks)	✓ Dispose of as hazardous waste (contain lead).
Stale Gasoline	✓ Add stabilizer in the winter to prevent it from becoming stale or an octane booster in the spring to rejuvenate it. Use the fuel. <ul style="list-style-type: none"> <li>• Mix it with fresh fuel and use.</li> <li>• Hire a hazardous waste hauler to collect and dispose of. A hazardous waste manifest is required.</li> <li>• Take small quantities to a household hazardous waste collection day.</li> </ul>

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Kerosene	✓ Filter and reuse for as long as possible and then recycle.
Mineral Spirits	✓ Filter and reuse.
Solvents <ul style="list-style-type: none"> <li>• Paint and Engine cleaners such as acetone and methylene chloride</li> </ul>	✓ Reuse as long as possible and then recycle. <ul style="list-style-type: none"> <li>• Dispose of as hazardous waste.</li> </ul>
Sludge Recovered from a Solvent Listed as a Hazardous Waste	✓ Dispose of as hazardous waste.
Sludge Recovered from a Solvent Not Listed as a Hazardous Waste	✓ Let sludge dry in a well-ventilated area, wrap in newspaper, and dispose in garbage.
Paints and Varnishes: <ul style="list-style-type: none"> <li>• Latex</li> <li>• Water-based</li> <li>• Oil-based</li> </ul>	✓ Allow to dry completely. Dispose of in regular trash. <ul style="list-style-type: none"> <li>• Use leftover material for other projects, <i>i.e.</i>, as in undercoat for the next boat.</li> </ul>
Paint Brushes	✓ Allow to dry completely. Discard in regular trash.
Paint Filters	✓ Allow to dry completely prior to disposal. Treat as a hazardous waste if paint contains heavy metals above regulatory levels.
Rags soaked with Hazardous Substances	✓ Keep in covered container until ready to dispose. Dispose of the solvent that collects in the bottom of the container as hazardous waste. <ul style="list-style-type: none"> <li>✓ Wring rags out over a collection receptacle and have laundered by an industrial laundry.</li> </ul>
Used Oil Absorbent Material	✓ If it is saturated with oil or diesel, double bag it in plastic and discard in trash (as long as no petroleum is leaking.) <ul style="list-style-type: none"> <li>✓ If it is saturated with gasoline, allow it to air dry and reuse.</li> </ul>
Used Bioremediating Bilge Booms	✓ Dispose in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.
Epoxy and Polyester Resins	✓ Catalyze and dispose of as solid waste.

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Glue and Liquid Adhesives	✓ Catalyze and dispose of as solid waste.
Containers <ul style="list-style-type: none"> <li>• Paint cans</li> <li>• Buckets</li> <li>• Spent Caulking Tubes</li> <li>• Aerosol cans</li> </ul>	✓ May be put in trash can as long as: <ul style="list-style-type: none"> <li>• All material that can be removed has been. Be sure no more than 1" of residue is on the bottom or inner liner.</li> <li>• Containers that held compressed gas are at atmospheric pressure.</li> <li>• Containers that held acute hazardous waste have been triple rinsed with solvent. Properly dispose of the solvent.</li> </ul>
Residue from Sanding, Scraping and Blasting	✓ Dispose of as solid waste.
Residue From Pressure Washing	✓ Dispose of as solid waste.
Lead Batteries	✓ Recycle or sell to scrap dealers. Store on an impervious surface, under cover. Protect from freezing. Check frequently for leakage. <ul style="list-style-type: none"> <li>• Inform boaters that if they bring their old battery to a dealer, they will receive a \$5 refund on a new battery.</li> </ul>
Expired Distress Signal Flares	✓ Encourage boaters to keep onboard as extras. ✓ Store in well-marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Be sure to notify the fire department and Coast Guard ahead of time – especially if using aerial flares. Conduct the demonstration over water. <ul style="list-style-type: none"> <li>• Encourage boaters to bring to a local fire department or household hazardous waste collection day.</li> </ul>
Scrap Metal	✓ Recycle
Light Bulbs <ul style="list-style-type: none"> <li>• Fluorescent Bulbs</li> <li>• Mercury vapor lamps</li> <li>• High-pressure sodium vapor lamps</li> <li>• Low-pressure sodium vapor lamps</li> <li>• Metal halide lamps</li> </ul>	✓ Recycle if you have more than 10 to dispose of. <ul style="list-style-type: none"> <li>• If fewer than 10, treat as solid waste.</li> </ul>
Refrigerants	✓ Recycle. If you deal with AC, you must be certified and use EPA approved CFC recovery and recycling equipment. <ul style="list-style-type: none"> <li>• Use alternative refrigerants: HCFC-22 (for ACS and electric chillers), HCFC-123 (replaces CFC-11), and HFH-134A (replaces CFC-12)</li> </ul>

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Monofilament Fishing Line	✓ Recycle through a manufacturer or tackle shop.
Scrap Tires	✓ Recycle or treat as solid waste.
Pesticides	✓ Dispose of as hazardous waste.
Plastic Shrink Wrap	✓ Recycle
Fish Waste	✓ Prohibit disposal of fish waste into confined marina waters. Establish a fish cleaning station and adopt one of the following disposal methods: <ul style="list-style-type: none"> <li>• Instruct boaters to dispose scraps off shore over deep water.</li> <li>• Equip the cleaning station with a garbage disposal connected to municipal sewer.</li> <li>• Compost the scraps.</li> <li>• Instruct boaters to bag scraps in plastic and place in a dumpster or bring home.</li> </ul>



## 10. Educate boaters.

- Photocopy the “Waste Containment and Disposal” tip sheet from Appendix V and distribute it to your customers. There is room to add your marina’s name and logo.
- Contact the Louisiana Sea Grant College Program or the Lake Pontchartrain Basin Foundation for marine debris educational materials at minimal or no cost.
- Post information about city or parish household hazardous waste collection events and recycling centers. Log on to [www.deq.state.la.us](http://www.deq.state.la.us) for information.

## Extra Information

### How do you know if a substance is hazardous?

All waste generators must determine whether or not their refuse is hazardous. Basic characteristics of hazardous materials include:

- ignitable
- corrosive
- reactive
- toxic

A generator may either test the waste to determine if it exhibits a hazardous characteristic or use knowledge of the waste, e.g., first-hand experience or information gathered from a Material Safety Data Sheet. The test for toxicity is called the Toxicity Characteristic Leaching Procedure and is performed by industrial laboratories.

## Regulatory Requirements

### Marine Plastics Pollution Research and Control Act of 1987 (MPPRCA)

MPPRCA, Title II of Public Law 100-220, restricts the overboard discharge of garbage. Its primary emphasis is on plastics; it is illegal to discharge plastic materials into any waterbody. The disposal of other types of garbage is restricted according to how far a vessel is out to sea. The important thing to remember is that within coastal bays, along rivers and on inland lakes, the discharge of any garbage into the water is illegal. Fish scraps are an exception. The law also requires that marinas be able to accept garbage from vessels that normally do business with them.

### Resource Conservation and Recovery Act of 1976 (RCRA)

RCRA was established to improve the collection, transportation, separation, recovery and disposal of solid and hazardous waste. Hazardous wastes are ignitable, corrosive, reactive and/or toxic substances.



## State laws

### State Laws

- **La. R.S. 30:2075** – No one “shall conduct any activity which results in the discharge of any substance into the waters of the state without the appropriate permit, variance or license required” by LDEQ. A fee added to these discharge permits shall be deposited into the Oyster Sanitation Fund established in 40:5.10.
- **La. R.S. 30:2076** – No one shall discharge any waste or any substance that will cause water pollution into the waters of the state.
- **La. R.S. 30:2531** – It is unlawful to intentionally litter upon any public place or in the waters of the state, from a vehicle or otherwise. If the litter is disposed from a boat, the inference is that the driver of the boat disposed of the litter. There are fines and community service punishment provisions.
- **La. R.S. 30:2531.2** – No one shall operate a boat in such a manner that the contents of the boat can blow or fall out of the boat.
- **La. R.S. 30:2546** – No one on board any boat or vessel shall “discharge, discard and permanently abandon into the waters of the state any type of finished plastic products, including but not limited to synthetic ropes, fishing nets and garbage bags,” or any paper, glass or other materials. “ All marinas and all other access areas used by vessels are required to have proper disposal facilities on site.”

# Chapter 8

## Marina Management

### Staff Training

- Teach pollution prevention.
- Share your emergency response plans.
- Be watchful.
- Approach polluters.
- Maintain training records.

### Patrons and Independent Contractors

- Incorporate best management practices into contracts.
- Post signs detailing best management practices.
- Distribute literature to patrons.
- Host a workshop.
- Make use of informal communication mechanisms.
- Recognize boaters.

### Public Relations

- Publicize your good deeds.
- Become a Louisiana Clean Marina.

### Business Practices

- Offer environmental audits for boaters.
- Consider environmental surcharges.
- Be diligent.



## Chapter 8

# Marina Management

Once you have adopted some of the best management practices outlined in this guidebook, tell people about it! Train your staff so they will routinely minimize pollution. Inform boaters how their actions can affect water quality. Let the public know that you are doing your part to protect the environment.

### Staff

**1. Teach pollution prevention.** Teach your employees how to prevent pollution and handle waste, fuel and chemicals properly. The training should be conducted at least once a year and address the following topics, as applicable:

- Used oil management
- Spent solvent management
- Proper disposal of spent abrasives
- Disposal of vessel wastewater
- Spill prevention and control
- Fueling procedures
- General good housekeeping
- Painting and blasting procedures
- Used battery management

If applicable, provide training on the proper use of equipment such as dustless sanders and high-volume, low-pressure spray guns. (Refer to Appendix IX for a training guide to help you organize and track your employee training.)

**2. Share your emergency response plans.** During a real emergency, you will want people to know what to do and how to do it. Once a problem arises, it's too late.

- Make sure emergency training is part of your orientation for all new employees.
- Review plans and response procedures with staff at the beginning of each boating season.
- Train employees in the use of containment measures.
- Run emergency response drills at least twice a year.
- Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

### 3. Be watchful.

- Involve all employees in policing your marina for waste.
- Encourage your staff to look for and immediately halt the following activities:
  - Colored plumes in the water where a hull is being cleaned
  - Bilge water discharge with a sheen
  - Uncontained sanding, painting, varnishing or cleaning
  - Maintenance debris being washed into the water
  - Sewage discharge within the marina
  - The use of environmentally harmful cleaning products

### 4. Approach polluters.

- Determine who will address boaters and contractors who are polluting. Generally, this is a job for the manager. Let your staff know whether they should handle polluters themselves or report pollution incidents to the manager.
- Politely inform boaters and contractors why their actions are harmful. Describe a more environmentally sensitive method, and ask the boater or contractor to stop work until it can be done with less environmental impact. It will be easier to get cooperation if you require boaters and contractors to practice pollution prevention as a condition of their contracts.
- If the problem persists, take these additional steps:
  1. Talk to the boater or contractor again.
  2. Mail a written notice asking that the harmful practice stop. Keep a record of the mailing.
  3. Remove the pollution source from the dock. Charge the boater or contractor for the cost of removal and clean-up.
  4. Ask the tenant or contractor to leave your marina.

### 5. Maintain training records.

- Record training dates, topics and names of employees and instructors.
- Keep copies of instructional material.

## Patrons and Independent Contractors

**1. Incorporate best management practices into contracts.** Customers and contractors should be informed about pollution control practices and be required to use them. In addition to being a legal document, contracts and leases are very effective educational tools. Use the contract to inform boaters and contractors how to minimize environmental impacts. (See Appendix V for sample contract language.)

- Include language requiring the use of best management practices in all of your contracts with slip holders, live-aboards, transients, charters, workers, contractors and tenants.

- Include language specifying the consequences for not using best management practices, e.g., failure to use best management practices will result in expulsion from the marina and forfeiture of rental fees.
- Include information about requirements for Marine Sanitation Devices.

## 2. Post signs detailing best management practices.

- Post signs at fuel docks and pumpout stations, along piers, in vessel maintenance areas and at Dumpsters and recycling stations. (See samples below.)
- Be sure the signs are visible.
- Make sure signs are durable, eye catching and appropriately sized.
- Post your facility's environmental policy in a conspicuous location.

### Keep Fuel Out of the Water

Do not top off tank.  
Listen to anticipate when tank is full.  
Wipe-up spills immediately.

### Notice

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone, if such discharge causes a film or sheen upon, or discoloration of, the surface water. Violators are subject to a penalty of \$5,000.

The use of soaps to disperse oil is illegal. Violators may be fined up to \$25,000 per incident.

Report oil spills to:

### Think Before You Throw

The following items may not be placed in this Dumpster:

- Oil
- Antifreeze
- Paint or varnish
- Solvents
- Pesticides
- Lead batteries
- Transmission fluid
- Distress flares
- Loose polystyrene peanuts
- Hazardous waste

### Oil Spill Response Kit

*Include name and number of person to contact at the marina in case of a spill.*

*Be sure that a copy of the Oil Spill Response Plan is clearly visible inside the Spill Response Kit.*

### Pumpout Station

- *Instructions for use*
- *Hours of operation*
- *Fee*
- *Name and number of person to call in case of malfunction*

### Do Not Discharge Sewage

Please use our clean, comfortable restrooms while you are in port.

Nutrients and pathogens in sewage impair water quality.

### Recycle Oil

This container is for:

- Engine oil
- Transmission fluid
- Hydraulic fluid
- Gear oil
- #2 Diesel
- Kerosene

*Tailor to fit your hauler's requirements.*

**Gasoline is STRICTLY PROHIBITED.**

*If container is locked, include information about where to find the key or leave the materials.*

### Vessel Maintenance Area

- All major repairs (e.g., stripping, fiberglassing) must be performed in the Vessel Maintenance Area.
- All blasting and spray painting must be performed within the enclosed booth or under tarps.
- Use tarps or filter fabric to collect paint chips and other debris.
- Use vacuum sanders. *(Include rental information if appropriate.)*
- Use high-volume, low-pressure spray guns. *(Include rental information if appropriate.)*
- Use drip pans with all liquids.
- Reuse solvents.
- Store waste solvents, rags and paints in covered, labeled containers.

## Recycle

Oil	Mixed paper
Antifreeze	Newspaper
Lead batteries	Solvents
Glass	Steel
Plastic	Scrap metal
Aluminum	Tin
Corrugated cardboard	Tires
Metal fuel canisters	

*Indicate which items you recycle and where the collection sites are.*

*Include information about local recycling services for materials that you do not collect.*

## Recycle Antifreeze

This container is for

- Ethylene glycol antifreeze
- Propylene glycol antifreeze

*Tailor to fit your hauler's requirements.*

Gasoline, diesel, kerosene and all other materials are  
**STRICTLY PROHIBITED.**

*If container is locked, include information about where to find the key or leave the antifreeze.*

## No Fish Scraps

Please do not discard fish scraps within the marina basin.

- Use our fish cleaning station.
- Bag the scraps and dispose in a Dumpster or at home.
- Save and dispose over deep water.

## Marine Sanctuary

This marina provides food and shelter for young fish.

- Prevent oil spills.
- Keep bilge clean.
- Use oil-absorbent pads.

Help by recycling or properly disposing of used oil, antifreeze, solvents, cleaners, plastics and other wastes.

## Environmental Policy

It is the policy of this marina to protect the health of our patrons, staff and the environment by minimizing the discharge of pollutants to the water and air.

**Thank you for  
keeping  
Louisiana's waters  
clean and safe!**

## Protect Sensitive Habitats

Proceed slowly in shallow waters to prevent damage to underwater grasses and wildlife.

Control your wake to help prevent erosion.



### **3. Distribute literature to patrons.**

- Copy and distribute the “Clean Boating” tip sheet included in Appendix VI, or create your own. Boater tip sheets on vessel maintenance, selecting a bottom paint, underwater hull cleaning, petroleum control, boat sewage, and waste disposal are also included in Appendix VI .
- Send the tip sheets with monthly mailings, or place them in dock boxes or on vessels. Make sure they do not end up in the water.
- Include articles about best management practices in your newsletter.
- Get copies of clean boating materials from organizations such as Louisiana Sea Grant, Lake Pontchartrain Basin Foundation, Barataria-Terrebonne National Estuary Program, Ocean Conservancy and BoatU.S. Foundation. (See Appendix I for contact information.)
- Contact the U.S. Coast Guard for publications summarizing federal boating requirements.

### **4. Host a workshop.**

- Include a walking tour of the facility to demonstrate best management practices.
- Try to schedule the workshop to coincide with an existing marina function that is traditionally well attended.
- Offer incentives to attendees such as door prizes, discounts, product samples and food.

### **5. Make use of informal communication mechanisms.**

- Pass along pollution prevention information in conversations with patrons and contractors.
- Post information about best management practices on the marina bulletin board.

### **6. Recognize boaters.**

- Publicly recognize boaters who are making an effort to control pollution. Include a feature in your newsletter; post a flyer with the boater’s picture on a public bulletin board; give an award; etc.

## **Public Relations**

### **1. Publicize your good deeds.**

- Seek free publicity with local press, magazines, television and radio outlets.
- Prepare news releases to highlight your innovative practices, new equipment or services, available literature or a workshop you are sponsoring.
- Plan news releases to coincide with seasonal activities.

- Start news releases with a contact person's name and phone number, the date and a headline. The first paragraph should contain vital information: who, what, when and where. Fill in with secondary information and support data. Conclude with a "call to action" (e.g., visit the marina for a demonstration. Double-space the text. One page is best. It should be no longer than two pages. Refer to *The Associated Press Style Book* (available at most libraries or bookstores) for additional formatting information.
- Become familiar with local media deadlines, and send releases in time to meet them.
- When submitting a news release, be sure you have the name of the proper editor and that it is spelled correctly.
- Get press kits from manufacturers of environmentally sensitive products. Utilize their photographs and product information for media promotion of your marina's use of these products.

**2. Become a Louisiana Clean Marina.** Apply to the Louisiana Department of Natural Resources Coastal Management Division for recognition as a Clean Marina.

Once you have satisfied the selection criteria, you may:

- Use the Louisiana Clean Marina logo in your advertising and correspondence.
- Fly a Clean Marina flag.
- Enjoy promotion by the Clean Marina Initiative in publications, on the World Wide Web and at public events.
- Use your selection into the program as an opportunity to prepare a press release.

## Business Practices

**1. Offer environmental audits for boaters.**

- Expand your business by promoting environmental audits.
- Inspect engines, bilges, fuel systems and Marine Sanitation Devices.
- Sell oil-absorbent pads, air/fuel separators, etc.

**2. Consider environmental surcharges.**

- Charge for tangible items such as tarps, vacuum sanders and protective clothing, or establish a flat "environmental surcharge" on all jobs.
- Consider donating a portion of rental fees (e.g., for vacuum sanders) to an environmental organization. The boater can feel good about controlling pollution and about the fact that a portion of his or her money is going to help conserve nature.

**3. Be diligent.** Be absolutely diligent in containing pollution, both your own and that created by your staff. Boaters will notice and follow your example.

# Chapter 9

## Laws and Regulations

### Selected Federal Agencies and Their Jurisdictions

- Environmental Protection Agency (EPA)
- National Oceanic and Atmospheric Administration (NOAA)
- U.S. Army Corps of Engineers (COE)
- U.S. Coast Guard (USCG)

### Selected State Agencies and Their Jurisdictions

- Louisiana Department of Agriculture and Forestry (LDAF)
- Louisiana Department of Culture, Recreation and Tourism (LCRT)
- Louisiana Department of Environmental Quality (LDEQ)
- Louisiana Department of Health and Hospitals (LDHH)
- Louisiana Department of Natural Resources (LDNR)
- Louisiana Department of Transportation and Development (LDOTD)
- Louisiana Department of Wildlife and Fisheries (LDWF)
- Louisiana Division of Administration (LDOA)

### Selected Federal Laws that Impact Marinas

### Selected State Laws that Impact Marinas

### Environmental Permits and Licenses



## Chapter 9

# Laws and Regulations

This chapter of laws, regulations and permit information is by no means all inclusive. It is meant to provide:

- An introduction to the responsibilities of certain federal and state agencies
- An overview of some relevant laws
- A synopsis of information about other pertinent permits and licenses

## Selected Federal Agencies and Their Jurisdictions

### Environmental Protection Agency (EPA)

The EPA is responsible for:

- Ensuring that environmental protections are considered in U.S. policies concerning economic growth, energy, transportation, agriculture, industry, international trade and natural resources
- Ensuring national efforts to reduce environmental risk are based on the best available scientific information
- Providing access to information on ways business, state and local governments, communities and citizens can prevent pollution and protect human health and the environment

The Office of Water is responsible for implementing, among other laws, the Clean Water Act, portions of the Coastal Zone Act Reauthorization Amendments of 1990, the Resource Conservation and Recovery Act, and the Marine Plastics Pollution Research and Control Act. Activities are targeted to prevent pollution wherever possible and to reduce risk to people and ecosystems in the most cost-effective manner.

### National Oceanic and Atmospheric Administration (NOAA)

The mission of NOAA, an agency within the U.S. Department of Commerce, is to describe and predict changes in the Earth's environment and to conserve and wisely manage the nation's coastal and marine resources to ensure sustainable economic opportunities. NOAA provides a wide range of observational, assessment, research and predictive services for estuarine and coastal ocean regions. NOAA has developed an array of programs to address national-scale estuarine issues and specific problems affecting individual estuarine and coastal ocean systems. In partnership with EPA, NOAA implements the Coastal Zone Act Reauthorization Amendments of 1990.

### **U.S. Army Corps of Engineers (COE)**

The COE reviews and issues permits for activities under Section 404 of the Clean Water Act (dredge and fill) and Section 10 of the Rivers and Harbors Act (navigable waters). The COE is responsible for ensuring adequate flood control, hydropower production, navigation and water supply storage. The COE contracts and regulates coastal engineering projects, particularly harbor dredging, beach renourishment and coastal restoration projects. It also reviews and permits coastal development and artificial reef projects. A joint permit from the DEQ and the COE is required for all dredging projects.

### **U.S. Coast Guard (USCG)**

The USCG, an arm of the U.S. Department of Transportation, protects the public, the environment and U.S. economic interests. It promotes maritime safety and marine environmental protection, enforces maritime law, tends all federal navigation aids and regulates and monitors recreational and commercial vessels and waterfront facilities.

## **Selected State Agencies and Their Jurisdictions**

### **Louisiana Division of Administration (LDOA)**

The State Land Office of the LDOA is responsible for the identification, administration and management of state public lands and waterbottoms. The primary goal of the office is to ensure the highest economic return and the maximum public utilization possible of Louisiana's public lands and waterbottoms. The objective of the office is to maximize revenues while insuring continued public utilization of state public lands and waterbottoms. A second major objective is to protect the state's proprietary interests in its lands and waterbottoms through the permitting process.

### **Louisiana Department of Agriculture and Forestry (LDAF)**

LDAF is responsible for administering many of the programs and enforcing the regulations that impact every aspect of the state's agriculture and forestry. LDAF has jurisdiction over pesticide regulation in the state (La. R.S. 3:3301, et. seq.). LDAF also oversees the Office of Soil and Water Conservation, with the responsibilities of protecting and conserving the state's soil and water resources (La. R.S. 3:1201, et. seq.).

### **Louisiana Department of Culture, Recreation and Tourism (LCRT)**

The mission of the LCRT is to preserve and enhance Louisiana's unique heritage and natural landscape, provide cultural informational and recreational resources, and promote the use of these resources by the state's diverse citizens and visitors. LCRT is overseen by the lieutenant governor. The office has commenting authority on marina construction/expansion activities that may influence historical or cultural aspects of a site under LCRT's purview.

### **Louisiana Department of Environmental Quality (LDEQ)**

LDEQ is the primary agency in the state concerned with environmental protection and regulation, including that of water, air, solid and hazardous waste disposal. LDEQ handles permits, licenses and variances in cooperation with other state and federal agencies (La. R.S. 30:2011). In conjunction with other state and federal agencies, LDEQ is responsible for ensuring that the state's waters are clean enough for swimming, boating and wildlife propagation.

### **Louisiana Department of Health and Hospitals (LDHH)**

The Office of Public Health under LDHH administers the Sanitation Code and is responsible for monitoring the public health, including the Safety of consumable shellfish (La. R.S. 40:4). The Onsite Wastewater Program of LDHH regulates the installation and upkeep of individual sewage treatment units. LDHH also works with other state agencies to ensure the safety of drinking water.

### **Louisiana Department of Natural Resources (LDNR)**

The Coastal Management Division (CMD) of LDNR administers the Louisiana Coastal Resources Program. CMD is charged with reviewing and permitting coastal use activities in or affecting coastal waters in the Louisiana Coastal Zone (La. R.S. 49:214.21 *et seq.*). LDNR/Office of Conservation has jurisdiction in the state over underwater obstruction removal (La. R.S. 30:101.2). LDNR and LDEQ are the co-lead agencies in administering the Louisiana Coastal Nonpoint Pollution Control Program.

### **Louisiana Department of Transportation and Development (LDOTD)**

The Public Works and Water Resources Division (DPW) of LDOTD administers the planning, operation and maintenance of levees, canals, dams, locks, spillways, reservoirs, drainage and irrigation systems, inland navigation projects, flood control, river improvement programs and systems, and other public works. The DPW renders its services to the port, harbor and terminal districts, and other local governmental and political subdivisions and special districts (La. R.S. 38:2).

## **Louisiana Department of Wildlife and Fisheries (LDWF)**

Louisiana owns and has title to wild animals and water bottoms (for the purpose of oyster leases) within the territory and jurisdiction of the state, including all shellfish, under the jurisdiction of LDWF (La. R.S. 56:3). LDWF administers permits for anyone dealing with wildlife, fish, game and activities on the state's scenic rivers (La. R.S. 56). Wildlife officers are also responsible for enforcing watercraft safety regulations (La. R.S. 34:851.3).

## **Selected Federal Laws that Impact Marinas**

### **Clean Air Act Amendments, 1990**

As a result of the 1990 Clean Air Act Amendments, the “gasoline marine final rule” establishes emission standards for new spark-ignition gasoline marine engines. Outboard engines and gasoline marine engines used in personal watercraft and jet boats are covered by the rule. Because sterndrive and inboard engines offer cleaner technologies, emission standards were not set for these types of engines.

Boat engines currently in use are not affected by this regulation. Boat owners are in no way responsible for making modifications to their current engines to meet the standards. Likewise, boat dealers are not responsible for compliance with this regulation.

The regulation does require that manufacturers of outboard and personal watercraft marine engines achieve yearly emission reductions by meeting a corporate average emission standard, which allows them to build some engines to emission levels lower than the emission standard and some engines to emission levels higher than the standard, provided the manufacturer's overall corporate average is at or below the standard.

### **Clean Vessel Act (CVA)**

The CVA, administered by the U.S. Fish and Wildlife Service, makes grants available to the states on a competitive basis to fund the construction and/or renovation, operation and maintenance of pumpout and portable toilet dump stations. States may sub-grant to public and private marinas to install, construct, renovate and operate marine sewage pumpout stations and to conduct boater environmental education. Contact the Louisiana Department of Wildlife and Fisheries for information about receiving grant funding to cover up to 75 percent of the cost of installing a pumpout system.

### **Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)**

CZARA provided the impetus for the Louisiana Clean Marina Initiative. Section 6217 (*aka* Section 310) of the Amendments requires that nonpoint-source pollution from marinas be contained. Through the Clean Marina Initiative, Louisiana is promoting voluntary adoption of best management practices to minimize the impact of marinas on surrounding land and water.

### **Federal Water Pollution Control Act (Clean Water Act)**

The Clean Water Act addresses many facets of water quality protection. It provides the authority for the National Pollutant Discharge Elimination System (NPDES) permit program for point sources of pollution. The Act prohibits the discharge of oil or hazardous substances into U.S. navigable waters. It also prohibits the use of chemical agents like soaps, detergents, surfactants or emulsifying agents to disperse fuel, oil or other chemicals without the permission of the U.S. Coast Guard.

All vessels 26 feet in length and longer are required to display a placard that is at least 5 by 8 inches, made of durable material, and fixed in a conspicuous place in the machinery spaces or at the bilge pump control station. The placard must read:

#### **Discharge of Oil Prohibited**

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or discoloration of, the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5,000.

The Clean Water Act requires that the U.S. Coast Guard be notified anytime a spill produces a sheen on the water. Failure to report a spill may result in civil penalties. Report spills to (800) 424-8802.

Furthermore, the Act prohibits the discharge of raw sewage within U.S. waters and requires that all recreational boats with installed toilets have an operable Marine Sanitation Device (MSD) on board.



## Marine Sanitation Devices

There are three types of MSDs:

**Type I** systems mechanically cut solids, disinfect the waste with a chemical additive or with chlorine disassociated from saltwater by an electronic jolt, and discharge the treated sewage overboard. The fecal coliform bacteria count of the effluent may be no greater than 1,000 per 100 milliliters, and effluent may not contain any floating solids.

**Type II** systems are similar to Type I systems, except Type IIs treat sewage to a higher standard. Effluent fecal coliform bacteria levels may not exceed 200 per 100 milliliters, and total suspended solids may not be greater than 150 milligrams per liter. Type IIs also require more space and have greater operating energy requirements.

**Type III** systems do not allow sewage to be discharged. The most common form of a Type III system is a holding tank. Others include recirculating and incinerating systems.

Vessels 65 feet and shorter may have any of the three types of MSDs. Vessels over 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.

## Marine Plastics Pollution Research and Control Act (MPPRCA)

MPPRCA is the U.S. law that implements Annex V of an international marine pollution prevention treaty known as MARPOL. The MPPRCA of 1987 (Title II of Public Law 100-220) restricts the overboard discharge of garbage. Its primary emphasis is on plastics – it is illegal to dispose of plastic materials in the water anywhere. The disposal of other garbage is restricted according to a vessel's distance from shore.

Within U.S. lakes, rivers, bays, sounds and within three nautical miles from shore, it is illegal to dump plastic, paper, rags, glass, metal, crockery, dunnage (lining and packing material, nets, lines, etc.) and food. Between three and 12 nautical miles from shore, it is illegal to dump plastic and any other garbage that is greater than one inch in size. Between 12 and 25 nautical miles from shore, it is illegal to dump plastic and dunnage.

Beyond 25 nautical miles, it is illegal to dump plastic.

The dumping restrictions apply to all vessels operating in all navigable waters of the United States and the 200-mile Exclusive Economic Zone. All vessels greater than 26 feet must display a MARPOL Annex V placard outlining the garbage dumping restrictions. All vessels longer than 40 feet must also have a written waste management plan on board.

Under the national law, ports and terminals, including recreational marinas, must have adequate and convenient “reception facilities” for their regular customers. That is, marinas must be capable of receiving garbage from vessels that normally do business with them, including transients.

### **Oil Pollution Act of 1990 (OPA)**

OPA was written in direct response to the Exxon Valdez oil spill. The law primarily addresses commercial oil shipping (e.g., tankers must be double-hulled; captains may lose their licenses for operating a vessel under the influence of drugs or alcohol).

Some of the requirements are applicable to recreational boating, however. Most notably, the responsible party for any vessel or facility that discharges oil is liable for the removal costs of the oil and any damages to natural resources; real or personal property; subsistence uses; revenues, profits and earning capacity; and public services like the cost of providing increased or additional public services.

The financial liability for all non-tank vessels is \$600 per gross ton or \$500,000, whichever is greater. Substantial civil penalties also may be imposed for failure to report a spill, discharging oil, failure to remove oil, failure to comply with regulations and gross negligence.

### **Organotin Antifoulant Paint Control Act of 1988 (OAPC)**

OAPC restricts the use of organotin antifouling paints, including tributyl tin-based paints. Tributyl tin (TBT) paints may be used only on aluminum-hulled vessels, on boats larger than 82 feet (25 meters) and on outboard motors and lower drive units.

### **Refuse Act of 1899**

The Refuse Act of 1899 prohibits throwing, discharging or depositing any refuse matter of any kind (including trash, garbage, oil and other liquid pollutants) into waters of the United States.

### **Resource Conservation and Recovery Act (RCRA)**

The Federal Resource Conservation and Recovery Act (RCRA) provides the legal authority to establish standards for handling, transporting and disposing of hazardous wastes.

## **Selected State Laws that Impact Marinas**

### **Marine Sanitation Devices**

State law allows a vessel with an installed toilet to have a “Y” valve or other means to bypass the sanitation system. However, within state waters, all pathways for overboard discharge of raw sewage must be secured. The “Y” valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.

### **Louisiana Oil Spill Prevention and Response Act**

The discharge of any harmful amounts of oil into waters of the state is addressed by the emergency procedures laid out in the state oil spill contingency plan, administered by the oil spill coordinator and other relevant state agencies. (La. R.S. 30:2451, et. seq.)

## **Environmental Permits and Licenses**

### **Coastal Use Permit**

Any person who wishes to conduct an activity that will affect the Coastal Zone of the state must apply for a coastal use permit (CUP), which is issued by LDNR/CMD or an approved local coastal management program (La. R.S. 49:214.30). Currently, 10 of the 19 coastal parishes have local coastal management programs that issue permits for uses of local concern. LDNR/CMD or the local coastal management programs will forward the permit applications for further review to COE and other agencies (LDHH, LDOTD, LDWF, State Land Office of the DOA or CRT), as appropriate.

### **Louisiana Pollution Discharge Elimination System Permits (LPDES)**

The LPDES permit program requires permits for the discharge of pollutants from any point source into waters of the state. LDEQ has assumed authority for the National Pollutant Discharge Elimination System (NPDES) through the LPDES permit program. There are several types of permits under the LPDES program that may be applicable to the construction and operation of a marina, including Exterior Vehicle and Equipment Wash Wastewater, Sanitary Wastewater Discharges and Stormwater Discharges. Any marina or boatyard that conducts boat maintenance activities, including pressure washing, or that has wastewater discharges must apply for coverage under a permit (La. R.S. 30:2001 et seq.; L.A.C. 33:IX.Subpart 2).

### **Water Quality Certification (401 Certification)**

Anyone applying for a state or federal permit must receive a Water Quality Certification from LDEQ, Office of Water Resources (33 U.S.C. 1341; La. R.S. 30:2074; L.A.C. 33:IX.1501, et. seq.).

### **Section 404 Permits**

After receiving a Section 401 Water Quality Certification from LDEQ, the COE can issue CWA Section 404 permits for dredge and fill activities (33 U.S.C. 1344).

<b>Select laws and required permits affecting marinas 2004</b>			
<b>ACTIVITY</b>	<b>PERMIT/LICENSE</b>	<b>AUTHORITY</b>	<b>REQUIREMENTS</b>
Any discharge into state waters that will require a state or federal permit	LDEQ, Office of Water Resources Water Quality Certification (401 Certification)	CWA, 33 U.S.C. 1251, et. seq.; La. R.S. 30:2074; L.A.C. 33:IX.1501 et. seq.	Must meet state's water quality standards
Dredge or filling activities	CWA Section 404 Permit issued by U.S. Army Corps of Engineers	CWA, 33 U.S.C. 1251, et. seq., 1344.	Must comply with federal and state laws; cannot impair navigation or flow of navigable waters
Release of sanitary waste water into waters of the state	LDEQ, LPDES Sanitary Waste Water Discharge Permit There are different permits depending on the amount of discharges per day.	CWA, 33 U.S.C. 1251, et seq.; La. R.S. 30:2001, et. seq.; L.A.C. 33:IX.Subpart 2.	Permittees are authorized to discharge sanitary wastewater totaling a certain amount per day. Monitoring and reporting requirements
Stormwater runoff from a source, such as a pipe or ditch.	LDEQ, LPDES Storm Water Discharge Permit	CWA, 33 U.S.C. 1251, et seq.; La. R.S. 30:2001, et seq.; L.A.C. 33:IX.Subpart 2.	Sector-specific requirements; pre- and post-construction requirements
Any activity in the state's Coastal Zone that is not excepted	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.701 et. seq.	Coastal Use Guidelines
Construction of a levee	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.703	Coastal Use Guidelines; i.e., must avoid segmentation of wetland areas
Construction of a road or other linear facility	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.705	Coastal Use Guidelines; i.e., must avoid adverse impacts on areas of high biological productivity

<b>ACTIVITY</b>	<b>PERMIT/LICENSE</b>	<b>AUTHORITY</b>	<b>REQUIREMENTS</b>
Deposition of dredged material	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.707	Coastal Use Guidelines; i.e., spoil must be used in a beneficial manner to improve or create new habitats
Modification of the shoreline	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.709	Coastal Use Guidelines; i.e., must avoid oyster beds and submersed grass beds
Surface alterations, including urban development	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.711	Coastal Use Guidelines; i.e., must be on lands five feet or more above sea level or on lands with a foundation stable enough to ensure public safety
Alteration of upland or upstream waters that drain into coastal waters	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.717	Coastal Use Guidelines; i.e., simulation of natural water patterns
Disposal of wastes	LDNR/CMD Coastal Use Permit	La. R.S.49:214.30; L.A.C. 43.1.715	Coastal Use Guidelines; i.e., waste disposed of only at approved disposal sites

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United States Fish and Wildlife Service. "BayScaping to Conserve Water," *A Homeowner's Guide*. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.

United States Fish and Wildlife Service. "Conservation Landscaping," *A Homeowners Guide*. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.

United States Fish and Wildlife Service. "Creating Landscape Diversity," *A Homeowner's Guide*. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.

United States Fish and Wildlife Service. "Integrated Pest Management," *A Homeowners Guide*. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.

United States Fish and Wildlife Service. "Using Beneficial Plants," *A Homeowner's Guide*. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.

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## Appendix I

### Information Sources 2004

#### **American Boat and Yacht Council**

*http://www.abycinc.org/*

3069 Solomons Island Rd.

Edgewater, MD 21037

(410) 956-1050

- Information about holding tank retrofits and vessel standards

#### **Barataria-Terrebonne National Estuary Program**

*www.btnep.org*

320 Audubon Dr.

North Babington Hall, Rm. 105

Nicholls State University Campus

Thibodaux, LA 70301

or

Barataria-Terrebonne National Estuary Program Office

Nicholls State University Campus

P.O. Box 2663

Thibodaux, LA 70310

(800) 259-0869

(985) 447-0868

#### **BoatU.S. Clean Water Trust**

*www.boatus.com*

880 S. Pickett St.

Alexandria, VA 22304

Phone: (703) 823-9550

Fax: (703) 461-2855

#### **Florida Sea Grant College Program**

*www.flseagrants.org*

P.O. Box 110409

Gainesville, FL 32611-0409

(352) 392-2801

- Order copies of the Panic Preventer File for Marinas (\$15). Item number SGEB-45.

#### **International Marina Institute**

*www.imimarina.org*

444 N. Capitol Street, NW

Washington, DC 20001

Phone: (202) 721-1603

Fax: (202) 721-1626

### **Lake Pontchartrain Basin Foundation**

[www.saveourlake.org](http://www.saveourlake.org)  
3 Lakeway, Ste. 2070  
Metairie, LA 70002

or

P.O. Box 6965  
Metairie, LA 70009  
(504) 836-2215

- Order the *Boating and Angling Guide to Lake Pontchartrain* and *A Guide to the Wetlands of the Lake Pontchartrain Basin*.

### **Louisiana Clean Marina Initiative**

Greg DuCote  
Coastal Management Division  
Louisiana Department of Natural Resources  
(800) 267-4019  
Email: [gregory.ducote@la.gov](mailto:gregory.ducote@la.gov)

### **Louisiana Department of Culture, Recreation and Tourism**

<http://www.crt.state.la.us/>  
Capitol Annex  
Baton Rouge, LA 70801  
Phone: (225) 342-8115  
Fax: (225) 342-3207

### **Louisiana Department of Agriculture and Forestry**

[www.ldaf.state.la.us](http://www.ldaf.state.la.us)  
5825 Florida Blvd.  
Baton Rouge, LA 70806

#### Executive

P.O. Box 631  
Baton Rouge, LA 70821-0631  
Phone: (225) 922-1234  
Fax: (225) 922-1253

#### Agriculture and Environmental Sciences

P.O. Box 3596  
Baton Rouge, LA 70821-3596  
Phone: (225) 925-3770  
Fax: (225) 925-3760

#### Soil and Water Conservation

(Suite 1070)  
P.O. Box 3554  
Baton Rouge, LA 70821-3554  
Phone: (225) 922-1269  
Fax: (225) 922-2577

**Louisiana Department of Environmental Quality**

*www.deq.state.la.us*

602 N. 5<sup>th</sup> St.  
Baton Rouge, LA 70802  
Phone: (225) 219-3950  
Fax: (225) 219-3970

Emergency Notifications

(225) 925-6595

Permits

P.O. Box 4313  
Baton Rouge, LA 70812-4313  
Phone: (225) 219-3181  
Fax: (225) 219-3156  
Email: *deqpermits@la.gov*

Recycling and Waste Reduction Section

P. O. Box 4313  
Baton Rouge, LA 70821-4313  
(225) 219-3266

**Louisiana Department of Health and Hospitals**

*www.dhh.state.la.us*

1201 Capitol Access Rd.  
or  
P.O. Box 629  
Baton Rouge, LA 70821-0629  
Phone: (225) 342-9500  
Fax: (225) 342-5568

**Louisiana Department of Natural Resources**

*www.dnr.state.la.us*

617 North 3rd St.  
or  
P.O. Box 94396  
Baton Rouge, LA  
Phone: (225) 342-4500  
Fax: (225) 342-2707

Coastal Management Division

617 N. 3<sup>rd</sup> St.  
Baton Rouge, LA 70802  
Phone: (225) 342-7591  
Fax: (225) 342-9439



**Louisiana Department of Wildlife and Fisheries**

[www.wlf.state.la.us/apps/netgear/page1.asp](http://www.wlf.state.la.us/apps/netgear/page1.asp)

2000 Quail Dr.  
Baton Rouge, LA 70808  
Phone: (225) 765-2800  
Fax: (225) 342-0064

**Louisiana Oil Spill Coordinator's Office**

150 3<sup>rd</sup> St., Suite 405  
Baton Rouge, LA 70801  
Phone: (225) 219-5800  
Fax: (225) 219-5802

**Louisiana Sea Grant College Program**

[www.laseagrant.org](http://www.laseagrant.org)  
Sea Grant Building  
Louisiana State University  
Baton Rouge, LA 70803-7507  
**Phone:** (225) 578-6342  
**Fax:** (225) 578-6331

- Order free copies of *Louisiana's Waters: Our Responsibility and Camp and Houseboat Sanitation*.

**LSU Agricultural Center Cooperative Extension Service**

[www.lsuagcenter.com/nav/extension/extension.asp](http://www.lsuagcenter.com/nav/extension/extension.asp)  
Louisiana State University  
Knapp Hall  
Baton Rouge, LA 70801  
(225) 578-4141

- See Appendix IV to find the office in your parish.

**Louisiana Wildlife Federation**

<http://www.lawildlifefed.org>  
P.O. Box 65239, Audubon Station  
Baton Rouge, LA 70896-5239  
or  
337 S. Acadian Thruway  
Baton Rouge, LA 70806  
Phone: (225) 344-6762  
Fax: (225) 344-6707  
Email: [lwf@lawildlifefed.org](mailto:lwf@lawildlifefed.org)

**Marina and Boatyard Association of Louisiana**

David J. Keyser Jr.  
Mariner's Village Marina  
225 Antibes West  
P.O. Box 61  
Mandeville, LA 70470-0061  
Phone: (985) 626-1517  
Fax: (985) 626-1070

**Minnesota Sea Grant College Program**

<http://www.seagrants.umn.edu/>  
University of Minnesota  
2305 East 5<sup>th</sup> St.  
Duluth, MN 55812-1445  
(218) 726-6191

- Order *Composting Fish Waste* by Thomas Halbach and Dale Baker (\$8).

**National Fire Protection Association**

[www.nfpa.org](http://www.nfpa.org)  
1 Batterymarch Park  
P.O. Box 9101  
Quincy, MA 02269-9101  
(800) 344-3555

- Copies of NFPA standards
- Copies of NFPA standards also may be available from your local fire marshal.

**National Technical Information Service**

<http://www.ntis.gov/>  
5285 Port Royal Rd.  
Springfield, VA 22161  
(800) 553-6847

- Order *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*.
- EPA-published summary document on the same subject

**The Nature Conservancy**

[www.nature.org](http://www.nature.org)  
4245 North Fairfax Dr., Suite 100  
Arlington, VA 22203-1608  
(800) 628-6860

**Ocean Conservancy**

[www.oceanconservancy.org](http://www.oceanconservancy.org)  
[stormdrain@oceanconservancyva.org](mailto:stormdrain@oceanconservancyva.org)  
1725 DeSales St., NW, Suite 600  
Washington, DC 20036  
(202) 429-5609

**State Fire Marshal's Office**

<http://www.dps.state.la.us/sfm/index1024.htm>

8181 Independence Blvd.

Baton Rouge, LA 70806

(225) 925-4911

(800) 256-5452

- Call to schedule basic fire inspection.

**State Land Office of the Louisiana Department of Administration**

<http://www.state.la.us/slo/default.htm>

1201 N. 4th St., Rm. G150

Baton Rouge, LA 70802

Phone: (225) 342-4580

Fax: (225) 342-5458

Waterbottom Permits

1201 N. 4th St., Suite G150

Baton Rouge, LA 70802

Phone: (225) 342-0120

Fax: (225) 342-5458

**U.S. Army Corps of Engineers**

[www.usace.army.mil/index.html](http://www.usace.army.mil/index.html)

U.S. Army Engineer District, New Orleans, CEMVN

P.O. Box 60267

New Orleans, LA 70160-0267

or

7400 Leake Ave.

New Orleans, LA 70118-3651

(504) 862-2077

**U.S. Coast Guard**

(800) 368-5647

- Copies of Federal Requirements and Safety Tips for Recreational Boats

National Response Center

[www.nrc.uscg.mil](http://www.nrc.uscg.mil)

2100 Second St., SW, Rm. 2611

Washington, DC 20593-0001

(800) 424-8802

(202) 267-2165

- Oil spill response

8th Coast Guard District (Louisiana activities)

<http://www.uscg.mil/d8>

Hale Boggs Federal Building  
500 Poydras St.,  
New Orleans, LA 70130  
(504) 589-6271

- Marine safety and environmental protection information

Search and rescue

(504) 589-6225

**U.S. Environmental Protection Agency**

[www.epa.gov](http://www.epa.gov)

National Response Center

(800) 424-8802

- To report an environmental emergency  
(866) EPA-SPILL (372-7745)
- Environmental Emergencies

Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas)

<http://epa.gov/region6>

1445 Ross Ave., Suite 1200  
Dallas, Texas 75202  
(214) 665-6444

- Information about federal laws and regulations and EPA programs
- Visit [www.epa.gov/oilspill](http://www.epa.gov/oilspill) for information about oil control laws and regulations.

Water Quality Field Office

707 Florida St., Rm. B21  
Baton Rouge, LA 70801  
Phone: (225) 389-0735  
Fax: (225) 389-0704

**U.S. Fish and Wildlife Service**

<http://southeast.fws.gov/es/lafayette.htm>

646 Cajundome Blvd., Suite 400  
Lafayette, LA 70506-4290  
(337) 291-3100

- Federal endangered/threatened species

## Appendix II

### Sanitarian Parish Managers, Coastal Parishes

#### **Acadia Parish**

530 West Mill St.  
P.O. Drawer 1289  
Crowley, LA 70527-1289  
Phone: (337)788-7507, 7508, 7509  
Fax: (337) 788-7577

#### **Acension Parish**

1024 S.E. Ascension Complex  
Gonzales, LA 70737  
Phone: (225) 644-4582 or 5916  
Fax: (225) 644-3635

#### **Assumption Parish**

158 Hwy. 1008  
Napoleonville, LA 70390  
Phone: (504) 369-6031  
Fax: (504) 369-2326

#### **Avoyelles Parish**

657 Government St.  
Marksville, LA 71351  
Phone: (318) 253-4528  
Fax: (318) 253-0862

#### **Calcasieu Parish**

707-C E. Prien Lake Rd. (70601)  
P.O.Box 3170  
Lake Charles, LA 70602  
Phone: (337) 475-8744  
Fax: (337) 475-8892

#### **Cameron Parish**

107 Recreation Center Lane  
P.O. Box 1430  
Cameron, LA 70631  
Phone: (337) 775-5368  
Fax: (337) 775-5078

**Iberia Parish**

121 West Pershing St.  
New Iberia, LA 70560  
Phone: (337) 373-0021  
Fax: (337) 373-0115

**Iberville Parish**

1100 Meriam St.  
P.O. Box 444  
Plaquemine, LA 70765-0444  
Phone: (225) 687-9021  
Fax: (225) 687-5275

**Jefferson Parish**

1855 Ames Blvd.  
P.O. Box 458  
Marrero, LA 70072  
Phone: (504) 349-8802 ext 0  
Fax: (504) 349-8817  
or  
111 North Causeway Blvd.  
Metairie, LA 70001  
Phone: (504) 838-5140  
Fax: (504) 838-5573

**Jefferson Davis Parish**

403 Baker St.  
P.O. Box 317  
Jennings, LA 70546  
Phone: (337) 824-2193  
Fax: (337) 824-0794

**Lafourche Parish**

2535 Veteran's Blvd.  
Thibodaux, LA 70302  
Phone: (504) 447-0954  
Fax: (504) 447-0897

**Livingston Parish**

20140 Iowa St.  
P.O. Box 365  
Livingston, LA 70754  
Phone: (225) 686-7017 or 7829  
Fax: (225) 686-1782

**Orleans Parish**

1440 Canal St.  
Suite 1700, P.O. Box 10  
New Orleans, LA 70112  
Phone: (504) 568-7970  
Fax: (504) 568-7974

**Plaquemines Parish**

3706 Main St.  
Belle Chasse, LA 70037  
Phone: (504) 394-0437  
Fax: (504) 393-0437

**St. Bernard Parish**

2712 Palmisano Rd.  
Chalmette, LA 70043  
Phone: (504) 278-7410 ext 211  
Fax: (504) 785-9243

**St. Charles Parish**

107 Maryland Dr.  
Suite C  
Luling, LA 70070  
Phone: (504) 785-1029  
Fax: (504) 785-9243

**St. James Parish**

29170 Health Unit St.  
Vacherie, LA 70090  
Phone: (225) 265-2181  
Fax: (225) 265-7247

**St. John Parish**

473 Central Ave  
Reserve, LA 70084-0515  
Phone: (504) 536-3535  
Fax: (504) 536-2571

**St. Martin Parish**

415 St. Martin St.  
St. Martinville, LA 70582  
Phone: (337) 394-3097  
Fax: (337) 394-1279

**St. Mary Parish**

1200 David Dr.  
Morgan City, LA 70380  
Phone: (504) 380-2441  
Fax: (504) 385-7012

**St. Tammany Parish**

21454 Koop Dr.  
Suite 2C  
Mandeville, LA 70471  
Phone: (504) 893-6296 or 6297  
Fax: (504) 893-6268  
Phone: (504) 646-6448 (Slidell)  
Fax: (504) 646-6474

**Tangipahoa Parish**

330 West Oak St.  
P.O. Box 278  
Amite, LA 70422  
Phone: (504) 748-2020  
Fax: (504) 748-2029  
Phone: (504) 543-4175 (Hammond)  
Fax: (504) 543-4179

**Terrebonne Parish**

600 Polk St.  
Houma, LA 70360  
Phone: (504) 857-3770  
Fax: (504) 857-3774

**Vermilion Parish**

401 South St. Charles St.  
Abbeville, LA 70510  
Phone: (337) 893-1443  
Fax: (337) 893-6680



## Appendix III

# Louisiana Native Perennial Flowers for Landscaping

These are generally tough, long-lived plants that will provide seasonal color in the landscape. You may use the species or varieties, when available.

Yarrow	<i>Achillea millefolium</i>
Blue Star	<i>Amsonia tabernaemontana</i>
Swamp Milkweed	<i>Asclepias incarnata</i>
Butterfly Milkweed	<i>Asclepias tuberosa</i>
Asters, various types	<i>Aster</i> species
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>
Tickseed	<i>Coreopsis tinctoria</i>
Swamp Lily	<i>Crinum americanum</i>
Purple Coneflower	<i>Echinacea purpurea</i>
Coral Bean, Mamou	<i>Erythrina herbacea</i>
Mist Flower	<i>Eupatorium coelestinum</i>
Spotted Joe Pye Weed	<i>Eupatorium maculatum</i>
Joe Pye Weed	<i>Eupatorium purpureum</i>
Narrow-leaf Sunflower	<i>Helianthus angustifolius</i>
Louisiana Iris Species	<i>Iris brevicaulis</i> , <i>Iris fulva</i> , <i>Iris giganticaerulea</i> , <i>Iris hexagona</i> , <i>Iris nelsonii</i>

### Louisiana Iris Hybrids

Southern Blue Flag	<i>Iris virginica</i>
Blazing Star	<i>Liatris spicata</i>
Cardinal Flower	<i>Lobelia cardinalis</i>
Beebalm	<i>Monarda fistulosa</i>
Primrose, Buttercup	<i>Oenothera speciosa</i>
Louisiana Phlox	<i>Phlox divaricata</i>
Prairie Phlox	<i>Phlox pilosa</i>
Black-eyed Susan	<i>Rudbeckia hirta</i>
Goldenrod	<i>Solidago</i> species
Indian Pinks	<i>Spigelia marilandica</i>
Stokes Aster	<i>Stokesia laevis</i>
Spiderwort	<i>Tradescantia virginiana</i>
Verbena	<i>Verbena canadensis</i>
	<i>Verbena rigida</i>
Moss Verbena	<i>Verbena tenuisecta</i>
Ironweed	<i>Vernonia altissima</i>

## Ornamental Grasses

These tough, reliable grasses are easy to grow, pest free and drought resistant. They generally grow in clumps and do not run like lawn grasses. They may be used in beds along with shrubs, perennials and annuals.

Big Bluestem	<i>Andropogon gerardii</i> (native)
Inland Sea Oats	<i>Chasmanthium latifolium</i>
Pampas Grass	<i>Cortaderia selloana</i>
Weeping Love Grass	<i>Eragrostis curvula</i> (native)
Maiden Grass	<i>Miscanthus sinensis</i> (There are many excellent varieties of this grass, including Gracillimus, Variegatus, Morning Light and Zebrinus.)
Bamboo Muhly	<i>Muhlenbergia dumosa</i>
Gulf Muhly	<i>Muhlenbergia capillaris</i>
Lindheimer's Muhly	<i>Muhlenbergia lindheimeri</i>
Switch Grass	<i>Panicum virgatum</i> (native)
Dwarf Fountain Grass	<i>Pennisetum alopecuroides</i> "Hamelin"
Feathertop	<i>Pennisetum villosum</i> (native)
Palm Grass	<i>Setaria palmifolia</i>

## Ground Covers

These plants are used to cover areas in a landscape where grass will not grow due to shade, on slopes, in tight areas difficult to mow, to add beauty and interest to a landscape and to reduce lawn areas. Once established, ground covers require far less maintenance than lawns.

### For Shade

Japanese Ardisia	<i>Ardisia japonica</i>
Cast Iron Plant	<i>Aspidistra</i>
Holly Fern	<i>Cyrtomium falcatum</i>
Autumn Fern	<i>Dryopteris erythrosora</i>
English Ivy	<i>Hedera helix</i>
Ligularia	<i>Farfugium japonicum</i>
Liriope	<i>Liriope muscari</i>
Creeping Lily Turf	<i>Liriope spicata</i>
Monkey Grass	<i>Ophiopogon japonicus</i>
Asiatic Jasmine	<i>Trachelospermum asiaticum</i>

### For Sun

Dwarf Bamboo	<i>Bambusa sasa pygmaea</i>
Daylily	<i>Hemerocallis</i>
Shore Juniper	<i>Juniperus conferta</i>
Creeping Juniper	<i>Juniperus horizontalis</i>
Liriope	<i>Liriope muscari</i>
Asiatic Jasmine	<i>Trachelospermum asiaticum</i>

### Evergreen Trees

These are useful where year-round shade is desirable, for screening or sound barriers.

Deodar Cedar	<i>Cedrus deodara</i>
American Holly	<i>Ilex opaca</i> (native)
Savannah Holly	<i>Ilex x attenuata</i> "Savannah"
Yaupon Holly	<i>Ilex vomitoria</i> (native)
Eastern Red Cedar	<i>Juniperus virginiana</i> (native)
Southern Magnolia	<i>Magnolia grandiflora</i> (native)
Pines	various species (native)
Cherry Laurel	<i>Prunus caroliniana</i> (native)
Live Oak	<i>Quercus virginiana</i> (native)

### Native Deciduous Trees

These are generally used as shade trees. They drop their foliage in fall/early winter.

Drummond Red Maple	<i>Acer rubrum</i> var. <i>drummondii</i>
Redbud	<i>Cercis canadensis</i>
Green Ash	<i>Fraxinus pennsylvanica</i>
Silverbell	<i>Halesia diptera</i>
Crape Myrtle	<i>Lagerstroemia indica</i>
Sweet Bay Magnolia	<i>Magnolia virginiana</i>
Southern Red Oak	<i>Quercus falcata</i>
Nuttall Oak	<i>Quercus nuttallii</i>
Willow Oak	<i>Quercus phellos</i>
Shumard Oak	<i>Quercus shumardii</i>
Bald Cypress	<i>Taxodium distichum</i>

### Evergreen Shrubs

Glossy Abelia	<i>Abelia grandiflora</i>
Dwarf Yaupon Holly	<i>Ilex vomitoria</i> "Nana" (native)
Pineapple Guava	<i>Feijoa sellowiana</i>
Starbush	<i>Illicium floridanum</i> (native)
Wax Myrtle	<i>Myrica cerifera</i> (native)
Nandina	<i>Nandina domestica</i>
Indian Hawthorn	<i>Raphiolepis indica</i>
Indian Azaleas	<i>Rhododendron indicum</i>

### Deciduous Shrubs

Red Buckeye	<i>Aesculus pavia</i> (native)
American Beautyberry	<i>Callicarpa americana</i> (native)
Althea	<i>Hibiscus syriacus</i>
Hydrangea	<i>Hydrangea macrophylla</i> and <i>H. quercifolia</i> (native)
Virginia Willow	<i>Itea virginica</i> (native)

### References:

- ◆ *The Southern Living Garden Book*. Oxmoor House, 1998.
- ◆ *Identification, Selection and Use of Southern Plants for Landscape Design*. Odenwald and Turner, Claitor's Publishing, 1996.
- ◆ *Revised Louisiana Gardener's Guide*. Gill and White, Cool Springs Press, 2002.
- ◆ *Month-by-Month Gardening in Louisiana*. Dan Gill, Cool Springs Press, 1999.

## Appendix IV

# LSU AgCenter Extension Parish Office Telephone Numbers

ACADIA .....	(337) 788-8821
ALLEN .....	(337) 639-4376
ASCENSION .....	(225) 621-5799
ASSUMPTION .....	(985) 369-6386
AVOUELLES .....	(318) 253-7526
BEAUREGARD .....	(337) 463-7006
BIENVILLE .....	(318) 263-7400
BOSSIER .....	(318) 965-2326
CADDO .....	(318) 226-6805
CALCASIEU .....	(337) 475-8812
CALDWELL .....	(318) 649-2663
CAMERON .....	(337) 775-5516
CATAHOULA .....	(318) 744-5442
CLAIBORNE .....	(318) 927-3110
CONCORDIA .....	(318) 336-5315
DESOTO .....	(318) 872-0533
EAST BATON ROUGE .....	(225) 389-3056
EAST CARROLL .....	(318) 559-1459
EAST FELICIANA .....	(225) 683-3101
EVANGELINE .....	(337) 363-5646
FRANKLIN .....	(318) 435-7551
GRANT .....	(318) 627-3675
IBERIA .....	(337) 369-4441
IBERVILLE .....	(225) 687-5155
JACKSON .....	(318) 259-5690
JEFFERSON .....	(504) 838-1170
JEFFERSON DAVIS .....	(337) 824-1773
LAFAYETTE .....	(337) 291-7090
LAFOURCHE .....	(985) 446-1316
LASALLE .....	(318) 992-2205
LINCOLN .....	(318) 251-5134
LIVINGSTON .....	(225) 686-3020
MADISON .....	(318) 574-2465
MOREHOUSE .....	(318) 281-5741
NATCHITOCHEs .....	(318) 357-2224
ORLEANS .....	(504) 278-7495
OUACHITA .....	(318) 323-2251
PLAQUEMINES .....	(504) 433-3664
POINTE COUPEE .....	(225) 638-5533
RAPIDES .....	(318) 473-6605

RED RIVER .....	(318) 932-4342
RICHLAND .....	(318) 728-3216
SABINE .....	(318) 256-3406
ST. BERNARD .....	(504) 278-4234
ST. CHARLES .....	(985) 783-6231
ST. HELENA .....	(225) 222-4136
ST. JAMES .....	(225) 562-2320
ST. JOHN .....	(985) 497-3261
ST. LANDRY .....	(337) 948-0561
ST. MARTIN .....	(337) 332-2181
ST. MARY .....	(337) 828-4100
	Ext. 300
ST. TAMMANY .....	(985) 875-2635
TANGIPAHOA .....	(985) 748-9381
TENSAS .....	(318) 766-3222
TERREBONNE .....	(985) 873-6495
UNION .....	(318) 368-9935
VERMILION .....	(337) 898-4335
VERNON .....	(337) 239-3231
WASHINGTON .....	(985) 839-7855
WEBSTER .....	(318) 371-1371
WEST BATON ROUGE .....	(225) 336-2416
WEST CARROLL .....	(318) 428-3571
WEST FELICIANA .....	(225) 635-3614
WINN .....	(318) 628-4528

## Appendix V

### Sample Contract Language

The following text is based on the Marine Trades Association of New Jersey's Best Management Pledge. The language may be incorporated into lease agreements. Contact the Louisiana Department of Natural Resources (225) 342-5052, for an electronic copy.

#### FOR TENANTS:

I \_\_\_\_\_ (name) understand that \_\_\_\_\_ (marina/boatyard) subscribes to and enforces pollution prevention procedures. I further understand and agree that in return for the privilege of performing work on a boat at this facility such as: hull cleaning, washing, sanding, polishing and/or painting; bottom cleaning, sanding, scraping and/or painting; opening the hull for any reason, *e.g.*, installation of equipment or engine work; engine and/or stern drive maintenance, repair, painting; etc., it is my responsibility to comply with, at a minimum, the following pollution prevention practices. I understand that this list may not be complete and pledge that I will exercise common sense and judgment in my actions to insure that my activities will not deposit pollution in surface waters or elsewhere where it may be conveyed by stormwater runoff into the surface waters. I understand that failure to adopt pollution prevention procedures may result in expulsion from the marina/boatyard and forfeiture of rental fees. I understand that I may elect to employ the facility to perform potential pollution-producing activities on my behalf, in which case the responsibility for compliance with the best management practices is left entirely to the marina/boatyard.

---

(Tenant Signature)

---

(Date)

---

(Facility Representative)

---

(Date)

## FOR SUB-CONTRACTORS ONLY:

I understand and agree to have my proposed work first authorized by this facility and that I will adhere, at a minimum, to the contents of this document. I further understand that because of the nature of my proposed work, the facility may require that I be supervised by an employee of said facility, for which I will pay the normal existing labor rate.

---

(Sub-Contractor Signature)

(Date)

---

(Facility Representative)

(Date)

## POLLUTION PREVENTION PRACTICES

### A. Repairs and Service:

1. Work on hulls and engines only in designated areas, or use portable containment enclosures with approval of marina management.
2. Use tarps and vacuums to collect solid wastes produced by cleaning and repair operations, especially boat bottom cleaning, sanding, scraping and painting.
3. Conduct all spray painting within an enclosed booth or under tarps.
4. Use nontoxic, biodegradable solvents.
5. Capture debris from boat washing, and use only minimal amounts of phosphate-free, nontoxic and biodegradable cleaners.
6. Use drip pans for any oil transfers, grease operations and when servicing I/Os and outboard motors.
7. Obtain management approval before commencing any repair that will open the hull. Clean and pump bilges free of contaminated materials before and after repairs that open the hull.
8. Use spill-proof oil change equipment.



## B. Vessel Maintenance Waste

1. Bag nontoxic residue from sanding, scraping and grinding and dispose of in regular trash.
2. Seek specific directions from marina management on the disposal of all toxic and nonenvironmentally safe solvents and cleaning liquids, or dispose of these substances through a licensed agency.

## C. Fuel Operations

1. Install fuel/air separator on fuel tank vent line(s) to prevent overflow of fuel through vent.
2. Keep petroleum-absorbent pad(s) readily available to catch or contain minor spills and drips during fueling.

## D. Waste Oil and Fuel

1. Recycle used oil and antifreeze.
2. Drain liquid from absorbent materials soaked with oil or diesel and dispose of in used oil recycling container. Double bag absorbent material in plastic and dispose in regular trash receptacle.
3. Air dry and reuse absorbent materials soaked with gasoline.
4. Dispose of bioremediating absorbent products in regular trash, as long as no liquid is dripping from them. Because the microbes need oxygen to function, do not seal in plastic.
5. Drain and recycle the oil from oil filters. Recycle the filter or double bag and put in regular trash.

## E. On-Board Practices

1. Maintain oil-absorbent pads in bilge. Inspect no less than annually.
2. Do not discharge bilge water if there is a sheen to it.
3. Use only low-toxic antifreeze (propylene glycol). Recycle used antifreeze. (Even low-toxic antifreeze will contain heavy metals once it has been used.)

## F. Sewage Handling

1. Never discharge raw sewage within Louisiana waters.
2. If you have an installed toilet, you must have an approved Marine Sanitation Device (MSD).
3. Do not discharge Type I or Type II marine sanitation devices within the marina basin.
4. Use marina restroom facilities when at slip.
5. Do not empty portable toilets overboard; use marina dump facility.
6. Do not discharge holding tanks overboard; use pumpout facility.

7. If you must use a holding tank additive, use an enzyme-based product. Avoid products that contain quaternary ammonium compounds (QACs), formaldehyde, formalin, phenal derivatives, alcohol bases or chlorine bleach.
8. Live-aboards should place a dye tablet in the holding tank after each pumpout to make any illegal discharges clearly visible.

#### G. Organic Waste

1. Clean fish only in designated areas.
2. Grind, compost or double bag fish scraps (*depending on the services offered by your marina*).
3. Walk pets in specified areas and dispose of their bagged waste, in a trash can or Dumpster.

#### H. Solid Waste

1. Recycle plastic, glass, aluminum, newspaper and used lead batteries. (*Tailor this section to fit your facility's practices*).
2. Place trash in covered trash receptacles and replace covers.

## Clean Boating Tip Sheet

# Vessel Cleaning and Maintenance

As a boater, you are well aware of the care your vessel requires. In order to keep your boat safe, reliable and attractive, you must clean and maintain it. As you do so, minimize environmental impacts by following the recommendations listed here. Caution is necessary because your choice of products and activities can have serious impacts on water quality and aquatic life. For example, if paint chips from a hull are not contained, they may end up in the water. The heavy metals in the paint chips may then harm worms, oysters and other bottom-dwelling creatures and, thus, disrupt the aquatic food chain.

### Clean Carefully

- Wash frequently with a sponge or nonabrasive pad and plain water. This approach is very effective at removing salt. Additional “elbow-grease” is required to remove stains.
- When detergents are necessary, use soaps that are phosphate-free, biodegradable and nontoxic. Any soap should be used sparingly because even nontoxic products can be harmful to wildlife. For example, detergents will destroy the natural oils on fish gills, limiting their ability to breathe.
- Wax your boat, if appropriate. A good coat of wax prevents surface dirt from becoming ingrained. Clean teak with a mild soap and abrasive pads or bronze wool. This method is safe for the environment and better for the boat than the solvents in standard teak cleaners, which tend to eat away at the wood and damage seam compounds.
- Avoid detergents that contain ammonia, sodium hypochlorite, chlorinated solvents (bleach), petroleum distillates and lye.
- Try some of the alternative cleaning products listed on the reverse side of this page.

### Maintain Mindfully

- Collect all paint chips, dust and residue. Dispose in regular trash.
- Share leftover paint and varnish.
- Use less-toxic propylene glycol antifreeze.
- Don't overkill; select a proper bottom paint for your region.

### Recycle Regularly

- Recycle used oil, oil filters and antifreeze.
- Bring used solvents and waste gasoline to local Hazardous Waste Collection Days sponsored by the Louisiana Department of Environmental Quality, on the Web at <http://www.deq.state.la.us/>.

### Be a Conscientious Consumer

- Read product labels. Labels convey information about the degree of hazard associated with a particular product. For example, DANGER equates to extremely flammable, corrosive or toxic; WARNING indicates that the material is moderately hazardous; and CAUTION signals a less hazardous product. Select products that contain no warnings or which merely CAUTION consumers.

- Be wary of unqualified general claims of environmental benefit, e.g., “ozone friendly.” A better, more meaningful label would read, “This product is 95 percent less damaging to the ozone layer than past formulations that contained chlorofluorocarbons (CFCs).”
- For additional information about environmentally responsible products, contact Green Seal. Green Seal is an independent, nonprofit organization that sets environmental standards for consumer goods. Products that meet their criteria are awarded a “Green Seal of Approval.” You may search Green Seal’s database of Green Seal-certified, environmentally responsible products at [www.greenseal.org](http://www.greenseal.org), or call (202) 872-6400.

## Alternatives to Toxic Products

While baking soda, vinegar, lemon juice and vegetable oils are far less harmful than bleaches, scouring powders or detergents, they are still toxic to marine life. Use cleaning products sparingly and minimize the amount discharged into the water. Never dispose of any cleaning products down the through-hull drain. Dispose of them onshore.

<i>Product</i>	<i>Alternative</i>
Bleach	Borax
Detergent & Soap	Elbow grease
Scouring Powders	Baking soda, or rub area with one-half lemon dipped in borax, then rinse
General Cleaner	Baking soda and vinegar or lemon juice combined with borax paste
Floor Cleaner	One cup vinegar + 2 gallons of water
Window Cleaner	One cup vinegar + 1 quart warm water; rinse and squeegee
Aluminum Cleaner	2 tablespoons cream of tartar + 1 quart hot water
Brass Cleaner	Worcestershire sauce or paste made of equal amounts of salt, vinegar and water
Copper Cleaner	Lemon juice and water or paste of lemon juice, salt and flour
Chrome Cleaner/Polish	Apple cider vinegar to clean; baby oil to polish
Stainless Steel Cleaner	Baking soda or mineral oil for polishing; vinegar to remove spots
Fiberglass Stain Remover	Baking soda paste
Mildew Remover	Paste with equal amounts of lemon juice and salt, or white vinegar and salt
Drain Opener	Dissemble or use plumber’s snake or flush with boiling water + 1/4 cup baking soda + 1/4 cup vinegar
Wood Polish	Olive or almond oil (interior walls only)
Hand Cleaner	Baby oil or margarine
Head & Shower	Baking soda; brush thoroughly
Rug/Upholstery Cleaner	Dry cornstarch sprinkled on; vacuum

Adapted from Buller, Pat. 1995. *Clean Marina+Clean Boating+Clean Water Partnership*. Seattle, WA: Puget Soundkeeper Alliance.

Adapted from information provided by the Maryland Clean Marina Initiative.



For more information on the Louisiana Clean Marina Initiative, contact the Louisiana Department of Natural Resources, (225) 342-5052.

## Selecting a Bottom Paint

### The issue

Marine growth, such as barnacles and slime, impair vessel performance. To maintain top performance, boats are often painted with toxic paint to prevent fouling growth. Unfortunately, the biocides found in the paints are harmful to many marine animals – not just those that try to make their homes on the undersides of boats.

Selecting a bottom paint is not an easy job. The challenge is to select the least-toxic paint that will effectively prevent fouling. The effectiveness of a particular paint will be impacted by water temperature and salinity and by the speed and frequency with which the vessel is operated.

### The paints

Bottom paints can be separated into three general categories: antifouling hard, antifouling ablative and nontoxic coatings.

The two most commonly used varieties of coating are hard and ablative paints. When hard or “contact leaching” paints dry, they create a porous film on the hull. Biocides are held in the pores. Toxins dissolve when they come in contact with water. Ablative or “sloughing” paints are partially soluble. The active ingredient is continually leached out. The underlying film then weakens and is polished off as the boat moves through the water, revealing fresh antifouling paint.

Hard paints contain varying levels of biocides that are released slowly. Ablative paints generally contain lower levels of toxins, yet they are released at a steadier rate. The impact to the aquatic environment over time is about the same.

Nontoxic coatings are the most environmentally friendly option. They contain Teflon or silicone and produce hard, slick surfaces to which fouling growth cannot firmly attach. Paint companies are moving toward the broad introduction of nontoxic slick paints. However, they are not yet widely available.

### Which bottom paint is right for you?

There is no easy answer to this question (at least until biocide-free coatings are readily available and affordable). Weigh the pros and cons described in the following table, and consider the type of boat you have and where and how you use it.

Ask yourself the following questions:

- **How frequently do I use my boat?** Ablative paint is most effective when a boat is used regularly.
- **How fast do I typically travel?** Speed boats are generally painted with hard paints.
- **Will I want the hull scrubbed while the boat is in the water?** If you anticipate underwater hull cleaning, DO NOT use ablative paint.
- **Will I have the boat hauled annually?** Hard paint is applied annually. Some ablative paints are designed to last for more than one season.

Maintenance Need	Ablative Paint	Hard Paint	Environmental Issue
Frequency of repainting	Every 1 to 3 years, depending on the thickness of the original application and use of boat.	A single coat is applied annually.	<b>Air Quality.</b> Fumes (volatile organic compounds) harmful to human health and air quality are released whenever solvent-based paints are used. Use water-based paints whenever practical.
Hull preparation	Light sanding is generally all that is needed prior to application of new paint.	Annual heavy sanding is suggested to improve adhesion and prevent build-up. For light sanding, the resulting build-up will need to be blasted or stripped off periodically.	<b>Debris.</b> Use the following techniques to keep debris out of the water: <ul style="list-style-type: none"> <li>• Collect dust created by sanding by using a vacuum sander or a tarp.</li> <li>• Blast or strip in an enclosed area where debris can be easily captured.</li> <li>• Send collected debris with your regular trash to a municipal landfill or incinerator.</li> <li>• Encourage your marina or boatyard to follow these pollution prevention practices.</li> </ul>
Pressure washing	Pressure washing will remove some ablative paint.	Pressure washing will remove fouling growth and possibly paint chips.	<b>Release of biocides.</b> Boatyards should remove visible solids from pressure-wash water before it is returned to local waterways. <ul style="list-style-type: none"> <li>• Solids from hulls painted with hard paints are easily collected in filter cloth, settling basins or hay bales.</li> <li>• Inform your yard manager if you have ablative paint. He or she should use minimal water pressure so that, to the greatest extent possible, only slime is removed. You will be protecting the environment and your investment in the paint.</li> </ul>
Underwater hull cleaning	Ablative paint should never be cleaned in the water.	Hard paints may be cleaned by diver if done carefully.	<b>Release of Biocides.</b> Be aware that colored plumes should not be visible in the water when a hull is being cleaned. They indicate that paint is being removed. <ul style="list-style-type: none"> <li>• Hard or slick paints may be cleaned while a vessel is in the water, as long as care is taken to use the least-abrasive material practical.</li> <li>• Ablative paints SHOULD NOT be cleaned in the water, as the scrubbing action will release paint and biocide.</li> </ul>



For more information on the Louisiana Clean Marina Initiative, contact the Louisiana Department of Natural Resources, (225) 342-5052.

Adapted from information provided by the Maryland Clean Marina Initiative.

# Underwater Hull Cleaning: Tips for divers, marina operators and boaters

In order to maintain maximum performance and to stretch the time between haul-outs, some boaters hire professional divers (or dive themselves) to clean their hulls while their boats are in the water. If done properly, underwater hull cleaning removes marine growth and a minimum of antifouling paint. When done too vigorously or when ablative paint is scrubbed, however, unacceptable levels of toxic bottom paint are released into the surrounding water.

The following tips for divers, boatyard and marina operators and boaters are intended to guide decisions about hull treatment and maintenance. By working together, we can minimize the pollution problems associated with underwater hull cleaning.

## Best Management Practices for divers

- Clean gently to avoid creating a plume or cloud of paint in the water.
- On boats painted with ablative paints, clean only running gear and zinc anodes.
- Refrain from hull cleaning for a minimum of 60 days after hard antifouling paint has been applied.
- Always use the least abrasive material that will effectively clean the painted surfaces.
  - Use soft sponges or piece of carpet to clean marine growth.
  - Use soft nylon on similar material on rotary brush machines.
  - Use more rigorous cleaning pads only as needed to remove hard growth.
  - Use stainless steel pads or brushes only on unpainted metal areas.
- Do not clean the entire hull if it is not dirty; just do the waterline, running gear and propeller.
- Never sand, strip or chip hull paint underwater.
- If you have been hired to replace zinc anodes, bring the old ones ashore for recycling. Look in the phone book under “scrap” for dealers.
- Provide customers with a copy of your standard pollution prevention procedures.

## Best Management Practices for boatyard and marina operators

- Provide an alternative to underwater hull cleaning by offering mid-season pressure wash specials.
- Allow only divers that follow the Best Management Practices outlined above to clean hulls within the confines of your marina. Ask all subcontractors to sign in. Also, ask to see a current business license and proof of liability insurance.
- Keep a referral list of reputable divers to pass along to boaters seeking underwater hull services.
- Encourage boaters who typically hire divers to use hard bottom paints.

- After painting a boat's hull, provide the boat owner with a simple description of the paint used and the maintenance requirements. For example, "Your boat was painted on April 27, 2000, with Barnacle B-gone. Barnacle B-gone is an ablative paint. It should not be scrubbed while in the water. The active ingredient is cuprous oxide, which is a potent biocide. A copy of the Material Safety Data Sheet is attached for your information. Barnacle B-gone retains its antifouling effectiveness when hauled and can be relaunched without repainting. Depending on frequency of use and other factors, the hull will need to be repainted in approximately two years."
- Ask customers who have had their hulls coated with ablative paints to read a notice that states, "I understand that my boat has been painted with an ablative paint. If the hull is scrubbed while in the water, unacceptable concentrations of paint and the pesticide cuprous oxide will be released."
- Earn cash by collecting and recycling used zinc anodes. Look in the phone book under "scrap" for dealers.

### Best Management Practices for boaters

- Take advantage of "quick haulout specials" if offered by your marina or a nearby boatyard.
- Where practical, store your boat out of the water.
- Be aware that colored plumes should NOT be visible in the water near underwater cleaning activity. They indicate that paint, rather than just marine growth, is being rubbed off your boat.
- Let divers know you expect them to minimize pollution while working on your boat. Ask them to follow best management practices for divers listed above.
- Never hire a diver to clean a hull painted with ablative (*i.e.*, sloughing) paint.
- Be knowledgeable about your antifouling paint. Ask your yard manager to provide a written statement describing the name and type of paint used, health and safety warnings, maintenance requirements and date applied. Keep a record of this information.
- If you know you will want a diver to clean your hull, select a hard or slick paint.
- Wait a minimum of 60 days after applying fresh, hard bottom paint to have the hull cleaned underwater.
- Consider low-copper hard paints and regular underwater hull cleaning instead of high-copper content paints.
- Before hiring a diver, get local references from a marina operator or other boaters.



For more information on the Louisiana Clean Marina Initiative, contact the Louisiana Department of Natural Resources, (225) 342-5052.

Adapted from information provided by the Maryland Clean Marina Initiative.



## Clean Boating Tip Sheet

# Petroleum control

Petroleum in or on the water is harmful and, in some cases, fatal to aquatic life. Floating petroleum is particularly bad because it reduces light penetration and the exchange of oxygen at the water's surface. Floating oil also contaminates the microlayer, the uppermost portion of the water column. The microlayer is home to thousands of species of plants, animals and microbes. The abundance of life in the microlayer attracts predators like seabirds from above and fish from below. Therefore, pollution in the microlayer has the potential to poison much of the aquatic food web.

### The law

The Federal Water Pollution Control Act (also called the Clean Water Act) prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone, if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5,000 from the U.S. Coast Guard. State law also prohibits the discharge of oil.

### Fueling practices

Gas or diesel may spill during fueling. Spills of this sort harm aquatic life, waste money and can result in stains on the hull and damage to the gel coat and striping of your boat. Follow these tips to avoid problems:

- Fill tanks no more than 90 percent capacity. Gas that is drawn from cool storage tanks will expand as it warms up onboard your vessel.
- To determine when the tank is 90 percent full, listen to the filler pipe, use a sounding stick, and be aware of your tank's volume.
- Rather than filling your tank upon your return to port, wait and fill it just before leaving on your next trip. This practice will reduce spills due to thermal expansion because the fuel will be used before it has a chance to warm up.
- Fill portable tanks onshore, where spills are less likely to occur and are easier to clean.
- Use oil-absorbent pads to catch all drips.
- Slow down at the beginning and end of fueling.

### Bilge maintenance

Engine oil tends to accumulate in bilges. If no precautions are taken, the oil is pumped overboard along with bilge water. Discharging oily water is illegal. To avoid fines and to protect quality water, follow these tips:

- Keep your engine well tuned to minimize the amount of oil that is released. Be sure there are no leaking seals, gaskets or hoses.
- Place oil-absorbent materials or a bioremediating bilge boom in the bilge.
- Place an oil-absorbent pad under the engine.
- Replace oil-absorbent materials regularly.
- Look for contractors or marinas that offer a bilge pumpout service.
- Do not treat oily water with detergents. Soaps pollute and make clean up impossible. You may be fined up to \$25,000 for using soaps to dissipate oil.

## Disposal of oil-absorbent materials

The disposal of used oil-absorbent material depends on the type of product and how it was used:

- Standard absorbents that are saturated with gasoline may be air dried and reused.
- Standard absorbents saturated with oil or diesel may be wrung out over oil recycling bins (if they are saturated with oil or diesel only!) and reused. Alternatively, they should be double bagged and tossed in your regular trash.
- Bioremediating bilge booms may be disposed in your regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.

## Emissions control

Marine engines, especially two-stroke outboard motors, produce the highest average level of hydrocarbon exhaust emissions after lawn and garden equipment. Hydrocarbon emissions contribute to ground-level ozone, a known health risk. Follow these tips to help your engine operate as efficiently as possible:

- Use the gas-to-oil ratio recommended by the engine manufacturer. Too much oil can foul spark plugs and too little can lead to increased engine wear or even failure.
- Use premium two-cycle engine oil (TC-W3 or TC-W4). Premium oils improve engine performance and reduce pollution because they burn cleaner, contain more detergents and prevent formation of carbon deposits.
- Use gasoline with the octane level recommended by the engine manufacturer.

## Preventive equipment

Products are available commercially that can help you prevent spills and reduce emissions:

- Install a fuel/air separator along your vent line. These devices allow air, but not fuel, to escape through a vent opening.
- Attach a safety nozzle to portable gas cans used to fill outboard engines. These nozzles automatically stop the flow of fuel when the receiving tank is full.
- To prevent oily bilge water from being discharged, install a bilge pump switch that leaves an inch or two of water in the bilge. Alternatively, connect a bilge water filter to your vessel's bilge pump.
- When it is time to buy a new engine, select a fuel-efficient, lower-emission model.

## In case of a spill

- Stop the flow.
- Contain the spill.
- Call the U.S. Coast Guard National Response Center at (800) 424-8802.



For more information on the Louisiana Clean Marina Initiative, contact the Louisiana Department of Natural Resources, (225) 342-5052.

Adapted from information provided by the Maryland Clean Marina Initiative.

## Clean Boating Tip Sheet

# Vessel Sewage

### Is sewage a problem?

Raw or poorly treated boat sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other microorganisms contained in sewage discharge.

Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When the algae die they create another problem – the algae are decomposed by bacteria that further reduce levels of dissolved oxygen.

### What does the law say?

According to federal and state law, it is illegal to discharge raw sewage. All vessels with installed toilets must have a Marine Sanitation Device (MSD):

- **Type I** systems mechanically cut solids and disinfect waste. They must bear a U.S. Coast Guard certification label.
- **Type II** systems are similar to Type I systems. The difference is that Type IIs treat sewage to a higher standard and generally require more space and energy. Type II systems must also have a U.S. Coast Guard certification label.
- **Type III** systems do not discharge sewage. Holding tanks are the most common Type III system. Incinerating systems are another option. A U.S. Coast Guard label is not required on Type III systems.

Vessels 65 feet and shorter may have any of these three types of MSDs. Vessels longer 65 feet must have a Type II or III system. Within a No Discharge Zone (NDZ), the discharge of all sewage is prohibited. Boaters with Type I and II systems must secure them while navigating within an NDZ. Locking the door to the head or disabling the seacock are acceptable methods for preventing overboard discharges.

### What Can You Do?

#### Holding Tanks

Install a holding tank on your boat. Information explaining how to retrofit a boat to include a holding tank is available on the Maryland Department of Natural Resources Web site, [www.dnr.state.md.us/boating/pumpout/systemsguide](http://www.dnr.state.md.us/boating/pumpout/systemsguide).

Use good plumbing to control holding tank odor. Fiberglass and metal tanks are highly resistant to permeation. Specially labeled flexible “sanitation hoses” and PVC piping are also highly impermeable. Hose runs should be as short and as straight as possible. Wherever practical, use rigid pipe below the level of the holding tank and in other areas where sewage will accumulate. Keep the number of connections to a minimum and ensure that seals are tight.

Use enzyme-based products in your holding tank to further control odor. Enzymatic products use biological processes, rather than harsh chemicals, to break down sewage. Be sure to pump and rinse your holding tank prior to initial use of an enzyme product if you have used chemical-based odor control additives in the past. Chemical residues may interfere with

the effectiveness of enzyme-based products. Avoid holding tank products that contain quaternary ammonium compounds (QACs) and formaldehyde. These products may disrupt sewage treatment plants.



Empty holding tanks at a marina pumpout station.

### **Type I and II MSDs**

Maintain your Type I or II MSD. Establish a regular maintenance schedule based on your owner's manual to remind yourself when chemicals need to be added, electrodes need to be cleaned, etc.

Do not discharge your Type I or II MSD while in a marina, a swimming area, a No Discharge Zone, over an oyster reef or in a poorly flushed area. Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It may contain pathogens as well. Use shoreside restrooms when in port.



For more information on the Louisiana Clean Marina Initiative, contact the Louisiana Department of Natural Resources, (225) 342-5052.

Adapted from information provided by the Maryland Clean Marina Initiative.

## Clean Boating Tip Sheet

# Waste Containment and Disposal

Trash is ugly and may be dangerous to humans and wildlife. For example, plastic may snare propellers and choke sea turtles. Congress passed a law in 1987 to protect our waterways from garbage. The Marine Plastics Pollution Research and Control Act (Title II of Public Law 100-220) regulates the disposal of garbage at sea according to how far a vessel is from shore:

- Within U.S. lakes, rivers, bays, sounds, and within three nautical miles from the ocean shore, it is illegal to dump anything other than fish guts.
- Between three and 12 nautical miles from shore, it is illegal to dump plastic and any other garbage that is greater than one inch in size.
- Between 12 and 25 nautical miles from shore, it is illegal to dump plastic and dunnage, *i.e.*, lining and packing material, nets, lines, etc.
- Beyond 25 nautical miles, it is illegal to dump plastic.

Meeting the law is easy. Just follow these tips:

### Contain trash

- Don't let trash get thrown or blown overboard.
- If trash blows overboard, retrieve it. Consider it "crew overboard" practice.
- Pack food in reusable containers.
- Buy products without plastic or excessive packaging.
- Don't toss cigarette butts overboard. They are made of plastic (cellulose acetate).
- Purchase refreshments in recyclable containers and recycle them.
- Properly dispose of *all* trash onshore. Bring it home or leave it in a trash bin at the marina.

### Recycle

- Recycle cans, glass, newspaper, antifreeze, oil, oil filters and batteries.
- Bring used monofilament fishing line to recycling bins at your tackle shop or marina.

### Fish scraps

For safety reasons, marinas are often located in sheltered areas — areas that will protect boats from wind and waves during a storm. The same features that protect boats during a storm, however, also limit the exchange of water. Poor exchange, or flushing, means that any waste discharged into the water may stay in the same general area for an extended length of time.

Fish cleaning may pose a problem if the waste is discarded into a poorly flushed marina basin. Fish waste is smelly and unsightly. Also, life-sustaining oxygen is removed from the water column as bacteria decompose the fish remnants.

- Do not discard fish waste in poorly flushed areas.
- Find out what your marina's disposal policy is.

- Bag waste and dispose at home or in a trash can.
- Dispose over deep water.

### Maintenance Waste

Dispose of the following items according to the recommendations listed below.

<i>Waste Product</i>	<i>Disposal Method</i>
Oil	Recycle.
Oil filters	Puncture and hot drain for 12 hours. Recycle oil and canister.
Antifreeze	Recycle.
Paint and varnish	Allow to dry completely, <i>i.e.</i> , solidify. Dispose in regular trash.
Solvents, gasoline and pesticides	Bring to a household hazardous waste collection day.
Expired emergency flares	Bring to local fire department or a household hazardous waste collection day.



For more information on the Louisiana Clean Marina Initiative, contact the Louisiana Department of Natural Resources, (225) 342-5052.

Adapted from information provided by the Maryland Clean Marina Initiative.

## Appendix VII.

### Waste Haulers and Recyclers 2004

**Note:** This is only a partial list of commercial waste haulers and/or recyclers, provided for information only. LDNR and the Clean Marina Initiative do not recommend or endorse these or any other companies. Please contact companies directly to verify information listed below. A more exhaustive list of recyclers for a variety of home, office and industrial materials is available from LDEQ at <http://www.deq.louisiana.gov/assistance/recycling/recdir1.htm>.

#### **Allied Sorbent Manufacturers**

95 1<sup>st</sup> Street Suite A  
Gretna, LA 70053  
(504) 362-9654

- Supplies oil-absorbent materials for cleanups

#### **Asset Waste Management & Recycling Inc.**

<http://www.assetwmr.com>

Phone: (706) 866-7098

Toll-free: (877) 858-5685

- Electronics: computers, telephones, other electronics

#### **Circle Recycling**

[www.absorbentrecycling.com](http://www.absorbentrecycling.com)

1245 1<sup>st</sup> Avenue

Harvey, LA 70058

(504) 341-0714

- Sells oil-absorbent booms and spill kits
- Recycles and reuses absorbents used in cleanups

#### **EPSI (Earth Protection Services Inc.)**

<http://www.earthpro.com>

10 South 48th Ave., Suite #4

Phoenix, AZ 85063

(800) 414-0443

This is a mail-in program. Call, or visit Web site for a complete listing of accepted materials.

- Batteries: NiCd batteries, rechargeable batteries (non-NiCd), single-use batteries
- Electronics: computer monitors, computers, televisions, other electronics
- Household Hazardous Waste: fluorescent tubes and ballasts, PCB and non-PCB ballasts, mercury-containing items

**KBK Innovations**

<http://www.kbk-innovations.net>

P.O. Box 772

Gilbert, AZ 85299

Phone: (480) 205-6524

Fax: (480) 857-0794

Email: [benkbk@qwest.net](mailto:benkbk@qwest.net)

This is a mail-in program. This site also provides universal waste training.

- Vehicles: car batteries
- Batteries: NiCd batteries, other batteries, rechargeable batteries (non-NiCd), single-use batteries
- Electronics: computer monitors, computers
- Household Hazardous Waste: fluorescent light bulbs, mercury-containing items
- Reuse: computer donation, reusable appliance donation

**Lamp Environmental Industries**

<http://www.lei-inc.net>

46257 Morris Rd.

Hammond, LA 70401

(800) 309-9908

Please call before bringing in items. This site disposes of reagents such as chemical oxygen demand, biochemical oxygen demand and Nessler's.

- Vehicles: antifreeze
- Batteries: NiCd batteries, other batteries, rechargeable batteries (non-NiCd), single-use batteries
- Electronics: computer monitors, computers, electronics, televisions
- Household Hazardous Waste: fluorescent light bulbs, mercury-containing items, pesticides, paint waste, metals and other chemicals

**M B Energy LLC**

920 West Pinhook Rd.

Lafayette, LA 70503

(337) 269-5652

- Petroleum: oil/oil clean up

**Nacarre SVCS GRP**

4100 Meadow Ln.

Bossier City, LA 71111

(318) 741-3495

- Other: contaminated water/ waste water hauling and treatment
- Petroleum: oil, fuel hauling

**Oil Mop Inc.**

5227 North River Rd.

Port Allen, LA 70767

(225) 388-9992

- Petroleum: Oil and waste hauling



**Page-Kraemer Environmental Services Inc.**

1426 Eraste Landry Rd.  
Lafayette, LA 70506  
(337) 237-2444

- All waste

**Pelican Commercial Waste Services**

1042 Woodland Hwy.  
Belle Chasse, LA 70037  
(504) 392-4619

- All waste

**Rubark Technical Services LLC**

7 River Rd.  
New Orleans, LA 70121  
(504) 828-5569

- Petroleum: Oil
- Hazardous waste

**Safety-Kleen Systems Inc.**

*www.safety-kleen.com*

2423 Tyler St.  
Kenner, LA 70062  
Phone: (504) 466-5718  
Fax: (504) 466-2373

- Vehicles: antifreeze, brake fluid
- Industrial: corrosives, metals, flammable materials, paints, solvents
- Household Hazardous Waste: fluorescent light bulbs
- Petroleum: used motor oil, used oil filters, oily rags, fuels

**U.S. Filter**

*www.usfilter.com*

14890 Intracostal Drive  
New Orleans, LA 70129  
(504) 254-9030

This company accepts only non-hazardous waste, but may coordinate the disposal of hazardous waste and other items.

- Vehicles: antifreeze
- Petroleum: used motor oil, used oil filters, spent fuel and oily rags

## Appendix VIII

### Spill Response Companies 2004

**Note:** This is only a partial list of commercial spill response companies. LDNR and the Clean Marina Initiative do not recommend or endorse any of these companies. Please contact companies directly to verify information listed below.

#### **Acadian Engineers & Environmental Consultants**

1601 Amazon St.  
P.O. Box 1126  
Eunice, LA 70535  
(337) 457-1492  
(800) 264-1492

#### **AMPOL**

**(American Pollution Control Inc.)**

*www.ampol.net*  
5619 Port Rd.  
New Iberia, LA 70560  
(337) 365-7847  
(800) 482-6765

#### **ASCO Environmental Services**

*www.asco-es.com*  
(800) 207-SPIL (7745)

Corporate Office  
307 Bunker Rd.  
Lake Charles, LA 70615  
(504) 832-8600

124 N. Doucet Dr.  
Golden Meadow, LA 70357  
(800) 207-7745

2001 Peters Rd.  
Harvey, LA 70058  
(504) 366-6557

191 A. J. Estay Rd.  
Golden Meadow, LA 70357  
(985) 396-2711

**B & B Fire and Safety**

319 E. Milton Ave.  
Lafayette, LA 70508  
(337) 857-8450  
(877) 660-3473

**Bertucci Industrial Services**

P.O. Box 10507  
Jefferson, LA 70181  
(504) 828-5569  
(800) 734-7792

**Courtney Companies**

6411 Masonic Dr.  
Alexandria, LA 71307  
Phone: (318) 448-3526  
Fax: (318) 448-0538

**Crucial Inc.**

(Provides products used in cleanups)  
*www.crucialinc.com*  
142 Enterprise Dr.  
Gretna, LA 70056  
(504) 347-9292

**Eagle Construction & Environmental Services Inc.**

10049 Industriplex Ave.  
Gonzales, LA 70737  
Phone: (225) 677-7877  
(800) 336-0909  
Fax: (225) 677-5474

**Environmental Equipment Inc.**

626 Hobson St.  
Houma, LA 70360  
(985) 868-3100

7388 Hwy. 182 E.  
Morgan City, LA 70361  
(985) 631-9919

**Environmental Response Services**

8583 Joe Ledoux Rd.  
Lake Charles, LA 70605  
or  
P.O. Box 4288  
Lake Charles, LA 70606  
Phone: (337) 562-0001  
Fax: (337) 562-0002

**ES&H**  
**(Environmental Safety & Health)**

*www.esandh.com*  
(888) 422-3622

3260 Barataria Blvd.  
Marrero, LA 70072  
(504) 340-0336

1730 Coteau Rd.  
Houma, LA 70364  
(985) 851-5350

3189 Hwy. 70  
Morgan City, LA 70380  
(985) 385-6730

**Ferguson-Harbour Inc.**

4110 Hwy. 80 E.  
Pearl, MS 39208  
Phone: (601) 936-6321  
(800) 235-1344  
Fax: (601) 936-6339

**Garner Environmental Services**

*www.garnerenvironmental.com*  
19701 Chef Menteur Hwy.  
New Orleans, LA 70129  
Phone: (504) 254-2444  
Fax: (504) 254-3004

**Global Pollution Service**

4909 Common St.  
Lake Charles, LA 70607  
(337) 478-4181

**Hulcher Services Inc.**

3505 Hwy. 1 N.  
P.O. Box 680  
Port Allen, LA 70767  
(225) 334-9900  
(800) 659-8032, Ext. 1 – Dispatch

**ICI**

**(Industrial Cleanup Inc.)**

129 ICI Lane & Hwy. 54  
P.O. Box 866  
Garyville, LA 70051  
Phone: (985) 535-3174

(800) 436-0883  
Fax: (985) 535-3262

**Jones Environmental Services**

708 Milam St., Suite 100  
Shreveport, LA 71101  
Phone: (318) 226-8444  
Fax: (318) 226-0381

**Marine Spill Response Corps Clean Gulf Associates**

396 Roland Rd.  
Houma, LA 70363  
(985) 580-0294  
(985) 580-0925

**Miller Environmental Services**

2208 Industrial Dr.  
Sulphur, LA 70665  
(337) 882-9800  
(888) 207-9403

**Oil Mop**

*www.oilmop.com*  
(800) 645-6671

9625 Hwy. 182  
Morgan City, LA 70381  
(985) 631-9664

131 Keating Dr.  
Belle Chasse, LA 70073  
(504) 362-8850

3815 Commercial Dr.  
New Iberia, LA 70560  
(337) 364-5373

41044 Hwy. 23  
Buras, LA 70041  
(985) 534-4163

5227 N. River Rd.  
Port Allen, LA 70767  
(225) 388-9992

**Petron**

P.O. Box 8718  
Alexandria, LA 71306  
Phone: (318) 445-5685  
(800) 259-4587  
Fax: (318) 448-1727

**Summitt Environmental Inc.**

4601 Blanchard  
Shreveport, LA 71101  
(800) 990-3433

**Reliable Onshore Services**

1116 Bayou Lacarp Rd.  
Houma, LA 70363  
(985) 851-5611

**United States Environmental Services LLC**

2809 E. Judge Perez Dr.  
Meraux, LA 70075  
Phone: (985) 534-2744  
(504) 279-9930  
(888) 267-4901  
Fax: (504) 279-7756

37009 Lirocchi Park Rd.  
Prairieville, LA 70769  
Phone: (225) 673-4200  
(888) 267-4901  
Fax: (225) 677-9549

## Appendix IX

### Staff Training Guide

Use this table as a guide and a record for training staff in marina policies and best management practices. Some of these items are beyond the scope of this guidebook. A more complete list of how to dispose of liquid and solid wastes is on pages 52-53.

STAFF TRAINING GUIDE			
Pollution Prevention	Page No.	Dates Reviewed	Staff Present
Blasting and painting procedures	21-25		
Containing debris from in-water maintenance	26-27, 58		
Containing dust from sanding	22-23		
Containing general maintenance debris	22		
Containing oil and grease associated with engine work	25-26, 33		
Disposal of spent abrasives	22-23		
Disposal of vessel waste water	39-45		
Fish Scrap disposal	48		
Fueling procedures	32		
General good housekeeping	48-49		
Handling & recycling liquid waste	50, 55-56, 58		
Handling & recycling solid waste	48-50, 55-56, 58		
Maintaining septic systems	43		
Preventing sewage discharges	41-43		
Spent solvent management	23, 51-53		
Spill prevention and control	29-36		
Stormwater management	13-19		
Used oil management	35-36, 52		
Using equipment and chemicals properly	N/A		

<b>Emergency and Other Response Policies</b>	<b>Page No.</b>	<b>Dates Reviewed</b>	<b>Staff Present</b>
Handling a health emergency	N/A		
Preparing for a hurricane	N/A		
Responding to a fire	N/A		
Responding to a fuel spill	35		
Watching for inappropriate discharges and how to approach a polluter	N/A		