



Alabama-Mississippi Clean Marina Guidebook

Produced by the
Alabama-Mississippi Clean Marina Program

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About this Guidebook

The Alabama-Mississippi Clean Marina Partnership developed this Guidebook based on similar guidebooks currently being used by clean marina programs in Texas, Florida, and the Tennessee Valley. It is intended as an educational and reference tool to support marina operators and owners who are voluntarily striving to protect the water resources of the coasts and waterways in Alabama and Mississippi.

The Guidebook's purpose is to provide best management practices geared toward improving marina operations. It does not constitute a complete reference to state, federal or local laws. Relying on the information in this book does not provide legal protection. The Mississippi-Alabama Sea Grant Consortium, and other contributing agencies, organizations and individuals cannot assume any liability for the accuracy or completeness of the information in this publication. Inclusion in this book is not an endorsement of the companies listed. Final determination of the proper handling and disposal of waste is the sole responsibility of the generator.



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The Clean Marina Guidebook is intended as an educational tool for marina operators and boaters. It does not constitute a complete reference to state, federal or local laws. Relying on the information in this book will not protect you legally. This book may not be relied upon to create a right or benefit substantive or procedural, enforceable at law or in equity by any person.

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Alabama-Mississippi Clean Marina Program

The Alabama-Mississippi Clean Marina Program (AMCMP) is a voluntary program developed and implemented by Mississippi-Alabama Sea Grant Consortium and its AMCMP partners to promote environmentally responsible marina and boating practices. This program, established in support of the National Clean Boating Campaign, will help marina operators protect the very resource that provides them with their livelihood: clean water. It is designed as an ongoing program to reduce water pollution and erosion in state waterways and coastal zones. The effort will encourage boater education, coordination among state agencies and better communication of existing laws, as well as offer incentives for creative and proactive marina operators.

The AMCMP includes seven management measures that were identified by marina operators as priorities:

- Marina siting, design, and maintenance
- Sewage management
- Fuel management
- Solid waste and petroleum recycling and disposal
- Vessel operation, maintenance, and repair
- Stormwater management and erosion control
- Marina Management/Public Education

Each management measure is discussed in detail in one of the sections of this guide. Each section offers several best management practices (BMPs), individual activities or structures that can be used alone or in combination to achieve the management measures. The BMPs include both pollution prevention practices and source reduction practices.

PRACTICES IN THE CLEAN MARINA PROGRAM

Pollution prevention practices occur at the spot where the pollutants are created or used. Pollution prevention measures include all practices that can prevent pollution from either being created or being released into the environment.

Benefits of Clean Marinas

1. Helps avoid new regulations
 2. Adds a new marketing angle
 3. Provides new revenue sources
 4. Cuts waste disposal costs
 5. Improves the environment and appearance of the marina
-

**Nonpoint
Source
Pollution:
Contamination
that originates
from a non-local-
ized source rather
than from a specif-
ic point. Storm
water runoff from
roads, parking lots,
and agricultural
areas is an exam-
ple of nonpoint
source pollution.**

They are often the first, best, least costly, and most effective ways to prevent contaminants from entering the water.

Source reduction practices occur after pollutants have been created, but before they have entered the environment. Source reduction practices are those used between where pollutants are released and the surface water. They include practices that capture, filter, screen, trap, contain, absorb, chemically neutralize, or divert to municipal sewer lines any pollutants before they can get into the water. Recycling is a form of source reduction.

The scope of this guide is broad, covering diverse *nonpoint source pollutants* from marinas and recreational boating. Because all waterbodies and marinas are different, not all practices and techniques described in this guide will be applicable to all situations. Also, BMPs are continually being modified and developed as a result of experience gained from their implementation and the innovation of marina owners and operators across the country.

This guide can assist marina owners and managers in identifying potential sources of nonpoint source pollution and offer potential solutions. Finding the best solution to any nonpoint source pollution problem at a marina requires taking into account the many site-specific factors that together comprise the setting of a marina.

BENEFITS OF THE CLEAN MARINA DESIGNATION

By participating in the Clean Marina Program your marina can demonstrate its commitment to addressing water quality issues. If successful, it could help the marine industry avoid new regulations. Marina operators, who depend on boaters for their income, have the utmost interest in protecting the resource upon which they rely so heavily. Studies have shown that the most important aspect in a marina for boat owners is cleanliness. By operating a clean, safe marina and flying the Clean Marina flag, you have an advantage in attracting new customers. Chances are, the new customers you attract will be more environmentally responsible, thus reducing your liability from careless boaters.

You also have opportunities for new revenue sources such as selling and promoting the use of “green” products in your marina store. Renting equipment such as vacuum sanders to your customers also presents a new source of revenue. Additionally, by reducing, reusing and recycling, marina operators can cut the costs of waste disposal/removal while encouraging environmentally sensitive behavior. Using non-disposable products and products that allow reuse can also save on the cost of supplies. These practices are mutually beneficial for your marina and the resource on which it depends.



STEPS TO BECOMING A DESIGNATED CLEAN MARINA

STEP 1: Learn about the Clean Marina Program and sign the pledge card included in the introductory material delivered to your marina. These are also available by contacting your Clean Marina Coordinator and the Mississippi-Alabama Sea Grant Consortium (MASGC). In signing the pledge card, you commit “to controlling pollution and erosion at your facility and to promoting water-protective behavior with the boating public” as you work toward attaining Designated Clean Marina status. Return a copy of the pledge card to your state’s Clean Marina Coordinator at the MASGC office and keep the original to display at your marina. Your Clean Marina Coordinator will provide you with a Clean Marina Checklist and a copy of this Clean Marina Guidebook to help you advance through the program.

STEP 2: Review the Clean Marina Checklist carefully to understand the goals and objectives of the initiative. If you have any questions, the Clean Marina Coordinator is on hand to provide assistance.

Make a preliminary assessment of your marina using the Clean Marina Checklist. You may want to reference this guidebook as you do this, as it includes recommended actions to address the various checklist items. At the same time, consider which actions you need or want to select in order to reach Clean Marina status. When you have completed your marina assessment, contact your Clean Marina Coordinator to schedule a visit. With your checklist to guide you, review your assessment with the Coordinator. Identify areas where improvements are indicated, and work together to develop a work plan.

STEP 3: Work on incorporating the required BMPs to attain Clean Marina status. Your Clean Marina Coordinator and several of AMCMP’s partners can provide assistance, help you find needed resources and answer, or help find the answer, to any of your questions. The goal is to have all marinas who wish to participate certified as Clean Marinas within two years of committing to be a part of the program. When your marina has succeeded in implementing the agreed-to actions on the checklist, contact your Coordinator to schedule an endorsement visit.

STEP 4: Schedule an endorsement visit. The endorsement visit consists of three or four members of the Clean Marina Advisory Committee completing a “walk-through” of your facility and grading the marina based on the

Steps to Earn Clean Marina Status

1. Complete a self evaluation using the clean marina checklist
 2. Obtain any needed technical assistance from the Clean Marina Coordinator
 3. Institute the necessary best management practices
 4. Schedule a visit by the clean marina review committee
 5. Receive your clean marina designation
-

Clean Marina Program's checklist and its point system. To become a certified Clean Marina, the marina must receive a passing score based on checklist scoring.

STEP 5: After a successful endorsement visit, you will receive a Clean Marina certificate acknowledging your commitment and authorization to use the Clean Marina logo. You will also receive an attractive Clean Marina flag to fly from your property. Your marina will be recognized in press releases, on the Clean Marina Program's Web site, and in other Clean Marina promotions and events.

STEP 6: Sustain your Clean Marina status. Simply complete a new self-assessment once every two years using the Clean Marina Guidebook and Checklist. When it is time for your self-assessment, call your Coordinator to receive the most current checklist. Complete the self-assessment and schedule a visit by the review team to reaffirm your Clean Marina status. As rules and regulations are not static, you will be notified if there are any changes in the contents of the guidebook and checklist. You will also receive fact sheets on new technologies and products as they become available.

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Using the Guidebook

The Alabama-Mississippi Clean Marina Guidebook is a reference tool complementing the self-assessment checklist. The sections in the checklist correspond to the sections in the guidebook. As you work through the checklist, refer to the applicable guidebook section (marked by corresponding section numbers) for background information and recommended actions.

Two other publications will provide further support and details important to successful implementation of the Clean Marina program:

1. Pollution Prevention for Coastal Mississippi Marinas - a publication of the Mississippi Department of Marine Resources published in 2001 which highlights environmentally-sound best management practices to help marinas address pollution prevention in marina operation and maintenance; general vessel maintenance and repair; and in marina siting, design and construction. The guide is available through the MS DMR website at [www.dmr.state.ms.us/coastal ecology/storm/section-4/section 4 text.pdf](http://www.dmr.state.ms.us/coastal%20ecology/storm/section-4/section%204%20text.pdf).
2. Guidelines for the Safe Operation and Maintenance of Marinas - by the National Water Safety Congress, the recommendations in this 2001 publication provide a guide for minimum safety requirements for the operation and maintenance of marinas to assure adequate protection of the public from mishaps, encouraging compliance with applicable state and local codes, the National Fire Protection Association Codes, the National Electric Code, and Code of Federal Regulations, Title 40, Subchapter I Solid Wastes, Part 280. This document is available online at www.watersafetycongress.org/publications/marinaguideupdate.pdf.

All actions required by regulation and law are not negotiable and must all be implemented in order to achieve Clean Marina status.

Helpful Hint:

As you read through the Guidebook, you will find that the practices listed in each section correspond to the items listed on the Clean Marina Checklist.



Marina Siting, Design, and Maintenance

BACKGROUND

Marina siting and design play important roles in determining how good water quality within a marina basin will be. Marina location affects circulation in a marina basin, and, therefore, how well it flushes. Marina design, especially the configuration of the basin and its orientation to prevailing winds, waves, and currents, affects the retention of pollutants in the marina and the movement of pollutants out of a basin.

Environmental Concerns

The natural plant and animal communities of coastal and inland waterways serve multiple functions. Wetlands, for example, provide habitat and are the base of the food chain for fish, shrimp, oysters, and birds. 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. The ecological, economic, recreational, and aesthetic values inherent in these resources make it important that shoreline development not diminish these features.

Legal Setting

New or expanding marinas are generally required to have their construction plans approved by the proper agencies. Depending on the scope of the construction, marinas may need permit approvals from the U.S. Army Corps of Engineers, the state Environmental Protection Agency office, the state marine resources agency, and any applicable city or county agency. To find out the extent of requirements for new building or renovation work, marina owners or operators should contact the appropriate local and state regulatory agencies. The contact information is provided in the appendix of this Guidebook.

Permitting Information:

In Mobile or Baldwin counties contact ADEM Coastal Program Office at 251-432-6533. Elsewhere in Alabama, contact ADEM's Water Division at 334-271-7714.

In Mississippi contact DMR Coastal Wetlands Permitting Department at 228-374-5000.

GOALS

Existing marinas can improve water and habitat quality in the marina basin through application of Best Management Practices. A marina designed with the important points of the management measures in mind will probably have better water quality and fewer water-pollution-related problems during its life of operation, and economic benefits may result from making such improvements. Simple yet effective forms of monitoring that provide valuable information about the conditions in the water can be done by someone knowledgeable of the marina and the surrounding waterbody. Visual inspections of the abundance and appearance of aquatic plants in and around the marina, use of the marina and surroundings by ducks and geese, the appearance of bottom sediments, the general clarity of the water near docks, and the abundance of fish can provide all the information necessary to judge the health of the water. All of these characteristics are indicators of the health of the waters.

BEST MANAGEMENT PRACTICES

1.1

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 last at least ten years, e.g., reinforced concrete, coated steel, recycled plastic, plastic reinforced with fiberglass.
- Be sure to contain shavings when field cutting plastic pilings and timbers.
- Avoid Do not use wood treated with creosote for pilings and similar structures that are in or above the water. Certain pressure-treated wood is a better option. However, be aware that some pressure treated timbers may contribute to water pollution due to the chemicals used in the pressure treating process.
- Use naturally durable timbers conservatively. Black locust, cedar, chestnut and white oak are naturally durable but expensive and may be hard to find.
- Avoid exotic timbers. Some tropical trees, such as greenheart and bongossi, are also naturally durable. Their harvest, however, may be harmful to tropical forests.
- Purchase floatable foams that have been coated or encapsulated in a plastic cover so that as these floats age, degraded foam is contained by the covering.

1.2 Limit Shaded Areas Over the Water.

- Nearshore bottom-dwelling organisms and grassbeds require sunlight. Limit the number of covered slips in order to provide them with as much sunlight as possible. Avoid building docks on top of submerged aquatic vegetation.

1.3 Minimize the Need for Dredging.

Marina concepts that require extensive dredging both in the construction stage and for maintenance during its operation, should be avoided, whenever possible. There should be concern over disposal of contaminated dredge materials and negative effects on critical habitats. New marinas should be located in areas where deepwater access can be obtained with a minimum of excavation, filling, and dredging. 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.

1.4 Minimize the Impacts of Dredging.

Minimize the amount of excavation, filling and dredging to reduce the water quality impacts of construction and maintenance dredging is desirable.

- Be certain that your dredging contractor selects an appropriate disposal site (such as upland areas, not wetlands) and containment design. The disposal site must should have minimal impact on public safety, adjacent properties, and the environment.
- When possible use dredging methods, like hydraulic dredging, that minimize environmental impacts.
- Use turbidity curtains to contain suspended sediments. When possible 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 preferred methods of shore erosion control.

Do Your Homework:

Check with appropriate federal, state, and local agencies BEFORE any site work begins and make certain you have all the permits required.

- If non-structural measures alone are not sufficient to control erosion, revetments, breakwaters, or groins can be used (if permitted) to stabilize and ensure the long term viability of the non-structural controls.
- As a last resort, use structural controls in this order of preference: Shoreline revetments, breakwaters, bulkheads and groins.
- Minimize the adverse effects of erosion control projects on adjacent properties, navigation, threatened or endangered species, significant historic or archaeological resources, and oyster beds.

1.5 **Conserve Drinking Water and Keep It Pure.**

- Equip all freshwater hoses with automatic shutoff nozzles.
- Fix leaks and drips.
- Install “low-flow” faucets, toilets, and showerheads.
- Consider requiring members to utilize anti-siphon devices on all water hose connections to prevent contamination.

1.6 **Maintain Structures Using Clean Marina Practices.**

- Use the same precautions listed in the Vessel Maintenance and Repair Section when you engage in scraping, sanding, or painting in-water and land-side structures.
- Maintain buildings, docks, and other structures so they are safe to use and estetically-pleasing to view. Remove peeling paint, rust, mold and mildew.

1.7 **Minimize Impervious Areas.**

- Keep paved areas to an absolute minimum, e.g., just designated work areas and roadways for heavy equipment.
- Utilize permeable paving such as permeable pavers or pervious concrete.

1.8 **Use Upland and Inland Areas.**

- When possible, locate buildings, workshops, and waste storage facilities in upland areas, away from fragile shore side ecosystems, to the greatest extent possible. Upland areas also provide a measure of protection against floods.
- Where feasible, locate parking and vessel storage areas away from the water.



- Consider inland areas for boat repair activities.
- When establishing repair areas, comply with all local, state and federal health, safety, and environmental regulations and provide systems that allow the execution of good management practices for these areas.

1.9 Expansion Considerations.

- As an alternative to adding wet slips, consider expanding storage capacity by adding dry stack storage.
- 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 minimized eliminated.
- Dry-stacked boats are less likely to accumulate water in their bilges and, therefore, less likely to discharge oily bilge water.
- Encourage the use of hoists and lifts in wet slips to achieve most of the same benefits described above.
- Control stormwater runoff from dry-stack areas as well as from any expanded parking areas.
- Keep forklifts well maintained to prevent grease or oil from dripping onto staging areas or into the water.

1.10 Practice Water-wise Landscaping.

Save on water bills, reduce your maintenance activities, and protect water quality by minimizing your water use. Landscape with native plants that require little care in terms of water, fertilizer, and pesticides.

- Water only when plants indicate that they are thirsty: shrubs will wilt and grass will lie flat and show footprints. Water in the early morning or early evening as temperatures generally are cooler. Plants will not be shocked and water loss to evaporation will be minimized.
- Select native 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. Check with your local county extension agent on suitable plants for your area.
- 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) to a depth of 3-4" around plants to keep water in the soil, prevent weeds, and reduce the amount of sediment picked up by stormwater. Planting groundcovers at the base of trees serve 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 and landscaped areas with native, drought tolerant wildflowers, groundcover, shrubs, and trees.
- Recycle "gray water". Gray water is water that has been used once – maybe for dishwashing or in a washing machine – but is not overly contaminated. It can be filtered and used to water landscaped areas. Because regulations vary, be sure to check local ordinances for permit requirements and written approval before pursuing this option. Gray water should not be discharged directly to surface water (lake, bay, river, etc.)
- Collect rainwater by directing downspouts into covered containers. Use the collected water on your landscaped areas.
- In areas not served by a public sewer system, consider the use of an aerobic system in lieu of a septic system. The treated water may be used for landscape watering and this prevents the contamination of ground water.

1.11

Adopt Integrated Pest Management Practices.

Because of your 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. Contact your local extension agent for assistance.

- Select plants that are disease and insect resistant, that will outcompete 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 to suppress weeds. Grasses that grow better in warm weather should be mowed to no less than 1.5 inches.
- Pull weeds by hand to reduce reliance on herbicides.
- Foster natural predators such as praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, and lizards.
- Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Also, rather than broadcasting pesti-

cides, apply them directly to problem areas. For pesticide information, go to www.aces.edu/dept/ent.

- 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.

1.12 Maintain and/or Develop Vegetated Areas.

Vegetation filters and slows the flow of surface water runoff, stabilizes shorelines, and provides wildlife habitat, flood protection, and visual diversity.

- Maintain vegetated buffers (grassy or wooded) between all impervious areas (e.g., parking lots and boat storage areas) and the water.
- Plant vegetated areas with “beneficial” plants: those plants that require minimal care in terms of trimming, watering, and applications of fertilizer and pesticides. Native, or 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). Check with your county extension agent for suitable plants.
- Select perennial plants instead of annuals. Perennial plants need only be planted once, tend to shade out most weeds, and few require additional water or maintenance.
- Choose plants that bear flowers, fruit, nuts, and seeds to attract birds, butterflies, and other wildlife.
- Maintain proper soil pH and fertility levels. Fertility describes the presence of nutrients and minerals in the soil. Acidity and alkalinity levels are indicated by pH. These two measures together tell you which plants your soil can support. Soil pH may be adjusted by adding lime (base) or gypsum (acid). Add organic matter such as compost, leaf mold, manure, grass clippings, bark, or peat moss to improve fertility.
- Periodically, submit a soil sample to your state’s agricultural extension service through the local county agent to determine fertility, pH, and application rates for soil amendments.
- 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.



Sewage Management

BACKGROUND

Overboard discharges of raw or improperly treated boat sewage from marine heads or holding tanks contribute significantly to water quality degradation and introduce dangerous pathogens into the water. Gastroenteritis, hepatitis, cholera and other waterborne diseases may be passed directly to people who swim in contaminated waters or indirectly to those who eat contaminated shellfish. Poorly maintained pumpouts and waste dump receptacles limit their use and discourage the proper disposal of sanitary wastes.

Progress has been made toward eliminating discharges of sanitary waste from boats through designation of no discharge zones, installation of pumpouts nationwide, and the growing number of boater education programs. Marinas can play an important role in educating boaters about the impacts of sewage discharge.

GOALS

Encourage the proper use of pumpout facilities and waste dump receptacles by boaters, particularly liveaboards and overnighters. Ensure that sewage pumpout facilities and waste dump receptacles are maintained in good operational and sanitary condition to encourage their use.

BEST MANAGEMENT PRACTICES

2.1 Provide a Convenient, Accessible and Clean Pumpout Station.

Install pumpout connections at convenient locations and provide clear instructions for operating them. Pumpout stations should be available to all boats that are able to access them and should not be restricted to marina members. Customers are more likely to use pumpouts if they are kept clean and neat. It is especially important to periodically disinfect the suction connection of a pumpout station by dipping or spraying it with disinfectant in order to control bacteria and odors (see reference section for disinfectant suppliers).

There are four types of onshore sewage collection systems to handle sewage from boat holding tanks and portable toilets available: fixed point systems, dump stations, portable/mobile systems and dedicated slipside systems. 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 their system will operate effectively given the specific conditions at your marina.

- Fixed-point collection systems include one or more centrally located sewage pumpout stations. The stations are usually located on the fueling dock, so that fueling and pumpout operations can be done at the same time.
- A dump station or a wand attachment for a fixed-point system may be a satisfactory disposal facility in a marina where boats use only small portable toilets.
- Portable/mobile systems are similar to fixed-point systems. A portable unit includes a pump and a small storage tank, and can be mounted on a golf cart or hand truck. The unit is moved where the boat is docked. Portable pumpout facilities might be the most feasible, convenient, accessible, regularly used and affordable way to ensure proper disposal of boat sewage.
- Dedicated slipside systems provide continuous wastewater collection at select slips in a marina. Slipside pumpouts are particularly suited to large houseboats and other extended use vessels. Dedicated slipside pumpout points could be provided to slips designated for boats receiving heavy use, while the rest of the marina could still be served by either a fixed point or mobile pumpout system.

2.2 Promote the pumpout station to the boaters.

- A pumpout station can be offered to the public either for free or at a reasonable cost. Post signs that are visible from the channel so that passing boats are aware of the facility.
- If you do not have a pumpout system, post directions to the closest public pumpout.
- The Clean Vessel Act permits marina operators to charge a pumpout fee up to \$5.00 to help recover any costs associated with its purchase and operation.
- A fueling dock is often a good location for a pumpout system, provided the vessel being pumped out does not prevent another boat from fueling.
- A marina may choose to have an attendant on duty or a paging system to help patrons with operating the pumpout, but clear directions for use should also be posted. If you do not plan to have an attendant, marina staff should be trained to use the pumpout system should the boaters need assistance, and to help make the boater's experience as pleasant and convenient as possible.

- The pumpout system should be regularly inspected and a log kept of observations. Contact the pumpout manufacturer for specific maintenance and winterization recommendations. During the boating season, test the efficiency of the pump weekly by measuring the length of time required for the system to empty a 5-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.
- The marina may also choose to have an agreement with a mobile pumping service for their patrons.

2.3 Keep inventory records of all sewage pumpout users, dates, and volumes pumped.

- A sign-in sheet at your pumpout enables you to measure usage and monitor users.

2.4 Have a dump station or a wand attachment available to empty portable toilets.

- Marine sanitation device (MSD) requirements do not apply to vessels with portable toilets, which must instead be emptied on shore. Remind boat owners with portable toilets that it is illegal to discharge raw sewage to any U.S. waterway.

2.5 Hold MSD inspections periodically at your marina.

- A pumpout system that is well maintained will run more efficiently, saving on repair costs in the future.
- Scheduled periodic inspections by marina operators can help boat owners be sure that their MSD is installed and functioning properly.
- This includes making sure the manufacturer-approved chemicals are being used in MSD Types I and II if they are approved for use in your waterbody, and that "Y" valves are tied down so no raw sewage may be released into the water. Follow-up maintenance services can remedy any problems found during inspection, and can be an additional revenue source for your marina.
- In some areas you may request the assistance of the U.S. Coast Guard Auxiliary, state wildlife or natural resources officers to assist with the inspection effort. Maintaining records of MSD inspections will also help you iden-

Four Sewage Collection Systems

There are four types of onshore sewage collection systems available to handle sewage from boat holding tanks and portable toilets:

1. Dump Stations
 2. Fixed Point Systems
 3. Portable or Mobile Systems
 4. Dedicated Slipside Systems
-

tify repeat violations and provide you with documentation of warnings issued.

- It is advisable to establish a maintenance agreement with a qualified contractor for service and repair of pumpout facilities if one is available in your area.
- Marina workers should handle waste collection with care, taking precautions to avoid coming into direct contact with sewage. Make rubber gloves and respirators available to workers who maintain or repair your pumpout system or MSDs and encourage their use.
- After each pumpout operation is complete be sure to pump a few gallons of fresh water through hoses and pumps to clean waste residue from these areas. Do not allow rinse water or residual waste in the hoses to drain into the water.

2.6 **Have clean, functioning restrooms available 24 hours a day.**

- Clean, dry, brightly lit restrooms in marinas will generally be used instead of boat toilets, especially if easy to get to. Restrooms are the best way to reduce boat toilet use, especially when they are pleasant, functional and safe. Keep dock, paths and restroom/shower areas well lit at night for safety and security.

2.7 **Encourage boater compliance.**

- While not required, it is a good idea to include information about the MSD law in your contracts for slips, transients and liveaboards. Regardless of the type of MSD, it is illegal to release untreated sewage in U.S. territorial waters. Some areas are designated as “No Discharge Areas”, or NDAs. An NDA is an area of water that requires greater environmental protection and where even treated sewage cannot be discharged from a boat. All freshwater lakes, reservoirs and rivers not capable of interstate vessel traffic are defined by the Federal Clean Water Act as NDAs. Coastal waters out to three miles are also considered NDAs. With the approval of the U.S. Environmental Protection Agency, states may establish other NDAs in waters of the state.
- Make it clear in the contract 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, first discuss the matter with the vessel’s owner. If this fails, mail a written notice asking that the offending practice stop immediately and keep a copy for your records. If the customer still refuses to discontinue discharging

untreated sewage, evict the boater and consider filing a report with the appropriate enforcement agency. Other customers will appreciate your efforts and your regard for their health and safety.

2.8 Comply with federal, state and local wastewater outfall and septic system regulations.

- Discharge of any pollutant from a point source (outfall) into waters of the U.S. requires a National Pollutant Discharge Elimination System (NPDES) permit from the state. In addition, written permission (permit or other appropriate document) from the municipality must be obtained for discharging into a municipal sewer; written permission from the state and local groundwater/drinking water authorities must be obtained for discharging into the groundwater; and all septic systems must be permitted by the county and inspected for proper installation by the county health departments.

REGULATORY REQUIREMENTS

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. When MSD Type I and II are used, it is critical to disinfect the waste appropriately in order to be in compliance with the regulation. Please see “Marine Sanitation Devices (MSDs) Fact Sheet” in Reference section for more information.

- Be sure to include Fact Sheet in Reference Section.
- Mississippi has a Marine Litter Act that the DMR enforces which deals with wastewater and litter.



Fuel Management

BACKGROUND

Fuel is easily spilled into surface waters while fueling a boat, and oil is easily discharged during bilge pumping. Because of the properties of oil, a pint of oil can spread as a very thin oil sheen over more than an acre of calm water. Small amounts of oil spilled from numerous boats can accumulate to create large oil sheens. Gasoline spills are also a safety problem because of gasoline's flammability.

Spread over the surface, oil creates a barrier to oxygen movement across the water surface and to animals that must breathe at the surface. On and below the surface, oil attaches to plant leaves, decreasing their respiration, and to bottom sediments where numerous aquatic animals go to feed.

Petroleum spills can also cause structural damage at marinas, such as discoloration on boat hulls, woodwork, and paint, and deterioration of white styrofoam in floats and docks, since petroleum dissolves this material.

Small spills can escape the attention of many people, and marina owners and operators can play an important role in bringing the importance of controlling this form of pollution to the attention of their patrons.

BEST MANAGEMENT PRACTICES

3.1 Comply with all federal, state, and National Fire Protection Association (NFPA) petroleum handling and storage requirements.

- Be sure hydrants are available to allow for fighting fires throughout your facility.
- Install smoke detectors.
- Have available and maintain adequate, readily accessible, and clearly marked fire extinguishers throughout the marina, especially near the fuel dock.
- Inspect and test all fire fighting equipment and systems regularly, and test all fire extinguishers annually.
- Train personnel on fire safety and response: who to call, location of hydrants, use of portable extinguishers. Post contact numbers for easy access.
- Provide ready access to all piers, floats, and wharves for municipal fire fighting equipment.

Did You Know:

The person fueling the vessel, generally the boater, is liable for all penalties associated with spilled fuel.

- Ask the local fire marshal to visit your marina each year to train employees and to familiarize himself with your facility.

3.2

If your marina operates an underground storage tank (UST), you have to have an annual state permit posted at your facility and you must be in compliance with all UST federal and state regulations?

- An underground storage tank is a tank or combination of any underground piping connected to the tank used to contain an accumulation of regulated substances that has at least 10% of its combined volume underground. Various state regulatory agencies have referred to the Federal regulations as a basis for their UST regulations.
- Marinas with one or more stationary fuel storage tanks, above or below ground, with a combined storage capacity of 1,100 gallons or more of petroleum products are subject to federal and state bulk storage regulations for registration, testing, monitoring, replacement, reconditioning, closure, and removal.
- Underground tanks with a capacity of 110 gallons or more are subject to federal UST regulations. Federal UST regulations can be viewed on the EPA web site at www.epa.gov/swerust1/fedlaws.
- When a tank is buried it is not easily accessible for inspection and maintenance. This means minor leaks may go undetected for some time, particularly if inventory control is inadequate. Escaping liquid may travel underground for some distance, polluting both soil and water resources. The labor of replacing an underground tank is often much greater than the cost of installation or the replacement value of a new tank, in addition to the fines which may be levied for violations.
- USTs should include corrosion protection and spill and overfill prevention equipment, with a leak detection system and readily accessible shut-off valve installed. All motor fuel USTs must meet federal financial responsibility requirements (i.e., insurance) for environmental pollution liability. Because of the potential problems associated with USTs, some marinas are switching from underground storage tanks to above ground, lined tanks.
- An aboveground storage tank (AST) is any storage tank whose total volume, including piping and tank, is less than 10% buried underground. No one set of federal regulations covers ASTs. Various air, water, and oil pollution regulations refer to ASTs which makes it difficult to know and comply with all applicable regulations.
- All states also endorse certain guidelines for tank installations and maintenance, stressing, for example, that they be installed and maintained according to the guidelines set forth in the National Fire Protection Association

Codes, and that the State Fire Marshal or local fire code representative inspect the AST at installation time.

For specific descriptions of the regulations pertaining to UST and ASTs in your state contact the Office of Pollution Control of the MS Department of Environmental Quality at 601-961-5284, or in Alabama, contact the Alabama Department of Environmental Management Hazardous Waste Division at 334-271-7735.

3.3 If you operate an aboveground storage tank larger than 660 gallons or a UST larger than 42,000 gallons have a Spill Prevention, Control, and Countermeasure Plan that was prepared within the past three years and has been signed and stamped by a professional engineer?

- A Spill Prevention, Control, and Countermeasures (SPCC) plan is a first line of defense against petroleum pollution and should be developed by all marinas, whether required by regulations or not. An SPCC plan should be written to apply to all locations in the marina where fuel or oil is stored or transferred, and it should clearly explain spill emergency procedures, including health and safety, notification, and spill containment and control measures. The plan should include the following:
- **Who:** Clearly identify who is responsible for taking what action. Action items will include deploying the equipment and contacting the emergency agencies and additional cleanup services. The plan should contain a list, updated periodically, of emergency phone numbers to be used if a spill occurs.
- **What:** Define what actions should be taken if a fuel spill occurs and, based on likely threats, what equipment should be deployed. Include information on the type of spill equipment available on site and its characteristics and capabilities. Make sure dispersants are not used on any spill.
- **When:** Clearly state when additional resources such as spill control services, should be called for assistance. Plan when the marina's spill control equipment will be inspected and replaced, if necessary.
- **Where:** Show where the spill control material is located. Make sure storage lockers are clearly marked and easy to access. Identify sources where additional spill response equipment can be obtained quickly if necessary. Sources may include commercial spill response companies, fire departments, or neighboring marinas.
- **How:** Explain how the spill control equipment should be used and disposed. To be sure that the crew understands the response plan, regularly conduct drills that simulate a fuel spill.

Call It In:

Fuel, oil and chemical spills should be reported 24 hours a day by calling 800-424-8802

3.4 Prohibit the use of detergents and emulsifiers on fuel spills.

- Soaps, detergents, and emulsifying products will hide a spill and seemingly make it disappear, but they actually cause petroleum products to sink into the water where the combination of fuel and detergent can harm aquatic life and make the pollutants difficult to collect. Use of detergent bilge cleaners is illegal and subject to a high fine from the U.S. Coast Guard.

3.5 Regularly inspect, maintain, repair, and replace fuel hoses, pipes, and tanks.

- Regularly scheduled preventive maintenance is the best source control for fuel loss from the fuel storage and delivery system, and it is often less costly than cleanup costs and fines levied for spills. Preventative maintenance projects such as replacing hoses and connections before they become problematic can help ensure that this equipment is not responsible for gas and oil in the water and can save time and money on extensive repairs in the future. Maintenance projects should be scheduled and recorded in a maintenance log.

3.6 Use automatic shutoffs on fuel lines and at hose nozzles to eliminate fuel loss.

- Fuel expands as it warms, and the temperature in a boat fuel tank usually is much higher than that in the storage tank. While fueling, a distinctive change in sound occurs when a tank is almost full, and filling can be stopped at this time. This leaves a small amount of space in the tank to allow for expansion of the fuel with temperature changes. Do not “top off” fuel tanks.
- Fuel delivery equipment can be altered to help prevent overflow. Installing shut-off nozzles that automatically stop the flow of fuel before overflow occurs can stem problems with overfilling.

3.7 Remove old style fuel nozzle triggers that are used to hold the nozzle open without being held.

- The use of any automatic nozzle with a latch-open device is prohibited unless automatic shut-off overrides trigger so no fuel overflows with its use.

3.8 Have a pump delivery rate of less than 10 gallons per minute.

- Setting the pump delivery rate at 10 gallons per minute or less allows patrons ample time to stop fueling before overflow occurs.
- You can also promote the installation and use of fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into surface waters during fueling. Attachments for vent lines are available commercially and are easily installed on most boats. Marinas can make these units available in their retail stores and post notices describing their spill prevention benefits and availability.

3.9 Have easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures.

- Boaters need to understand that whenever they spill even a few drops of oil or fuel, the environment is harmed. There are simple steps they can take to prevent fuel loss:
 - a. Don't top off the tank,
 - b. Use an oil absorption pad to catch drops when the fueling nozzle is removed from the boat,
 - c. Install a fuel/air separator on the air vent line,
 - d. Place an oil-absorbing pad in the bilge.
- Signs with easy-to-follow instructions, perhaps using pictures, can encourage a cleanup if a spill occurs. It is helpful to have signs that state the following information:
 - a. Step-by-step way to fuel a boat,
 - b. Requirements of the law and spill reporting numbers,
 - c. What to do in case of a spill,
 - d. Warnings against the use of detergents or emulsifiers,
 - e. Locations of absorbent materials for cleaning up spills,
 - f. Proper use and disposal of fuel absorbent materials.
- Spills should be immediately reported to either the U.S. Coast Guard or EPA. Oil spills can be reported 24 hours a day at 1.800.424.8802. On navigable waters, any oily slick or sheen must be reported. More information on laws and regulations related to spills can be obtained at the U.S. Coast Guard web site: www.uscg.mil/.
- Marinas posting signs which educate boaters and offering the products referenced at a reasonable cost can help protect the water resources while increasing revenue through boater purchases.

Minor Spill -- Major Effect:

A single pint of oil released onto the water can cover one acre of water surface area.

3.10 **Have personal watercraft (PWC) floats at fuel docks to help drivers refuel without spilling.**

- Special docking facilities for PWCs can be installed to stabilize them while they are at a fuel dock. Docking PWCs while fueling reduces fuel loss caused by the craft rocking on the water while fueling. These docks have proven popular with PWC operators and do reduce spillage. Consider placing the PWC fueling area at the end of the fuel dock to reduce conflict with larger boats.

3.11 **Provide “gas guzzlers,” nozzle rings, or small petroleum absorption pads to patrons for use while fueling to catch splashback and drips.**

- A doughnut placed over the fuel nozzle or a small absorbent pad in hand to catch any splashback when the fuel tank is full and any drops that fall while the handle is being replaced on the pump is an excellent and easy way to prevent the small spills that can add up to big problems. A small absorbent pad temporarily attached to the hull with suction cups below the fuel tank air vent during fueling provides an added precaution against fuel spilling directly into surface waters. Used absorption pads can be air-dried and reused or disposed of in accordance with petroleum disposal guidelines.
- Consider keeping a pole with a small floating absorption boom attached at one end on the fuel dock to be used quickly and effectively by staff to sweep and mop the water surface if any small spills occur during boat fueling.
- The disposal of used oil absorbent material depends on what type of product it is and how it was used. Standard absorbents that are saturated with gasoline may be air dried and reused. Standard absorbents saturated with only oil or diesel may be wrung out over oil recycling bins and reused. Alternatively, they should be double bagged with one plastic bag sealed inside of another and tossed in the regular trash. Bioremediating bilge booms may be disposed in the 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.

3.12 Have staff pump fuel or assist patrons in pumping fuel.

- Marina staff who are fully educated and trained on all of the environmental management practices used at a marina and most familiar with the equipment will not only become skilled at preventing spills, but will also present the image of an environmentally proactive marina. By their actions and their conversations, they will encourage environmentally-friendly behavior among the patrons of your facility.
- Ideally, fuel handling facilities should be operated **ONLY** by trained marina employees. This practice would account for fewer spills, eliminate carelessness, and be safer for marina employees and patrons. If this is the practice at your marina, be sure to post signs that specify “Fuel Pumping by Employees **ONLY**.” All staff members should know the location of absorbent materials and how to use them to remove the fuel immediately from the water or the ground. Regular practice drills ensure that staff are familiar with the proper use of these materials.

LY RAGS

USED
· OIL ·
ONLY

FLAMMABLE
KEEP
FIRE
AWAY
HAZARDOUS
MATERIAL

Solid Waste Management

BACKGROUND

Preventing solid and liquid waste from polluting surrounding waters is an important step in maintaining healthy drinking and recreational waters, and by extension a clean and aesthetically pleasing marina for patrons. Solid waste includes not only everyday litter associated with marina patrons and operators, but also waste from boat cleaning, maintenance and repair that may contain harmful substances such as antifouling paint chips or cleaning solvents. Liquid waste such as antifreeze, oil, pesticides, cleaners and paints can be toxic to people, wildlife and aquatic organisms.

GOALS

Manage and dispose of all solid waste properly. Check with your local Solid Waste Authority for information on what materials are allowed in dumpsters, what materials can be recycled, etc.

BEST MANAGEMENT PRACTICES

4.1 Store and dispose of hazardous waste in accordance with state and federal regulations. Contact your Alabama Department of Environmental Management or Mississippi Department of Environmental Quality office to determine if you need a permit for the hazardous waste generated at your facility.

- New and waste fuels, oils, solvents, paints, antifreeze and other liquid materials at the marina should be clearly labeled.
- Store these materials away from flood areas or fire hazards in a manner that minimizes the chance of a spill until they can be recycled or disposed of properly.
- Curbs, berms or other barriers can be built around areas used for liquid material storage, and all drains within the area should be permanently closed.
- Should a spill occur, make sure employees are trained in how to quickly con-

tain it and dispose of it.

4.2 Provide convenient trash disposal bins that are wind and wildlife proof.

- Covered trash cans, bins and dumpsters will help prevent unsightly litter from being scattered around the marina by the wind or wildlife.
- To better encourage patrons and employees to use the disposal areas, be sure to place an adequate number of clearly marked trash receptacles in the parking lot, in and around the marina and on the docks.
- Empty receptacles regularly to prevent overflow. Schedule daily walk-throughs in and around the marina to pick up stray litter and net debris from the water.
- Boaters should be encouraged to bring all of the trash they generate while boating back to shore by providing them with a plastic bag or other suitable trash container. Imprinted with the marina's logo, the bag will carry the clear message that your marina cares about the environment.

4.3 Provide fish cleaning station and fish waste disposal.

- Fish waste creates water quality problems at marinas where a lot of fish are landed. The waste from fish cleaning should not be disposed of into a marina basin because the natural ability of the waterbody to assimilate and decompose may not be enough, and unsightly fish carcasses may negatively affect marina business.
- Provide fish cleaning stations located away from the water with access to running water and a waste receptacle. The number of fish cleaning stations should be based on user patterns for weekends. Fish waste can be disposed of or composted. Contact your local Cooperative Extension Service or Sea Grant Extension for information on applicable composting procedures.

4.4 Provide clearly marked and accessible recycling containers.

- Where recycling is available through the local government municipality, it can be a cost-effective way to decrease trash disposal costs.
- Public education is necessary if a recycling program is to be effective, and signs can be placed around the marina notifying patrons that the option is available.
- Have separate receptacles available for different solid recyclables such as scrap metal, aluminum, glass, batteries, newspaper, paper and cardboard.
- Check with your local recycler to learn what petroleum materials may be

mixed. Generally engine oil, transmission and hydraulic fluids and gear oil may all be placed in a waste oil container.

- Do not allow patrons to pour gasoline, solvents, paint, varnishes or pesticides into the waste oil or antifreeze recycling containers, or it will be necessary to dispose of the material as hazardous waste.

4.5 Minimize waste in your daily operations and avoid the use of hazardous products whenever possible.

- 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, and purchase recycled office paper.
- Purchase smaller quantities of products that bear safety warnings, as safe storage is easier when the quantities are manageable.
- There are many biodegradable, environmentally friendly alternatives to the hazardous boat cleaning and maintenance products on the market. Effective nontoxic and “phosphate-free” cleaners and solvents are available and could provide an additional revenue stream for the clean marina.
- Adopt alternatives to solvent-based washes such as self-contained bioremediating systems that take advantage of microbes to digest petroleum, or use soy-based or citrus-based solvents and other similar products with no or low volatility.
- If you use a solvent to clean engine parts, do so in a container or parts washer with a lid to prevent evaporation of the volatile organic compounds. Reuse the solvent, and once it is spent, recycle or dispose of it properly.

4.6 Provide materials needed for spill-proof oil changes.

- Invest in a non-spill pump system to draw crankcase oils out through the dipstick tube. Use the system in the boat shop or, if you do not have a boat shop and/or allow boaters to perform their own oil changes, require that the non-spill pump be used.
- 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, and if practical the metal canister as well.

Trash With a Message:

Consider printing clear trash bags with your marina name or logo. Distribute them to your patrons to emphasize the importance of solid waste management.



Vessel Cleaning and Repair

BACKGROUND

Any debris that is on the ground and light enough to be swept away by flowing rainwater can end up in local waterbodies. Sanding dust, paint chips, metal filings and similar solids that might be carelessly or inadvertently allowed to drop to the ground while maintaining or repairing a boat can be carried by runoff from the next rain. Oils, grease, solvents, paint drippings and spilled fuel may also be carried away in the runoff.

Chemicals, petroleum products and other toxic materials used in maintaining and repairing boats can contribute to pollution if not controlled. Cleaning products and solvents, such as teak cleaners, fiberglass polishers and detergents, are typically toxic to aquatic life. Many cleaners also contain nutrients that, if washed into waters, cause excess algae growth which reduces both the amount of dissolved oxygen and available sunlight necessary for aquatic life.

Maintaining boat hulls painted with antifouling paint by sanding, scrubbing and pressure washing has the potential to release heavy metals. If they reach the water, heavy metals can affect the aquatic food chain and humans who consume fish and shellfish caught in polluted waters.

GOALS

Use cleaning and maintenance methods that prevent or contain the release of pollutants to surface waters.

BEST MANAGEMENT PRACTICES

5.1 Strongly discourage in-water cleaning.

- When possible, remove the boat from the water and perform cleaning where debris can be captured and properly disposed of.
- Promote the use of dry slips and boat lifts in order to reduce the need for in-water cleaning.

No Dumping:
Never dispose of any hazardous substance by dumping it into a sink, floor drain, or onto the ground.

- To reduce the cleaning wastes, encourage the use of sponges or soft towels to clean the boat hull on a regular basis.
- Be sure to properly dispose of the containers of wash and rinse water on shore when the cleaning is completed.
- If the boat must be cleaned in the water, discourage or prohibit pressure washing or hull scraping to minimize the release of harmful antifoulants or toxins into surface waters.
- Educate boaters, through prominently displayed signs or brochures, to use environmentally-friendly boat cleaning methods, such as using nontoxic cleaners in limited amounts and washing the boat hull above the waterline by hand.

5.2 Supply environmentally friendly cleaners.

- Educate marina patrons on the negative impact of many traditional cleaners, and when possible, supply for sale biodegradable spray type cleaners that do not require rinsing.
- Discourage the use of detergents containing ammonia, phosphate, sodium hypochlorite, chlorinated solvents (bleach), petroleum distillates or lye, and encourage “nontoxic” and “phosphate-free” cleaners.

5.3 Minimize impacts of wastewater from pressure washing.

- If your marina uses pressure washing to clean boats, one of the preferred methods for managing wastewater is to wash on a pervious surface such as pervious concrete, pervious asphalt, or pervious formed concrete mats. The area should be as far from the water’s edge as possible. Wastewater will then filter through the surface into the underlying gravel and soil, eliminating most of the runoff and allowing bacterial action to breakdown the pollution into less harmful components. After drying, paint chips and other particles left on the surface should be swept or vacuumed.
- Other ways to treat wastewater from pressure washing:
 - a. Settling. Trap the water in a container and allow it to sit long enough to permit any particles to settle out of the water. This method will remove only the particles large enough to settle out of solution.
 - b. Filtration. Wastewater can be passed through one or more filters that screen out particles. A filter cloth used at the wash site can be effective for straining out visible particles. Additional filtration is achieved by using a series of filters with decreasing mesh sizes.
 - c. Treatment. Chemical or biological cleaning technologies can be used to

treat the wastewater and remove contaminants. Treatment can remove oil and grease, metals, or other contaminants. Once wastewater has been treated, it can be discharged into marina waters or a sanitary sewer.

5.4 Restrict engine maintenance to designated areas.

- At the very least, boats should be removed from the water for maintenance activities.
- One of the simplest and most effective ways to prevent pollutants from boat repairs from entering storm water runoff is to perform as much maintenance work as possible on an impervious surface under a roof, where pollutants can be contained and properly disposed of. Where feasible, the inside of a fully enclosed building provides the most protected space, making it easier to contain spills and debris from maintenance work, resulting in an easier cleanup afterwards.
- Employing a dry cleanup method for petroleum and/or oil waste using absorbent materials is recommended over use of potentially hazardous solvents.

5.5 Contain dust and debris from sanding and blasting.

- If a large enough interior space is not available, a suitably sized outdoor area, preferably covered and with an impervious surface, can be designated for boat sanding, blasting and painting. Mark the area well with signs, post a list of boat owner responsibilities, indicate the rules for use of the work area, and do not permit work outside of the designated areas.
- Tarps, screens and other filter cloths can be used to help prevent residue from abrasive blasting and sanding from drifting to non-work areas of the marina and into surface waters.
- When possible, scheduling work on calm days will help ensure that wind won't carry debris and pollutants to other areas of the marina property.
- Consider using vacuum sanders to remove paint from hulls and to collect paint dust, which will not only prevent the dust from entering surface waters, but also makes cleaning up the work area easier and increases the speed at which a boat bottom can be completely sanded.

5.6 Prevent oil spills.

- Invest in a portable or stationary oil/water separator to draw contaminated water from bilges, capture hydrocarbons in a filter, and discharge the clean water. Use the system in the boat shop and rent it to those that perform

Fuel Advice:
Encourage boaters to add stabilizer in the winter to prevent fuel from becoming stale or an octane booster in the spring to rejuvenate it.

their own oil changes.

- Oil is easily discharged during bilge pumping. Encourage boaters to avoid pumping any bilge water that is oily or has a sheen, and promote the use of materials that either capture or digest oil in bilges.
- Marina operators can advertise the availability of bilge socks and other oil-absorbing materials or can include the cost of installation of such material in yearly dock fees. A clause can be inserted into leasing agreements that requires boaters to use oil-absorbing materials in their bilge.
- Bioremediation pads and biosocks with natural oil-eating bacteria are available. Please see the Guidebook's Resources section for more information.

5.7 Use long-lasting and low-toxicity or nontoxic antifouling paints.

Antifouling bottom paints that contain pesticides such as cuprous oxide or tributyl tin harm fish, shellfish and other nontarget species as the pesticides leach out. Considerable progress has been made in antifouling paint technology in recent years.

- New nontoxic coating such as teflon, polyurethane and silicone paints are now available. These deter fouling on hard, slick surfaces, reducing the need for pesticides as well as increasing the life of the paint job. Water-based paints are also manufactured that are up to 97% solvent free. The use of these nontoxic, easily cleaned coatings should be encouraged among marina patrons.

5.8 Winterize safely.

- When antifreeze is needed, use the pink propylene glycol antifreeze for all systems instead of the very toxic green ethylene glycol, and use the minimum amount necessary for the job.
- Add stabilizers to fuel. This will protect engines by preventing corrosion and sludge formation, as well as eliminating the problem of stale fuel disposal.
- Be sure tanks are 85-90% full to prevent flammable fumes from accumulating and to minimize the possibility of corrosion due to condensation.
- All gas and oil caps should be closed tightly to prevent leakage.



Stormwater Management and Erosion Control

BACKGROUND

Normal activities occurring on marina grounds, such as vehicular traffic and equipment operation, generate dust, detergents and other land-generated debris which are a source of pollution. This pollution may be flushed into surface waters during periods of rainfall. In addition, sanding dust, paint chips, metal filings, and other solids created during boat maintenance and repairs can be swept along by rainwater runoff and end up in the water. When they reach the marina basin, they create unsightly surface films or float until they adhere to surfaces like boat hulls or docks. Some of these pollutants sink with the eroding soil to the bottom, are eaten by bottom-feeding fish or filter-feeding shellfish, or settle onto the leaves of aquatic vegetation and clog their pores. These discharges continually degrade water quality and may contribute to violations of standards for turbidity, oils and greases, metals, nutrients and dissolved oxygen. The best way to minimize the polluting effects of stormwater is to use pollution prevention activities and proper design of hull maintenance and mechanical repair and maintenance areas, and otherwise reduce, as much as possible, the amount of pollution that gets on the ground in the first place.

GOAL

Reduce the concentration of pollutants entering surface waters through use of various stormwater management techniques. These are designed to slow, retain or percolate stormwater runoff and keep it from discharging directly into the marina's water basin.

BEST MANAGEMENT PRACTICES

6.1 General good housekeeping is the first line of defense.

This effective management tool can prevent accumulated dust, dirt, litter,

and trash from ending up in the marina's basin.

- Keep general cleaning and maintenance materials tidy and stored in covered areas.
- Opened or punctured fertilizer bags, insecticide/herbicide containers, detergents, etc. can be a significant source of pollution during rainstorms.

6.2 **Have a stormwater management system in place.**

There are a number of BMPs to prevent pollution and reduce the sources of pollution that are carried in stormwater. Many of these are listed under the guidebook's section on Vessel Cleaning and Repair. These BMPs, if well implemented, should significantly reduce the load of total suspended solids in your stormwater runoff and should be included as part of your stormwater management system.

6.3 **Inspect your stormwater system regularly.**

- This is especially important after large storms, to assure that it is still working properly. Remove debris and other materials that have accumulated, especially on discharge structures.
- Label each stormwater sewer with a stencil or paint so that the public knows not to dump wastewater or other chemicals down the drain.

6.4 **Direct rainwater from roofs onto permeable landscaped areas instead of paved surfaces.**

- This practice is designed to reduce the pollution roof rainwater would carry or pickup in a direct route to the water basin. The most common method to deal with this issue is to direct the rainwater through a gutter and downspout system to a landscaped area.
- Rainwater runoff can also be directed to cisterns for plant irrigation, water gardens, or bird baths.
- For rainwater discharging from large roofed areas a landscaped catch basin may be needed to help slowly filter the water.

6.5 **Increase the use of grassed or natural green spaces or use pervious pavement.**

- This serves to further reduce the amount of runoff generated from the upland area.

- In many cases, grassed areas can be designed to serve as depressional retention areas, where runoff from adjacent impervious surfaces (pavement, buildings, etc.) can be collected and percolated through the underlying soil.
- Limit paved areas around your facility. Areas for vehicle traffic not frequently used (such as overflow parking, etc.) can be sodded instead of paved.
- Use curb cuts, perimeter swales and raised collars on existing storm sewer inlets to increase the use of pervious land for percolation of stormwater.
- Consider using pervious pavement or pavement tile where feasible. Pervious pavement allows runoff to filter through its porous layer and into the ground, helping recharge ground water and removing up to 80% of sediment, trace metals and organic matter.

6.6 Use riprap, breakwaters or biostabilization instead of a solid vertical bulkhead where shorelines need structural stabilization.

- Riprap is a common and economical revetment that can withstand substantial wave energy. Natural rock is the best material.
- Gabions and sloping revetments also dissipate incoming wave energy and usually reduce the scouring effect of bulkheads. Some concrete revetments have open areas which allow vegetation to reestablish along the shoreline.
- Vegetation can often be added at the edges of these structural elements to control erosion from runoff and to serve as a landscaping element.

6.7 Plant grass, herbs, or shrubs between impervious areas and the marina basin to retain and filter pollutants.

- Directing stormwater to a grassed area instead of to drains, pipes, or cement channels is an effective way to prevent the pollutants in runoff from reaching the marina basin
- The technical term for a channel or ditch planted with grass and used for stormwater treatment is “grassed swales.” Grassed swales are low-gradient channels that can be used in place of buried storm drain pipes. To effectively remove pollutants, grassed swales need to have only a slight slope and should be long enough to filter out all of the pollutants.
- The vegetation filters out pollutants and absorbs nutrients while the runoff infiltrates into the ground as it is slowed by the grass in the swale.

Get Creative:

Harbour Towne Marina in Florida modified its yard storm drains to hold an ordinary air conditioner filter, which effectively stops suspended solids from passing through.

6.8 Use chemical fertilizers and pesticides sparingly.

A common misconception is that if a little is good then more must be better. This is not true for fertilizers and pesticides.

- Follow the instructions on the product label. If chemical fertilizers are used, use a slow release variety in which at least 30% of the nitrogen is water insoluble.
- When using pesticides, avoid windy conditions that would carry the pesticide into unwanted areas, and when washing the application equipment, do not wash it over a paved surface which drains to waterbodies.

6.9 Have oil and grit separators installed in storm drains to capture petroleum spills and coarse sediment.

Some storm drain designs will permit a filter to be inserted in them to screen solid materials out of runoff.

- If oil is typically contained in runoff, an oil absorption pad can be inserted into the water pool or trap beneath the filter as well, where it can remove much of the oil and grease contained in runoff. Absorbent material products can remove 10 to 25 times their weight in oil.

6.10 Use catch basins where stormwater flows to the marina basin in large volumes.

- Catch basins with flow restrictions are used to keep large pulses of stormwater from entering the marina basin at one time. Particulates and soil settle to the bottom of a catch basin, in which the bottom of the basin is typically 2 to 4 feet below the outlet pipe (the pipe through which the trapped water moves out of the basin). The traps in catch basins require periodic cleaning and maintenance, but if properly maintained, a catch basin should last about 50 years.
- Catch basins can have a separate chamber filled with sand. With this design, runoff first enters an open chamber where coarse particles are filtered out. The runoff then flows into a second chamber where it filters through the sand. These catch basins with sand filters work well in areas with a high percentage of impervious surfaces, and where other BMPs may be ineffective. The top layer of sand will need to be removed periodically and replaced with fresh, clean sand.

REGULATORY REQUIREMENTS

An NPDES or other stormwater discharge permit may be required by your state EPA office, local government or water management district if a new stormwater system is to be constructed or if an existing system will be modified.



Marina Management

BACKGROUND

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

GOAL

This guidebook of best management practices is only a resource. It contains practical helpful ideas to help reduce and prevent pollution at marinas. However, the ideas will never be implemented unless the manager and staff of a marina adopt and put them in action. To make this happen, marina owners and operators have to take it upon themselves to educate and train their employees on how to implement them. Following are the specific training areas that if covered properly in staff training will produce employees who are knowledgeable and conscientious about protecting the environment at the marina.

BEST MANAGEMENT PRACTICES

7.1 Stormwater Pollution Prevention Plan

If your marina is required to have a stormwater pollution prevention plan, then you are required to teach your employees about the components and goals of that plan. The training should be conducted at least twice a year and should 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

Also, provide training on the proper use of equipment such as dustless sanders and high-volume low-pressure spray guns.

7.2 Emergency Response Plan

During a real emergency – when time is of the essence – you will want people to know what to do and how to do it. Review plans and response procedures with staff at the beginning of each boating season.

- Train employees in the use of spill containment and fire fighting equipment.
- Have the fire department conduct basic fire fighting training for tenants.
- Keep extinguishers and hoses charged and inspected.
- Make sure fire fighting equipment, such as hose connections, is compatible between fire department and marina.
- Prepare an Emergency Procedures File that provides detailed instructions for employees on how to handle all common emergencies. It should also include preparation procedures for severe weather events such as hurricanes.
- Run emergency response drills at least twice annually.
- Invite U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

7.3 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 discharges within the marina.
- The use of environmentally harmful cleaning products.

7.4 Approach Polluters

Determine who will address boaters and contractors who are polluting. Generally speaking, 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 what they are doing is 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
 - Talk to the boater or contractor again.
 - Mail a written notice asking that the harmful practice stop. Keep a record of the mailing.
 - Remove the problem from the dock. Charge the boater or contractor for the cost of removal and cleanup.
 - Ask the tenant or contractor to leave your marina.

7.5 Maintain Training Records

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

7.6 Inform Patrons and Independent Contractors

If you have a water discharge permit, it may require you to inform your customers and contractors about your pollution control practices and require them to follow those practices. Even if you are not required to, it is in your best interest to make sure everyone using your facility understands your policies on pollution prevention and what they need to do to follow your policies.

- Incorporate your BMPs into contracts. In addition to being legal documents, contracts are very effective educational tools. Use the contract to inform boaters and contractors how to minimize their environmental impacts.
 - a. Include language requiring the use of best management practices in all of your contracts: slip holders, liveboards, transients, charters, workers, contractors, and tenants.

Talk it Up:

Encourage marina staff to pass along pollution prevention information in conversations with patrons and contractors.

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

7.7 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.
- Post your facility's environmental policy in a conspicuous location.
- Signs must be durable, eye catching, and appropriately sized. See sample signs in Resource Section of Guidebook.

7.8 Distribute Literature to Patrons

- Copy and distribute the Clean Boating Tip Sheets included in this Guidebook Resource Section or create your own.
- Send the tip sheets with monthly mailings or place in dock boxes or on vessels. Be cautious that they do not end up in the water.
- Include articles about best management practices in your newsletter.
- Get free copies of clean boating materials from organizations such as the U.S. Coast Guard, Boat/U.S., or the Mississippi-Alabama Sea Grant Consortium.
- Contact the United States Coast Guard for publications summarizing Federal boating requirements.

7.9 Make Use of Informal Communications Mechanisms

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

7.10 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, e.g., helpful tips for winterization.
- Become a certified Clean Marina. Apply to the Alabama-Mississippi Clean Marina Program for recognition as a Clean Marina. Once you have satisfied the selection criteria, you may use the Alabama-Mississippi Clean Marina logo in your advertising and correspondence, fly a Clean Marina burgee, and enjoy promotion by the Alabama-Mississippi Clean Marina Program in publications, on the World Wide Web, and at public events.

Free Info:

Get free copies of clean boating materials from organizations such as The Ocean Conservancy and BOAT/US Clean Water Trust, from agencies with jurisdiction over boating and marina activities, and from numerous websites available through use of appropriate key words.
