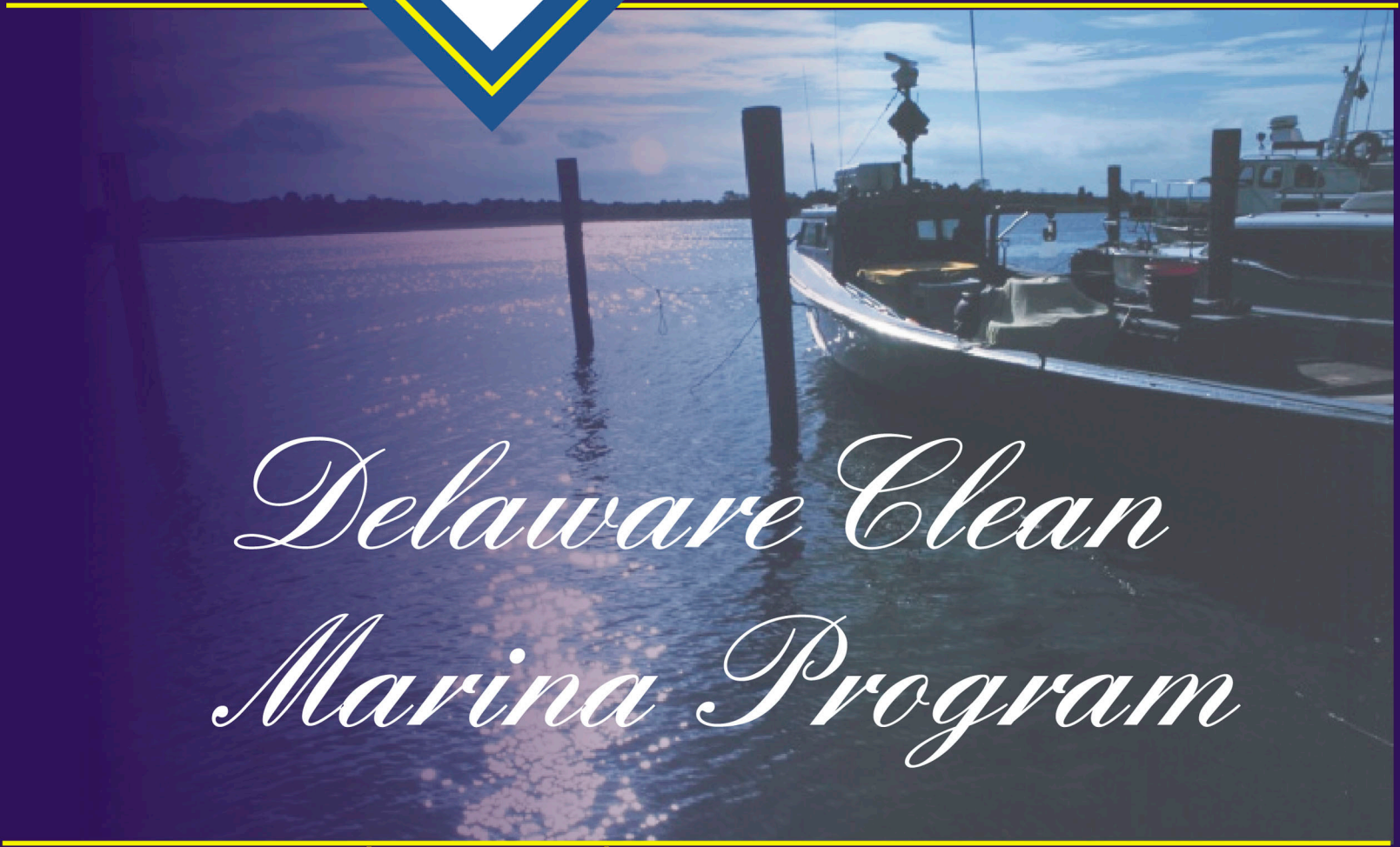
DELAWARE CLEAN MARINA



# Delaware Clean Marina Program

# Delaware Clean Marina

# GUIDEBOOK

A product of the Delaware Clean Marina Program

Prepared by

University of Delaware Sea Grant College Program
Newark and Lewes, Delaware

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Sea Grant
University of Delaware

The University of Delaware Sea Grant Marine Advisory Service developed this guidebook with backing from Sea Grant, the Center for the Inland Bays (CIB), the Delaware Department of Natural Resources and Environmental Control (DNREC), and the U.S. Environmental Protection Agency (USEPA). This project was funded, in part, through a grant from the Delaware Coastal Programs with financial support from the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration (NOAA) under award number NA17OZ2329.

Although this project was partially funded by NOAA, EPA, DNREC, CIB, and the University of Delaware, it does not necessarily reflect the opinion or position of those organizations.

This manual is intended as an environmental educational tool for marina operators, boat yards, marine dealers, 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 from Delaware and Federal regulatory requirements. 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.

The University of Delaware Sea Grant Marine Advisory Service, 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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Center for the Inland Bays

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# Foreword

Dear Friends:

Our Inland Bays and coastal waters are precious jewels of our Diamond State. Clean water and air are vital to the health of all Delawareans, and our recreation and tourism industry would cease to exist without a clean environment. The Delaware Clean Marina Initiative is a voluntary pollution prevention program, developed by a group of marine industry, regulatory, and other environmental advocacy representatives. It is intended to provide for safe and environmentally sound operation of marinas through pollution prevention and incorporation of “good housekeeping” procedures.

The Clean Marina Program rewards marina operators for their voluntary stewardship of clean water and fresh air. By joining the Clean Marina Program, Delaware’s marine industry is taking a leadership role in protecting the environment, the lifeblood of your operations and Delaware’s economy.

We want to thank you, on behalf of all Delawareans, for doing your part to help protect the beauty and health of the waterways that we so enjoy and depend upon.

Sincerely,

Ruth Ann Minner
Governor

John Hughes
DNREC Secretary

# Acknowledgements

The creation of this 1st edition of the Delaware Clean Marina Guidebook took place in 2002 and 2003, with immense support from a statewide Advisory Committee, and the help of several other states' Clean Marina Programs. The Delaware Clean marina Advisory Committee is comprised of individuals from the marine industry (including marina operators, dealers, and boatyard owners), various departments of the State of Delaware, several environmental and boating nonprofit organizations, the U.S. Coast Guard, and Delaware Sea Grant. These people donated hundreds of hours of their time to help tailor this guidebook to the marinas, boatyards, and marine dealers in the State of Delaware. We are grateful for their advice, insights, perseverance, and good humor.

| | |
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# Table of Contents

# Acronyms

| | |
|---|---|
| AC | Air Conditioning |
| ACA | Ammoniacal Copper Arsenate |
| ACZA | Ammoniacal Copper Zinc Arsenate |
| AST | Aboveground Storage Tank |
| BMP | Best Management Practice |
| BT | *Bacillus thuringiensis* (Japanese Beetle) |
| CCA | Chromated Copper Arsenate |
| CESQG | Conditionally Exempt Small Quantity Generator |
| CFR | Code of Federal Regulations |
| CFC | Chlorofluorocarbon |
| $Cu_2O$ | Cuprous Oxide |
| CVA | Clean Vessel Act |
| CZARA | Coastal Zone Act Reauthorization Amendments |
| DSWA | Delaware Solid Waste Authority |
| DNREC | Department Of Natural Resources and Environmental Control |
| DRGHW | Delaware Regulations Governing Hazardous Waste |
| EPCRA | Emergency Planning and Community Right-To-Know Act |
| HCFC | Hydrochlorofluorocarbon |
| HFC | Hydrofluorocarbon |
| HPLV | High Pressure Low Volume |
| LEPC | Local Emergency Planning Committee |
| LPG | Liquefied Petroleum Gas |
| MARPOL | International Convention for the Prevention of Pollution from Ships |
| MEEF | Marine Environmental Education Foundation |
| MPPRCA | Marine Plastic Pollution Research and Control Act |
| MSD | Marine Sanitation Device |
| MSDS | Material Safety Data Sheet |
| NAICS | North American Industry Classification System |
| NDZ | No Discharge Zone |
| NFPA | National Fire Protection Association |
| NOAA | National Oceanic and Atmospheric Administration |
| NPDES | National Pollutant Discharge Elimination System |
| NOI | Notice of Intent |
| OAPC | Organotin Antifoulant Paint Control Act |
| O&M | Operations and Maintenance |
| OPA | Oil Pollution Act |
| OSHA | Occupational Safety and Health Administration |
| pH | Measure of acidity or alkalinity |
| PMB | Plastic Medium Blast |
| PVC | Poly Vinyl Chloride |
| PWC | Personal Water Craft |
| QAC | Quaternary Ammonium Compound |
| RCRA | Resource Conservation and Recovery Act |
| SAV | Submerged Aquatic Vegetation |
| SDS | Siting and Design Study |
| SIC | Standard Industrial Classification |
| SPCC | Spill Prevention, Control and Countermeasure |
| SQG | Small Quantity Generator |
| SWP | Stormwater Permit |
| TBT | Tributyltin |
| TCLP | Toxicity Characteristic Leaching Procedure |
| VOC | Volatile Organic Compound |
| UL | Underwriter's Laboratories, Inc |

| | |
|---|---|
| USACOE | United States Army Corps of Engineers |
| USCG | United States Coast Guard |
| USEPA | United States Environmental Protection Agency |
| UST | Underground Storage Tank |
| WSCS | Wetlands and Subaqueous Lands Section |

# Introduction

The Delaware Clean Marina Program is an effort to assist marina and boatyard operators to protect the resources that provide their livelihood: clean water and fresh air. These natural assets are essential features of the boating industry. After all, many boaters are drawn to the water by nature's glory. They want to feel the sea rolling beneath them and the crisp air against their skin. They want to see fish swimming and birds diving. They want to be able to swim and crab without health concerns. They want to test their mettle against a rising wind and to sit tranquilly at twilight. Ironically, it is the enjoyment of these natural wonders that may lead to their decline.

The maintenance, operation, and storage of recreational vessels has 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 in 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 and by stormwater runoff that collects oil and heavy metals deposited by our cars. 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 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 or boatyard 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. And, your facility will be more attractive to those who care about the health of our water, land, and air.

The Delaware 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 Delaware 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 with boatyards. The recommendations contained within, however, are equally applicable to marinas with limited services, independent boatyards, full-service boat dealers, and 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
- boater education

Those marinas that adopt a significant proportion of the best management practices suggested within the Guidebook (including complying with all regulations) will be recognized as Delaware Clean Marinas. They will receive a certificate acknowledging their environmentally responsible actions, authorization to use the Delaware Clean Marina logo on their letterhead and in their advertising, a flag to fly from their property, and promotion by the Delaware Clean Marina Initiative in publications and at public events. Plans are also being made to acknowledge Delaware Clean Marinas and provide additional resource materials on the World Wide Web.

Now is the time to take a leadership role in protecting and enhancing the quality of Delaware's natural resources. We hope you'll be part of this clean water program.

## How to Use this Guidebook

The Delaware Clean Marina Guidebook is intended to be used as a reference document. Refer to selected chapters as needed. For example, as you prepare for spring commissioning, review the recommendations in the Vessel Maintenance and Repair chapter.

As you read through the Guidebook you will find that recommendations are preceded by a diamond (◆), a broken diamond (❖), or an open diamond (✧). Solid diamonds identify legal requirements, broken diamonds precede highly recommended practices, and open diamonds indicate desirable activities.

Six Clean Boating Tip Sheets are included in the Guidebook. 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 intended to be photocopied and distributed to boaters. There is space on each sheet to include your marina's name and logo.

### *Helpful Hint*

*As you read through the Guidebook you will find that recommendations are preceded by a diamond (◆), a broken diamond (❖), or an open diamond (✧). Solid diamonds identify legal requirements, broken diamonds precede highly recommended practices, and open diamonds indicate desirable activities.*

Throughout the book you will find references to additional sources of information. Contact information is listed in Appendix I. Subsequent appendices contain information about marina industry periodicals and reference materials, storm water permitting, sample contract language, emergency response contractors, EPA management measures, spill control and emergency response plans, and marina regulations.

## Operations and Maintenance (O&M) Plans

As you explore the Delaware Clean Marina Program, it will quickly become evident that there is a heavy emphasis on developing and maintaining an Operations and Maintenance (O&M) Plan for your marina. The Plan has been a requirement for all Delaware marinas since 1990, whether existing, under construction, or proposed. The intent of the O&M Plan is to address compliance with statutory requirements and permit programs and to protect the water and land environment. One of the primary benefits of the Clean Marina Program is to provide guidance to those marinas without approved Operations and Maintenance (O&M) Plans. We all have a vested interest in a clean marine environment. The Clean Marina Program is ready to support those marinas seeking to come into compliance with State and Federal marina regulations. This Guidebook is the centerpiece of the Clean Marina Program's support.

## Steps to Becoming a Delaware Clean Marina

1. Learn about the Clean Marina Program.

   Call the Delaware Clean Marina office at (302) 645-4268 (or email dchapman@udel.edu) to obtain a copy of the Delaware *Clean Marina Guidebook,* the pledge form, the award checklist, and other program information.

2. Take the Clean Marina Pledge.

   By signing the pledge, you commit to do your part to "keep Delaware's waterways free of harmful chemicals, excess nutrients and debris." Send us a photocopy (to Delaware Sea Grant Marine Advisory Service, 700 Pilottown Road, Lewes, DE 19958, Attention: D. Chapman) of the signed pledge and then display the original in a public area so that your customers will be aware of your commitment to clean water. We will prepare a news release acknowledging your participation in the Program and will include your facility's name in public displays. The pledge expires one year from the date you sign it. If you are unable to achieve Clean Marina status in one year, you may renew the pledge by contacting the Clean Marina office.

3. Conduct a self-assessment of your property.

   Assess your own facility using the *Clean Marina Award Checklist* and this *Delaware Clean Marina Guidebook*.

4. Call upon a mentor or Clean Marina Advisory Committee member if you have any questions.

   Do not be discouraged if you initially have difficulty meeting the minimum scores. Call the Delaware Clean Marina (Delaware Sea Grant Marine Advisory Service) office at (302) 645-4268. We will keep all questions in strict confidence. If we cannot answer your question directly, we will put you in touch with one of the marina operators who have helped to develop the Delaware Clean Marina Program.

5. Schedule a confirmation visit.

   Once you are satisfied that your facility meets the award standards described on the back of the *Clean Marina Award Checklist,* call the Clean Marina office to schedule a confirmation visit. Representatives from the Delaware Clean Marina Advisory Committee, including a marina operator, will visit your facility to verify the items checked on the *Award Checklist.*

6. Enjoy your rewards!

   As a Delaware Clean Marina you will be authorized to use the Clean Marina logo on your letterhead and in your advertising. You will receive a certificate and a flag. Furthermore, the Delaware Clean Marina Program will promote your facility through publications, public displays, and media releases. A variety of environment-enhancing incentives are also being developed for Clean Marina Program participants.

7. Maintain your Clean Marina status.

   Annually, confirm in writing that you continue to meet the award standards described on the *Clean Marina Award Checklist.* At least every third year, a Clean Marina representative will contact you to setup a meeting to reaffirm Clean Marina status.

# Siting Considerations for New and Expanding Marinas

## Environmental Concerns

*For copies of DNREC's Marina Guidebook, call DNREC's Wetlands and Subaqueous Lands Section at (302) 739-4691.*

The natural plant and animal communities of 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.

The Delaware Department of Natural Resources and Environmental Control (DNREC) is responsible for protecting, preserving, and enhancing the environmental quality of the water, air, and land of Delaware. DNREC adopted Marina Regulations in 1990, the full text of which is included as Appendix X of this Delaware Clean Marina Guidebook. DNREC also maintains a *Marina Guidebook* that contains useful information about the planning, design, and operation of marinas. This guidebook can be used as a public service, as an educational tool, and for technology transfer, and is available on request directly from DNREC.

The following are Delaware's environmental siting considerations:

**Vessel Storage.** Marina Permit applications that involve water-based vessel storage (wet slips) must demonstrate to DNREC's satisfaction that (a) no practicable and appropriate comparable land-based vessel storage alternatives exist, or (b) that available land-based alternatives have an equal or greater adverse impact on the aquatic environment than comparable water-based vessel storage alternatives. When evaluating comparability, the Department will consider number of slips, location, intended use, and proposed ancillary facilities.

**Water Quality Assessment.** Maintaining water quality within a marina basin depends on how readily a marina renews its waters, a process known as "flushing".

DNREC's mandate is to prevent degradation of the surface and ground waters of the State which might result from any pollutant source, so that all existing water designated uses are maintained and protected. Marinas shall be permitted only if they do not cause a violation of established Delaware water quality regulations.

Applicants must provide, as part of a Siting and Design Study, a documented and valid water quality assessment of the potential impacts

of the design, construction, and operation of the proposed marina. At a minimum, the assessment must explicitly address fecal coliform and dissolved oxygen surface water quality standards. Other parameters may be required by DNREC if there is a documented concern.

At a minimum, a valid assessment will include appropriate modeling, monitoring, and data analysis to determine the following:
(1) the flushing characteristics of the proposed marina;
(2) the spatial extent of the shellfish harvest closure zone. The closure zone shall be clearly indicated on an appropriate USCG chart of the area; (See also, Chapter 7)
(3) the 24 hour average dissolved oxygen concentration and the one hour (or instantaneous) minimum dissolved oxygen concentration both inside the marina and in adjacent ambient waters.

**Cumulative Impacts.** DNREC reserves the right to consider the cumulative impacts of clusters of proposed new and existing developments in a finite receiving waterbody. Therefore, even in cases where such projects, if considered alone, would comply with applicable State regulations, DNREC may still deny an individual application or applications, or may require each applicant to make modifications so that the cumulative impacts of the projects shall not cause violations of State regulations.

**Wetlands.** Wetlands perform many vital functions, such as serving as highly productive nursery areas for water and land organisms, providing nutrients, reducing flood damages, and maintaining water quality by trapping sediment and filtering pollutants.

No activity may occur in State-regulated wetlands without first obtaining a permit from DNREC pursuant to The Wetlands Act (Title 7. Del. C., Chapter 66) and the Wetlands Regulations. DNREC's policy is to preserve and protect public and private wetlands and to prevent their despoliation and destruction consistent with the historic right of private ownership of lands.

DNREC strictly regulates the location of marinas in wetlands. Marinas shall be limited to those sites where applicants can demonstrate that short and long-term adverse impacts to the biological, chemical, and physical integrity of wetlands and their functions have been avoided, and that unavoidable impacts have been minimized and can be compensated for.

Before DNREC allows disturbance of wetlands, the applicant shall demonstrate that all practicable alternatives to avoiding wetland impacts have been thoroughly examined and the results of such examinations shall be provided to DNREC. In all cases, the applicant shall demonstrate that the purchase of additional property to avoid the wetland impacts is impracticable.

If wetland impacts cannot be avoided, and the applicant has demonstrated that wetland impacts have been minimized, DNREC may allow compensation. Compensation plans must provide for the creation or restoration of an area of wetlands that is of equal or greater value than the area that will be disturbed or destroyed so that there is no net loss of wetlands.

*Debris and silt tend to collect in poorly flushed areas and will eventually settle to the bottom. As the 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.*

**Shellfish Resources.** The Siting and Design Study must include a description of all measures taken to first avoid and then minimize unavoidable impacts to shellfish resources. DNREC will consider the following impacts of proposed marina facilities on shellfish resources:

a. Impacts on the organisms themselves, including their ability to survive, grow and propagate, without regard to potential use by humans; and
b. Impacts that may cause a violation of the Delaware Surface Water Quality Standards; and
c. Impacts on the public's ability to harvest and consume edible shellfish species based upon the shellfish growing area classification proposed by the DNREC Division of Water Resources for the marina or marina alteration under consideration.

**Submerged Aquatic Vegetation (SAV).** SAV is protected because it provides shelter and a source of food to small aquatic organisms, and because of its ability to filter and remove suspended solids and disperse wave energy.

a. Applicants must demonstrate that short and long-term impacts to SAV have been avoided, and that unavoidable impacts have been minimized and can be compensated for. Marina projects that could cause the destruction of SAV without corresponding compensation as approved by DNREC shall not be permitted.
b. Shading of SAV by piers should be avoided.

**Benthic Resources.** Benthic resources, the plants and animals on the seabed, are protected because of their importance in the food chain and their value as commercial and recreational food sources. The status of a benthic community shall be assessed by the applicant using frequency, diversity, and abundance measures approved by DNREC. DNREC may require monitoring of the benthos as a permit condition.

**Critical Habitats.** Construction of marinas shall not be permitted at sites that are recognized by DNREC as critical habitats.

**Recreational Water Use Areas.** Marinas are not permitted at sites which conflict with Recreational Water Use Areas as duly adopted by the State.

**Mitigation Measures.** All mitigation and compensation measures must be reviewed and approved by DNREC before a permit can be issued. DNREC approvals may establish a schedule for completion. The intent of this policy is to assure no net loss of aquatic habitat productivity, including flora and fauna.

Compensation may be allowed by DNREC to offset unavoidable impacts to existing wetlands and SAV beds, generally in the ratio of 2:1 for areas disturbed. Compensation will only be considered if the applicant has demonstrated suitable avoidance and minimization. This may require modification of marina plans, including limiting the number of slips and/or rearranging the marina configuration.

Wetland functions and values encompass:

- Environmental quality values (water quality maintenance, aquatic productivity, microclimate regulation, etc.)
- Fish and wildlife values (fish and shellfish, waterfowl and other birds, fur bearers, and other wildlife)
- Socioeconomic values (flood control, erosion control, water supply, fishing and hunting, aesthetics, research, education, etc.)

Compensation shall be with the same species (flora and fauna) and soil types that were disrupted unless alternate species or soil types are approved by DNREC. For wetlands, post creation/restoration monitoring shall be required for a minimum of three (3) years after completion of the compensation project.

## Information Sources

Appendix I

Local Planning and Zoning Offices

Delaware Department of Natural Resources and Environmental Control (DNREC)

- For copies of DNREC's *Marina Guidebook* or *Marina Regulations*, call DNREC's Wetlands and Subaqueous Lands Section (302) 739-4691
- Division of Water Resources, Shellfish Program (302) 739-4590

U.S. Fish and Wildlife Service
(413) 253-8200

# Marina Design and Maintenance

## Environmental Concerns

Land management decisions, operating procedures, and structural improvements may all contribute to–or detract from–the quality of the land and water surrounding your marina. Roads and parking areas may convey polluted stormwater directly into adjacent waterways. Dredging may re-suspend toxic compounds such as heavy metals, hydrocarbons, and synthetic chemicals. Hazardous chemicals may be leached 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 rain 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.

## Regulatory Issues

Good planning and design practices will assure that appropriate and adequate environmental safeguards will be incorporated into a prospective project, and is something that is considered by DNREC during the Marina Construction Permit review process. During the permit review process DNREC will balance the needs of development and growth with its own primary mission, which is to protect the natural environment of the State for all of our citizens and for future generations.

*For copies of DNREC's Marina Guidebook, call DNREC's Wetlands and Subaqueous Lands Section at (302) 739-4691.*

DNREC adopted Marina Regulations in 1990, the full text of which is included as Appendix X of this Delaware Clean Marina Guidebook. DNREC also maintains a *Marina Guidebook* that contains useful information about the planning, design, and operation of marinas. This guidebook can be used as a public service, as an educational tool, and for technology transfer, and is available on request directly from DNREC. Please refer to DNREC's *Marina Regulations* and *Marina Guidebook* for more details.

The Department's review of all Marina Permit applications will include consideration of the following design features:

**Marina Flushing.** Marinas are to be designed to maximize flushing so as to prevent the possible accumulation of contaminants that could result in a violation of the Delaware Surface Water Quality Standards.

- Marina basins shall be designed so that they do not include square corners or stagnant water areas that tend to collect debris or cause shoaling or flushing problems.
- Marina basin and access channel depths shall not be deeper than the existing controlling depth of the receiving water body and shall be designed to introduce a negative slope (shallow to deep) when moving from the head of the basin toward the receiving water body.

**Dredging and Dredged Material Disposal.** Dredging and dredged material disposal activities shall be in accordance with the Regulations Governing the Use of Subaqueous Lands, as authorized by Title 7. Del. C., Chapter 72. Dredged material disposal activities may also be regulated, depending upon the nature of the spoil material, by the Delaware Regulations Governing Solid Waste or the Delaware Regulations Governing Hazardous Waste.

a. Dredging shall be limited to the minimum dimensions necessary for the project and should avoid sensitive areas such as wetlands, shellfish resources, and SAV. Delaware Surface Water Quality Standards must not be violated because of dredging operations.
b. DNREC may authorize dredging or other marina activities on a seasonally restricted basis in known nursery and spawning areas of important species. Marinas shall not be permitted in areas that would require frequent maintenance dredging, resulting in harm to aquatic life and preventing the recolonization of benthic organisms (plants and animals on the seabed). Such areas include those which would require maintenance dredging more often than once every four years.
c. Dredging activities shall not be approved until the applicant can demonstrate that both initial and future maintenance dredging demands can be accommodated by the proposed disposal plan. Future maintenance dredging shall be estimated using a project life not less than 30 years unless the applicant can provide good reasons why the project life will be less than 30 years.

**Shoreline Protection Structures.** Construction of shoreline protection structures shall be in accordance with the Delaware Regulations Governing the Use of Subaqueous Lands, as authorized under Title 7. Del. C., Chapter 72. Shoreline protection structures should be designed to minimize adverse impacts to aquatic resources. Vertical bulkheads should be avoided if at all possible. When bulkheading is proposed as part of a marina project, the permit application must include an evaluation of alternatives to bulkheading. Such evaluations must demonstrate that no practicable and appropriate alternative to bulkheading exists to accomplish the primary purpose of the project.

**Navigation and Access Channels.**

a. Marinas shall only be located in areas which, in DNREC's determination, offer safe and convenient access to waters of navigable depth. Such locations tend to present maximum opportunities for flushing, with less danger of sedimentation than very shallow sites. Safe and convenient access will be determined on a case-by-case basis. Factors such as existing water depths, distance to existing channels and their depths, and tidal and wave action will be considered.
b. Where feasible, docks and piers shall be extended to navigable depths rather than employing dredging to provide such depths closer to shore. In some cases, limitations on maximum vessel drafts may be necessary. Minimum navigable depths shall be based on the kind of vessels expected to use the marina, but shall not exceed the depths of the receiving water body.
c. Alignment of channels shall make maximum practical use of natural or existing channels.

d. Docks, moorings, pilings, and other structures or berthing areas associated with marinas shall be located a minimum of ten (10) feet from a navigation channel.
e. Marina docking facilities shall not extend beyond existing structures in the immediate vicinity unless absolutely necessary to obtain adequate water depths for a water dependent activity.
f. Where adequate water depths exist for water dependent marina structures, berthing areas shall not extend channelward more than 10% of the width of the water body at that location, not to exceed 250 feet. In no case shall a structure extend channelward more than 20 percent of the width of the water body (as measured from mean low water to mean low water).

**Vessel Traffic and Navigation.**

a. Marinas shall be designed to minimize adverse effects on the existing public and private use of waters of the State. This includes applications for mooring sites (permanent or temporary), speed or traffic reductions, or any other device, either physical or regulatory, that may cause the use of State waters to be restricted.
b. New marinas must be sited and/or designed, to the maximum extent practicable, to afford adequate protection against wakes caused by vessel traffic.

**Water Supply.**

a. Marina construction, maintenance, dredged material disposal, or operation shall not be allowed to contribute substances to groundwater in violation of Title 7. Del. C., Chapter 60, §6003, regardless of whether the affected groundwater is used as a public or private water supply.
b. Marina construction, maintenance, dredged material disposal, or operation shall not be allowed to contaminate a public water supply as defined by the Delaware Surface Water Quality Standards, whether existing or reserved for future use.
c. When an applicant proposes to construct an upland basin marina, whether through excavation or other means (i.e. connection of an existing landlocked water body to tidal waters), documentation must be provided to demonstrate that the basin will not cause intrusion of saltwater into a public or private water supply.
d. Applicants must demonstrate that there is an adequate water supply to serve all of the project's needs, and that all required permits and/or approvals can be obtained for the proposed method of water supply, whether by well installation, hook-up to an existing water supply system, or other means.

**Wastewater Facilities.**

a. In accordance with Title 7. Del. C., Chapter 60, §6035, discharge of raw, untreated, or inadequately treated sewage from marine sanitation devices into waters of the State, including marina basins, is prohibited.
b. All marinas shall comply with the provisions set forth in Title 7. Del. C., Chapter 60, §6035.
c. Adequate restroom facilities for the use of marina patrons shall be provided to discourage any overboard discharge of untreated or inadequately treated sewage from vessels, and to protect water quality. Toilet facilities shall be constructed in a location that would facilitate their use by the users of the marina. The number of toilets required for any given marina shall be determined by the nature

(recreational, public, or commercial) and size of the marina and by its specific configuration. There shall be adequate restroom facilities to serve patrons such that use of shoreside facilities is encouraged. Public restroom facilities will not be required at recreational marinas if every resident who utilizes a slip within the marina can quickly and conveniently travel from the slip to their residence.

d. The applicant shall demonstrate adequate capacity to properly dispose of all sanitary wastes generated by the project.
e. An ample number of signs shall be provided to identify the location of public restrooms and of pumpout facilities or dump stations. Such signs shall also fully explain the procedures and rules governing the use of these facilities.
f. The applicant must demonstrate that proper treatment, storage, or disposal permits have been or can be obtained.

**Parking.** In the absence of local planning requirements, dedicated parking spaces should be provided at a rate of 0.50 spaces/slip, plus such additional spaces required by local codes for retail activities, handicapped citizens, residences, and employee parking. The applicant may submit information to DNREC in support of an alternative parking space rate. DNREC will review such information to determine if the proposed standard is appropriate for use. In the event of a conflict between this requirement and an applicable local building code or requirement, the local code shall have precedence.

**Stormwater Management.** Stormwater runoff becomes polluted with oils, greases, organic and inorganic wastes, and other potentially harmful substances. The movement of these substances into streams and estuaries can have significant adverse water quality impacts. To minimize these impacts, all marina permit applications shall include plans for stormwater management and sediment and erosion control. These plans must be reviewed and approved by the appropriate plan approval agency in order to ensure compliance with Title 7. Del. C., Chapter 40, the Delaware Sediment and Stormwater Regulations, and the National Pollutant Discharge Elimination System (NPDES) Stormwater Regulations, (40 CFR 122.26).

In the event that the proposed marina project is exempted or waived from the requirements of Chapter 40 or the NPDES Stormwater Program, surface water and groundwater quality protection must still be demonstrated by the applicant. In reviewing the plans for stormwater management and sediment and erosion control, DNREC will rely upon the water quality provisions of Chapter 40 and the Delaware Sediment and Stormwater Regulations.

**Solid Waste Management.** Storage, handling, and disposal of solid wastes shall be in strict accordance with DNREC's Regulations Governing Solid Waste.

a. Discharge of solid waste, including but not limited to, garbage, maintenance waste, plastics, refuse, and rubbish into waters of the State, including marina basins, is prohibited.
b. Solid wastes shall be managed so as to prevent their entrance into any surface or ground waters of the State.

**Vessel Maintenance Areas and Activities.**

a. Vessel maintenance areas shall be sited as far from the water as is practicable, and shall be designed so that all maintenance activities that are potential sources of water or air pollution can be accomplished over dry land and under roof, where practicable, as determined by DNREC. Control of by-products, debris, residues, spills, and stormwater runoff shall comply with applicable DNREC regulations. All drains from maintenance areas must lead to a sump, holding tank, or pump out facility from which the wastes can later be extracted for treatment and/or disposal by approved methods. Drainage of maintenance areas directly into surface or groundwater shall not be allowed.
b. Maintenance activities including, but not limited to, painting, welding, woodworking, and LPG servicing shall comply with applicable State regulations, as well as with National Fire Protection Association (NFPA) 303: Fire Protection Standards for Marinas and Boatyards.
c. Only biodegradable detergents shall be allowed for vessel washing and cleaning within waters of the State.
d. Waste oils and other wastes generated as a result of maintenance and repair operations shall not be disposed of into ground or surface water.
e. Materials used in maintenance and repair operations shall be stored and handled in accordance with local fire codes or, if none exist, with applicable codes and standards of NFPA and with applicable DNREC regulations. Such material shall be stored in such a way as to prevent adverse environmental impacts.

**Fuel Storage and Delivery Facilities.**

a. Fuels shall be stored and handled in accordance with local fire codes or, if none exist, with NFPA 303: Fire Protection Standards for Marinas and Boatyards, and with applicable DNREC regulations. All vessel fueling operations shall be undertaken at the fueling station or other specifically designated remote location in accordance with NFPA 302: Fire Protection Standards for Pleasure and Commercial Motor Crafts.
b. Aboveground and underground fuel storage tank installations shall comply with all State and/or local storage tank regulations.

**Fire Protection Systems.** Fire protection systems shall comply with local fire codes or, if none exist, with NFPA 303: Fire Protection Standard for Marinas and Boatyards.

**Life Safety Equipment.** Flotation devices shall be provided at regular intervals throughout the marina to ensure the safety of marina users.

**Fish Wastes**. Fish waste disposal shall be in accordance with Title 7. Del. C., Chapter 60, and with any applicable DNREC approved policies.

**Marina Structures.** Marina structures in, on, or over subaqueous lands shall be designed to comply with applicable requirements of the Delaware Regulations Governing the Use of Subaqueous Lands and with the following:

a. They shall be designed to minimize adverse impacts on navigation, public use of waters, and natural resources, while allowing the applicant adequate access to waters of navigable depth.
b. They shall not significantly restrict water flows.
c. The width and length of all structures shall be limited to what is reasonable for the intended use. To the extent feasible, heights and widths should be chosen to minimize shading of vegetation. Shading of submerged aquatic vegetation (SAV) should be avoided.
d. Barrier-free access for the handicapped shall be provided for all marina structures in accordance with federal, state, or local statutes, regulations, or ordinances.
e. They shall have sufficient strength to resist expected dead, live, wind, and impact loads. Adequate consideration shall be made for forces imposed by earth pressures, flowing water, floating objects or debris (including ice), and vessel docking and mooring operations.
f. Marina structures shall not be constructed using creosote treated timber.

## Best Management Practices for Marina Facilities and Structures

**Use Fixed or Floating Piers to Enhance Water Circulation.** While being mindful of the need for pier/dock systems to provide access during routine operations and under emergency circumstances (e.g., evacuation preceding or during a storm), piers, and other structures should be placed to enhance, rather than to obstruct, 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. The fewer the segments, the better the circulation.

To understand what is meant by “segment” see DNREC’s *Marina Guidebook*.

✧ Use a de-ice bubbler system to aerate areas with poor circulation.

**Use Environmentally Neutral Materials.**

❖ For new pilings and other structures that are in or above the water, use materials that will not leach toxic chemicals into the water and which will not degrade in less than ten years time, e.g., reinforced concrete, coated steel, recycled plastic, vinyl sheet piling.

❖ Be sure to contain shavings when field cutting plastic pilings and timbers.

❖ Purchase floatable foams that have been coated or encapsulated in plastic or wood. As these floats age, degraded foam is contained by the covering.

❖ Avoid exotic timbers. Some tropical trees, such as greenheart and bongossi, are also naturally durable. Their harvest, however, is harmful to tropical forests.

✧ Use naturally durable timbers conservatively. Black locust, cedar, chestnut, and white oak are naturally durable but expensive and may be hard to find.

✧The use of wood treated with creosote for pilings and other structures in the aquatic environment is prohibited in Delaware. Wood pressure treated with chromated copper arsenate (CCA), ammoniacal copper zinc arsenate (ACZA), or ammoniacal copper arsenate (ACA) is often used. There is concern that these pressure treated timbers may also contribute to water pollution, however.

**Limit Shaded Areas Over the Water.**

✧ Near-shore bottom-dwelling organisms require sunlight. In order to provide them with as much sunlight as possible, limit the number of covered slips.

**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. 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.

❖ Use dredging methods, like hydraulic dredging, that minimize environmental impacts.

❖ Use turbidity curtains to contain suspended sediments.

✧ Provide dry storage for smaller boats.

**Follow Natural Channels.**

❖ Align entrance channels with natural channels to increase flushing.

❖ Boat lanes should 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 as shoaling (and, therefore, dredging) is a potential problem.

❖ Avoid long winding channels connecting marinas to open water.

❖ Where possible, establish two openings at opposite ends of the marina to promote flow-through currents.

**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.

✧ If non-structural measures alone are not sufficient to control erosion, use revetments, breakwaters, or groins 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, 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 bars.

**Conserve Water.**

❖ Equip all freshwater hoses with automatic shutoff nozzles.
❖ Fix leaks and drips.
✧ Install “low-flow” faucets, toilets, and showerheads.

**Maintain Structures Using Clean Marina Practices.**

❖ Scrape, sand, and paint in-water and landside structures according to the same management principles as for vessels (refer to the Vessel Maintenance and Repair chapter).
✧ If feasible, move floating structures to shore for scraping, painting, and major repairs.

## Best Management Practices for Protecting Sensitive Areas

**Minimize Impervious Areas.**

❖ Keep paved areas to an absolute minimum, e.g., just designated work areas and roadways for heavy equipment.

**Use Upland and Inland Areas.**

❖ Locate buildings, workshops, and waste storage facilities in upland areas, away from fragile shoreside ecosystems, to the greatest extent possible. Upland areas also provide a measure of protection against floods.
❖ Locate parking and vessel storage areas away from the water where feasible.
✧ Consider inland areas for boat repair activities and winter storage. Use hydraulic trailers to quickly and easily move boats to inland storage locations.

**Expand Upward.**

✧ Rather than adding wet slips, expand storage capacity by adding dry-stack storage, which provides 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. They are, therefore, less likely to discharge oily bilge water.

❖ Control stormwater runoff from dry-stack areas as well as from any expanded parking areas.
❖ Keep forklifts and other equipment well tuned to prevent grease or oil from dripping onto staging areas or into the water.

**Conserve Sensitive Land.**

✧ Provide a serene setting for your marina by placing adjacent, sensitive land in a conservation easement. Income, estate, and property tax benefits are available.
✧ Sell or donate the land (or the development rights to the land) to a local land trust or a non-profit organization such as The Nature Conservancy or The Trust for Public Land.

*Landscape with native plants that require little care in terms of water, fertilizer, and pesticides.*

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

❖ 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 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. Refer to Appendix II for information sources for beneficial native plants.

❖ 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, nut shells, etc.) 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 groundcover 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 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.

✧ Collect rainwater by directing downspouts into covered containers. Use the collected water on your landscaped areas.

## Best Management Practices for Creating Habitat Areas

**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, 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). Refer to Appendix II for Delaware native plant information sources.

❖ 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, small mammals, 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.
❖ Annually, submit a soil sample to the University of Delaware's Cooperative Extension Service to determine fertility, pH, and application rates for soil amendments. Cost of the test is $7.50. Contact the University of Delaware Soil Testing Program, 152 Townsend Hall, Newark DE 19717-1303, (302) 831-1392 (Phone), (302) 831-0605 (Fax), kgartley@udel.edu (E-mail)
❖ Foster beneficial critters. For example, earthworms move through the soil feeding on microorganisms. In the process, they aerate the soil, improving 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.

## Information Sources

Appendix I

Appendix II

Delaware Department of Natural Resources and Environmental Control (DNREC)
- For copies of DNREC's *Marina Guidebook* or *Marina Regulations*, call DNREC's Wetlands and Subaqueous Lands Section (302) 739-4691

The Nature Conservancy
(302) 654-4707

The Trust for Public Land
(202) 543-7552

U.S. Fish and Wildlife Service
(413) 253-8200

# Stormwater Management

## Environmental Concerns

Stormwater runoff is precipitation that has not been absorbed by the ground. Rather, it washes over the surface of the land picking up pollutants as it travels. Stormwater runoff may collect soil particles, petroleum products, residues from industrial activities, litter, and pet waste. All of these pollutants are carried with the runoff into surface waters where they adversely impact water quality.

The volume of stormwater runoff increases as natural forests and fields are replaced with hard surfaces such as buildings, parking lots, driveways, and roads. Also, without any plants to disrupt the flow, stormwater moves across the land more quickly than it did under predevelopment conditions. This greater, faster flow of stormwater can severely degrade receiving water bodies by accelerating erosion which leads to flooding, destruction of plant and animal life, and loss of habitat. Also, pollutants carried by stormwater 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. Also, using the water for human recreation becomes less desirable.

## Legal Setting

*See end of chapter for dialog on SIC codes.*

## General Stormwater Permit for Discharges from Marinas

Marinas classified as Standard Industrial Classification (SIC) codes 4493 or 4499 that conduct watercraft maintenance (including vessel rehabilitation, mechanical repairs, painting, fueling, blasting, sanding, and lubrication) activities are required to obtain a General Stormwater Permit only if they discharge into a waterbody – stream, lake, river, tax ditch, etc. If the facility is located inland and does not discharge to waters of the state, then it is not required to obtain permit coverage.

*To determine whether a permit is needed, call DNREC's Surface Water Discharges Section at (302) 739-5731.*

If the marina operator does not provide maintenance services, but allows contractors hired by his boating patrons to come into the marina to perform the work – sometimes on land (scraping/painting, etc.), sometimes in the water (engine work and repairs), the marina would still be required to obtain permit coverage since maintenance activities are performed on facility grounds. The facility operator would be required to ensure that contractors are conducting these activities in accordance with the facility's Stormwater Permit (SWP).

The General Stormwater Permit, addressed by the *State of Delaware Regulations Governing Stormwater Discharges Associated with Industrial Activity* in accordance with Part 1: *Baseline General Permit* and Part 9: *Stormwater Discharges Associated with Industrial Activity,* covers stormwater discharges associated with boat maintenance/repair activities and wastewater from pressure washing activities. It does not cover any other non-stormwater discharges, such as wastewater discharges to surface or groundwater from boats or other sources.

The goal of the General Stormwater Permit is to establish accepted practices for protecting and improving water quality and minimizing adverse effects on waters of the State from stormwater discharges associated with boat maintenance/repair activities. Rather than setting numerical water quality criteria, the General Stormwater Permit Program requires all facilities to obtain coverage under the General Stormwater Permit by implementing certain Best Management Practices (BMPs).

Facilities required to obtain coverage under the General Stormwater Permit must do the following:

Step 1) Submit a Notice of Intent (NOI) Form to DNREC (see Guidebook Appendix IV for the Form and Instructions). DNREC will then issue a letter verifying that permit coverage has been acquired.

Step 2) Within the timeframe specified by DNREC, develop, implement and maintain a Stormwater Plan (SWP) which describes the BMPs that will be used to limit the discharge of pollutants associated with maintenance/repair activities, by minimizing the following:

- The discharge of pressure wash wastewater to surface water or groundwater.
- The exposure of all machinery, equipment or vehicle maintenance areas to precipitation (to the maximum extent practicable).
- The exposure to precipitation of stored substances, products, or wastes that can contribute pollutants to stormwater runoff (to the maximum extent practicable).
- The exposure to precipitation of substances, products, or wastes that can contribute pollutants to stormwater runoff during handling, shipping, receiving, loading or unloading (to the maximum extent practicable).

The SWP should also address the following:

- Elimination of wastewater or other non-stormwater discharges to any stormwater system.
- Development of a response plan to address the prevention and minimization of accidental releases of substances, products, or wastes that can contribute pollutants to stormwater runoff.
- Implementation of a BMP which will buffer the stormwater that discharges from the facility.
- Annual training for employees regarding SWP BMPs.
- Annual self-inspections to assure effective operation and implementation of BMPs.

Step 3) Upon approval of your SWP, a permit will be issued by DNREC. Note that stormwater management must be addressed as part of your Operations and Maintenance (O&M) Plan.

*The Delaware Marina Regulations define Best Management Practices (BMPs) as methods, measures, or practices that are determined by DNREC to be reasonable and cost-effective means for a person to meet certain pollution control needs. Best management practices include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. Best Management Practices can be applied before, during, or after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters.*

*For guidance and help with any questions about Stormwater permits contact DNREC's Surface Water Discharges Section at (302) 739-5731.*

## State Law: Sediment Control and Stormwater Management

Delaware Code Title 7, Chapter 40 requires that any land disturbing activity that disturbs 5,000 square feet or more, unless exempted, must have an approved sediment and stormwater management plan before land disturbance begins. The plans are typically approved by a local review agency, such as the Sussex Conservation District. For construction projects that disturb one or more acres, you must also obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities.

## Best Management Practices to Control Stormwater Runoff

**Avoid Maintenance Area Runoff.**

◆ Prevent or minimize contamination of stormwater runoff from all areas used for engine maintenance and repair.
◆ Develop spill prevention and response procedures for all areas where spills can contribute to stormwater discharge.

**Cultivate Vegetated Areas.** Healthy soil and vegetation capture, treat, and slowly release stormwater. The water is cleaned through a combination of microbial action in the soil, vegetative uptake, evaporation, and transpiration.

❖ Plant environmentally-sensitive landscapes at the edge of parking lots and within islands in parking lots.
❖ Plant vegetated buffers between your upland property and the water's edge.
❖ Position downspouts so that they drain to vegetated areas–avoid draining to concrete or asphalt.
✧ Construct wetlands to remove pollutants, protect the shore from storms, and provide habitat for aquatic species and birds.
✧ Use grassed swales to direct stormwater on your property. Grassed swales are channels or ditches planted with erosion-resistant vegetation. They improve water quality by filtering out particulates, taking up nutrients, and promoting infiltration. Also, water generally moves more slowly over a grassed swale than it would in a pipe. Grassed swales are not practical on very flat land, on steep slopes, or in wet or poorly drained soils.

**Minimize the Amount of Paved Area.** The less impervious area on site, the less runoff you will have to manage.

❖ Pave only those areas that are absolutely necessary.
❖ 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, e.g., gravel, seashells, or paving blocks that allow vegetation to grow. DNREC can provide a list of suppliers of these materials.

**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 non-target 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 to suppress weeds. Varieties of grass that grow better in cooler weather should be mowed to no less than 2.5 inches in height. 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.
❖ Boost your own tolerance for weeds and other pests. If it is not actually harming anything, leave it alone.
❖ Foster natural predators such as spiders, praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards, and certain snakes and toads.
❖ Use natural agents such as milky spore disease for grubs and Japanese beetles, *Bacillus thuringiensis* (BT) to control mosquito and small moth larvae, and sabadilla for chinch bugs.
❖ Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Also, rather than broadcasting pesticides, apply them directly to problem areas.
❖ Treat only serious or threatening intolerable pest infestations.
❖ 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.

*For more information, contact Joanne Whalen, Specialist for Integrated Pest Management, Agricultural Extension Service at jwhalen@udel.edu, http://www.udel.edu/IPM, or call (302) 831-1303.*

**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).
- Stormwater wetland systems are designed to mimic the ability of natural wetlands to cleanse and absorb storm flows.

*The following USEPA website http://www.epa.gov/owm/mtb/mtbfact.htm has a series of technology fact sheets on various stormwater Best Management Practices, with good practical approaches.*

*Another good resource can be found at the Center for Watershed Protection website, http://www.stormwatercenter.net. For this site, select "Slideshows", then "A Review of Stormwater Treatment Practices" for graphics of the most current Best Management Practices. This presentation is a general review of the many types of practices used to manage and treat urban stormwater. The stormwater treatment practices presented in this presentation fall into five major categories: stormwater ponds, stormwater wetlands, infiltration practices, filtering practices, and open channels. Within each category, there are several design variations. For each practice, a general sequence of slides will be provided including: a schematic, applicability and performance summary, design notes, and one or two representative photographs.*

*For information on specific design criteria and Delaware construction standards, be sure to contact DNREC's Division of Soil and Water Conservation Sediment & Stormwater Program at (302) 739-4411, or email at randell.greer@state.de.us*

- Infiltration systems are designed to take advantage of soil's natural infiltration capacities and pollutant removal characteristics.
- Rain barrels are an example of an inexpensive way to store and release rooftop runoff from small buildings.
- Filter systems "strain" runoff to remove pollutants. The Delaware Sand Filter is one type of system that allows particles to settle into a wet chamber before flowing through a sand chamber for final treatment. The design for this BMP is available by contacting DNREC Sediment and Stormwater Program at (302) 739-4411.
- Structural Stormwater Systems – There are many new structural stormwater products designed to treat stormwater runoff, most of which are connected to storm drain systems and catch basins. They are designed to either filter runoff or separate pollutants from the cleaner water. These structural systems may be used for retrofit situations or new construction. DNREC maintains a list of these products and their suppliers.
- Catch Basin Inserts – There are also a variety of catch basin inserts that are used to filter stormwater runoff that are usually comprised of some type of geo-textile fabric and frame. The filters are inserted into existing catch basins and must be maintained frequently. Some of these filters have an absorbent material designed to capture oils and greases and would be good applications in marina situations. DNREC can also provide information on these products.

❖ Establish a schedule for inspecting and cleaning stormwater systems. Remove paint chips, dust, sediment, and other debris.

❖ ALL stormwater management structures must be maintained in order to be effective.

**Practice Low Impact Development.** One goal of low impact development is to develop a site with a minimal amount of impact to the soil, groundwater, and surface water. This approach takes advantage of a site's natural features–including vegetation–to minimize the need to build expensive stormwater control devices. DNREC Sediment and Stormwater Program (302) 739-4411 has developed several "Green Technology Best Management Practices" that may be applicable in marina environments.

❖ Capture and treat stormwater on site.

✧ For example, direct the runoff from your parking lot to a bio-retention area rather than toward a storm drain. A "rain garden" is an example of a bio-retention area. It is an area planted with native vegetation and sited such that it collects stormwater. Water, nutrients, and pollutants are taken up by soil and plants within 24 to 48 hours after a storm. Rain gardens have the added advantage of being attractive areas that can provide shade and wildlife habitat, act as windbreaks, and muffle noise.

✧ Contact DNREC's Sediment and Stormwater Program for information about low impact development and rain gardens.

**Control Sediment from Construction Sites.** Use BMPs as required on an approved Sediment and Stormwater Plan such as silt fences and sediment traps, to prevent sediment from leaving construction areas. If an area that will be disturbed is too small to require a plan, these BMPs should still be installed. Contact the local Soil and Water Conservation District for technical assistance.

**Signs.** The use of signs as a reminder that keeping pollutants out of the water is important can be very effective. These signs can inform about pet wastes, littering, or discarding used waste materials.

**Storm Drains.** Storm drains can be stenciled with messages about the waste that goes in them and their connection to the water. Painted storm drains grab people's attention at a marina and help control disposal of solid and liquid wastes in inappropriate places.

❖ Paint in colorful, large, and obvious letters and pictures. Contact DNREC's Pollution Prevention Program (302) 739-6400 for the availability of stencils to borrow.

✧ Indicate what surface water body receives the stormwater.

✧ Having children help will increase their environmental awareness.

**Standard Industrial Classification (SIC) Codes.**
The 11 categories of industrial activities for which stormwater discharge permits are required are defined in the U.S. Code of Federal Register at 40 CFR 122.26(b)(14). A permit is required for Standard Industrial Classification (SIC) codes 4493 (marinas) and 3732 (boatyards and boat builders that repair, clean, and/or fuel boats). Note that the North American Industry Classification System (NAICS) is replacing the U.S. SIC system. NAICS was developed jointly by the United States, Canada, and Mexico to provide new comparability in statistics about business activity across North America. The following table provides conversion information for the two systems:

| SIC | | NAICS |
|---|---|---|
| 3732 | Boat Building and Repairing | |
| | Boat Repair | 81149 Other Personal and Household Goods Repair and Maintenance (part) |
| | Boat Building | 336612 Boat Building |
| 4493 | Marinas | 71394 Marinas |

## Information Sources

Appendix I

Department of Natural Resources and Environmental Control (DNREC)

- Division of Water Resources
  NPDES Program
  (302) 739-5731
- Division of Soil and Water Conservation
  Sediment and Stormwater Program
  (302) 739-4411

U.S. Environmental Protection Agency (USEPA)
(800) 438-2474

# 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. They need to be prepared to withstand the cold of winter. Each of these activities has the potential to introduce pollutants into the environment.

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. If heavy metals find their way into the water, they may be consumed by mussels, 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 spoil 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 non-toxic 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.

Call DNREC's Wetlands and Subaqueous Lands Section, (302) 739-4691, for a copy of their publication, *Best Management Practices for Delaware Boat Maintenance Facilities*, May 1997.

## Legal Setting

## Environmental Regulation

In Delaware, several types of pollution pertaining to boat maintenance facilities are regulated by the Department of Natural Resources and Environmental Control (DNREC) and include the following: boat maintenance facility construction and operation, hazardous and solid waste storage, treatment and disposal, wastewater discharge, underground storage tanks (USTs) installation and operation, and management of stormwater runoff.

Vessel maintenance areas must be sited as far from the water as is practicable, and be designed so that all maintenance activities that are potential sources of water or air pollution can be accomplished over dry land and under roof, where practicable, as determined by the DNREC. Control of by-products, debris, residues, spills, and stormwater runoff shall comply with applicable DNREC regulations. All drains from maintenance areas must lead to a sump, holding tank, or pump out facility from which the wastes can later be extracted for treatment and/or disposal by approved methods. Drainage of maintenance areas directly into surface or groundwater is not permitted.

## Critical Habitat Areas

Critical habitat areas are classified by DNREC and serve an essential role in the maintenance of sensitive species. Critical habitat areas may include unique aquatic or terrestrial ecosystems that support rare, endangered, or threatened plants and animals. Rare, endangered, or threatened species are defined by both state and/or federal listings.

## Best Management Practices to Control Pollution from Vessel Maintenance and Repair Activities

**Designate Work Areas.** One of the easiest ways to contain waste is to restrict the area where maintenance activities may be performed.

- ❖ All drains from maintenance areas lead to a sump, holding tank, or pump out facility from which the wastes can later be extracted for treatment and/or disposal by approved methods.
- ❖ Locate maintenance areas as far from the water as possible.
- ❖ Maintenance areas do not drain directly into surface or groundwater.
- ❖ Perform all major repairs–such as stripping, fiberglassing, and spray painting–in designated areas.
- ❖ Collect all maintenance debris. Clean work areas after completing each operation or at the end of the day–whichever comes first. Remove sandings, paint chips, fiberglass, trash, etc.
- ✧ Vessel maintenance areas should have an impervious surface (e.g., asphalt or cement) and, where practical, a roof. Sheltering the area from rain will prevent stormwater from carrying debris into surface waters.
- ✧ If asphalt or cement is not practical, perform work over filter fabric or over canvas or plastic tarps. Filter fabric will retain paint chips and other debris yet–unlike plastic, or to a lesser extent, canvas–filter fabric will allow water to pass through. Tarps may potentially be re-used multiple times.
- ❖ Surround the maintenance area with a berm, retaining wall, or vegetative buffer to control runoff.
- ❖ Clearly mark the work area with signs, e.g., “Maintenance Area for Stripping, Fiberglassing, and Spray Painting.”
- ❖ Post signs throughout the boatyard 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, to move boats to and from the site, and to insure the use of best management practices.

*To collect maintenance debris, consider purchase or rental of filter fabric to line the work area.*

*Dave Gohsman, former Manager of Port Annapolis, now Marina Management Consultant at Gangplank Marina in Washington DC, states: "My experience with (manmade) filter cloth is that the customer loved it! Once they saw another customer with it under their boat - they wanted it too. The cost was a low per foot fee and in most cases we used the same piece of cloth for several boats by leaving it in one place and putting successive boats on that spot for a set fee. We accomplished the two basic business prerequisites - to make the customer happy and to make money. Some boats did not contaminate it even a little. Others a lot.*
*In addition, the cloth had other uses. We used it to line drains and vaults where we were sure to have run off. This way we caught the particulates. The cloth used this way can be vacuumed once dirty or simply thrown into the dumpster. Wherever you have need of the filter cloth, you also have the opportunity to sell Tyvek suits, hats and shoe covers, face masks and other similar products. The filter cloth starts the package."*

### Contain Dust from Sanding.

◆ Collect debris. Have your waste characterized; if hazardous, you must manage it according to the Delaware Regulations Governing Hazardous Waste (DRGHW).

❖ Invest in vacuum sanders and grinders. These tools collect dust as soon as it is removed from the hull. Vacuum sanders allow workers to sand a hull more quickly than with conventional sanders. Additionally, because paint is collected as it is removed from the hull, 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 non-vacuum equipment.

❖ Conduct sanding in the vessel maintenance area or over a drop cloth.

❖ Restrict or prohibit sanding on the water to the greatest extent practical.

❖ 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.

### Contain Debris from Blasting.

◆ Collect debris. Have your waste characterized; if hazardous, you must manage it according to the Delaware Regulations Governing Hazardous Waste (DRGHW).

❖ 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 ground cover.

✧ Avoid dust by using strippers that allow the paint to be peeled off. These products are applied like large bandages, allowed to set, and are then stripped off. When the strips are removed, the paint is lifted from the surface. Dust and toxic fumes are minimized.

✧ Consider using a closed, plastic medium blast (PMB) system. These systems blast with small plastic bits. Once the blasting is completed, the spent material and the paint chips are vacuumed into a machine that separates the plastic from the paint dust. The plastic is cleaned and may be reused. The paint dust is collected for disposal. A 50-foot vessel will produce about a gallon of paint dust; substantially less than the many barrels full of sand and paint that must be disposed of with traditional media blasting methods.

**Minimize Impacts of Pressure Washing.**

◆ Collect debris (pressure washing solids). Have your waste hauler characterize the waste and bring it to a facility authorized to manage such waste.

❖ Visible solids must be removed from wash water before it may be discharged. At a minimum, allow large particles to settle out. More thorough treatment involves filtration or chemical or physical techniques to treat the rinse water:

- *filtration* uses devices such as screens, filter fabrics, oil/water separators, sand filters, and hay bales to remove 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; and
- 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 then discharged.

❖ Pressure wash over a bermed, impermeable surface that allows the waste water to be contained and filtered to remove particulates and solids.

❖ 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.

✧ Reuse the wash water. For example, recycle it through the power washing system (a closed water recycling operation).

*Pressure washing wastewater should not be discharged directly to septic tanks or surface waters. It may contain both the organic material off the bottom of the boat as well as flakes or small bits of toxic paint.*

*A list of vendors of pressure wash recovery systems can be obtained from DNREC's Pollution Prevention Program at (302) 739-6400.*

## Bottom Paints

Currently there are 3 main options for recreational boat owners to think about for slowing the growth of organisms on their boat's bottom.

1. Keep the boat out of the water, and wax the bottom of the boat.
2. Use copper based anti-fouling paints.
3. Use alternative bottom coatings.

If the boat is kept out of the water, whether it be on a trailer, an electric hoist at the slip, or in a dry-stack storage facility, the boater may prefer to avoid the hassles of painting the bottom of the boat. With a sturdy Teflon wax on top of the gelcoat, the boater will be ready for daytrips, and can wash the boat bottom on it's way out of the water each night.

*See also the Clean Boating Tip Sheet, "Selecting a Bottom Paint", at the end of Chapter 11*

The second, more traditional option, is to use some type of anti-fouling paint. Through the centuries, copper has been the preferred coating for boats. (Some even say Columbus had sheets of copper attached to the bottom of some of his boats but it's hard to find photographs of that.) The same copper that keeps a boat bottom clean of barnacles has also been shown to be toxic to other marine life. Copper in the bottom paint or hull sheathing enters the water and sediments, where it can be accumulated by marine life, and has been linked to impaired growth in clams, mussels, and other shellfish (Sobral & Widdows 1997).

These days you can buy paints that contain the biocide cuprous oxide ($Cu_2O$) copper bottom paints with between 20% and 76% cuprous oxide, depending on the brand and formulation.

*Antifouling paints can be separated into three general categories:*

*Leaching (Hard) 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. Consequently, fumes are a concern.*

*Ablative (Soft) 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 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% 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.*

*Non-toxic Coatings. Teflon, polyurethane, and silicone paints are nontoxic options. With hard, slick surfaces, natural foulants find it more difficult to adhere.*

Antifouling coatings are designed to release copper through passive leaching (hard paints) and ablation (soft paints). One thing to know is that you don't need the highest amount of copper content to do a good job in preventing growth. Paint distributors in the mid-Atlantic area generally recommend something like Micron CSC, with 37% copper content, or Pettit Trinidad with 65-76% copper content, since they provide enough toxicity to prevent the major anti-fouling problems. Most recently some "slime inhibitors" have also been added to these paintings, to try to address other bottom maintenance concerns.

Other metals have been tried in bottom paints, including the tributyltin (TBT), seen on race boats and ships up through the early 1990s. While TBT created a very nice smooth finish, it was also found to be a major environmental problem. Studies showed that TBT altered the development and reproductive success in oysters, clams and snails (EPA 1993). As a result, the Organotin Antifoulant Paint Control Act of 1988 restricted the use of tributyltin based paints. This law restricts use of TBT paints to aluminum hulled vessels, on boats larger than 82 feet (25 meters) and on outboard motors and lower drive units. Any boatyard operator wishing to apply TBT paints must obtain a TBT/pesticide applicator's license from the DE Department of Agriculture. Contact them at (800) 282-8685 for more information.

Looking towards the future, and analyzing international trends with TBT, experts predict a total ban on TBT coming to the United States, via federal legislation in the next few years. While nothing is yet firm, marina operators should be aware that:
*Boats painted with TBT may not be welcomed into US waters after January 1, 2008. While this is far away at the time of this writing (April 2003), it should help alert both marinas and boat owners that alternatives to TBT should be sought out and used on recreational boats, so as not to create a problem later.*

Finally, because of rising concerns about the long-term toxicity of the copper bottom paints, there are alternative non-toxic bottom coatings being developed, and on the market. They are being created primarily in the European and commercial shipping market, but recreational boating will see a trickle down effect.

Some of these products, the silicone-based or ceramic-based paints are not anti-fouling. Instead, they are extremely slick – slicker than a tabletop – and they work because they are too slick for the fouling organisms to adhere. This is great news, but they will take a very different application and maintenance scenario than most of us are used to. Studies have shown that if a boat is used once a week, and goes faster than 15 knots, that most of the fouling from the week slides off these bottoms. However, for the average boat owner who leaves their slip far less often, and perhaps has a sailboat that can't go 15 knots, the coatings may not be a real viable solution. They will require more maintenance, perhaps twice as much in-water scraping, and they will require some very different application methods and haul out methods. Time will tell – pilot tests are being conducted on these products in the California market now.

**Minimize Impacts of Paints.**

❖ Recommend antifouling paints which contain the minimum amount of toxin necessary for the expected conditions to your customers.
❖ 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.
❖ Store boats out of the water, where feasible, to eliminate the need for antifouling paints.
✧ Stay informed about alternative bottom coatings, like Teflon, silicone, polyurethane, and wax, that have limited negative impacts. Pass the information along to your customers.

**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.
❖ 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, less 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.
❖ 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 should be 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 over-mixing in the future.

**Handle Solvents Carefully.** Refer to Chapter 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.
❖ Direct solvent used to clean spray equipment into containers to prevent evaporation of volatile organic compounds. A closed gun cleaning system will save you money on cleaning materials.

*To operate a permanent paint spray booth, you must obtain an air permit from the Air Quality Management Section, DNREC at (302) 793-4791 or DNREC's Clean Air Act Ombudsman at (302) 739-6400.*

*The Marina Operations and Maintenance (O&M) Plan requires that marinas address the storage and handling of all materials used in maintenance, as well as storage, handling, and disposal of wastes, with the goal of minimizing the discharge of pollutants to surface waters.*

❖ 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 solvent into a small container in order not to contaminate a large amount of solvent.
✧ Use soy-based solvents and other similar products with no or low volatility.
✧ Order your spray painting jobs to minimize coating changes. Fewer changes mean less frequent purging of the spray system. Order your work light to dark.
✧ Allow solids to settle out of used strippers and thinners so you can reuse solvents.
✧ Keep records of solvent and paint usage so you have a handle on the amount of hazardous waste generated on site.

**Repair and Maintain Engines with Care.**

❖ Do not wash engine parts over the bare ground or water.
❖ Adopt alternatives to solvent-based parts washers such as water-based and/or 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.
❖ Store engines and engine parts under cover on an impervious surface like asphalt or concrete.
❖ Use dry pre-cleaning methods, such as wire brushing.
❖ Avoid unnecessary parts cleaning.
❖ 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 totally spent, recycle it.
❖ Water-soluble engine washing fluids should be treated in the same manner as other industrial wastewaters.
❖ 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 all parts of fluids 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.

**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.
❖ For health reasons, ethylene glycol should never be used in potable water systems; it is highly toxic and cannot be reliably purged come springtime.
❖ 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. Also, the problem of disposing of stale fuel in spring is eliminated.

❖ Be sure fuel tanks are 85-90% 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% full. The fuel will expand as it warms in the springtime; 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 covers. Some manufacturers will clean and store canvas covers during the boating season.
❖ Recycle used plastic covers (Shrink Wrap) whenever possible.

**Help Your Customers and Contractors to Conduct Maintenance Wisely by Encouraging the Following Practices:**

◆ Only biodegradable detergents are allowed for vessel washing and cleaning within Delaware waters. Discharge treated wash water to surface water if no detergents or other chemical cleaning agents were used.
❖ If the impacts of cleaning or maintenance activities (regardless of area involved) cannot be contained or mitigated against, remove the boat from the water. No debris should be allowed to fall into the water.
❖ 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 when the boat is in the water.
❖ Do not spray paint on the water.
❖ Discourage underwater hull cleaning of anti-fouling paints 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.
❖ Educate your customers about the difference between ablative and hard paints and their maintenance, as well as alternative bottom coatings. See pages 5-4 and 5-5 for a discussion on bottom paint.
❖ Incorporate guidelines for boat maintenance into slip leasing agreements.
❖ Require maintenance contractors to register at the marina office and obtain and follow your guidelines for appropriate maintenance practices.
❖ Perform all major repairs at designated maintenance areas (and help customers know where they are).
❖ Make use of dustless sanders and ground tarps.
❖ Fill fuel tanks only 90% full – for winter or summer – to prevent overflow when fuel expands.
❖ Copy the Vessel Cleaning and Maintenance, Selecting a Bottom Paint, and Underwater Hull Cleaning tip sheets from the back of this book (after Chapter 11) and distribute them to your customers. There is room on each sheet to add your marina's name and logo.
❖ Find out about local hazardous waste collection days. Check your local phone book, or call the Delaware Solid Waste Authority Recycling Manager at (800) 404-7080, or visit www.dswa.org for local recycling contacts. Post notices informing your tenants when and where they can take their hazardous wastes.
✧ Offer incentives, like reduced mid-season haul out rates, so that boaters can have their hulls cleaned on land where contaminants may be contained.

## Information Sources

Department of Natural Resources and Environmental Control (DNREC)

- Marina Regulations
  Wetlands and Subaqueous Lands Section
  (302) 739-4691
- Solid and Hazardous Waste
  Hazardous Waste Management Branch
  (302) 739-3689
- Surface Water Discharge Section
  (302) 739-5731
- Underground Storage Tanks
  Underground Storage Tank Section
  (302) 395-2500
- Watershed Assessment Section
  (302) 739-4590
- Air Quality Management Section (302) 739-4791

Delaware Department of Agriculture
(800) 282-8685

Delaware Solid Waste Authority
(800) 404-7080

# Petroleum Control

## Environmental Concerns

Petroleum in or on the water is harmful and, in some cases, fatal to aquatic life. Benzene, a carcinogen, is in gasoline. 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 sea floor. 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 microlayer refers to the uppermost portion of the water column. It is home to thousands of species of plants, animals, and microbes. The abundance of life in the microlayer attracts predators: seabirds from above and fish from below. Pollution in the microlayer, thus, has the potential to poison much of the aquatic food web.

## Legal Setting

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

Because of the harm associated with petroleum, the discharge of oil is absolutely 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.

*Report any spill, no matter how small, to USCG at (800) 424-8802 and DNREC Emergency Response at (800) 662-8802*

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.

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 the petroleum to sink in the water column and mix with sediments where they will remain 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.

## Delaware State Law

The discharge of a pollutant, including but not limited to petroleum products, is prohibited under Delaware State Law, Title 7, Chapter 60 "*Environmental Control",* citation 6003(a)2, which states in part:

*"(a) No person shall, without first having obtained a permit from the Secretary, undertake any activity…(2) In a way which may cause or contribute to discharge of a pollutant into surface or ground water"*

All spills must be reported immediately to the Delaware Emergency Response Team at (800) 662-8802 (in state only) or (302) 739-5072.

Aboveground Tanks
On July 8, 2002, Governor Ruth Ann Minner signed the Jeffery Davis Aboveground Storage Tank Act. The signed law creates a state program for the registration and regulation of aboveground storage tanks. The law stipulates regulations shall be developed by July 2004. For more information regarding registration and the upcoming regulation of aboveground storage tanks (ASTs), contact the DNREC Storage Tanks Branch at (302) 395-2500.

Underground Storage Tanks (USTs)
Underground Storage Tanks are regulated in accordance with Title 7. Del. C., Chapter 60, the Water and Air Resources Act, and Title 7. Del. C., Chapter 74, the Delaware Underground Storage Tank Act. Regulations governing underground storage tank systems are legally required, and may be obtained from DNREC's UST Branch (official version), or (unofficial version) may be found at:
http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/ust/Regs/parta.htm

*Careless engine maintenance, refueling habits, and improper disposal of oil and contaminated bilge water release more oil into marine water each year than did the Exxon Valdez spill (Clifton et al. 1995a).*

*While there are no aboveground tank regulatory requirements as of this printing, Delaware recommends following the NFPA codes.*

## Best Management Practices for Emergency Planning

**Prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan.**
The Environmental Protection Agency's (EPA) Oil Pollution Prevention Regulation requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the facility has an underground storage capacity of greater than 42,000 gallons, or an aggregate aboveground storage capacity greater than 1,320 gallons. The 1,320 gallon threshold for ASTs applies only to an accumulation of individual containers of at least 55-gallon capacity. Oil is defined in the SPCC regulations (40 CFR 112) as "oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil and oily mixtures."

◆ The plan must address:
- operating procedures implemented by the facility to prevent oil spills,
- control measures installed to prevent a spill from entering navigable waters or adjoining shorelines, and
- countermeasures to contain, cleanup, and mitigate the effects of an oil spill that impacts navigable waters or adjoining shorelines.

◆ The SPCC plan must be certified by a professional engineer and kept onsite for USEPA review. If a single spill of greater than 1,000 gallons occurs or two discharges of 42 gallons or more (each) occur within one year, a copy of the SPCC plan must be submitted to USEPA Region III.

◆ SPCC plans must be reviewed by the marina owner or manager at least every five years (40 CFR 112.5). A record of the review should be kept in the beginning of the plan showing the reviewer's signature, date signed, and list of any changes. Major changes such as tank installations or removals require a formal amendment signed by an engineer.

### Assess Hazards.

❖ Consider and plan for likely threats:

- fuel spill
- holding or water tank filled with gas
- spill at the storage area: used oil, antifreeze, solvents, etc.
- fire
- health emergency
- hurricane, etc.

### Develop Emergency Response Plans.

❖ Develop written procedures describing actions to be taken under given circumstances. The plans should be clear, concise, and easy to use during an emergency, e.g., use a large type size. Each emergency response plan should contain the following information:

*Where:*

- In the very front of the plan, insert a laminated site plan of the facility showing valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations, and telephones.
- Describe where response material is located.

*Who:*

- 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.
- Include a list of emergency phone numbers: U.S. Coast Guard's National Response Center (800) 424-8802, DNREC's Emergency Response Team (800) 662-8802 (in state only) or (302) 739-5072, the Poison Center (800) 722-7112, local fire and police departments, owner, neighboring marinas that have emergency response equipment, and emergency response contractors (see Appendix VI).
- Include a brief description of each agency's jurisdiction and information about what type of equipment and services are available from neighboring marinas and spill response firms.

*What:*

- State what action should be taken during an emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available on site and what its characteristics and capabilities are.
- Characterize the facility's waterfront and vessels.
- Describe the type, amount, and location of materials stored on site, e.g., petroleum and hazardous materials.

*How:*

- Explain how the equipment should be used and disposed.

*When:*

- Indicate when additional resources should be called for assistance.

❖ Update the plans annually to include any new technology or equipment and to confirm phone numbers.

❖ Use the outline in Appendix IX to create your emergency plans or obtain a copy of the Panic Preventer File for Marinas from Florida Sea Grant.

**Make Plans Accessible.**

❖ Keep copies of all Emergency Response Plans in a readily accessible location.

❖ Place a copy of the Oil Spill Response Plan (or SPCC plan if applicable) in the oil spill response kit.

**Train 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 annually.

✧ Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

**Share Your Emergency Response Plans.**

❖ Inform your local fire department and harbormaster, if applicable, about your emergency response plans and equipment.

✧ Let neighboring marinas know what resources are available at your marina.

**Maintain Oil Spill Response Equipment.**

❖ Maintain enough oil spill response equipment to contain the greatest potential spill at your facility.

❖ Store enough boom to encircle the largest vessel in your facility. Vessel length x 3 = required length of boom.

**Store Oil Spill Response Equipment Smartly.**

❖ Store the equipment where the greatest threat of an oil spill exists: fuel receiving and fuel dispensing areas.

❖ Store materials in an enclosed container or bin that is accessible to all staff – especially those who handle the fueling operations.

❖ Mark the storage site with a sign reading “Oil Spill Response Kit.” Include instructions for deploying pads and booms and notification that all spills must be reported to the USCG at (800) 424-8802 and DNREC’s Emergency Response Team at (800) 662-8802 (in state only) or (302) 739-5072.

✧ Consider leaving the storage container unlocked so that it is available to patrons, as well as to staff. If leaving the bin unlocked at all times is not palatable, try leaving it unlocked just on weekends and holidays when both activity and risk are greatest.

✧ If the bin is left unlocked, check the inventory regularly.

## Fuel Spill

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 and DNREC's Emergency Response Team at (800) 662-8802 (in state only) or (302) 739-5072.

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 their own resources. They 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.

## Be Prepared for a Fire.

❖ Meet the National Fire Protection Association's standards for marinas: NFPA 303, Fire Protection Standards for Marinas and Boatyards; NFPA 302, Fire Protection Standards for Pleasure and Commercial Motor Craft; NFPA 30A, Automotive and Marine Service Station Code; NFPA 307, Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves; and NFPA 33, Standard for Spray Application Using Flammable and Combustible Materials.

❖ Be sure hydrants are available to allow for fighting fires throughout your facility.

❖ Install and maintain smoke detectors.

❖ Provide and maintain adequate, readily accessible, and clearly marked fire extinguishers throughout the marina, especially near fueling stations.

❖ Inspect and test all fire fighting equipment and systems regularly. Test fire extinguishers annually.

❖ Train personnel on fire safety and response: who to call, location of hydrants, use of portable extinguisher, etc.

❖ Provide ready access to all piers, floats, and wharves for municipal fire fighting equipment.

❖ Call the State Fire Marshal's Office at (800) 432-8500 to schedule a "basic fire inspection." The inspection will determine whether you are meeting the state fire code, including hazardous material storage requirements.

✧ Invite the local fire marshal to visit your marina annually to train employees. These annual visits will also help the fire department to become familiar with your facility.

**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 material 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 what materials you store and what is released when they burn.

**File Tier Two Forms.**

- ◆ The Emergency Planning and Community Right-to-Know Act (EPCRA) requires that marinas with 10,000 pounds or more of petroleum (approximately 1,250 gallons) file "Tier Two" forms with emergency response agencies by March 1 of each year. The single-page form must be submitted to DNREC, your Local Emergency Planning Committee (LEPC), and your local fire department. Forms and contact information for LEPCs is available from DNREC at www2.state.de.us/serc/epcra.htm or (302) 739-4791.

## Best Management Practices for Preventing Spills at the Source

**Protect Petroleum Storage Tanks.** Fuel storage tanks at marinas typically hold from 1,000 to 10,000 gallons of fuel. If a tank was to rupture or develop a leak, the consequences could be devastating.

Aboveground Tanks

- ❖ Install double-walled or vaulted aboveground fuel tanks. Tanks installed after April 21, 1978 should meet the following conditions (NFPA 30).
  a. The capacity of the tank shall not exceed 12,000 gal (45,420 L).
  b. All piping connections to the tank shall be made above the normal maximum liquid level.
  c. Means shall be provided to prevent the release of liquid from the tank by siphon flow.
  d. Means shall be provided for determining the level of the liquid in the tank. This means shall be accessible to the delivery operator.
  e. 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.
  f. Spacing between adjacent tanks shall be not less than 3 ft. (0.9 m).
  g. The tank shall be capable of resisting the damage from impact of a motor vehicle or suitable collision barriers shall be provided.
  h. Where the interstitial space is enclosed, it shall be provided with emergency venting.

Also, refer to NFPA 30A Automotive and Marine Service Station Code.

*While there are no aboveground tank regulatory requirements as of this printing, Delaware recommends following the NFPA codes.*
*Contact your local Fire Marshall for complete fire safety regulations for your operation. This Clean Marina Program focuses on the recommendations listed here.*

*NFPA is the National Fire Protection Association. NFPA codes are available through the NFPA website, www.nfpa.org, or by phone at (617) 770-3000.*


*A single pint of oil released onto the water can cover one acre of water surface area (Buller 1995).*

Underground Oil Storage Tanks (USTs)

- ◆ All regulated underground storage tanks must be registered with DNREC. A $50/year/tank fee applies.
- ◆ USTs must have fill line protection (color code the fills and mark with tank capacity)
- ◆ Marina Gasoline USTs are exempt from Vapor Recovery regulations unless they also dispense to vehicles.
- ◆ All existing and new USTs must 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 metal pipe that runs from the surface fill to within 6 inches of the bottom of the tank and is intended to prevent static build up. Drop tubes may not be constructed of PVC.
- ✧ Contact the DNREC Storage Tank Program for further information and assistance with installation or plan review.

**Avoid Waves and Wakes.**

- ❖ Locate fuel docks in areas protected from wave action and boat wakes when constructing new or upgrading existing facilities. 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.

**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.

**Install Environmental Controls at the Pumps.**

- ❖ Do not install holding clips to keep fuel nozzles open 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 boat's fuel tank when sufficient reverse pressure is created.
- ✧ Consider installing fuel nozzles that redirect blow-back into vessels' fuel tanks or vapor control nozzles to capture fumes.

❖ 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 leakage from reaching the water.
❖ Post instructions at the fuel dock directing staff and patrons to immediately remove spilled fuel from the dock and water with oil absorbent material. Indicate the 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.

**Supervise Fueling: 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 them to capture backsplash and vent line overflow.
❖ Train employees that the use of dispersants or soaps on spills is illegal.
❖ 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 to 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, i.e., 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 slow down at the beginning and end of fueling.
❖ Require boaters to stay with their craft during fueling.

**Supervise Fueling: 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 get 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 after fueling for leakage or fuel odors
- 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 the holding or water tank.

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

## 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 twists on 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 2 to 3 weeks to digest a given input of 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 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 and 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 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 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–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 the microbes need oxygen to function, do not seal them in plastic bags.

Oil absorbent materials, such as pillows (left), pads (center), and booms (right) absorb up to 25 times their weight in oil while repelling water.

**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.

**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.

**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.

**Offer Spill-Proof Oil Changes.**

❖ Purchase a non-spill 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. *Contact the Delaware Solid Waste Authority Recycling Manager at (800) 404-7080 for their FREE metallic fuel and oil filter disposal program*

✧ Encourage the use of spill-proof oil change equipment as a condition of your slip rental agreement.

**Minimize Spills and Leaks from Machinery.**

❖ Use non-water-soluble grease on travelifts, forklifts, 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 8, 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, being conscientious to dispose of the material properly (uncontaminated oil and antifreeze may be recycled).

✧ Place oil-absorbent pads under machinery.

**Educate Boaters.**

❖ Photocopy the Petroleum Control tip sheet from the back of this Guidebook (after Chapter 11) and distribute to your customers. There is room to add your marina's name and logo.

## Information Sources

Appendix I

Appendix VI

Appendix VIII

Appendix IX

Florida Sea Grant College Program
(352) 392-5870

Delaware Department of Natural Resources and Environmental Control (DNREC)

- Emergency Planning and Community Right-to-Know (EPCRA) (302) 739-4791
- Solid and Hazardous Waste Management Program (302) 739-3689
- Storage Tanks Branch (302) 395-2500

National Fire Protection Association (NFPA)
(617) 770-3000

State Fire Marshal's Office

- Kent County (302) 739-4394
- New Castle County (302) 323-5375
- Sussex County (302) 856-5298

United States Coast Guard (202) 267-2229

United States Environmental Protection Agency (800) 438-2474

USEPA Spill Prevention, Control and Countermeasure (SPCC) Plan Coordinator
(215) 814-3292

# Sewage Handling

## Environmental Concerns

Raw or poorly treated sewage from boaters is harmful to human health. 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.

In 1988, the Interstate Shellfish Sanitation Conference developed specifications for states to use in determining shellfish harvest buffer zones around marinas. This is based on the potential for release of untreated or inadequately treated sewage into receiving waters from boats in marina basins. The pathogen level associated with the untreated discharge from one boat may exceed that from thousands of people via a sewage treatment plant with secondary treatment. Therefore, Delaware is required to prohibit shellfish harvesting in the buffer zones established around marinas. However, the size of these no-harvest zones can be significantly reduced around clean marinas that implement Best Management Practices designed to reduce the potential for the discharge of sewage into receiving waters. Compliance is measured under the auspices of an annual inspection by the U.S. Food and Drug Administration. Minimizing the size of the shellfish harvest buffer zones where no commercial or recreational shellfishing can occur is certainly a desirable goal.

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 which further reduce levels of dissolved oxygen.

## Legal Setting

## Marina Regulations

Delaware Marina Regulations require marinas to prepare and maintain a Sewage Spill Prevention and Containment Plan as part of their Operations and Maintenance (O&M) Plan.

## Marine Sanitation Devices

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 marine sanitation device (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 may not contain any floating solids.

- *Type II* systems are similar to Type I systems except that the Type II's treat the 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 under 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.

It should be noted that MSD requirements do not apply to vessels with portable toilets. Portable toilets should be properly emptied 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.

*While not required, it is a good idea to include information about the MSD law in your contracts for slips, transients, and liveaboards too.*

## Pumpout Stations

- Delaware law (Title 7. Del. C., Chapter 60 § 6035) requires that marinas located on tidal waters of the State, and that provide dockage for vessels with a portable toilet(s) or Type III marine sanitation device(s) (MSD), to provide convenient access to an approved, fully operable and well maintained pumpout facility(ies) and/or dump station(s) for the removal of sewage from such vessels to an approved sewage disposal system.

- Owners/operators may agree to pool resources for a single pumpout or dump station with Departmental approval based on criteria of number and class of vessels, type of MSD aboard, marina locations, cost per pumpout use, and ultimate method of sewage treatment and disposal (i.e. septic system or waste water treatment facility).

- The owner/operator of any boat docking facility that is located in whole or in part on tidal waters of the State, and that provides dockage for a live-aboard vessel(s) with a Type III marine sanitation device(s), shall install and maintain at all times, in a fully operable condition, an approved dedicated pumpout facility at each live-aboard vessel slip for the purpose of removing sewage from the live-aboard vessel on a continuous or automatic, intermittent basis to a Department approved sewage disposal system.

- Any discharge, by any means, of untreated or inadequately treated vessel sewage into or upon the waters of any marina, boat docking facility or tidal water of the State is prohibited.

- ◆ All vessels while on waters of the State shall comply with Federal marine sanitation device (MSD) regulations [33 U.S.C. § 1322, as amended February 4, 1987.]

Installation of a pumpout system may also be required as a condition of receiving a Marina Construction Permit or a Subaqueous Lands Permit from the Delaware Department of Natural Resources and Environmental Control.

## No Discharge Zones

A No Discharge Zone (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 No Discharge Zones. States, with the approval of the U.S. Environmental Protection Agency (EPA), may establish NDZ's in other State waters. Delaware would like to petition EPA to create a NDZ in the Delaware Inland Bays region once there are enough pumpout stations, and other federal requirements can be met.

## Best Management Practices to Control Sewage

**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. You, as a marina operator, 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. More tangibly, 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.

*Delaware Inland Bay Marinas may apply for grant funding to install pumpout systems.*

As this guidebook goes to print, any Delaware public or private marina is eligible to apply for grant funds (matched by 25% from the marina) to install a fixed pumpout facility. Funding is from year to year, and is not certain to extend beyond the current fiscal year. To check the status of funding availability or to apply for a Pumpout Facility Grant, contact DNREC's Division of Fish and Wildlife at (302) 739-5296 or Lynn.Herman@state.de.us, or the University of Delaware Sea Grant at (302) 645-4268 or dchapman@udel.edu. Please be aware that once you have been approved to receive grant money the grants are strictly reimbursable. You must pay for the equipment and installation up front. DNREC 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 $10 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.

Once you have decided to invest in a pumpout system, consider the following recommendations.

❖ Select an Appropriate System. 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.

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. Also, grant funding for pumpout boats is available only to government agencies.

❖ *Choose an Accessible Location.* Consider where the pumpout will be placed (if you select a fixed system). 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 local health department.

❖ *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 that 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 liveaboards be charged? Or just transients? Remember, no more than $10 may be charged 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.

*Be careful how you word your signs! 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 across the creek to a competitor 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 show the national pumpout symbol.*

*The national pumpout symbol is an easy way to advertise the availability of pumpout facilities.*

❖ *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 that 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.* You should inspect the system regularly and keep a log of your 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 of pumpout facilities. Some funding for maintenance and repair of pumpout systems may be available through the Delaware Department of Natural Resources and Environmental Control (DNREC). Contact Delaware Sea Grant, (302) 645-4268 or dchapman@udel.edu, for more information.

❖ *Do Not Allow Waste to Drain into Receiving Waters.* 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.* There have been several incidents in which boaters were told that the pumpout system was broken when in fact it was not. There are also rude dockhands and inconvenient procedures. If boaters are going to use the pumpout systems, the experience must be as pleasant 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.

**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 l00 milliliters (ml). Delaware's shellfish harvest standard is 70 total coliform per 100 ml. 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. Adopt the following recommendations to discourage discharge within your facility.

❖ Prohibit discharge of head waste in your marina as a condition of your lease agreements.

❖ Post signs prohibiting the discharge of head waste and directing people to use shoreside restrooms.

**Provide Shoreside Restrooms.**
The goal is to encourage boat owners to use shoreside bathrooms. For example, residential marinas or park facilities that can provide convenient access to other public bathrooms or to personal home bathrooms comply with this goal.

- ❖ Provide clean, functional restrooms to encourage people not to discharge sanitation waste while in port.
- ❖ 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 air conditioning and heating.

**Design and Maintain Septic Systems to Protect Water Quality and Public Health.** If you have a septic 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. 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 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 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 2-5 years.

**Provide Facilities for Liveaboards.** 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 Type I or II systems. Your obligation as marina owner/manager is to provide a convenient sewage disposal system for liveaboards while maintaining good water quality. Consider the following options to meet this challenge. Keep in mind that some liveaboards expect and are willing to pay a premium for extra service and more convenient slips.

*Sewage and gray water from bathhouses and laundry facilities may be discharged to a publicly owned treatment works or to an approved septic system.*

## Information Sources

American Boat and Yacht Council (ABYC)
(410) 956-1050

Appendix I

Delaware Department of Natural Resources and Environmental Control
- Non-Point Source Program
  (302) 739-8014
- Division of Fish and Wildlife
  (302) 739-5296

❖ Provide a portable pumpout system or require that liveaboards contract with a mobile pumpout service.
❖ Reserve slips closest to shoreside restrooms for liveaboards. Be sure that the dock and route to the bathhouse are well lit at night.
❖ Stipulate in the lease agreement that vessels used as homes may not discharge any sewage.
❖ Offer to board their vessels and demonstrate the proper way to secure the "Y" valve.
✧ As a condition of the lease agreement, require that liveaboards place dye tablets in holding tanks to make any discharge clearly visible.
✧ Install direct sewer hookups for liveaboards.

**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.

**Encourage Compliance.**
❖ Include information about MSD requirements and sewage laws in contracts for slips rentals, transients, and liveaboards.
❖ 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 and keep a copy for your records, and 3) evict the boater.
❖ If a tenant is discharging raw sewage, report him or her to the Delaware Department of Natural Resources and Environmental Control (DNREC). Provide as much information as possible: name of owner, vessel, location, etc.

**Educate Boaters.** As the generators and conveyors of sewage, boaters need to be educated about the impacts of sewage and its proper disposal. They must also be encouraged to properly maintain their MSDs and to purchase environmentally friendly treatment products for their heads and holding tanks.
❖ Photocopy the *Clean Boating Tip Sheet* from the back of this Guidebook (after Chapter 11) and distribute it to your tenants. There is room to add your marina's name and logo.

# Waste Containment and Disposal

## Environmental Concerns

All marinas generate some waste; waste that could threaten human health, be hazardous to wildlife, and be costly to coastal communities.

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, likewise, 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 of corrosive, reactive, toxic, and/or ignitable materials, i.e., hazardous wastes.

## Legal Setting

## Marine Plastic Pollution Research and Control Act

The Marine Plastic Pollution Research and Control Act of 1987 (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 water body. 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 the Delaware and coastal bays, along rivers, and on inland lakes, the discharge of any garbage into the water is illegal. Fish scraps are an exception. The discharge of fish waste into Delaware waters is permitted only if it is in accordance with Delaware's Fish Waste Management Policy.

The law also requires that marinas be able to accept garbage from vessels that normally do business with them.

## Resource Conservation and Recovery Act and State Hazardous Waste Laws

The Federal Resource Conservation and Recovery Act (RCRA) of 1976 was established to improve the collection, transportation, separation, recovery, and disposal of solid and hazardous waste. Both RCRA and the Delaware Regulations Governing Hazardous Waste govern the management of hazardous waste in the State of Delaware.

Hazardous wastes are ignitable, corrosive, reactive, and/or toxic.

Hazardous waste "generators" are those individuals or companies that produce any amount of hazardous waste during one calendar month. The following requirements apply to all hazardous waste generators.

- ◆ Identify and label all hazardous waste you generate.
- ◆ Send these wastes to a permitted hazardous waste treatment, storage or disposal facility.
- ◆ Retain copies of all manifests.
- ◆ Store containers to prevent any leaks.
- ◆ Keep containers closed unless waste is being added or removed.
- ◆ Inspect containers weekly.
- ◆ Store quantities of waste greater than 100 kg (220 lbs) but less than 1,000 kg (2,200 lbs) for a maximum of 180 days. Any quantity of waste greater than 1,000 kg can be stored for a maximum of 90 days.
- ◆ Prepare a written emergency contingency plan if you produce or accumulate more than 1,000 kg (2,200 lbs) of hazardous waste. Copies must be kept on site and given to local agencies (fire, police and hospital).
- ◆ Document all hazardous waste training in each employee's personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with State regulations.
- ◆ Anybody who sends hazardous waste offsite for treatment, storage, or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste manifest must accompany all hazardous wastes "from cradle to grave." It is your responsibility to insure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest, as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored, or disposed of.
- ◆ Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection.

### How Do You Know if a Substance is Hazardous?

All waste generators must determine whether or not their refuse is hazardous. Use the following steps to determine if you have hazardous waste.

1. It is listed as a hazardous waste in the Delaware Regulations Governing Hazardous Waste.
2. The waste exhibits one or more of the characteristics of hazardous materials: ignitability, corrosivity, reactivity, or toxicity. 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 (TCLP) and is performed by industrial laboratories.

*Contact DNREC's Solid and Hazardous Waste Management Branch at (302) 739-3689, or log on to DNREC's website at http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/hw/indexhw.htm, to determine if a waste is hazardous.*

## Best Management Practices to Properly Contain and Dispose of Waste

**Reduce Waste.** In addition to the suggestions offered in the balance of this Guidebook, consider the following recommendations to further reduce waste. Keep in mind that 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, e.g., paper, potato starch peanuts, popcorn, etc.

❖ Discourage the use of plastic and styrofoam cups, food containers, utensils, and other non-biodegradable products.

✧ Encourage boaters to 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, non-toxic paints.

*Never dispose of any hazardous substance by dumping it into a sink, floor drain, storm drain, or onto the ground.*

**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. Refer to 49 CFR 178 for additional packaging specifications.

❖ Small quantities of solvents may be stored in the containers they were purchased in. Keep the storage area neat.

◆ Plainly label all stored and containerized material. For hazardous waste, mark the date accumulation begins 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.

❖ 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 date of materials to prevent them from outlasting their shelf life.

❖ Call the State Fire Marshal's Office at the numbers below to schedule a "basic fire inspection." The inspection will determine whether you are meeting the state fire code, including hazardous material storage requirements.

- Sussex (302) 856-5298
- Kent (302) 739-4394
- New Castle (302) 323-5375

**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, e.g., cans, bins, dumpsters.

❖ Locate trash receptacles in convenient locations. Select high traffic areas such as at 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, 4 to 6 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 the 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 collects along bulkheads or elsewhere within your marina.

✧ Post signs directing people to trash receptacles if they are not in plain view.

✧ Provide lights around trash receptacles so that they are easy to find and safe.

✧ Plant or construct a windscreen around the dumpster to make the area more attractive and to prevent trash from blowing away. Use native shrubs such as red chokeberry *(Aronia arbutifolia)*, spicebush *(Lindera benzoin)* or mountain laurel *(Kalmia latifolia)*.

**Recycle Whenever Possible.** Divert reusable materials out of the waste stream. 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,

*Educate boaters to remove plastic ice bags before dumping their coolers at the end of the day. This will help prevent clear ice bags from accidentally going into our waterways.*

*See the Delaware Recyclers Directory at http://www.state.de.us/dedo/new_web_site/Green/DERECYC.pdf*


*The number in the center of the recycle symbol on the bottom of a plastic container refers to the type of plastic.*

*Contact the Delaware Solid Waste Authority (DSWA) Recycling Manager at (800) 404-7080 or DNREC's Solid and Hazardous Waste Management Branch at (302) 739-3689 for information on containers for collecting solid waste.*

and cardboard. Also, you may realize cost savings due to less frequent tipping of your dumpster(s) because of 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. The following materials may be recycled: antifreeze, oil, oil filters, metal fuel filters, solvents, glass, shrink wrap, type 1 and 2 plastics (e.g., soda bottles, milk jugs), aluminum, steel, tin, lead batteries, newspaper, corrugated cardboard, mixed paper, scrap metal, tires, and white goods (appliances).

✧ Post information about local recycling services if you are not able to provide all of the desired services at your facility. Contact the Delaware Solid Waste Authority (DSWA) for the nearest used oil and antifreeze recycling center.

**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 the 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 trashcans, e.g., use a different color or material.

**Recycle Liquid Waste.**

❖ Provide containers to collect oil and antifreeze. Also, collect solvents from your boatyard according to hazardous waste regulations.

❖ Provide separate containers for oil, antifreeze, and solvents.

❖ 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 speaking, 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 though, 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." The whole tank must be disposed of as hazardous waste: a very expensive undertaking.

❖ Be aware that recycling liquid materials is a long-term obligation. Investigate waste haulers to insure that they do actually recycle the collected material. Maintain shipping manifests for solvents and other hazardous wastes for a minimum of 3 years (manifests are not required for used oil and antifreeze that is being recycled).

✧ Consider locking the intake to oil and antifreeze recycling containers to prevent contamination. If you do lock the tanks, 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.

**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.

**Control the Disposal of Fish Waste.** When large amounts of fish scraps are deposited in an enclosed area, the resultant, unsightly mess can produce foul odors and a decrease in levels of dissolved oxygen.

❖ Establish fish cleaning areas. Adopt one of the following methods to dispose of the waste.

- Provide a stainless steel sink equipped with a garbage disposal that is connected to a sanitary sewer.
- Compost fish waste. Proper composting will control the odor and, over time, will produce an excellent soil conditioner that can be used for your landscaping needs. Contact Minnesota Sea Grant for a copy of Composting Fish Waste by Thomas Halbach and Dale Baker. This booklet provides instructions for composting 25 five-gallon buckets of fish waste per week using sphagnum peat moss and wood chips.
- Instruct boaters to place fish scraps in plastic bags and dispose in dumpster or at home.
- Instruct boaters to dispose fish scraps off shore over deep water.

❖ Prohibit fish cleaning outside of designated areas or altogether.

❖ Post signs directing people to clean their fish at a fish cleaning station or at home.

**Follow Recommended Disposal Methods.** The following table contains information about recommendations for the proper disposal of wastes typically found at marinas. See the Delaware Recyclers Directory at http://www.state.de.us/dedo/new_web_site/Green/DERECYC.pdf for lists of recyclers and hazardous waste haulers. See DNREC's hazardous waste website, http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/hw/hw/faqissues.htm#Antifreeze, for additional information.

**Table 8-1:** Recommended Disposal Methods

| **Waste** | **Disposal Options**<br>If multiple options are listed, the first option (✓) is the preferred method |
|---|---|
| Antifreeze<br>• Propylene glycol<br>• Ethylene glycol<br>*Contact your waste hauler to confirm that they will accept mixed antifreeze.* | ✓ Recycle.<br>• Hire a waste hauler to collect and dispose.<br>• Purchase an on-site recovery unit. Distillation systems are more expensive than filtration systems but are more efficient at renewing used antifreeze. |
| Waste Oil<br>• Engine oil<br>• Transmission fluid<br>• Hydraulic oil<br>• Gear oil<br>• #2 Diesel<br>• Kerosene<br>*Contact your waste hauler to confirm that they will accept mixed oil.* | ✓ Recycle.<br>• Use waste oil for space heating.<br>• Take small quantities to a hazardous waste collection day. |
| Quart Oil Cans | ✓ Drain completely and dispose in regular trash. They cannot be recycled. |
| Non-terne plated Fuel Filters | ✓ Puncture and completely hot drain for at least 24 hours. Recycle the oil and the metal canister.<br>• If you do not recycle the canister, double-bag it in plastic and place it in your regular trash. |
| Terne plated Fuel Filters (used in heavy equipment and heavy-duty trucks) | ✓ Dispose of as hazardous waste (Terne is a mixture of tin and lead, which can contaminate soil and/or groundwater) |
| 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.<br>• Mix with fresh fuel and use<br>• Hire a hazardous waste hauler to collect and dispose. A hazardous waste manifest is required.<br>• Take small quantities to a hazardous waste collection day. |
| Kerosene | ✓ Filter and reuse for as long as possible then recycle. |
| Mineral spirits | ✓ Filter and reuse. |
| Solvents<br>• Paint and engine cleaners such as acetone and methylene chloride | ✓ Reuse as long as possible then recycle.<br>• Dispose of as hazardous waste. |
| Sludge Recovered from a Solvent | ✓ Dispose of as hazardous waste. |
| Paints and Varnishes<br>• Latex<br>• Water-based<br>• Oil-based | ✓ Allow to dry completely. Dispose in regular trash.<br>• Use leftover material for other projects, *i.e.,* as an undercover for the next boat.<br>• Encourage tenants to swap unused material. |
| Paint Brushes | ✓ Allow to dry completely. Discard in regular trash. |
| Paint Filters | ✓ Allow to dry completely prior to disposal. Treat as hazardous waste if paint contains heavy metals above regulatory levels. |

**Table 8-1.** Recommended Disposal Methods, page 2 of 3

| **Waste** | **Disposal Options**<br>If multiple options are listed, the first option (✓) is the preferred method |
|---|---|
| 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.<br>✓ Wring rags out over a collection receptacle and have laundered by an industrial laundry. |
| 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.<br>✓ If it is saturated with gasoline, allow it to air dry and reuse. |
| 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. |
| Glue and Liquid Adhesives | ✓ Catalyze and dispose of as solid waste. |
| Containers<br>• Paint cans<br>• Buckets<br>• Spent calking tubes<br>• Aerosol cans | ✓ May be put in trash cans as long as:<br>• All material that can be removed has been. Be sure no more than 1" of residue is on the bottom or inner liner.<br>• Containers that held gas are at atmospheric pressure.<br>• Containers that held acute hazardous waste have been triple rinsed with solvent. Properly dispose of the solvent. |
| 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. |
| Expired Distress Flares | ✓Encourage boaters to keep onboard as extras.<br>✓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.<br>• Encourage boaters to bring to local fire department or household hazardous waste collection day. |
| Scrap Metal | ✓ Recycle. |
| Light Bulbs<br>• Fluorescent bulbs<br>• Mercury vapor lamps<br>• High-pressure sodium vapor lamps<br>• Low-pressure sodium vapor pressure lamps<br>• Metal halide lamps | ✓ Recycle. |
| Refrigerants | ✓ Recycle. If you deal with AC, you must be certified and use EPA approved CFC recovery and recycling equipment.<br>• Use alternative refrigerants: HCFC-22 (for AC and electric chillers), HCFC-123 (replaces CFC-11), HFC-134A (replaces CFC-12). |

## Information Sources

Appendix I

BoatU.S. Foundation
(703) 823-9550 x3200

Delaware Department of Natural Resources and Environmental Control
- Enforcement Section/Emergency Response Team
  (800) 622-8802
- Solid and Hazardous Waste Management Branch
  (302) 739-3689
- Pollution Prevention and Compliance Assistance Program
  (302) 739-6400
- Recycling Office
  (302) 739-3689

Delaware Solid Waste Authority
(800) 404-7080

Minnesota Sea Grant College Program
(218) 726-8106

The Ocean Conservancy
(202) 429-5609

State Fire Marshal's Office
- Kent County
  (302) 739-4394
- New Castle County
  (302) 323-5375
- Sussex County
  (302) 856-5298

**Table 8-1.** Recommended Disposal Methods, page 3 of 3

| **Waste** | **Disposal Options**<br>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<br>Store according to National Fire Protection Association Standards. |
| 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:<br>• Equip the cleaning station with a garbage disposal connected to municipal sewer.<br>• Compost the scraps.<br>• Instruct boaters to bag scraps in plastic and place in a dumpster or bring home.<br>• Instruct boaters to dispose scraps off shore over deep water. |

**Track Pollution Incidents.**

✧ Copy and use the Pollution Report and Action Log included at the end of this chapter to track pollution incidents and actions taken.

✧ Post the Log on a clipboard in the maintenance area or another easily accessible location.

✧ Consult the *Pollution Report and Action Log* daily.

**Educate Boaters.**

❖ Photocopy the Waste Containment and Disposal tip sheet from the back of this Guidebook (after Chapter 11) and distribute it to your customers. There is room to add your marina's name and logo.

✧ Contact the Ocean Conservancy for marine debris educational materials at minimal cost.

✧ Post information about county Household Hazardous Waste Collection events and recycling centers.

✧ Post "Stash Your Trash" posters, available from the BoatU.S. Foundation.

## Pollution Report and Action Log

| Report Date | Staff Reporting | Problem Description | Action Taken | Action Date | Staff Handling |
|---|---|---|---|---|---|
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# Marina Management

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. Inform boaters how their actions can affect water quality. And let the public know that you are doing your part to protect the environment.

**Develop Emergency Response Plans.** The marina Operations and Maintenance (O&M) Plan requires the marina owner/operator to develop plans of action for the following emergencies:

- ◆ Fuel/Oil Spill Prevention and Containment Plans
- ◆ Sewage Spill Prevention and Containment Plan
- ◆ Fire
- ◆ Hurricane/Severe Weather
- ◆ Emergency telephone numbers

## Staff Training

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 emergency response 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 annually.
- ❖ Be watchful. Involve all employees in policing your marina for waste. Encourage your staff to look for and immediately stop 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.
- ❖ Develop a staff training brochure.
- ✧ Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

*To cover yourself in the event of an emergency, training records, even by retaining your daily calendar, may prove invaluable.*

**Maintain Training Records to Cover Yourself in the Event of an Emergency.**

- ❖ Record training dates, topics, and names of employees and instructors.
- ❖ Keep copies of instructional material.
- ❖ Jot down on your calendar whenever you meet with staff.

**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 clean up.
- Ask the tenant or contractor to leave your marina.

## Inform Patrons and Independent Contractors of Marina Rules and Regulations

The marina Operations and Maintenance (O&M) Plan requires that slip renters and transient boaters be informed about pollution control practices and be required to use them. The O&M Plan is required to include marina user Rules and Regulations, as listed on page 10-3.

A copy of the DNREC approved O&M Plan is required to be distributed to all marina tenants (full time slip renters). Contractors should also be informed of the marina rules before performing any work at the marina.

**Incorporate Best Management Practices into Contracts.** In addition to being a legal document, contracts are very effective educational tools. Use the contract to inform boaters and contractors how to minimize their environmental impacts.
❖ Include language requiring the use of best management practices in your contracts as appropriate. For example: slip holders, liveaboards, 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.

**Post Signs Detailing Best Management Practices.** A copy of the DNREC approved O&M Plan is required to be posted at a prominent place within the marina.
❖ 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.
❖ Signs must be durable, eye catching, and appropriately sized.
❖ Post your facility's environmental policy in a conspicuous location.

*Remember, there are other training requirements for the Occupational Safety and Health Administration (OSHA). Contact the Delaware Department of Labor at (302) 761-8200 for further information on workplace safety requirements*.

*If a boater is sanding and not containing the debris, bring a vacuum sander to him or her. Explain that it collects most of the dust and allows one to work more quickly. Charge him or her your standard rental fee for the equipment.*

***Report Oil Spills to the USCG at (800) 424-8802 and DNREC Emergency Response at (800) 662-8802***

Sample signage:

**Keep Fuel Out of the Water**
Do Not Top Off Tank
Listen to Anticipate When Tank is Full
Wipe-up Spills Immediately

**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.

**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 sander (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 containers.

**Do Not Discharge Sewage**
Please use our clean, comfortable restrooms while you are in port.

Nutrients and pathogens in sewage impair water quality.

**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 USCG at (800) 424-8802 and DNREC Emergency Response at (800) 662-8802**

**Pumpout Station**

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

**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

Sample signage:

**Recycle**

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

*Indicate which items you recycle and the locations of collection sites.*

*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.*

**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 oil.*

**Marine Sanctuary**

This marina provides food and shelter for young fish

- Prevent oil spills!
- Keep bilge clean!
- Use oil sorbent 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 Delaware waters clean and safe!**

**No Fish Scraps**

Please do not discard fish scraps within the marina basin

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

## Information Sources

Appendix I

BoatU.S. Foundation
(703) 823-9550 x3200

Delaware Department of Natural Resources and Environmental Control (DNREC)
- Wetlands and Subaqueous Lands Section
  (302) 739-4691

The Ocean Conservancy
(202) 429-5609

U.S. Coast Guard Auxiliary
(877) 875-6296

**Distribute Literature to Patrons.**

❖ Copy and distribute the Clean Boating Tip Sheets included in this Guidebook or create your own. Boater tip sheets on Vessel Maintenance, Selecting a Bottom Paint, Underwater Hull Cleaning, Petroleum Control, Boat Sewage, and Waste Disposal can be found at the end of this book (after Chapter 11).

❖ 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 copies of clean boating materials from organizations such as the Coast Guard Auxiliary, Ocean Conservancy and BoatUS Foundation.

❖ Contact the United States Coast Guard for publications summarizing Federal boating requirements.

**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.

**Become a Delaware Clean Marina.**

❖ Apply to the Delaware Clean Marina Initiative for recognition as a Delaware Clean Marina. Once you have satisfied the selection criteria, you may use the Delaware Clean Marina logo in your advertising and correspondence, fly a Clean Marina flag, and enjoy promotion by the Clean Marina Initiative in publications, on the Web, and at public events.

❖ Use your selection into the program as an opportunity to prepare a press release.

## Business Practices

**Offer Environmental Audits for Boaters.**

✧ Expand your business by selling environmental audits.

✧ Inspect engines, bilges, fuel systems, and marine sanitation devices.

✧ Sell biodegradable soaps and cleaners, oil absorbent pads, air/fuel separators, etc.

**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.

**Be Diligent.**

❖ Be absolutely diligent in containing pollution; your own and that created by your staff. Boaters will notice and follow your example.

# Laws and Regulations

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

- an introduction to the responsibilities of certain Federal and State agencies,
- an overview of some relevant laws,
- a look at the Delaware Operations and Maintenance (O&M) Plan for Marinas, and
- a synopsis of information about other pertinent permits and licenses.

The Delaware Department of Natural Resources and Environmental Control (DNREC) is responsible for protecting, preserving, and enhancing the environmental quality of the water, air, and land of the State. The Department recognizes that water quality protection and improvement is an important goal, particularly in water bodies subject to development pressure with its attendant impacts on where we live and our quality of life. Delaware Marina Regulations are intended to deal with such impacts by addressing the potential sources of pollution that may result from the physical presence, construction, or operation of marinas.

## Delaware Marina Regulations

*For copies of DNREC's Marina Guidebook, call DNREC's Wetlands and Subaqueous Lands Section at (302) 739-4691.*

The Delaware Department of Natural Resources and Environmental Control (DNREC) adopted a set of Marina Regulations in 1990, the full text of which is included as Appendix X of this Delaware Clean Marina Guidebook. DNREC also maintains a *Marina Guidebook* that contains useful information about the planning, design, and operation of marinas. This guidebook can be used as a public service, as an educational tool, and for technology transfer, and is available on request directly from DNREC. Please refer to DNREC's *Marina Regulations* and *Marina Guidebook* for more details.

The Department's intent in adopting these Regulations is three-fold:

- apply strict environmental controls over the siting, design, construction and operation of new marinas.
- allow upgrading of existing facilities in ways which can benefit the environment by imposing reasonable restrictions which would effectively discourage or prevent environmentally detrimental impacts.
- provide for safe and environmentally sound operation of existing and future marinas through prevention of pollution by good housekeeping procedures.

*Delaware Marina Regulations define a headboat as a commercial vessel, primarily used for fishing activities that can accommodate more than twenty people.*

The Marina Regulations apply to:

a. Any commercial, public, recreational, or private marina that is on or adjacent to the water and: 1) contains five or more slips, or 2) provides berthing for one or more headboats.
b. Any vessel maintenance or repair yard that is on or adjacent to the water.
c. All public or commercial boat ramps.
d. Recreational boat ramps with five or more slips, or associated upland ancillary facilities such as fueling or vessel maintenance facilities.

Authority for these Regulations is in accordance with Title 7. Del. C., Chapter 60, Water And Air Resources Act, Title 7. Del. C., Chapter 72, The Subaqueous Lands Act, Title 7. Del. C., Chapter 66, The Wetlands Act, and Title 7. Del. C., Chapter 19, Shellfish.

## Marina Operations and Maintenance (O&M) Plan

All marinas in the State of Delaware, whether existing, under construction, or proposed, are required to have a marina Operations and Maintenance (O&M) Plan. The intent of the Operations and Maintenance Plan is to address compliance with statutory requirements and permit programs and to protect the aquatic and terrestrial environment. Once the plan is approved, marina owners are responsible for ensuring that marina personnel comply with all aspects of the plan, providing copies of the plan to all marina tenants, and taking appropriate action to deal with marina tenants who violate any provision of the plan.

*The DNREC Wetlands and Subaqueous Lands Section (WSLS) is the group that reviews and approves marina O&M Plans. They can be reached at (302) 739-4691*

All marinas are required to update and submit their previously approved O&M Plan for Department review and re-approval periodically. O&M Plans for marinas with 0-50 slips are due for re-approval four years after the original approval date. For marinas with 51-100 slips, re-approval is due in three years, and in two years for marinas with over 100 slips. Also, whenever the marina ownership or leasehold changes, the O&M Plan must be revised and resubmitted for Department approval. When making marina alterations, an updated Operations and Maintenance Plan must be submitted for the entire marina at the time of application. The plan must cover the operation and maintenance of the original, existing portions of the marina, as well as altered portions of the marina.

Small marinas may qualify for DNREC's Standard O&M Plan, which is a generic plan containing an individualized information sheet for the particular marina. The following facilities may qualify for this streamlined Standard O&M Plan:

- Any marina with 50 slips or fewer which does not contain fueling or maintenance facilities,
- Facilities that have fewer than 5 slips, but provide dockage for one or more headboats,
- Public, commercial, and recreational boat ramps.

Marinas that do not fall into the above categories must have a specialized O&M Plan that addresses the following areas:

a. Water Quality Management
   (1) A plan to reduce the seasonal wet storage of vessels to the maximum extent practicable, including dates for autumn vessel removal and spring launching.
   (2) Stormwater Runoff
b. Storage and Handling of all Materials Used in Maintenance
c. Storage, Handling and Disposal of Wastes
d. Shoreline Structures Maintenance

e. Emergency Operations
   (1) Fuel/Oil Spill Prevention and Containment Plans
   (2) Sewage Spill Prevention and Containment Plan
   (3) Fire
   (4) Hurricane/Severe Weather
   (5) Emergency telephone numbers.
f. Rules and Regulations for Marina Users (Includes full time slip renters and transient boaters)
   (1) Restrictions on overboard sewage discharge and rules on the uses of marine sanitation devices and pump out facilities
   (2) Boater responsibilities for fuel and sewage spills, clean-up costs, and reporting requirements
   (3) Proper procedures for vessel fueling operations
   (4) Proper disposal of used or waste oils
   (5) Policies and procedures for removal of oil from bilges
   (6) Rules pertaining to fire prevention and fire protection
   (7) Policies and procedures for trash and garbage disposal
   (8) Policies and procedures for vessel maintenance activities
   (9) Restrictions on vessel speeds and wake conditions if applicable
   (10) Marina user responsibilities during emergencies
g. Additional Required Information
   (1) Tidal Range
   (2) Marina Layout
   (3) Water Depths
   (4) Capacities - the size of each berth and dry stack space, including the total number of each type
   (5) Fueling Facilities Location and Rules
   (6) Sanitation Facilities Location and Rules
   (7) Numbers and types of marine sanitation devices on board vessels berthed at the marina
   (8) Fire Protection Equipment Locations and Rules
   (9) Other Rules and Regulations that apply to boaters using the marina

Copies of the Department-approved Marina Operations & Maintenance Plan Rules and Regulations must be distributed to all marina tenants (full time slip renters), and the full O&M Plan must be posted in the harbormaster's office or other prominent place within the marina, where it must be readily available for inspection at all times.

## Marine Sanitation Devices

Delaware defines a marine sanitation device as any equipment utilized on board a vessel which is designed to receive, retain, treat, or discharge sewage, and any process to treat such sewage. Marine sanitation devices, as defined by Title 7. Del. C., Chapter 60 §6035, are classified as:

- Type I - A device that produces an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids.
- Type II - A device that produces an effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter.

- Type III - A device that is designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage. A Type III MSD is a no direct discharge device. Under Delaware code, a Type III MSD shall include both portable (i.e. porta-potty) and permanently installed MSD devices.

## Pumpout Requirements

Regardless of the number of slips, any marina providing other than transient berthing for any vessel containing a Type III marine sanitation device (holding tank or portable toilet) must provide access to a sewage pumpout or dump station as required by Title 7. Del. C., §6035. In addition, the marina owner must post signs to identify the location of the marina's pumpout/dump stations.

Delaware law states:
Marina owners/operators for marinas that are located in whole or in part on tidal waters of the State, and that provide dockage for vessels with a portable toilet(s) or Type III marine sanitation device(s) (MSD), shall provide convenient access, as determined by the DNREC, to an approved, fully operable and well maintained pumpout facility(ies) and/or dump station(s) for the removal of sewage from said vessels to a DNREC approved sewage disposal system.

a. Owners/operators may agree to pool resources for a single pumpout dump station with Departmental approval based on criteria of number and class of vessels, marina locations, cost per pumpout use, and ultimate method of sewage treatment and disposal (i.e. septic system or waste water treatment facility).
b. The owner/operator of any boat docking facility that is located in whole or in part on tidal waters of the State, and that provides dockage for a live-aboard vessel(s) with a Type III marine sanitation device(s), shall install and maintain at all times, in a fully operable condition, an approved dedicated pumpout facility at each live-aboard vessel slip for the purpose of removing sewage from the live-aboard vessel on a continuous or automatic, intermittent basis to a DNREC approved sewage disposal system.
c. Any discharge, by any means, of untreated or inadequately treated vessel sewage into or upon the waters of any marina, boat docking facility or tidal water of the State of Delaware is prohibited.
d. All vessels while on waters of the State of Delaware shall comply with 33 USC Section 1322, as amended February 4, 1987 (Federal regulations for technical requirements for MSD's, available online at http://www4.law.cornell.edu/uscode/33/1322.html).
[Authority – Title 7. Del. C., Chapter 60, Section 6035 (a) and (b)(1, 2, 3, & 4), Adopted June 23, 1992].

*Even if your marina is not required to have a pumpout/dump station, you are required to post a sign identifying the location of the nearest facility.*

## Water Quality Monitoring

Marinas may be required to perform water quality monitoring to ensure compliance with Delaware water quality regulations. The determination of whether a water quality monitoring plan is required will be based upon the ecological sensitivity of the site and evidence that water quality regulations may be violated. If monitoring is required, the Department will consider logistics and costs in determining the appropriate nature and scope of the water quality monitoring plan.

## Permits and Approvals

*Delaware Marina Regulations define an alteration as any change to an existing marina which would (a) increase the number of slips by five or more, or (b) involve new or additional upland or water-based activities whose construction or operation have the potential to generate pollution. Maintenance of existing serviceable structures shall not be considered an alteration.*

There are five separate permits and approvals that DNREC may require before new construction or alterations to marinas can begin:

1. Section 401 Water Quality Certification
2. Coastal Zone Consistency Determination
3. Marina Permit
4. Wetlands Permit (if applicable)
5. Subaqueous Lands Use Approval and/or Lease

Items 1 and 2 from the above list are actually part of the federal (Corps of Engineers) permit process, but there are no separate applications needed for those. Applicants must also obtain Sections 10 and 404 permits from the Corps of Engineers. While the Corps of Engineers is the lead agency at the federal level, their review includes other agencies such as:

1. U.S. Environmental Protection Agency (USEPA)
2. U.S. Fish and Wildlife Service (USFWS)
3. National Marine Fisheries Service (NMFS)
4. U.S. Coast Guard (USCG)

Even though DNREC is the agency administering permits at the State level, their decision to issue or deny a permit takes into consideration comments and recommendations from many other governmental agencies and others, including the following:

1. All Divisions of DNREC
2. Delaware Geological Survey
3. County Planning Office
4. Department of Highways and Transportation
5. Department of Health and Social Services
6. Governor's Council on Environmental Control
7. Council on Historical and Cultural Affairs, Archaeological Office
8. Adjacent property owners
9. Local planning department that has jurisdiction over the land involved
10. U.S. Environmental Protection Agency (USEPA)
11. U.S. Fish and Wildlife Service (USFWS)
12. National Marine Fisheries Service (NMFS)
13. Other interested parties

Finally, in addition to the DNREC and Corps permits, there are local, county, and municipal approvals and permits which must be obtained before DNREC will issue a State permit. The applicant is responsible for identifying local requirements and for obtaining all such approvals and permits. Typical local permits include:

1. Zoning Approvals
2. Water and Sewer Approvals
3. Building Permits
4. Erosion and Sedimentation Control Permits
5. Other applicable permits and approvals

The first step in the State Marina Permit application procedure is to obtain a Joint Application Form from DNREC, complete its Appendix N "Preliminary Marina Screening Checklist", and submit it to DNREC for review. Further steps are explained in DNREC's *Marina Guidebook*.

*For copies of DNREC's Marina Guidebook, call DNREC's Wetlands and Subaqueous Lands Section at (302) 739-4691.*

## Marina Permit

Delaware requires a Marina Permit in order to construct, install, modify, rehabilitate, or replace a marina. The applicant shall be responsible for obtaining any other local, state, or federal permits or approvals that may be required for the proposed construction or alteration.

For alterations, only the newly constructed portions of the marina (whether upland or water-based) must comply with the requirements for new marinas. Upland portions of the original, existing marina that are left undisturbed or are upgraded by the alteration, shall be brought into compliance with the requirements for new marinas only to the extent practicable. Delaware defines an alteration as any change to an existing marina which would (a) increase the number of slips by five (5) or more, or (b) involve new or additional upland or water-based activities whose construction or operation have the potential to generate pollution. Maintenance of existing serviceable structures is not considered an alteration.

Permitting requirements for small, new marinas and minor alterations to existing marinas may be less burdensome than the standard requirements. Such requirements may apply if the proposed new marina or marina alteration can be described by any one of the following:

1. It is a commercial, recreational, or public marina of more than 4 but not more than 25 slips.
2. It is a commercial or public boat ramp.
3. It is a recreational boat ramp in conjunction with more than 4 but not more than 25 slips.
4. It is a facility that has fewer than five slips, but is classified as a marina because one or more headboats are docked there.
5. It is a minor alteration. Minor alterations are those that expand an existing marina by 25 slips or fewer, or involve no new water- based structures or activities.

In addition to the above five items, the proposed marina or proposed alteration must not include fuel storage or delivery facilities, or vessel maintenance or repair facilities in order to qualify for permitting status under this section. Alterations can only be permitted under this section

once unless the proposed alteration expands the marina by fewer than 25 slips, in which case, future alterations may be permitted under this section until the total number of additional slips from the combined alterations reaches 25.

Applicants shall provide a Siting and Design Study (SDS) for new marina applications in order to prove environmental safety. The primary objective of the SDS shall be avoidance of impacts. It shall document all efforts to avoid adverse impacts, and to minimize and offset unavoidable adverse impacts to aquatic and terrestrial resources. Such documentation shall be in the form of an objective alternatives analysis that provides an evaluation of practicable alternate sites and/or designs for Department consideration.

The siting and design of new marinas and alterations are subject to the following considerations:

**Environmental Siting Considerations**
Vessel Storage
Water Quality Assessment
Cumulative Impacts
Wetlands
Shellfish Resources
Submerged Aquatic Vegetation (SAV)
Benthic Resources
Critical Habitats
Recreational Water Use Areas
Mitigation Measures

**Planning and Design Requirements**
Marina Flushing
Dredging and Dredged Material Disposal
Shoreline Protection Structures
Navigation and Access Channels
Vessel Traffic and Navigation
Water Supply
Wastewater Facilities
Parking
Stormwater Management
Solid Waste Management
Vessel Maintenance Areas and Activities
Fuel Storage and Delivery Facilities
Fire Protection Systems
Life Safety Equipment
Fish Wastes
Marina Structures

## Selected Federal Agencies and Their Jurisdictions

The **United States Army Corps of Engineers (USACOE)** protects and develops the Nation's water resources. Environmentally, the Corps takes into consideration fish and wildlife values, conservation, pollution, aesthetics, ecology, and other factors in the public interest. The Corps has jurisdiction over all construction activities in tidal and/or navigable waters, including adjacent wetlands shoreward to the mean high water line. Additionally, the Corp regulates the discharge of dredged or fill material for all waters of the United States, including wetlands.

*The Philadelphia District of the Corps of Engineers is the permitting contact for Delaware marine construction/dredging projects. Contact them at their Philadelphia District Office at (215) 656-6728, or at their Dover Field Office at (302) 736-9763. See their Regulatory Branch website at http://www.nap.usace.army.mil/cenap-op/regulatory/aypwww.htm*

The **United States Coast Guard (USCG)**, an arm of the U.S. Department of Homeland Security, protects the public, the environment, and U.S. economic interests. They promote maritime safety and marine environmental protection, enforce maritime law, tend all Federal navigation aids, and regulate and monitor recreational and commercial vessels and waterfront facilities.

The **United States Environmental Protection Agency (USEPA)** 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; and providing access to information on the ways that 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 the risk to people and ecosystems in the most cost effective manner.

The mission of the **National Oceanic and Atmospheric Administration (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.

# Selected Federal Laws

## 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 stern-drive 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 not required to make 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 Clean Vessel Act (CVA) provides funds to states to construct, renovate, and operate marine sewage pumpout stations and to conduct boater environmental education related to sewage pumpout. Other Federal agencies, such as the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service, and NOAA have similar programs. Contact the Delaware Department of Natural Resources and Environmental Control (DNREC) Division of Fish and Wildlife at (302) 739-5296 for information about receiving up to $15,000 in grant funding (with 25% cost share by marina) to install a pumpout system.

## Clean Water Act

## Spill Prevention, Control, and Countermeasure (SPCC) Plan.

The Environmental Protection Agency’s Oil Pollution Prevention Regulation requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the facility has an underground storage capacity of greater than 42,000 gallons, or an aggregate aboveground storage capacity greater than 1,320 gallons. The 1,320 gallon threshold for aboveground storage tanks (AST's) applies only to an accumulation of individual containers of at least 55-gallon capacity.

Oil is defined in the SPCC regulations (40 CFR 112) as “oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil and oily mixtures.”

- The plan must address:
  - operating procedures implemented by the facility to prevent oil spills,
  - control measures installed to prevent a spill from entering navigable waters or adjoining shorelines, and
  - countermeasures to contain, cleanup, and mitigate the effects of an oil spill that impacts navigable waters or adjoining shorelines.
- The SPCC plan must be certified by a professional engineer and kept onsite for EPA review. If a single spill of greater than 1,000 gallons occurs or two discharges of 42 gallons or more (each) occur within one year, a copy of the SPCC plan must be submitted to EPA Region III.
- SPCC plans must be reviewed by the marina owner or manager at least every five years (40 CFR 112.5). A record of the review should be kept in the beginning of the plan showing the reviewer’s signature, date signed, and list of any changes. Major changes such as tank installations or removals require a formal amendment signed by an engineer.

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

The Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) provided the impetus for the Delaware Clean Marina Initiative. Section 6217 of the Amendments requires that nonpoint source pollution from marinas be contained. Through the Clean Marina Initiative, Delaware is promoting voluntary adoption of best management practices to minimize the impact of marinas on surrounding land and water.

## Federal Water Pollution Control Act

The Federal Water Pollution Control Act, commonly known as 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 over 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 on board.

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

The Marine Plastic Pollution Research and Control Act (MPPRCA) is the U.S. law that implements an international 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 into 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 3 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 3 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 placard outlining the garbage dumping restrictions. All vessels over 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).

*For a sample copy of waste management plans contact the BoatU.S. Foundation at (410) 897-1060 www.boatus.com/foundation or see them at www.boatus.com/cleanwater/environmental/wastemanagement.htm*

## 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.

## Oil Pollution Act of 1990 (OPA)

The Oil Pollution Act of 1990 (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. Also, substantial civil penalties may be imposed for failing to report a spill, for discharging oil, for failure to remove oil, failure to comply with regulations, and gross negligence.

*Don't forget. Any spill that causes a sheen, no matter how small, must be reported to USCG at (800) 424-8802 and DNREC Emergency Response at (800) 662-8802.*

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

The Organotin Antifoulant Paint Control Act restricts the use of organotin antifouling paints, including tributyltin-based paints. Tributyltin (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. *Note: Changes to this law to further restrict its use are expected by the year 2005.*

## 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.

Hazardous wastes are ignitable, corrosive, reactive, and/or toxic. Hazardous waste "generators" are those individuals or companies that produce greater than 100 kilograms (about 220 pounds or 30 gallons) of hazardous waste during one calendar month or who store more than 100 kg at any one time. The following requirements apply to all hazardous waste generators.

- All generators and transporters of hazardous waste must apply to the Delaware Department of Natural Resources and Environmental Control (DNREC) for an Environmental Protection Agency (EPA) identification number. Use EPA Form 8700-12 (available from DNREC).

◆ Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations (refer to 49 CFR 178). Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion in an area able to contain any leaks. Keep containers closed unless waste is being added or removed. Inspect containers weekly.
◆ Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
◆ Prepare a written Emergency Contingency Plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste. Copies must be given to DNREC and local agencies.
◆ Document all hazardous waste training in each employee's personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with the State regulations.
◆ Anybody who sends hazardous waste offsite for treatment, storage or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste manifest must accompany all hazardous wastes "from cradle to grave." It is your responsibility to insure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored, or disposed.
◆ Submit a bi-annual report to DNREC that summarizes hazardous waste activities during odd numbered years. It is recommended, but not mandatory, to report figures for even numbered years too.
◆ Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection by DNREC.

Facilities that generate less than 100 kg of hazardous waste per month and which do not accumulate more than 100 kg of waste at any one time are considered "small quantity generators." Small quantity generators are not required to register with the EPA. However, under Delaware law, hazardous waste "generators" are those companies that produce any amount of hazardous waste during one calendar month. The following requirements apply to hazardous waste generators:

**Conditionally Exempt Small Quantity Generator (CESQG): Generates up to 25 gallons (220 pounds) of hazardous waste in any calendar month**

- Identify and label all hazardous waste you generate.
- Send these wastes to a permitted hazardous waste treatment, storage or disposal facility.
- Retain a copy of the manifest, bill of lading, receipt, etc. for each hazardous waste shipment for a minimum of 3 years.
- Never accumulate more than 300 gallons (2,200 pounds) of hazardous waste on your property.
- Keep containers closed unless waste is being added or removed.

**Small Quantity Generators (SQG): Generates more than 25 gallons (220 pounds) to under 300 gallons (2,200 pounds) of hazardous waste in any calendar month**

- Label all hazardous waste containers with the words “Hazardous Waste”.
- Place the date on which accumulation begins on each hazardous waste container.
- Hazardous waste containers cannot remain onsite for more than 180 days.
- Never accumulate more than 1,595 gallons (13,000 pounds) of hazardous waste on your property.
- Containers must be in good condition.
- Keep containers closed unless waste is being added or removed.
- Retain a copy of the manifest for a minimum of 3 years.
- Perform and document weekly inspections of the hazardous waste accumulation area.
- Train any employees who handle hazardous waste.

These requirements do not encompass all of the applicable regulations for small quantity generators of hazardous waste. For additional information, contact the Solid and Hazardous Waste Management Branch at (302) 739-3689.

Delaware Solid Waste Authority Recycling Manager – 1-800-404-7080
DNREC, Emergency Response Branch – (302) 739-3694
DNREC, Solid and Hazardous Waste Management Branch – (302) 739-3689
DNREC, Pollution Prevention & Compliance Assistance Program – (302) 739-6400

## Information Sources

Appendix I

Delaware Department of Natural Resources and Environmental Control (DNREC)

- For marina permitting requirements, call DNREC’s Wetlands and Subaqueous Lands Section (302) 739-4691
- Pollution Prevention & Compliance Assistance Program (302) 739-6400
- Marina Regulations Wetlands and Subaqueous Lands Section (302) 739-4691
- Hazardous Waste Solid and Hazardous Waste Management Branch (302) 739-3689
- Solid Waste Solid and Hazardous Waste Management Branch (302) 739-3689
- Control of Water Pollution Surface Water Discharge Section (302) 739-5731
- Underground Storage Tanks Underground Storage Tank Section (302) 323-4588
- Stormwater Discharges Associated with Industrial Activity Surface Water Discharge Section (302) 739-5731
- Surface Water Quality Standards Watershed Assessment Section (302) 739-4590

## Information Sources (continued)

- Federal Consistency Determination
  Coastal Management Program
  (302) 739-3451

National Fire Protection Association (NFPA)
(617) 770-3000

State Fire Marshal's Office
- Kent County
  (302) 739-4394
- New Castle County
  (302) 323-5375
- Sussex County
  (302) 856-5298

United States Coast Guard
(202) 267-2229

United States Environmental Protection Agency
(800) 438-2474

United States Army Corps of Engineers
- Dover Field Office
  (302) 736-9763
- Philadelphia District
  (215) 656-6728

United States Fish and Wildlife Service
(413) 253-8200

# Boater Education

## Environmental Concerns

Boaters and marina operators have the potential to negatively impact the water quality in and around a marina through neglect and poor judgment. In order for a marina to maintain its standards, it is important to educate your clientele and employees on any issues that could affect the water quality and appearance of the marina (recycling, boat cleaning, fueling, painting, sewage, fish wastes, and hazardous materials). The following list of best management practices (BMP's) provides guidance for these issues:

## Goals

Provide boaters and employees with information on water pollution and provide them with ways to correct and prevent any water pollution activities in which they may be involved.

## Legal Setting

Delaware's solid waste management program, including vessel sewage discharge requirements, is authorized under The Water and Air Resources Act, Title 7. Del. C., Chapter 60. The Delaware Department of Natural Resources and Environmental Control (DNREC) is responsible for protecting, preserving, and enhancing the environmental quality of the water, air, and land of the State.

It is illegal to litter in the waterways in the State of Delaware. (Title 7. Del. C., Chapter 60, § 6073.)

Federal pollution law also addresses the following:

- Litter/ debris (e.g., plastic bags, food waste, aluminum cans, fishing line) regulated by MARPOL -- (MARine POLlution), the International Convention for the Prevention of Pollution from Ships at Sea, and MPPRCA -- Marine Plastic Pollution Research and Control Act
- Fuel and Oil (e.g., gasoline, motor oil) regulated by CWA -- Clean Water Act and OPA -- Oil Pollution Act of 1990
- Dispersants (e.g., dishwashing soaps, detergent) regulated by CWA -- Clean Water Act and OPA -- Oil Pollution Act of 1990
- Sewage (human waste) regulated by CWA -- Clean Water Act and CVA – Clean Vessel Act
- Hazardous Substances (e.g., boat cleaners, varnish, used oil, cleaners) regulated by CWA -- Clean Water Act and OPA -- Oil Pollution Act of 1990
- Bottom Paints (e.g., Tributyltin (TBT) based boat paints) regulated by OAPCA -- Organotin Antifoulant Paint Control Act of 1988

## Best Management Practices

❖ Distribute clean boating sheets to boaters. These sheets can be found at the end of this chapter and there is space for the marina to put its logo and name.
❖ Provide clear signage for recycling, trash, bathrooms, pumpouts, and showers so that boaters can easily participate in your Clean Marina Program.
❖ Contact your local Coast Guard Auxiliary for brochures and advice about safe boating.
❖ Include language in the boaters' contracts explaining the environmental policies of the marina.
❖ Walk your docks and ask boaters if they have any questions.
❖ Make a point of noticing pollution problems (i.e., sheens near boats). Point out to the boater activities that are not acceptable in your marina and provide advice on how to correct the problem.
❖ Offer "green" cleaners for sale at your store.
✧ Hold workshops for issues of concern to you and/or your boaters.

**7 tips for reaching boaters.**

- *Don't assume they know.* Most boaters want to do the "right thing", but may not know what that is. Help educate them so they are part of your clean water team.
- *Repeat your clean boating messages.* Marketing experts advise that we must hear things 7 times before they sink in. As you are educating your boaters, remember to repeat what you are trying to teach them in different ways and in different places.
- *Be positive.* It's easy to say, "no littering", but it's more effective to say, "Please recycle here."
- *Identify your target audiences.* Spend 5 minutes and identify what audiences need to be reached with your education efforts. They may include transients, ramp users, pumpout users, fuel dock customers, work colleagues, part time summer employees, neighbors, press, regulators, liveaboards, visitors, and old and new slip holders. Analyze your outreach efforts to figure out what efforts may be reaching what audiences, and customize future educational work to reach them all.
- *Speak their language.* Don't educate with acronyms or big regulatory words. Use simple language to help your boaters understand what you want them to do. In some cases, you may need to educate in more than one language, or you may want to use pictures to help illustrate actions instead of translating everything.
- *Test on a guinea pig.* When you are ready to educate your customers, whether it's through a poster, sticker, or newsletter article, have someone else review your material. Don't choose your business partner, or someone that knows the topic well. Pick a trusted customer or someone that is brand new to the topic, and ask for their candid feedback. Then adjust your work accordingly.
- *Serve as an example.* Actions speak louder than words. Pick up trash off the ground. Recycle in the office. Fuel boats cleanly. If you serve as an example to both your patrons and your colleagues, you are telling them it's what you expect, and what's right.

## Information Sources

American Boat and Yacht Council (ABYC)
(410) 956-1050

Appendix I

BoatU.S. Foundation
(703) 823-9550 x3200

Delaware Department of Natural Resources and Environmental Control (DNREC)

- Division of Fish and Wildlife
  (302) 739-5296

United States Coast Guard
(202) 267-2229

U.S. Coast Guard Auxiliary
(877) 875-6296

University of Delaware Sea Grant Marine Advisory Service
(302) 645-4346

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 non-toxic. 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 to 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.
- Avoid overkill. Select a bottom paint developed for the mid-Atlantic region.

## Recycle Regularly

- Recycle used oil, oil filters, and antifreeze.
- Bring used solvents and waste gasoline to local hazardous waste collection days.
- Call the Delaware Solid Waste Authority Recycling Manager at (800) 404-7080 or visit www.dswa.org for local recycling contacts.

## 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 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 thru-hull drain; dispose of them on shore.

| *Product* | *Alternative* |
|---|---|
| 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 qt. warm water. Rinse and squeegee |
| Aluminum Cleaner | 2 Tbsp. cream of tartar + 1 qt. of 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 + one-quarter cup baking soda + one-quarter 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.


*For information about the Delaware Clean Marina Program, contact Delaware Sea Grant at (302) 645-4268, or dchapman@udel.edu*

Clean Boating Tip Sheet

# Selecting a Bottom Paint

## The Issue

Marine growth, such as barnacles and slime, impair vessel performance. To maintain top performance, therefore, boats are often painted with toxic paint to prevent fouling growth. Unfortunately, the biocides found in the paints are harmful to many marine critters—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 how frequently and how quickly 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 coatings 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. The toxins dissolve when they contact 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. Fresh antifouling paint is, thus, exposed.

Hard paints contain varying levels of biocides which 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 overtime is about the same.

Non-toxic 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 non-toxic slick paints. At this time, however, they are not 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 quickly do I typically travel?** Speedboats 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.
- **What type of coating is presently on the hull?** Select a new coating that is compatible.

# Comparison of Maintenance Requirements

| 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. | **AIR QUALITY.** Fumes (volatile organic compounds) that are harmful to human health and air quality are released whenever solvent-based paints are used.<br>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 & prevent build up. If you chose light sanding instead, the resulting build up will need to be blasted or stripped off periodically. | **DEBRIS.** Use the following techniques to keep debris out of the water:<br>• Collect dust created by sanding with a vacuum sander or in tarps.<br>• Blast or strip in an enclosed area where debris can be easily captured.<br>• Send collected debris with your regular trash to a municipal landfill or incinerator.<br>• Encourage your marina or boatyard to follow these pollution prevention practices. |
| Pressure washing | Pressure washing will remove some ablative paint. | Pressure washing will remove fouling growth and possibly paint chips. Very little pigment should be released. | **RELEASE OF BIOCIDES.** Boatyards are required by law to remove visible solids from pressure wash water before it is returned to local waterways.<br>• Solids from hulls painted with hard paints are easily collected in filter cloth, settling basins or even hay bales.<br>• Inform your yard manager if you have ablative paint. He or she should use minimal water pressure so that, to the greatest extent possible, just slime is removed. You will be protecting the environment and your investment in the paint. |
| Underwater hull cleaning | Ablative paint should never be cleaned in the water. | Hard paints may be cleaned by divers if done carefully. | **RELEASE OF BIOCIDES.** 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.<br>• 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 (see the Clean Boating Tip Sheet Underwater Hull Cleaning).<br>• Ablative paints should not be cleaned in the water, as the scrubbing action will release paint and its associated biocide. |


*For information about the Delaware Clean Marina Program, contact Delaware Sea Grant at (302) 645-4268, or dchapman@udel.edu*

Clean Boating Tip Sheet

# 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 minimal amount 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 pieces of carpet to clean marine growth.
  - Use soft nylon or 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 who 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 that 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, 2002 with Barnacle Bgone. 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 Date Sheet is attached for your information. Barnacle B-gone retains its antifouling effectiveness when hauled and can be re-launched without repainting. Depending on frequency of use and other factors, the hull will need to be repainted in approximately 2 years."
- Ask customers who have had their hulls coated with ablative paints to read and sign 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.
- 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 of your boat.
- Let divers know you expect them to minimize pollution while working on your boat. Ask them to follow the 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 same information if you paint your own hull.
- 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 or nontoxic slick paints and regular underwater hull cleaning instead of high copper content paints.
- Before hiring a diver, get three local references from a marina operator or other boaters who know the diver's work.


*For information about the Delaware Clean Marina Program, contact Delaware Sea Grant at (302) 645-4268, or dchapman@udel.edu*

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 microlayer refers to the uppermost portion of the water column. It is home to thousands of species of plants, animals, and microbes. Ninety-nine percent of the Delaware Estuary's blue crab larvae feed in the microlayer which also serves as a nursery ground for rockfish. The abundance of life in the microlayer attracts predators: seabirds from above and fish from below. Pollution in the microlayer, thus, 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. It is also illegal to use soap or any other substance to disperse the sheen. You may be fined up to $25,000. State law also prohibits the discharge of oil. The Delaware Department of Natural Resources and Environmental Control may impose additional fines.

## Fueling Practices

Gas or diesel may be spilled during the act of fueling: as backsplash out the fuel intake or as overflow out the vent fitting. 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. Follow these tips to avoid problems:

- Fill tanks to 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 ashore where spills are less likely to occur and easier to clean up.
- Use oil absorbent pads or containment jugs 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 the bilge water. Discharging oily water is illegal. To avoid fines and to protect water quality, 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.

## Disposal of Oil Absorbent Materials

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 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 with 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 the microbes need oxygen to function, do not seal them in plastic bags.

## Emissions Control

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. 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.
- When you are ready to replace your outboard, make sure you purchase one of the new less polluting 2 or 4 stroke engines.

## Preventive Equipment

Products are available commercially which 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. Filters will remove oil, fuel, and other petroleum hydrocarbons from the water.

## In Case of a Spill

- Stop the flow.
- Contain the spill.
- Call the U.S. Coast Guard National Response Center at (800) 424-8802.
- Call DNREC's Emergency Response Team (800) 662-8802 (in state only) or (302) 739-5072.


*For information about the Delaware Clean Marina Program, contact Delaware Sea Grant at (302) 645-4268, or dchapman@udel.edu*

# Clean Boating Tip Sheet

# Vessel Sewage

## Is Sewage a Problem?

Raw or poorly treated boat sewage is harmful to human health. 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 which 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 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 Coast Guard label is not required. Note that under Delaware Code, Type III MSDs include both portable toilets and permanently installed MSD devices. Under Federal law, portable toilets are not considered MSDs.

Vessels 65 feet and under may have any of these three types of MSDs. Vessels over 65 feet must have a Type II or III system.

Within a No Discharge Zone (NDZ), the discharge of all sewage is prohibited.

Currently, there are no NDZs in Delaware waters. However, efforts are underway to designate Delaware's Inland Bays as NDZs. 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. Information explaining how to retrofit a boat to include a holding tank is available on the Maryland Department of Natural Resources' web site at 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 insure 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.

## 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, in a swimming area, in a No Discharge Zone, over an oyster bar, 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.

Always use shoreside restrooms when in port. Encourage guests to do the same.


*For information about the Delaware Clean Marina Program, contact Delaware Sea Grant at (302) 645-4268, or dchapman@udel.edu*

Clean Boating Tip Sheet

# Waste Containment and Disposal

Trash is ugly and may be dangerous–dangerous to humans and to 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 Plastic 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 3 nautical miles from the ocean shore, it is illegal to dump anything other than fish scraps. This includes all of Delaware Bay.
- Between 3 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 on-shore, e.g., bring home or leave in a dumpster at the marina.

## Recycle

- Recycle cans, glass, newspaper, antifreeze, oil, oil filters, and lead batteries.
- Call (800) 404-7080 for locations.
- 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 which is 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 scraps are 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 innards. Avoid problems by following these tips.

- Do not discard fish waste in poorly flushed areas.
- Learn your marina's disposal policy.
- Bag waste and dispose at home or in a dumpster.
- Dispose over deep water.

## Maintenance Waste

Dispose of the following items according to the recommendations listed below. Find out about local household hazardous waste collection days. Call the Delaware Solid Waste Authority at (800) 404-7080 or visit www.dswa.org for local recycling contacts.

| Waste Product | Disposal Method |
|---|---|
| Oil | Recycle. |
| Oil Filters | Puncture and hot drain for 24 hours. Recycle oil and canister. |
| Antifreeze | Recycle. |
| Paint and Varnish | Allow to dry completely, i.e., 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 information about the Delaware Clean Marina Program, contact Delaware Sea Grant at (302) 645-4268, or dchapman@udel.edu*

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Delaware Code, Title 7 Conservation, Part VII Natural Resources, Chapter 66 *Wetlands Act.*

Delaware Code, Title 7 Conservation, Part VII Natural Resources, Chapter 72 *Subaqueous Lands Act.*

Delaware Code, Title 7 Conservation, Part VII Natural Resources, Chapter 19 *Shellfish Act*.

Delaware Code, Title 7 Conservation, Part VII Natural Resources, Chapter 60 *Environmental Control Act.*

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Tanski, J. 1998. *Stormwater Runoff Best Management Practices For Marinas: A Guide for Operators*. New York Sea Grant Extension Program, Cornell Cooperative Extension, Ithaca, New York. http://www.seagrant.sunysb.edu/pages/BMPsForMarinas.htm. Accessed 5-5-03.

Texas Sea Grant College Program. 2001. *Clean Texas Marina Guidebook*. College Station, Texas. http://www.cleanmarinas.org/guidebook.pdf. Accessed 5-5-03.

US Clean Water Act, Section 404

US Code, Title 33, Chapter 26, Subchapter III, Section 1322 Marine Sanitation Devices

US Rivers and Harbors Act of 1899, Section 10

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Virginia Sea Grant. 2001. *Virginia Clean Marina Guidebook*. Virginia Institute of Marine Science Sea Grant Marine Advisory Program, Gloucester Pt, Virginia, Virginia Department of Environmental Quality and Virginia Department of Conservation and Recreation, Richmond, Virginia. http://www.vims.edu/adv/vamarina/guidebook.html. Accessed 5-5-03.

# Appendix I: Information Sources

**Agricultural Extension Service**
Integrated Pest Management
(302) 831-1303
http://www.udel.edu/IPM

**American Boat and Yacht Council (ABYC)**
(410) 956-1050
http://www.abycinc.org/

**BoatU.S. Foundation for Boating Safety and Clean Water**
(703) 823-9550 x3200
http://www.boatus.com/foundation/

**Center for Watershed Protection**
(410) 461-8323
http://www.stormwatercenter.net/

**Delaware Economic Development Office**
(302) 739-4271
http://www.state.de.us/dedo/new_web_site/

**Delaware Department of Agriculture**
(800) 282-8658
http://www.state.de.us/deptagri/

**Delaware Department of Natural Resources and Environmental Control (DNREC)**
http://www.dnrec.state.de.us/dnrec2000/
89 Kings Highway, Dover, DE 19901
(302) 739-4403

**DNREC Division of Air and Waste Management**
Air Quality Management Section
(302) 739-4791
http://www.dnrec.state.de.us/air/aqm_page/aqm_nets.htm

Delaware EPCRA Reporting Program
(302) 739-4791
http://www2.state.de.us/serc/epcra.htm

Enforcement Section / **Emergency Response Team**
(800) 622-8802 (In State Only)
(302) 739-5072
http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/EPO/epo.htm

Solid and Hazardous Waste
(302) 739-3689
http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/hw/

Tank Management Branch
Underground Storage Tanks
(302) 395-2500
http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/ust/

Aboveground Storage Tanks
(302) 739-4764
http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/ast/

Recycling
(302) 739-3689
http://www.dnrec.state.de.us/dnrec2000/Recycling.asp

**DNREC Division of Fish and Wildlife**
(302) 739-5296
http://www.dnrec.state.de.us/fw/

**DNREC Division of Soil and Water Conservation**
Delaware Coastal Management Program
(302) 739-3451
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/index.htm

Nonpoint Source Program
(302) 739-8014
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/NPS/index.htm

Sediment and Stormwater Program
(302) 739-4411
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/Stormwater/StormWater.htm

**DNREC Division of Water Resources**
Surface Waters Discharge Section
(302) 739-5731
NPDES Program
http://www.dnrec.state.de.us/water2000/Sections/SurfWater/DWRSurfWat.htm

Wetlands and Subaqueous Lands Section
(302) 739-4691
http://www.dnrec.state.de.us/water2000/Sections/Wetlands/DWRWetlands.htm

Watershed Assessment Section (Shellfish Program)
(302) 739-4590
http://www.dnrec.state.de.us/water2000/Sections/Watershed/DWRWatershed.htm

**DNREC Office of the Secretary**
Pollution Prevention and Compliance Assistance Program
(302) 739-6400
http://www.dnrec.state.de.us/dnrec2000/Pollution Prevention.asp

**Delaware Department of Transportation (DelDOT)**
(800) 652-5600 (In State Only)
(302) 760-2080
http://www.deldot.net/

**Delaware Division of Public Health**
(302) 744-2680
http://www.state.de.us/dhss/dph/index.htm

**Delaware Solid Waste Authority**
(800) 404-7080
http://www.dswa.com/home.htm

**Florida Sea Grant College Program**
(352) 392-5870
http://www.flseagrant.org/

**Green Seal**
(202) 872-6400
http://www.greenseal.org/

**Local Emergency Planning Committee**
Kent County
(302) 735-3465
http://www2.state.de.us/serc/kclepc.htm

New Castle County
(302) 761-1751
http://www2.state.de.us/serc/ncclepc.htm

Sussex County
(302) 855-7801
http://www2.state.de.us/serc/sclepc.htm

**Marine Environmental Education Foundation (MEEF)**
(401) 247-0313
http://www.meef.org/

**Marine Trades Association of Delaware**
(302) 422-9177

**Minnesota Sea Grant College Program**
(218) 726-8106
http://www.seagrant.umn.edu/

**National Fire Protection Association (NFPA)**
(617) 770-3000
http://www.nfpa.org/

**National Oceanic and Atmospheric Administration (NOAA)**
http://www.noaa.gov/
(202) 482-6090

**Occupational Safety and Health Administration (OSHA)**
(215) 861-4900
http://www.osha.gov/

**Delaware Department of Labor**
(302) 761-8200
http://www.delaware.gov/agencies/DeptLabor/Employment_Services

**Soil and Water Conservation Districts**
Kent County
(302) 697-2600
New Castle County
(302) 832-3100
Sussex County
(302) 856-3990

**State Fire Marshall's Office**
Kent County
(302) 739-4394
New Castle County
(302) 323-5375
Sussex County
(302) 856-5298
http://www.delawarestatefiremarshal.com/

**The Ocean Conservancy**
(202) 429-5609
http://www.oceanconservancy.org/dynamic/home/home.htm

**The Poison Control Center**
(800) 722-7112 (emergency)
http://www.1uphealth.com/health/poison_control_centers_for_alabama_hawaii_info.html

**The Nature Conservancy**
Delaware Field Office
(302) 654-4707
http://nature.org/

**The Sierra Club, Delaware Chapter**
(302) 425-4911
http://delaware.sierraclub.org/

**The Trust for Public Land**
Chesapeake Field Office
(202) 543-7552
http://www.tpl.org

**United States Army Corps of Engineers (USACOE)**
http://www.usace.army.mil/
Philadelphia District Office
(215) 656-6728
http://www.nap.usace.army.mil/
(215) 656-6516
Dover Field Office
(302) 736-9763

**United States Coast Guard (USCG)**
202-267-2229
http://www.uscg.mil/USCG.shtm
National Response Center
(800) 424-8802
http://www.nrc.uscg.mil/nrchp.html

**U.S. Coast Guard Auxiliary (USCGA)**
(877) 875-6296
http://www.uscgaux.org/~05312/index.htm

**United States Department of Transportation (USDOT)**
(202) 366-4000
http://www.dot.gov/

**United States Environmental Protection Agency (USEPA)**
EPA Region III Office
(800) 438-2474
http://www.epa.gov/region3/

SPCC Coordinator
U.S. EPA Region III
(215) 814-3292

**United States Fish and Wildlife Service (USFWS)**
Northeast Regional Office
(413) 253-8200
http://www.fws.gov/

**University of Delaware Cooperative Extension Service**
Kent County
(302) 730-4000
New Castle County
(302) 831-2667
Sussex County
(302) 856-7303
http://ag.udel.edu/extension/

Soil Testing Program
(302) 831-1392
http://www.udel.edu/DSTP/

**University of Delaware Sea Grant College Program**
(302) 831-8083
http://www.ocean.udel.edu/seagrant/

# Appendix II: Delaware Native Plant Information Sources

Contact the following sources for information on Delaware native plants:

Susan Barton
Horticulture Specialist
(302) 831-1375
sbarton@udel.edu

Margaret L. Moor – Orth
Master Gardener
Delaware State University
(302) 730-4000

Joanne M. Whalen
Integrated Pest Management
(302) 831-1303,
jwhalen@udel.edu

Joyce Simpson
Family and Community Educator
(302) 856-7303
joyces@udel.edu

Bill McAvoy
Delaware Natural Heritage Program
(302) 653-2880
wmcavoy@state.de.us

Britt Slattery
Fish & Wildlife Biologist
BayScapes Program Coordinator / Outreach Program Team Leader
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Dr.,
Annapolis, MD 21401
(410) 573-4581
(410) 224-2781 fax
britt_slattery@fws.gov
www.fws.gov/r5cbfo/bayscapes.htm

# Appendix III: Marine Industry Information Resources

## Marine Industry Publications

**Soundings: The Nations Boating Newspaper** Published monthly in a newspaper style, with national and regional sections covering a wide array of boating topics. Written for the recreational boater. Published subscription rate: $24.97 for 1 year. Send to Soundings, PO Box 2093, Marion, OH 43306. Call (800) 244-8845.

**Soundings Trade Only: The Boating Business Newspaper** Published monthly in a newspaper style, with national and regional sections covering the marine industry. Written for the marine professional. Published subscription rate: $29.95 for 1 year. Send to Soundings Trade Only, PO Box 2097, Marion OH 43306. Call (800) 244-6396.

**Boating Industry International** A bi-monthly publication intended for the American and International marine professional. It includes sections on new products and technology, market outlook, and marine services. Published subscription rate: $59 for 1 year. Send to Boating Industry International, National Trade Publications, Inc., 13 Century Hill Drive, Latham, NY 12110.

**Marine Business Journal: The Voice of the Marine Industry Worldwide** A bi-monthly publication focusing on the business aspect of the industry. It includes association news, new products, people news and marketing suggestions. Published subscription rate: FREE. Send to Marine Business Journal, Attn: Circulation Department, 330 N. Andrews Ave., Fort Lauderdale, FL 33301. Call (954) 522-5515.

**Marine Log: Reporting on Marine Business and Technology** A monthly publication focusing on the marine shipping industry. It includes articles covering shipping laws, ferry services, international trade and marine security. Published subscription rate: $50 for 1 year. Send to Marine Log, Subscription Department, PO Box 10, Omaha, NE 68101. Call (800) 895-4389.

**Marina Dock Age: The Magazine Dedicated to Marina and Boatyard Management** A bi-monthly publication that covers all aspect of the marina business. The magazine handles such topics as: laws, security, finances, safety and yard equipment. Published subscription rate: FREE. Send to Marina Dock Age, PO Box 21652, St. Paul, MN 55121. Call (874) 647-2900 ext. 322.

**Marina Business Today** A monthly publication that covers the marina business. The magazine tackles such topics as safety, environmental concerns, dock designs, and the handling of equipment and materials. Published subscription rate: FREE. Send to Marina Business Today, 1550 E. Missouri Ave, Suite 202, Phoenix, AZ 85014. Call (602) 265-7600.

**SeaWorthy** A quarterly publication provided by BoatU.S. This periodical is free for all boat owners insured through the BoatU.S. Marine Insurance program. It is also available to boat owners outside of the insurance program for $10. Topics that are covered range from findings in insurance claims, to tips on how to avoid damage and accidents, as well as boat maintenance. Published subscription rate: FREE ($10 to boat owners outside of the insurance program). Send to SeaWorthy, BoatU.S. National Headquarters, 880 South Pickett St., Alexandria, VA 22304. Call (800) 274-4877.

# Marine Industry Online Resources

**Trade Only Today**
http://www.tradeonlytoday.com/ This online daily news source is tailored expressly for the marine industry. Their coverage highlights fast-breaking news developments that marine business professionals need to know today. The online aspect of Soundings supplements their 3 monthly publications.

**International Boat Industry**
http://www.ibinews.com This online resource is a leading business-to-business website covering the global marine recreational market. They cover in-depth reports of key markets and product sectors through up-to-the-minute news of interest to boatbuilders, designers, equipment manufacturers, distributors and dealers. Emails are sent daily on the top ten topics.

**Boating Industry International**
http://www.boating-industry.com/ BII Online reports daily on the days activities in the marine industry. Up to the minute breaking news are emailed to recipient's everyday. Their coverage is international with an emphasis on the American market.

# Appendix IV: Notice of Intent (NOI)

**Instructions Form 3-GPSW/00**
**Notice of Intent (NOI) For Storm Water Discharges Associated With Industrial Activity To Be Covered Under the NPDES General Permit**
**A FEE IS REQUIRED UPON SUBMISSION OF THE NOI.**
**FILING A NOTICE OF INTENT (NOI) FORM**

Under Federal Law, through the Clean Water Act, any point source discharge of pollutants to surface waters of the United States requires a permit. These permits are issued under the National Pollutant Discharge Elimination System (NPDES) program.

The EPA can authorize any State, which displays the appropriate capability, to operate the NPDES program. Delaware received this authority in April, 1974. The 1987 amendments to the Clean Water Act require national regulations to be issued for controlling pollutants entrained in storm water discharges. The national regulations were issued on November 6, 1990.

The Delaware NPDES Storm Water General Permit Regulations require permits for facilities which discharge storm water associated with industrial activity. Industrial activity is defined as activity which results in the exposure of significant materials to precipitation. Significant materials are substances, products or wastes which can contribute pollutants to runoff when storm water comes in contact with these materials.

Delaware law requires a permit for any discharge of pollutants to waters of the State. Therefore, the NPDES Storm Water Program applies to sheet-flow as well as point source discharges from sites or facilities engaged in industrial activity in Delaware.

**WHERE TO FILE THE NOI FORM**
NOIs are to be submitted to the following address:

Delaware Department of Natural Resources and
Environmental Control
Division of Water Resources
Surface Water Discharges Section - NPDES Storm Water Program
89 Kings Highway, Dover, DE 19901

A $150.00 yearly fee is required for each facility or site.

**COMPLETING THE FORM**
You must type or print, using upper-case handwriting, in the appropriate areas only. Abbreviate if necessary. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions, please call (302) 739-5731.

**NUMBER 1.**
Give the legal name of the facility/site or entity which is applying for coverage through this NOI Form. Enter full name, mailing address and latitude and longitude of the approximate center of the site.

**NUMBER 2.**
Enter the name, position and telephone number of the contact who is responsible for complying with the NPDES Storm Water Program.

**NUMBER 3.**
List, in descending order of significance, up to four 4-digit standard industrial classification (SIC) codes which best describe the principal products or services provided at the facility requesting coverage.

For industrial activities listed in the Regulations Governing Storm Water Discharges Associated with Industrial Activity which do not have SIC codes that accurately describe their activities, the following 2 character codes are to be used:

HZ = Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA;
LF = Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under subtitle D of RCRA;
SE = Steam electric power generating facilities, including coal handling sites,
TW = Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment recycling, and reclamation of municipal or domestic sewage.

**NUMBER 4.**
If stormwater discharges to a municipal storm water system, enter the name of the system.

If the facility discharges storm water directly to receiving water(s), enter the name of the receiving water.

**NUMBER 5.**
Under federal law, facilities subject to SARA III Section 313 (40 C.F.R. Part 372) are required to submit toxic release reports (Form R) to the State. Indicate whether the facility has submitted a Form R within the last 5 years.

**NUMBER 6.**
State law provides for severe penalties for submitting false information on this application form. This application shall be signed as follows:

For a corporation: by a responsible corporate officer which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For partnership or sole proprietorship: by a general partner or the proprietor, respectively; or,

For a municipality, State, Federal or other public facility: by either a principal executive officer or ranking elected official.

| FORM 3-GP.SW/00 | Delaware Department of Natural Resources and Environmental Control<br>NOI Form for obtaining coverage through<br>**The Regulations Governing Storm Water Discharges Associated With Industrial Activity** (Section 9, Subsection 1) |
|---|---|
| **DNREC** | |

Submission of this form serves as a notification of the intention of the facility identified on this form, to adhere to provisions of **The Regulations Governing Storm Water Discharges Associated With Industrial Activity** (NPDES Storm Water General Permit Program).

THIS FORM MUST BE COMPLETE IN ORDER TO OBTAIN PERMIT COVERAGE. PLEASE REFER TO THE DIRECTIONS REGARDING THE YEARLY FEE THAT IS REQUIRED UPON SUBMISSION.

1) Name of Facility Noticing Intent: _____
   Address: _____
   _____

   Latitude: _____ Longitude: _____

2) Name of the contact person responsible for facility compliance with the (NPDES Storm Water General Permit): _____
   Telephone : _____

3) Up to four SIC codes which describe the activities of the facility:

| | | | |
|---|---|---|---|
| | | | |

Name of the waterbody or municipal (public) storm system which receives storm water runoff from the facility:

_____

Is the facility subject to SARA Title III, Section 313 requirements ? (Yes or No)_____

4) Certification:
"I certify under penalty of law this document and all attachments were prepared under my direction, or supervision, in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based upon my inquiry of the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations."

PRINT NAME AND TITLE: _____

SIGNATURE: _____ DATE: _____

# 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 Delaware Sea Grant at (302) 645-4268 or dchapman@udel.edu for an electronic copy.*

**FOR TENANTS:**

I,_____, understand that_____
(name) (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 residues in surface waters or elsewhere where they 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 (*insert name of facility*) and forfeiture of rental fees. I understand that I may elect to employ the facility to perform potentially pollution producing activities on my behalf in which case the responsibility for compliance with the best management practices is entirely theirs.

Signed _____ 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.

Signed _____ Date _____

**POLLUTION PREVENTION PRACTICES:**

A. REPAIRS AND SERVICE (to hull and engine: painting, cleaning, washing, sanding, scraping, etc.)
   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 non-toxic, biodegradable solvents.
   5. Capture debris from boat washing and use only minimal amounts of phosphate-free, non-toxic, 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 which will open the hull. Clean and pump bilges free of contaminated materials before and after repairs which open the hull.
   8. Use spill proof oil change equipment.

B. VESSEL MAINTENANCE WASTE

1. Non-toxic residue of sanding, scraping, and grinding: bag and dispose of in regular trash.
2. Toxic and non-environmentally safe solvents and cleaning liquids: seek specific directions from marina management or dispose of with 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. Add a stabilizer to fuel tank in the fall or an octane booster to stale fuel in the spring. Use the fuel or bring it to a household hazardous waste collection site.
3. Absorbent materials soaked with oil or diesel: drain liquid and dispose of in used oil recycling container; double bag absorbent material in plastic and dispose in regular trash receptacle.
4. Absorbent materials soaked with gasoline (flammable): air dry and reuse.
5. Bioremediating absorbent products: dispose in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.
6. Oil filters: drain and recycle the oil; recycle the filter or double bag and put in regular trash.

E. ONBOARD 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 Maryland 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 port-a-pots overboard; use marina dump facility. Do not empty port-a-pots in the restrooms.
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. Liveaboards, place a dye tablet in holding tank after each pumpout out. The dye will 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 wastes, double-bagged, in the 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; replace covers.

# Appendix VI: Emergency Response Contractors

ALPHABETICAL LISTING, CHEMICAL/OIL RELATED INCIDENTS

*A & A Environmental Services
Salisbury, MD
*(800) 404-8037
(410) 543-9945
(410) 543-1559 Fax

Advanced Resource Management, Inc.
Claymont, DE
(302) 792-8222
(302) 792-7977 Fax

**Allstate GeoTek, Inc
Lester, PA
(610) 521-8923
(610) 521-8927 Fax

** Clean Harbors
Deptford, NJ
*(609) 589-5000

**Clean Venture/Cycle Chem
Swedesboro, NJ
(609) 467-4488
(609) 467-2640 Fax

Joseph A. Cochran & Sons
New Castle, DE
*(302) 652-6628
(302) 247-9512 Pager

**Eldredge, Inc.
West Chester, PA
*(610) 436-4749

EnerCon Services, Inc.
Bear, DE
*(800) 550-2371

**Environmental Products & Services, Inc.
Harrisburg, PA
(800) 843-8265
(717) 564-3457 Fax

# Environmental Solutions Group, Inc.
Wilmington, DE
(302) 764-1600
(302) 764-2826 Fax

Freehold Cartage, Inc.
New Castle, DE
(302) 658-2005

Guardian Environmental
Bear, DE
*(800) 345-4395 Bear
(302) 398-5800 Harrington

HMHTTC
Wilmington, DE
*(800) 927-9303
(302) 777-7403

**IMS-Baltimore (A-E OSRO)
*(888) 229-4672
(410) 636-2811

**JMT Environmental Technologies
Lehigh Valley, PA
(610) 759-0200
(610) 759-6149 Fax

Leager Construction, Inc.
Smyrna, DE
*(302) 653-8021

Lewis Environmental Group
Wilmington, DE
*(302) 323-9490

**MARCO of Delmarva
Salisbury, MD
*(410) 742-6161

---

Key:
* 24-hour number
** Out of state contractor
# Non-emergency daytime (8am to 5pm) contractor
+ Boat raising, salvage, towing, diving, etc.

**National Response Corporation (OSRO)
Great River, NY
*(800) 899-4672
(631) 224-9082 General Fax
(631) 224-9086 IOC Fax
(631) 224-9096 Finance Fax

+**Northstar Marine
Swainton, NJ 08210
*(609) 263-6666
(609) 463-4880 Fax

**REMAC USA, Inc.
Morrisville, PA
*(800) 826-0518
(215) 736-8659 Fax

**S&D Environmental Services
Westville, NJ
*(609) 853-1196
(609) 853-1205 Fax

**TPH Industries
Baltimore, MD
*(800) 874-2313

+TowBoat U.S., Indian River/Lewes
Millville, DE
*(800) 391-4869
(302) 537-2553 Fax

---

Key:
* 24-hour number
** Out of state contractor
# Non-emergency daytime (8am to 5pm) contractor
+ Boat raising, salvage, towing, diving, etc.

Please note that this is not an approval or certification list. It is recommended that you contact additional contractors or check other sources if necessary. Revised 2/21/03

# Appendix VII: Management Measures Coastal Nonpoint Program

**Coastal Nonpoint Guidance Management Measures**

Management measures are defined as "economically achievable measures to control the addition of pollutants to our coastal water, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives."

**Siting and Design**

Marina Flushing
- Site and design marinas such that tides and/or currents will aid in the flushing of the site or renew its water regularly.

Water Quality Assessment
- Assess water quality as part of marina siting and design.

Habitat Assessment
- Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, state, or federal governments.

Shoreline Stabilization
- Where shoreline erosion is a nonpoint source pollution problem, shorelines should be stabilized. Vegetative methods are strongly preferred unless structural methods are the more cost effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas.

Stormwater Runoff
- Implement effective runoff control strategies that include the use of pollution prevention activities and the proper design of hull maintenance areas.
- Reduce total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis.

Fueling Station Design
- Design fueling stations to allow for ease in cleanup of spills.

Sewage Facility
- Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters. Design these facilities to allow for ease of access and post signage to promote use by the boating public.

**Marina and Boat Operation and Maintenance**

Solid Waste
- Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

Fish Waste
- Promote sound fish waste management through a combination of fish cleaning restrictions, public education, and proper disposal of fish waste.

Liquid Waste
- Provide and maintain appropriate storage, transfer, containment, documentation, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.

Petroleum Control
- Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.

Boat Cleaning
- For boats that are in the water, perform cleaning operations to minimize, to the extent possible, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water cleaning.

Public Education
- Public education/outreach/training programs should be instituted for boater, as well as marina owners and operators, to prevent improper disposal of polluting material.

Maintenance of Sewage Facilities
- Ensure that sewage pumpout facilities are maintained in operational condition, locally situated for convenience, and encourage their use.

Boat Operation
- Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.

# Appendix VIII: Spill Prevention, Control and Countermeasure (SPCC) Plans

## Background

**What is a Spill Prevention, Control and Countermeasure (SPCC) Plan?**

An SPCC plan is a written document that describes measures one has taken to prevent, contain and clean up oil spills. The term "oil" includes gasoline, diesel, heating oil, and solvents. All SPCC plans must be certified by a licensed professional engineer.

**Who needs an SPCC Plan?**

Any boating facility that has an aggregate aboveground petroleum storage capacity greater than 1,320 gallons or a total underground storage capacity greater than 42,000 gallons must have a Spill Prevention, Control and Countermeasure plan.

**Are SPCC plans required by law?**

Yes, SPCC plans are required by federal regulation 40 CFR 112 which is implemented by the U.S. Environmental Protection Agency (EPA).

**Can I prepare my own SPCC plan?**

Any facility operator may draft his or her own SPCC plan. The plan must be certified by a professional engineer, however.

**What counts toward storage capacity?**

Storage capacity includes the capacity of all containers with capacities of 55 gallons or more, including tanks, portable tanks, transformers, and 55-gallon drums. The capacity of any empty containers that may be used to store oil and are not permanently taken out of service are also counted in a facility's total storage capacity.

**Does the term "oil" include vegetable oil, transformer oil, and other non-petroleum based oil?**

Yes. "Oil" is defined in 40 CFR 112.2 as oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredge spoil. This definition has been interpreted to include vegetable oil, mineral oil, transformer and other oils.

**Who do I give the SPCC plan to?**

A copy of the entire SPCC plan must be maintained at the marina if the facility is normally attended at least eight hours per day, or at the nearest field office if the facility is not so attended.

Since a boating facility must be in compliance with all applicable laws and regulations in order to be certified as a Delaware Clean Marina, any facility wishing to be recognized as a Clean Marina and that is subject to the SPCC requirements must submit a copy of its SPCC plan to the Clean Marina office.

The SPCC plan is not required to be filed with the U.S. EPA, but a copy must be available for on-site review by the regional administrator during normal working hours. The SPCC plan must be submitted to the U.S. EPA Region III regional administrator and the Delaware Department of Natural Resources and Environmental Control (DNREC) along with the other information specified in 40 CFR 112.4 if either of the following occurs:

- the facility discharges more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single event, or
- the facility discharges oil in quantities greater than 42 gallons in two spill events within any twelve month period.

**How often must I review the SPCC plan?**

The facility owner or operator must review the SPCC plan at least every five years. These reviews must be documented.

**When do I have to update the SPCC plan?**

The SPCC regulation requires the owner or operator to amend the plan whenever there is a change in facility design, construction, operation, or maintenance that materially affects the facility's potential to discharge oil. Such amendments must be fully implemented not later than six months after the change occurs. All amendments must be certified by a registered professional engineer.

# Appendix IX: 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.

The first item ought to be a site plan:

___ **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 of response materials, and telephones.

Then, prepare individual plans for all likely threats 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.

___ **Phone Numbers:**
When calling an emergency response agency, be prepared to describe the nature of the emergency, the location and address of the marina, and the exact location within the complex.
**• U.S. Coast Guard National Response Center (fuel spill): (800) 424-8802**
**• DNREC Emergency Response Team (fuel or hazmat spill): (800) 662-8802 (in state only) or (302) 739-5072**
• DNREC Solid and Hazardous Waste Management Branch: (302) 739-3689
• Poison Center: (800) 722-7112
• State Fire Marshal's Office: (800) 432-8500
• Fire department
• Police department
• Local hospital
• Owner
• Spill response contractors
• Neighboring marinas that have emergency response equipment

___ **Action:** State what action should be taken during an emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available on site and what its characteristics and capabilities are. Explain how the equipment should be used and disposed.

# ANY PLACE MARINA

1234 Maple Lane, Any Town, DE 12345 302-123-4567

## Fuel Spill Response Plan

for fuel tanks, pumps and oil recycling tanks

1. Survey the scene and address safety issues.

2. Identify the source and stop the flow.

3. Contain the spill *(indicate where oil absorbent material is stored).*

4. Notify marina manager/owner *(include home and cell phone numbers).*

5. Call the U.S. Coast Guard's National Response Center at (800) 424-8802.

6. Call DNREC Emergency Response Team: (800) 662-8802 (in state only) or (302) 739-5072.

7. Contact spill response company if necessary.

8. Call 911 in an emergency.

# Appendix X: Marina Regulations

State of Delaware

# Marina Regulations

Adopted: March 29, 1990
Amended: February 22, 1993

Department of Natural Resources and Environmental Control

TABLE OF CONTENTS

# MARINA REGULATIONS

## I. GENERAL CONDITIONS

### A. FOREWORD

The Delaware Department of Natural Resources and Environmental Control (DNREC) is responsible for protecting, preserving, and enhancing the environmental quality of the water, air, and land of the State. The Department recognizes that water quality protection and improvement is an important goal, particularly in water bodies subject to development pressure with its attendant anthropogenic impacts. This Regulation is intended to deal with such impacts by addressing the potential sources of pollution that may result from the physical presence, construction, or operation of marinas.

The Department's intent in adopting these Regulations is three-fold. First, to apply strict environmental controls over the siting, design, construction and operation of new marinas. The controls shall be most strict in this case because new construction offers the greatest opportunity for proper environmental planning and management.

Second, to allow upgrading of existing facilities in ways which can benefit the environment by imposing reasonable restrictions which would effectively discourage or prevent environmentally detrimental impacts. In this case, it is recognized that physical constraints at existing sites may present insurmountable limitations over the scope of feasible improvements that can occur.

Third, to provide for safe and environmentally sound operation of existing and future marinas through prevention of pollution by good housekeeping procedures.

### B. SCOPE

#### 1. Purpose

The provisions of these Regulations shall establish minimum requirements for the siting, design, construction, and operation of marinas to serve the needs of boaters, while properly managing the State's natural resources, and protecting public health. For the purposes of this Regulation, marinas shall be those facilities on or adjacent to the water which provide for mooring, berthing, or storage of vessels, and which include any or all of the related ancillary structures and functions of marinas such as docks, piers, vessel storage areas, boat ramps, anchorages, breakwaters, channels, moorings, basins, vessel repair services, vessel sales, sales of supplies which are normally associated with boating, such as vessel fuel sales, bait and tackle sales, vessel rentals, and parking areas for users of the marina. Marinas can be categorized as recreational operations which are not operated for profit and include planned community marinas, water sports clubs and co-ops, commercial facilities which are operated for profit, or public facilities operated by governmental agencies.

Within the commercial, recreational, and public marina categories, there are general types of marinas that are commonly found in Delaware waters. (Also see Definitions, Section I.C.). These include: full service marinas, vessel repair/maintenance yards, fishing facilities (including

charter boat operations), residential or planned community marinas, water sports club marinas, anchorages or mooring fields, and boat ramps.

2. Applicability

These Marina Regulations shall apply to:

a. Any commercial, public, recreational, or private marina that is on or adjacent to the water and: 1) contains five or more slips, or 2) provides berthing for one or more headboats.

b. Any vessel maintenance or repair yard that is on or adjacent to the water.

c. All public or commercial boat ramps.

d. Recreational boat ramps with five or more slips, or associated upland ancillary facilities such as fueling or vessel maintenance facilities.

3. Exemptions

These Marina Regulations shall not apply to:

a. Private Slips, or Ramps. Private slips or ramps are exempt from the requirements of this Regulation, except any combination thereof that qualifies as a marina, as described in the Applicability section, above.

b. Recreational Boat Ramps: Recreational ramps are exempt if they are for the exclusive use of the owner(s), residents, or members and are thus designated, unless additional facilities are provided which qualify the ramp as a marina, as described in Section 2.d., above.

4. Authority

Authority for these Regulations is in accordance with 7 Del. C., Chapter 60, Water And Air Resources Act, 7 Del. C., Chapter 72, The Subaqueous Lands Act, 7 Del. C., Chapter 66, The Wet1ands Act and 7 Del. C., Chapter 19, Shellfish.

5. General Standards, Prohibitions, and Provisions

a. No person shall construct, install, modify, rehabilitate, or replace a marina unless such person has a valid permit issued by the Department pursuant to these Regulations.

b. Administrative and judicial review under these Regulations shall be in accordance with the provisions of 7 Del. C., Chapter 72.

c. These Regulations, being necessary for the health and welfare of the State and its inhabitants, shall be liberally construed in order to preserve the land, air, surface water, and groundwater resources of the State.

6. Emergency Conditions

If the Secretary finds that an emergency condition exists which may result in adverse environmental impacts, DNREC may waive appropriate portions of these Regulations, or the conditions of any permit or plan approved and/or issued under these Regulations, in order to deal with the emergency. Economic hardship alone will not be considered an emergency condition.

7. Marina Guidebook

The Department of Natural Resources and Environmental Control maintains a Marina Guidebook which contains useful information about the planning, design, and operation of marinas. This guidebook can be used as a public service, as an educational tool, and for technology transfer.

8. Effective Date

These Regulations shall become effective on March 29, 1990.

C. DEFINITIONS

Activity. Construction, demolition, or operation, or use of any facility, property, or device. Any dredging, filling, construction of any kind, including but not limited to, construction of a basin, channel, dock, pier, jetty, breakwater, bulkhead, revetment or other marina structure, or human induced or conducted action resulting in the making of a connection to state waters.

Alteration. Any change to an existing marina which would (a) increase the number of slips by five (5) or more, or (b) involve new or additional upland or water-based activities whose construction or operation have the potential to generate pollution. Maintenance of existing serviceable structures shall not be considered an alteration.

Ambient. The background biological, chemical, and/or physical conditions, as measured at a point(s) outside of the influence of the pollution source being studied.

Anchorages. Areas in which vessels are held by means of anchors or similar devices which are removed from the bottom and carried aboard the vessels once they are underway.

Best Management Practices.
Methods, measures, or practices that are determined by the Department to be reasonable and cost-effective means for a person to meet certain

pollution control needs. Best management practices include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. Best management practices can be applied before, during, or after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters.

Board. The Environmental Appeals Board.

Boat Ramps. Facilities which provide access to the water primarily for vessels that are carried on, launched from and returned to trailers.

Breakwater. A structure, parallel to the shore, that protects a shore area, harbor, anchorage, or basin from waves.

Bulkhead. A vertical walled structure or partition intended to retain or prevent sliding of the land, or to provide an interface between land activities and those which occur in the water, or intended to protect the upland against damage from wave action.

Commercial Marinas.
Marinas which are operated primarily for profit.

Critical Habitat.
Areas classified by the Department and that serve an essential role in the maintenance of sensitive species. Critical habitat areas may include unique aquatic or terrestrial ecosystems that support rare, endangered, or threatened plants and animals. Rare, endangered, or threatened species are defined by both state and/or federal listings.

Dedicated Pumpout Facility.
A semi-permanent connection made between a vessel and the shore for the purpose of removing vessel sewage from the vessel holding tank or head on a continuous or automatic intermittent basis to an approved sewage disposal facility.

Degradation. Any adverse change in surface or groundwater quality or designated uses, as defined in applicable Delaware water quality regulations, including the Delaware Surface Water Quality Standards and the State of Delaware Regulations Governing Public Drinking Water Systems.

Department. The Department of Natural Resources and Environmental Control.

Discharge. Any release, however caused, from a vessel, pier, or other marina facility. This includes any escape, disposal, spillage, leaking, pumping, emitting, pouring, dumping, or emptying.

Dock. A fixed or floating decked structure where a vessel or vessels may be secured either temporarily or indefinitely.

Dry Slip. A slip or berth in which the vessel rests in a rack or trailer located on land adjoining the water, rather than in or over the water.

Dry Stack Marina.

A boating facility which stores vessels on dry land, including but not limited to, dry storage facilities, boatels, valet storage, pigeon-hole storage, and stackominiums.

Dump Station. See Pumpout Facility.

Exfiltration Area.

An underground stormwater retention area consisting of perforated pipes placed within an underground bed of crushed rock or other pervious granular material.

Existing Marina.

Any marina structures or functions that were in operation or had a valid subaqueous lands lease or permit as of March 29, 1990.

Finger Pier. A comparatively smaller dock structure attached (usually perpendicular) to a primary pier or bulkhead, usually provided to facilitate access to berthed vessels.

Fishing Facilities.

Facilities which provide slips, anchorages, or mooring fields for charter fishing boats and other fishing operations.

Gray water. The liquid and water-borne waste derived from vessel galleys, showers, bathroom sinks and tubs, but not including sewage.

Harbormaster. An officer designated for a particular facility who executes and enforces the “Rules and Regulations for Marina Users" that are included as part of the Operation and Maintenance Plan for the facility.

Headboat. A commercial vessel, primarily used for fishing activities, that can accommodate more than twenty people.

Holding Tank. A storage tank for sewage which requires pumping out and is part of an installed Type III Marine Sanitation Device. Holding tanks may also receive and store vessel gray water.

Intertidal Flat.

That shallow water habitat situated between the extreme high and extreme low tidal limits.

Joint Application Form.

The Department's combined application form for subaqueous lands, wetlands and marina projects.

Live-aboard vessel.

(a) A vessel used principally as a residence. (b) A vessel used as a place of business, professional or other commercial enterprise and, if used as a means of transportation, said transportation use is secondary or subsidiary use. (c) Any other floating structure used for purposes stated above under (a) or (b). (d) Charter and other similar fishing boats shall not be considered to be live-aboard vessels unless they are residences as described in (a), above.

Maintenance Dredging.

Dredging of previously dredged channels, ditches, dockages, lagoons and other waterways to maintain or restore the approach depth and width.

Maintenance wastes.

Materials collected while maintaining or operating vessels, including, but not limited to, soot, machinery deposits, solvents, hydrocarbons, scraped paint, deck sweepings, wiping wastes, and rags.

Marina. Those facilities on or adjacent to the water which provide for mooring, berthing, or storage of vessels, and which may include any or all of the related ancillary structures and functions of marinas such as slips, docks, finger piers, piers, berths, upland vessel storage areas, boat ramps, anchorages, shore stabilization structures, breakwaters, channels, moorings, basins, vessel repair services, vessel sales, sales of supplies which are normally associated with boating (such as fuel, bait and tackle), vessel rentals, and parking areas for users of the marina.

Marine Sanitation Device.

Any equipment utilized on board a vessel which is designed to receive, retain, treat, or discharge sewage, and any process to treat such sewage. Marine sanitation devices, as defined by 7 Del. C. 60 §6035, are classified as:

Type I Marine Sanitation Device - A device that produces an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids.

Type II Marine Sanitation Device - A device that produces an effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter.

Type III Marine Sanitation Device. A device that is designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage. A Type III MSD is a no direct discharge device. A Type III MSD shall include both portable and permanently installed MSD devices.

Minimum Navigable Depth.
The minimum depth, at mean low tide, that is required for safe navigation by vessels.

Mooring Fields.
An area in which vessels are held by means of mooring buoys or similar devices which are fastened to stationary underwater devices which are not carried aboard the vessels as regular equipment. Mooring fields have no direct access from land and the moored vessels can only be reached through the use of small dinghies or other vessels.

Most Probable Number (MPN).
An index of coliform bacteria as defined in the 1989 edition of Standard Methods for the Examination of water and wastewater, which is published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation.

Oil. Oil of any kind and in any form including, but not limited to, petroleum products, tank bottoms, oil refuse, oil mixed with other wastes, and all other liquid hydrocarbons regardless of specific gravity.

Pier. A structure in, on or over subaqueous lands which is used by the public primarily for fishing, crabbing, swimming, or viewing. A pier shall not include vessel berthing use unless specifically designated as such.

Private Slips or Ramps.
Facilities that are not part of a residential or planned community marina, serve a single residence, and are constructed exclusively for the personal use of the occupants of that residence.

Public Marinas.
Marinas owned by governmental agencies and operated with their own personnel or through a concession or other agreement with a private entity.

Pumpout Facility.
A mechanical device which is temporarily connected to a vessel for the purpose of removing vessel sewage from its holding tank or head to an approved sewage disposal facility. A station is a type of pumpout facility which receives vessel sewage from portable marine sanitation devices and

from which sewage is delivered or transferred to an approved sewage disposal facility. See also Dedicated Pumpout Facility.

Recreational Marinas.

Recreational marinas include residential or planned community marinas, water sports club marinas, and all other marinas which are not commercial marinas or public marinas.

Recreational Water Use Area.

An area specifically designated by the Department for water-based recreational use, including but not limited to, fishing, clamming, water skiing, sailboarding, snorkeling, diving, rowing, swimming, and boating.

Residential or Planned Community Marinas.

Groups of 5 or more slips that are contiguous, are for the exclusive personal use of the adjoining upland residents, and:

1. are constructed, owned, operated, or maintained jointly; or

2. are created as a unit or common element under the Unit Property Act, 27 Del. C. Chapter 22.

Residential or planned community marinas are usually (but not always) part of a single, overall development plan and/or are designed to share common facilities such as docks, walkways, pilings, or an entrance channel. They are distinguishable from commercial marinas because they do not have commercial operations or support facilities and are for the exclusive use of the residents of the adjoining upland property.

Retention. Prevention of the discharge of a given volume of stormwater runoff into surface waters of the State accomplished through on-site storage of a specified quantity of rainfall and/or runoff, with provision for controlled release of water in excess of the stored volume.

Revetment. A sloping structure made of stone, concrete, or other material, and built to protect a shoreline, scarp, embankment, or structure against erosion by wave action or currents.

Riprap. A layer, facing, protective mound of stones, or other durable material placed to prevent erosion, scour, or sloughing of a structure or embankment. Also, the stone or other material so used.

Secretary. The Secretary of the Department of Natural Resources and Environmental Control.

Sewage. Human body wastes and wastes from toilets and other receptacles intended to receive or retain human body wastes.

Shellfish. Any edible mollusk or crustacean including oysters, clams, lobsters, mussels, whelks, crabs, and shrimp.

Slip. A place where a vessel may be secured to a fixed or floating structure, including, but not limited to, a dock, finger pier, or mooring. Anchorages may also be included if they provide non-transient berthing for vessels. Slips may be wet (in the water) or dry (in a rack or other device on land).

Solid Waste. Any garbage, refuse, sludge, or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from commercial operations or from community activities. Solid waste does not include solid or dissolved material in domestic sewage or discharges which are point sources that are subject to permits.

Structure. Any man-made object including, but not limited to: piers, slips, docks, breakwaters, revetments, or bulkheads.

Subaqueous Lands.

Submerged lands and tidelands, as defined by 7 Del. C., Chapter 72 and the Delaware Regulations Governing the Use of Subaqueous Lands.

Submerged Aquatic Vegetation.

Vascular plants rooted in the sediment and permanently growing on or below the surface of the water. Submerged aquatic vegetation does not include emergent wetland species.

Subtidal Flat. A shallow water habitat situated below the extreme low tidal limit.

Support Facilities.

Installations or services that support the functions of a marina, such as utility services, fueling stations, repair and launching facilities, the marina headquarters, parking, retail facilities catering to the boating and aquatic recreational needs of marina users, and restrooms, showers, and laundries.

Tidal Flushing.

The exchange of waters within a confined area, such as a marina basin, with water from a larger adjoining water body; such exchange being due to the rise and fall of the tide, and/or wind circulation with accompanying mixing of the water.

Transient Mooring.

Anchorage or mooring periods less than forty-eight hours.

Uplands. Lands of elevations above the current mean or ordinary high water mark and which are not classified as wetlands.

Upland Basin Marina.
Any marina constructed by excavating or dredging uplands.

Vessel. Every type of watercraft, boat, houseboat, or other form of man-made contrivance used, or capable of being used, whether or not capable of self-propulsion, for navigation on the waters of the state.

Vessel Repair/Maintenance Yards.
Any facility which provides for the new construction, repair or maintenance of vessels.

Wastewater. The liquid and water-borne human and/or household waste derived from residential, industrial, institutional, or commercial sources, including vessels.

Water Pollution.
The man-made or man-induced alteration of the natural chemical, physical, biological, and/or radiological integrity of water.

Water Sports Club Marinas.
The facilities used by people associated for the common purpose of engaging in any manner of water sports. Such facilities are normally made available to dues-paying members only. Examples include sailing clubs, fishing clubs, waterskiing clubs, and rowing clubs.

Waters of Exceptional Recreational or Ecological Significance.
Waters which are specifically classified in the Delaware Surface Water Quality Standards as important, unique, or sensitive from a recreational and/or ecological perspective.

Waters of the State.
All surface waters of the State as defined in the Delaware Surface Water Quality Standards.

Wetlands. Wetland areas as defined by the State Wetland Act or the State Freshwater Wetland Act.

Wet Slip. A berth or slip space in the water.

## D. PERMITS AND APPROVALS

### 1. Applicant

An Applicant shall be the property owner of record, lessee, or designated representative thereof of any marina for which a permit application or operation and maintenance plan is filed. If the applicant is not the record owner or lessee, the applicant must demonstrate that he shall become one or the other before the permit is issued or the operation and maintenance plan is approved.

2. Construction of New Marinas or Alteration of Existing Marinas

a. All construction for new marinas and for alterations to existing marinas shall require a marina permit from the Department. The applicant shall be responsible for obtaining any other local, state, or federal permits or approvals that may be required for the proposed construction or alteration.

b. All applications for permits for construction or alterations shall be in a form approved by the Department.

c. Applicants shall provide a Siting and Design Study (SDS) for new marina applications. The SDS studies or investigations shall be site-specific. The type of studies or investigations that are necessary to prove environmental safety and support an application shall be based upon the existing ecological conditions, including physical, biological, and chemical characteristics of the site, the existing hydrological conditions, the existing marinas in the area (demand for, capacity of, type and quality, etc.), and other site qualities such as required under Section II, Requirements for Siting and Designing New Marinas. All proposals for study or investigation shall be presented to the Department for review and shall be based upon sound scientific principles. Such proposals shall be modified, if warranted, based upon Department comments prior to initiation. The studies shall be conducted by individuals qualified to utilize methods of collection and analysis which are recognized and accepted by the Department.

d. The individuals recognized as acceptable to the Department for data collection, analyses, studies, and investigations shall have experience with techniques generally recognized by experts in the field. Ecological studies shall be conducted by individuals experienced and educated in ecological relationships typical of the waterbody in question (fresh, brackish, tidal, estuarine, or oceanic). Chemists, engineers, hydrologists, toxicologists, economists, architects, land planners, etc., shall also be educated and experienced in their particular field as it pertains to the specific characteristics of the proposed project.

e. Supplemental studies or investigations to support the SDS may be required by the Department.

3. Permit Processing Procedures

a. Pre-application Meetings

If requested by the Applicant, the Department will conduct pre-application meetings to discuss the requirements for a particular project, prior to preparation of the marina permit application.

b. Application Review and Processing Procedures

(1) Review Criteria

The Department will evaluate permit applications based on their predicted impacts to Delaware's land, water, underwater, and air resources in order to ensure proper management, protection, conservation, and utilization of those resources in accordance with 7 Del. C., Chapters 60, 66 and 72.

(2) Incomplete Applications

The Department will first review applications to determine if they are reasonably complete and will return incomplete applications to the applicant. An active file will not be created for returned applications.

(3) Active/Inactive Applications

If an application is determined to be reasonably complete, but additional information is subsequently requested by the Department and the applicant fails to provide that information within 180 days of receiving such request, the application will be considered to be inactive. Exceptions may be granted for cases in which the data or information requested cannot reasonably be supplied within the 180 day period. The Department may return inactive applications. Once an application has been returned, the applicant must submit a new application in order to re-activate the file, including payment of any fees that are required for new applications.

(4) Public Notice: Upon receipt of an application which is determined to be reasonably complete, the Department will:

i. Advertise receipt of the application in two (2) newspapers of statewide circulation.

ii. Receive public comments for 45 days from the date of notice.

iii. Allow the applicant to respond to questions posed by the Department and the public within the time period defined for active applications.

iv. Publish a public notice of the final completed application.

v. Receive requests for a public hearing and additional comments for 20 days from the date of notice.

(5) Public Hearing

If a meritorious request for a public hearing is received or if the Department decides that a hearing would be in the public interest, applicable procedures for notice and conduct will be followed in accordance with 7 Del. C., §§6006, 6609 and 7207. The costs of such hearings shall be charged to the applicant. These costs may include the costs of publication of the notice of the bearing, charge for the hearing room, if any, costs for recording, transcription, and copying the proceedings, and other costs directly related to the hearing. No charge will be made for the salaries and expenses of the public officials involved in the hearing.

(6) Final Issuance or Denial of Application

Following the receipt of public comments and/or a public hearing if held, the Department will make a final evaluation of all information on record for the project and will either issue a permit or deny the application. Once a denial has been issued, any subsequent submittals will be considered as a new application requiring payment of appropriate fees.

4. Fees

Each application shall be accompanied by a non-refundable application fee established by the General Assembly. This fee shall cover the costs of handling and evaluating the application and other expenses of administering the marina program. In accordance with 7 Del. C. §6003(h), no fee will be required when the applicant is a state or federal government agency or political subdivision of the State of Delaware.

5. Enforcement and Penalties

The provisions of this Regulation shall be enforced by the Secretary as provided in 7 Del. C. §§6005, 6013, 7214 and 6617. Such enforcement may include revocation of any permit for cause. The failure of the Department to enforce any of the provisions of this Regulation shall not constitute a waiver by the Department of any such provisions.

6. Appeal to the Board

a. As provided by 7 Del. C., §6008, any person whose interest is affected by any action of the Secretary may appeal to the Environmental Appeals Board (Board) within 20 days after the Secretary has announced the decision.

b. As provided by 7 Del. C., § 7210, a decision by the Secretary to deny a permit on any matter involving state-owned subaqueous lands, cannot be appealed to the Board.

7. Appeal from the Board's Decision

Any person aggrieved by any decision of the Board, may appeal to the Superior Court for the county in which the activity in question is principally located by filing a petition as provided in 7 Del. C. §6009. Such petition must be made within 30 days of the Board's decision.

8. Variance

The Secretary may, upon request by the applicant, grant a variance from any section of this Regulation as provided in 7 Del. C. §60l1 after following the notice and public hearing procedures outlined therein.

E. APPLICABLE STANDARDS & CODES

Applicable provisions of the most recent versions in effect on the effective date of these Regulations are hereby incorporated by reference and shall be a part of this Regulation.

1. National Fire Protection Association (NFPA) 13, Standard for the Installation of Sprinkler Systems;

2. NFPA 30, Flammable and Combustible Liquids Code;

3. NFPA 30A, Automotive and Marine Service Station Code;

4. NFPA 70, National Electrical Code;

5. NFPA 302, Fire Protection Standard for Pleasure and Commercial Craft;

6. NFPA 303, Fire Protection Standard for Marinas and Boatyards.

F. SUBAQUEOUS LANDS REQUIREMENTS

All new marinas or marina alterations must comply with subaqueous lands requirements as described in 7 Del. C., Chapter 72 and the Regulations Governing the Use of Subaqueous Lands. Where the construction of marinas or ancillary facilities require the use of public subaqueous lands to fully effectuate the operation of the facility, the Department will require such mitigation as may be appropriate under 7 Del. C. Chapter 72 and the Regulations Governing the Use of Subaqueous Lands.

G. CONSISTENCY WITH ZONING PLANS

The applicant shall provide evidence of zoning approval for proposed marina projects. The Department may defer consideration of an application if it determines that substantive questions regarding the zoning status for the proposed project actions are raised in a zoning appeal.

## H. OTHER REGULATORY AGENCIES

Compliance with these Regulations does not relieve any person from complying with the laws, rules, regulations, and requirements imposed on the same lands, uses, structures, facilities, or other appurtenances by local, State, and Federal government agencies, or other divisions within the Department.

## I. SEVERABILITY

If any part of these Regulations or their application is held invalid or unconstitutional, the application of that part to other persons or circumstances and the remainder of these Regulations shall not be affected.

## J. BONDING

### 1. Requirement

Applicants may be required to obtain a secured bond, or other surety acceptable to the Department, including an irrevocable letter of credit or money in escrow, that shall be sufficient to hire an independent contractor to complete any conditions imposed, or to effect any limitations, or to restore the project area to its original condition in the event of a failure by the applicant to comply with the conditions or limitations of the marina construction permit. Bonds may be required for compensation projects, see Section II.D.10.d.

### 2. Amount

Bonds shall be posted in an amount equal to 115 percent of the estimated cost of the activity.

## II. REQUIREMENTS FOR SITING AND DESIGNING NEW MARINAS

### A. FOREWORD

This section describes the requirements, restrictions, and limitation criteria for new marina development. Requirements for the construction of new small marinas (25 slips or less) and minor alterations to existing marinas are identified in Section IV of this Regulation. New marina applications must include a Siting and Design Study that demonstrates how the proposed marina meets criteria of this section. The Department will review all permit applications to determine if the project will comply with the Delaware Surface Water Quality Standards and other applicable State regulations. The Department will deny a permit if the permit application fails to demonstrate to the Department's satisfaction that the siting, design, construction, and operation of the marina comply with all applicable State regulations.

### B . SITING AND DESIGN

1. A Siting and Design Study (SDS) must be submitted for each project. The SDS must assess the impacts of all the Environmental Siting Considerations and Planning and Design Requirements identified in Sections II.D & II.E, below.

2. The SDS shall examine all facets of a project. The primary objective of the SDS shall be avoidance of impacts. It shall document all efforts to avoid adverse impacts, and to minimize and offset unavoidable adverse impacts to aquatic and terrestrial resources. Such documentation shall be in the form of an objective alternatives analysis that satisfies this sequencing of review criteria and provides an evaluation of practicable alternate sites and/or designs for Department consideration.

3. All designs that include water-based vessel storage must be accompanied by alternatives that explore various combinations of wet and dry vessel storage. At least one alternative which uses only land-based vessel storage must be evaluated.

4. Facilities which must comply with the Federal Aid in Sportfish Restoration Act (Dingell-Johnson Program), may substitute documents which satisfy these federal program requirements in place of the Siting and Design Study required by this Regulation. Substitute documentation shall be reviewed by the Department in the same manner as a Siting and Design Study by using the criteria described in Section II.C., below.

5. Siting and Design Studies shall not be required for alterations to existing facilities if:

    a. They are located on freshwater impoundments, and

    b. They provide service for human or wind powered craft only.

C. REVIEW CRITERIA

1. These Regulations set forth rebuttable presumptions that:

   a. alternatives that do not involve the use of state waters for storage of vessels have less adverse impact on the aquatic environment, and

   b. alternatives that do not involve the use of state waters for storage of vessels are available.

2. In evaluating the SDS the Department must first determine whether the applicant has demonstrated that:

   a. potential impacts have been or can be avoided to the maximum extent practicable when considering existing technology, infrastructure, logistics, and costs in light of overall project purposes, and

   b. impacts have been or can be minimized to an extent practicable and appropriate to the scope and degree of those environmental impacts, and

   c. any unavoidable impacts to aquatic and terrestrial resources have been or can be compensated for to an extent that is practicable and appropriate.

3. The Department will also consider the public interest in any activity which might affect the use of subaqueous lands including, but not limited to, the following:

   a. The potential effect on the public with respect to commerce, navigation, recreation, aesthetic enjoyment, natural resources, and other uses of the subaqueous lands.

   b. The extent to which any disruption of the public use of such lands is temporary or permanent.

   c. The extent to which the public at large would benefit from the activity or project and the extent to which it would suffer detriment.

   d. The extent to which structures that extend over subaqueous lands are dependent upon water access for their primary purpose. Restaurants, decks, residences, and other non-water dependent structures that extend over subaqueous lands shall not be authorized by these Regulations.

4. The Department will only issue a permit for the alternative found to be the least environmentally damaging practicable alternative. Appropriate and practicable steps to avoid and minimize adverse impacts will be required through project modifications and permit conditions.

5. The Department may determine that the environmental impacts of a project are so significant that, even if alternatives are not available, the application should be denied regardless of the compensatory mitigation proposed by the applicant. In making its determination, the Department will prepare a report which documents the reasons for the denial.

D. ENVIRONMENTAL SITING CONSIDERATIONS

The Department's review of all permit applications will include consideration of following:

1. Vessel Storage

Any permit application, except as allowed in Section IV, below, that involves water based vessel storage (wet slips) must demonstrate to the Department's satisfaction that a) no practicable and appropriate comparable land-based vessel storage alternatives exist, or b) that available land-based alternatives have an equal or greater adverse impact on the aquatic environment than comparable water-based vessel storage alternatives. When evaluating comparability, the Department will consider number of slips, location, intended use, and proposed ancillary facilities.

2. Water Quality Assessment

a. Policy Statement

It is the policy of the Department to prevent degradation of the surface and groundwaters of the State which might result from any pollutant source, so that all existing water designated uses are maintained and protected. Marinas shall be permitted only if they do not cause a violation of established Delaware water quality regulations.

b. Requirements

In order to meet the policy objectives stated in (a), above, the applicant must provide, as part of the Siting and Design Study, a documented and valid water quality assessment of the potential impacts of the design, construction, and operation of the proposed marina. At a minimum, the assessment must explicitly address fecal coliform and dissolved oxygen surface water quality standards. Other parameters may be required by the Department if there is a documented concern. At a minimum, a valid assessment will include appropriate modeling, monitoring, and data analysis to determine the following:

(1) the flushing characteristics of the proposed marina;

(2) the spatial extent of the shellfish harvest closure zone; The closure zone shall be clearly indicated on an appropriate U.S.C.G. chart of the area (see also Section II.D.5(b), below);

(3) the 24 hour average dissolved oxygen concentration and the one hour (or instantaneous) minimum dissolved oxygen concentration both inside the marina and in adjacent ambient waters.

c. Conditions

For each of the items described above, the analyses shall be conducted based on the following conditions:

(1) Average ambient water temperature and salinity for the critical season of marina operation. The critical season is defined as the season which has the highest potential for adverse water quality impacts. The critical season will be assumed to be the late summer months unless the applicant or the Department can document a more critical time period.

(2) For tidally influenced sites, the average tidal conditions (high and low tide elevations, tide range, and current velocities) for the critical season of marina operation.

(3) Sediment Oxygen Demand rates of at least 1.0 gm/sq m/d at 20 degrees C. This base rate will be adjusted to the temperature of the analysis based on the following formula:

$SOD_T = SOD_{20} (1.065)^{(T - 20)}$

Where:

$SOD_{20}$ = SOD @ 20°C

$SOD_T$ = SOD at temperature of analysis

T = Temperature °C

A higher base rate may be required by the Department if there is documented evidence that higher SOD rates exist at the site.

(4) Seasonal average ambient $BOD_5$ and $BOD_{20}$ concentrations of the adjacent receiving waters.

(5) Seasonal 24 hour average ambient dissolved oxygen concentrations of the adjacent receiving waters.

(6) A typical instantaneous minimum and maximum dissolved oxygen concentration determined by continuous dissolved oxygen, temperature, and salinity monitoring of the adjacent waters at the site. The monitoring should be conducted during the season of interest. Temperatures should approximate the average seasonal temperature in II.D.2.c.(1) above.

(7) Additional or alternative conditions may be required or approved by the Department if there is documented evidence that the additions or alternatives are appropriate.

Each assessment shall include documentation of all water quality data and calculations relevant to these items. Additional guidance regarding water quality assessments can be found in the Marina Guidebook.

d. The Department may require the applicant to implement a water quality monitoring plan for the periods of time prior to construction, during construction, and after construction. The determination of whether a water quality monitoring plan is required will be made by the Department based upon the ecological sensitivity of the proposed site and the potential for violation of Delaware water quality regulations. The Department will weigh costs versus benefits when determining what is practicable and appropriate.

3. Cumulative Impacts

The Department shall reserve the right to consider the cumulative impacts of clusters of proposed new and existing developments in a finite receiving water body. Therefore, even in cases where such projects, if considered alone, would comply with applicable State regulations, the Department may still deny an individual application or applications, or may require each applicant to make modifications so that the cumulative impacts of the projects shall not cause violations of State regulations.

4. Wetlands

a. No activity shall occur in wetlands without first obtaining a permit from the Department pursuant to The Wetlands Act (Title 7. Del. C., Chapter 66) and the Wetlands Regulations.

b. It is the policy of the State to preserve and protect public and private wetlands and to prevent their despoliation and destruction consistent with the historic right of private ownership of lands. Therefore, the Department shall strictly regulate the location of marinas in wetlands. Marinas shall be limited to those sites where applicants can demonstrate that short and long-term adverse impacts to the biological, chemical, and physical integrity of wetlands and their functions have been avoided, and that unavoidable impacts have been minimized and can be compensated for.

Before the Department allows disturbance of wetlands, the applicant shall demonstrate that all practicable alternatives to avoiding wetland impacts have been thoroughly examined and the results of such examinations shall be provided to the Department. In all cases, the applicant shall demonstrate that the purchase of additional property to avoid the wetland impacts is impracticable.

If wetlands impacts cannot be avoided, and the applicant has demonstrated that wetland impacts have been minimized, the Department may allow compensation. Compensation plans must provide for the creation or restoration of an area of wetlands that is of equal or greater value than the area that will be disturbed or destroyed so that there is no net loss of wetlands. Compensation requirements are more fully described in Section II.D.10 Mitigation Measures.

5. Shellfish Resources

The Siting and Design Study shall include a description of all measures taken to first avoid, and then minimize unavoidable impacts to shellfish resources. The Department will consider the following impacts of proposed marina facilities on shellfish resources:

a. Impacts on the organisms themselves, including their ability to survive, grow and propagate, without regard to potential use by humans; and

b. Impacts that may cause a violation of the Delaware Surface Water Quality Standards, (including, but not limited to, Sections 3 and 10 of the Standards); and

c. Impacts on the public's ability to harvest and consume edible shellfish species based upon the shellfish growing area classification proposed by the Delaware Division of Public Health for the marina or marina alteration under consideration.

6. Submerged Aquatic Vegetation (SAV)

SAV is protected because it provides shelter and a source of food to small aquatic organisms, and because of its ability to filter and remove suspended solids and disperse wave energy.

a. Applicants must demonstrate that short and long-term impacts to SAV have been avoided, and that unavoidable impacts have been minimized and can be compensated for. Marina projects that could cause the destruction of SAV without corresponding compensation as approved by the Department shall not be permitted. Compensation measures are more fully described in Section II.D.10 Mitigation Measures.

b. Shading of SAV by piers should be avoided.

7. Benthic Resources

a. Benthic resources are protected because of their importance in the food chain and their value as commercial and recreational food sources.

b. The status of a benthic community shall be assessed by the applicant using frequency, diversity, and abundance measures approved by the Department. As a part of this determination, the rapid bioassessment techniques of Luckenbach, Diaz and Schaffner (1989)* as modified by the Department shall be used to characterize benthic communities. Taxonomic and biomass data specific to this methodology shall be collected. The Department may continue to modify this methodology as experience is gained in applying these techniques in Delaware waters.

c. The Department may require monitoring of the benthos as a permit condition.

8. Critical Habitats

Construction of marinas shall not be permitted at sites that are recognized by the Department as critical habitats.

9. Recreational Water Use Areas

Marinas shall not be permitted at sites which conflict with Recreational Water Use Areas as duly adopted by the State.

10. Mitigation Measures

a. General

(l) All mitigation and compensation measures must be reviewed and approved by the Department before a permit can be issued. Department approvals may establish a schedule for completion.

(2) The intent of this policy is to assure no net loss of aquatic habitat productivity, including flora and fauna.

*Luchenbach, M.W., R.J. Diaz and L.C. Schaffner. 1989. Report to the Virginia Control Board. Appendix I. Project 8: Benthic Assessment Procedures. Virginia Institute of Marine Science, School of Marine Science, College of William and Mary, Gloucester Point, VA.

(3) When a proposed activity would cause unavoidable disturbance to, or loss of, environmental resources such as those described in parts II.D.10.b. and II.D.10.c., below, such disturbance or loss shall be minimized, and any remaining impacts shall be compensated for by the creation or restoration of a comparable or greater area. The area to be created or restored may be reduced if the applicant can prove through the use of Department approved productivity/functional assessment models or other similar and approved methods, that creating or restoring a lesser area will result in no net loss in the environmental value or function of the resource.

(4) Where the Department permits compensation in area ratios less than those listed in II.D.10.b(4) and II.D.10.c(3), because of an applicant's productivity/functional assessment model projections or other studies, post creation/restoration monitoring shall be required of the applicant to validate those projections or studies. In such cases, the Department shall require additional compensation if monitoring indicates that a net loss of environmental value or function has resulted. Additional compensation efforts may be required if the initial compensation effort is not successful.

(5) Compensation similar in kind and location to the resource that will be disturbed or destroyed is preferred. Proposals for off-site compensation will only be considered if the compensation site is in the same watershed as the resource that will be lost. The Department may also consider proposals for out-of-kind compensation if the proposed compensation would provide equivalent or greater functions and values than the resource that will be disturbed or destroyed.

(6) The State of Delaware may establish a compensation bank, or license a private compensation bank, which is an area of wetlands or other suitable aquatic habitat(s) that has been created or restored by the State and which may be available for use by potential applicants to meet the compensation requirements of their projects. The costs of creating or restoring an area within the compensation bank, including any land acquisition costs and administrative costs, plus the initial and maintenance costs of the compensation work itself, shall form the basis of the charge to the applicant for use of any credits so established. No lands within the compensation bank shall become the property of the applicant because of any fee paid to use the bank credits.

b. Wetlands

(1) Compensation may be allowed by the Department to offset unavoidable impacts to existing wetlands. Compensation will only be considered if the applicant has demonstrated avoidance and minimization in accordance with Section II.C.2, above. This may require modification of marina plans, including limiting the number of slips and/or rearranging the marina configuration. When evaluating compensation plans, the Department will consider the functions and values, quality, areal extent, and configuration of wetlands which will be impacted by the activity.

(2) Wetland functions and values encompass:

i. Environmental quality values (water quality maintenance, aquatic productivity, microclimate regulation, etc.)

ii. Fish and wildlife values (fish and shellfish, waterfowl and other birds, fur bearers, and other wildlife)

iii. Socioeconomic values (flood control, erosion control, water supply, fishing and hunting, aesthetics, research, education, etc.)

(3) Marinas shall not be permitted that would adversely impact wetlands without corresponding compensation as required by the Department. Creation of wetlands from existing intertidal or subtidal flats, enhancement of existing wetlands, or transfer of title of existing wetlands (including granting of easements) to a government agency or conservation organization are not acceptable forms of compensation.

(4) Compensation plans for wetlands shall be considered on a case-by-case basis. A no net loss criterion shall be applied to all activities. Compensation shall be required in the ratio of 2:1 for areas disturbed, except as provided in subparagraph II.D.10.a.(3), above. In no case shall compensation be allowed in ratios less than 1:1 for areas disturbed.

(5) Compensation shall be with the same species (flora and fauna) and soil types that were disrupted unless alternate species or soil types are approved by the Department.

(6) Post creation/restoration monitoring shall be required for a minimum of three (3) years after completion of the compensation

project. A wetland compensation project shall be considered successful if the plantings have achieved at least 85% of the required density and areal coverage. Functional values for fauna must also achieve 85% of expected abundance, frequency, and diversity. If the compensation measures fail to achieve these requirements within one (1) year, the applicant shall be required to replant and/or take other appropriate measures until success is achieved.

c. Submerged Aquatic Vegetation (SAV) Beds

(1) Compensation to offset unavoidable impacts to established SAV beds will only be considered if the applicant has demonstrated avoidance and minimization in accordance with Section II.C.2, above. This may require modification of marina plans, including limiting the number of slips and/or rearranging the marina configuration. When evaluating compensation plans, the Department shall consider the functions and values, quality, and areal extent of the SAV which will be impacted by the activity.

(2) Marinas shall not be permitted in areas that will result in the destruction of SAV beds without corresponding compensation measures as approved by the Department.

(3) Compensation projects shall be considered on a case-by-case basis by the Department. Compensation shall be required in a ratio of 2:1 for SAV beds disturbed, unless the applicant can demonstrate, through generally accepted methods, that a smal1er area will provide the same ecological productivity and function. In no case shall compensation be allowed in ratios less than 1:1 for areas disturbed.

(4) Compensation must employ the same species (flora and fauna) as the ones disturbed, or alternate species as approved by the Department.

(5) A SAV compensation program shall be considered successful if the average density and average shoot height of each of the SAV varieties in the compensation area is the same or greater than the average density and average shoot height of each of the SAV varieties in the bed that was disturbed. If the compensation measures fail to achieve these requirements, the applicant shall be required to replant and/or take other appropriate measures to achieve success.

d. Bonding

To assure that there are funds available for mitigation and compensation, the applicant shall be required to post a ten-year bond or other surety acceptable the Department including an irrevocable letter of credit or money in escrow, and equal to 200% of the amount adequate to pay for the full mitigation and compensation program. If success, as defined in II.D.10.b.(6) and II.D.10.c.(5). is reached after five years, the bond will be released in its entirety. The Department may release portions of the Bond, if successful compensation is demonstrated after two years but in no case shall the bond be maintained at less in 115% of funds necessary to pay for the full mitigation and compensation program.

E. PLANNING AND DESIGN REQUIREMENTS

The Department's review of all applications will also include consideration of the following design features:

1. Marina Flushing

a. Marinas shall be designed to maximize flushing so as to prevent the possible accumulation of contaminants that could result in a violation of the Delaware Surface Water Quality Standards, and to meet the policy objectives as set forth in II.D.2(a), above. Guidance on suitable methods to determine marina flushing characteristics can be found in the Marina Guidebook. The applicant remains responsible for providing the justifications for the model chosen.

b. Marina basins shall be designed so that they do not include square corners or stagnant water areas that tend to collect debris or cause shoaling or flushing problems.

c. Marina basin and access channel depths shall not be deeper than the existing controlling depth of the receiving waterbody and shall be designed to introduce a negative slope (shallow to deep) when moving from the head of the basin toward the receiving waterbody.

2. Dredging and Dredged Material Disposal

Dredging and dredged material disposal activities shall be in accordance with the Regulations Governing the Use of Subaqueous Lands, as authorized by 7 Del. C., Chapter 72, and the following. Dredged material disposal activities may also be regulated, depending upon the nature of the spoil material, by the Delaware Regulations Governing Solid Waste or the Delaware Regulations Governing Hazardous Waste.

a. Dredging shall be limited to the minimum dimensions necessary for the project and should avoid sensitive areas such as wetlands, shellfish resources, and SAV. Delaware Surface Water Quality Standards must not

be violated because of dredging operations.

b. The Department may authorize dredging or other marina activities on a seasonally restricted basis in known nursery and spawning areas of important species. Marinas shall not be permitted in areas that would require frequent maintenance dredging, resulting in harm to aquatic life and preventing the recolonization of benthic organisms. Such areas include those which would require maintenance dredging more often than once every four years.

c. Dredging activities shall not be approved until the applicant can demonstrate that both initial and future maintenance dredging demands can be accommodated by the proposed disposal plan. Future maintenance dredging shall be estimated using a project life not less than 30 years unless the applicant can provide good reasons why the project life will be less than 30 years.

3. Shoreline Protection Structures

Construction of shoreline protection structures shall be in accordance with the Delaware Regulations Governing the Use of Subaqueous Lands, as authorized under 7 Del. C., Chapter 72. Shoreline protection structures should be designed to minimize adverse impacts to aquatic resources. When bulkheading is proposed as part of a marina project, the permit application must include an evaluation of alternatives to bulkheading. Such evaluations must demonstrate that no practicable and appropriate alternative to bulkheading exists to effectuate the primary purpose of the project.

4. Navigation and Access Channels

a. Marinas shall only be located in areas which, in the determination of the Department, offer safe and convenient access to waters of navigable depth. Such locations tend to present maximum opportunities for flushing, with less danger of sedimentation than very shallow sites. Safe and convenient access will be determined on a case-by-case basis. Factors such as existing water depths, distance to existing channels and their depths, and tidal and wave action will be considered.

b. Where feasible, docks and piers shall be extended to navigable depths rather than employing dredging to provide such depths closer to shore. In some cases, limitations on maximum vessel drafts may be necessary. Minimum navigable depths shall be based on the kind of vessels expected to use the marina, but shall not exceed the depths of the receiving waterbody.

c. Alignment of channels shall make maximum practical use of natural or existing channels.

d. Docks, moorings, pilings, and other structures or berthing areas associated with marinas shall be located a minimum of ten (10) feet from a navigation channel.

e. Marina docking facilities shall not extend beyond existing structures in the immediate vicinity unless absolutely necessary to obtain adequate water depths for a water dependent activity.

f. Where adequate water depths exist for water dependent marina structures, berthing areas shall not extend channelward more than 10% of the width of the waterbody at that location, not to exceed 250 feet. In no case shall a structure extend channelward more than 20 percent of the width of the waterbody (as measured from mean low water to mean low water).

5. Vessel Traffic and Navigation

a. Marinas shall be designed to minimize adverse effects on the existing public and private use of waters of the State. This includes applications for mooring sites (permanent or temporary), speed or traffic reductions, or any other device, either physical or regulatory, that may cause the use of State waters to be restricted.

b. New marinas must be sited and/or designed, to the maximum extent practicable, to afford adequate protection against wakes caused by vessel traffic.

6. Water Supply

a. Marina construction, maintenance, dredged material disposal, or operation shall not be allowed to contribute substances to groundwater in violation of 7 Del. C. §6003, regardless of whether the affected groundwater is used as a public or private water supply.

b. Marina construction, maintenance, dredged material disposal, or operation shall not be allowed to contaminate a public water supply as defined by the Delaware Surface Water Quality Standards, whether existing or reserved for future use.

c. When an applicant proposes to construct an upland basin marina, whether through excavation or other means (i.e. connection of an existing landlocked waterbody to tidal waters), documentation must be provided to demonstrate that the basin will not cause intrusion of saltwater into a public or private water supply.

d. Applicants must demonstrate that there is an adequate water supply to serve all of the project's needs, and that all required permits and/or approvals can be obtained for the proposed method of water supply, whether by well installation, hook-up to an existing water supply system, or other means.

7. Wastewater Facilities

a. In accordance with 7 Del. C., §6035, discharge of raw, untreated, or inadequately treated sewage from marine sanitation devices into waters of the State, including marina basins, is prohibited.

b. All marinas shall comply with the provisions set forth in 7 Del. C., §6035.

c. Adequate restroom facilities for the use of marina patrons shall be provided to discourage any overboard discharge of untreated or inadequately treated sewage from vessels, and to protect water quality. Toilet facilities shall be constructed in a location that would facilitate their use by the users of the marina. The number of toilets required for any given marina shall be determined by the nature (recreational, public, or commercial) and size of the marina and by its specific configuration. There shall be adequate restroom facilities to serve patrons such that use of shoreside facilities is encouraged. Public restroom facilities will not be required at recreational marinas if every resident who utilizes a slip within the marina can quickly and conveniently travel from the slip to their residence.

d. The applicant shall demonstrate adequate capacity to properly dispose of all sanitary wastes generated by the project.

e. An ample number of signs shall be provided to identify the location of public restrooms and of pumpout facilities or dump stations. Such signs shall also fully explain the procedures and rules governing the use of these facilities.

f. The applicant must demonstrate that proper treatment, storage, or disposal permits have been or can be obtained.

8. Parking

In the absence of local planning requirements, the following rebuttable presumption is set forth:

Dedicated parking spaces should be provided at a rate of 0.50 spaces/slip, plus such additional spaces required by local codes for retail activities, handicapped citizens, residences, and employee parking.

The applicant may submit information to the Department in support of an alternative parking space rate. The Department will review such information to determine if the proposed standard is appropriate for use. In the event of a conflict between this requirement and an applicable local building code or requirement, the local code shall have precedence.

9. Stormwater Management

Stormwater runoff becomes polluted with oils, greases, organic and inorganic wastes, and other potentially harmful substances. The movement of these substances into streams and estuaries can have significant adverse water quality impacts. To minimize these impacts, all marina permit applications shall include plans for stormwater management and sediment and erosion control. These plans must be reviewed and approved by the appropriate plan approval agency in order to ensure compliance with 7 Del. C., Chapter 40, the Delaware Sediment and Stormwater Regulations, and the National Pollutant Discharge Elimination System (NPDES) Stormwater Regulations, (40 CFR 122.26).

In the event that the proposed marina project is exempted or waived from the requirements of Chapter 40 or the NPDES Stormwater Program, surface water and groundwater quality protection must still be demonstrated by the applicant. In reviewing the plans for stormwater management and sediment and erosion control, the Department will rely upon the water quality provisions of Chapter 40 and the Delaware Sediment and Stormwater Regulations.

10. Solid Waste Management

Storage, handling, and disposal of solid wastes shall be in strict accordance with the Department's Regulations Governing Solid Waste.

a. Discharge of solid waste, including but not limited to, garbage, maintenance waste, plastics, refuse, and rubbish into waters of the state, including marina basins, is prohibited.

b. Solid wastes shall be managed so as to prevent their entrance into any surface or groundwaters of the State.

11. Vessel Maintenance Areas and Activities

a. Vessel maintenance areas shall be sited as far from the water as is practicable, and shall be designed so that all maintenance activities that are potential sources of water or air pollution can be accomplished over dry land and under roof, where practicable, as determined by the Department. Control of by-products, debris, residues, spills, and stormwater runoff shall comply with applicable Department regulations. All drains from maintenance areas must lead to a sump, holding tank, or pump out facility from which the wastes can later be extracted for treatment and/or disposal by approved methods. Drainage of maintenance areas directly into surface or groundwater shall not be allowed.

b. Maintenance activities including, but not limited to, painting, welding, woodworking, and LPG servicing shall comply with applicable State regulations, as well as with NFPA 303, Fire Protection Standards for Marinas and Boatyards.

c. Only biodegradable detergents shall be allowed for vessel washing and cleaning within waters of the State.

d. Waste oils and other wastes generated as a result of maintenance and repair operations shall not be disposed of into ground or surface water.

e. Materials used in maintenance and repair operations shall be stored and handled in accordance with local fire codes or, if none exist, with applicable codes and standards of NFPA and with applicable Department regulations. Such material shall be stored in such a way as to prevent adverse environmental impacts.

12. Fuel Storage and Delivery Facilities

a. Fuels shall be stored and handled in accordance with local fire codes or, if none exist, with NFPA 303, Fire Protection Standards for Marinas and Boatyards, and with applicable Department regulations. All vessel fueling operations shall be undertaken at the fueling station or other specifically designated remote location in accordance with NFPA 302, Fire Protection Standards for Pleasure and Commercial Motor Crafts.

b. Aboveground and underground fuel storage tank installations shall comply with all State and/or local storage tank regulations.

13. Fire Protection Systems

Fire protection systems shall comply with local fire codes or, if none exist, with NFPA 303, Fire Protection Standard for Marinas and Boatyards.

14. Life Safety Equipment

Flotation devices shall be provided at regular intervals throughout the marina to ensure the safety of marina users.

15. Fish Wastes

Fish waste disposal shall be in accordance with 7 Del. C. Chapter 60, and with any applicable Department approved policies.

16. Marina Structures

Marina structures in, on, or over subaqueous lands shall be designed to comply with applicable requirements of the Delaware Regulations Governing the Use of Subaqueous Lands and with the following:

a. They shall be designed to minimize adverse impacts on navigation, public use of waters, and natural resources, while allowing the applicant adequate access to waters of navigable depth.

b. They shall not significantly restrict water flows.

c. The width and length of all structures shall be limited to what is reasonable for the intended use. To the extent feasible, heights and widths should be chosen to minimize shading of vegetation. Shading of SAV should be avoided.

d. Barrier-free access for the handicapped shall be provided for all marina structures when required by federal, state, or local statutes, regulations, or ordinances.

e. They shall have sufficient strength to resist expected dead, live, wind, and impact loads. Adequate consideration shall be made for forces imposed by earth pressures, flowing water, floating objects or debris (including ice), and vessel docking and mooring operations.

f. Marina structures shall not be constructed using creosote treated timber.

## III. ATERATIONS TO EXISTING MARINAS

### A. GENERAL REQUIREMENTS

Applicants for marina alterations shall comply with all applicable Delaware Laws and Regulations. Applying for an alteration to an existing marina rather than a new marina does not relieve the applicant of responsibility for obtaining any other local, state, or federal permits or approvals that may be required for the proposed alteration.

Applicants for marina alterations shall comply with all requirements of this Regulation except as may be provided for otherwise in the paragraphs below. However, only the newly-constructed portions of the marina (whether upland or water-based) must comply with the requirements for new marinas. Upland portions of the original, existing marina that are left undisturbed or are upgraded by the alteration, shall be brought into compliance with the requirements for new marinas only to the extent practicable.

#### 1. Shoreline Protection Structures

Shoreline protection must comply with 7 Del. C., Chapter 72, and the Regulations Governing the Use of Subaqueous Lands.

#### 2. Dredging and Dredged Material Disposal

a. Dredging to enlarge, deepen, or relocate a channel to specifications differing from the previously approved dredge plan shall constitute an alteration and must conform with Section II.E.2.

b. Except as provided in Section II.E.2(a), above, a marina alteration permit is not required for maintenance dredging provided that all spoils are placed in approved areas. However, the applicant shall obtain a letter of authorization pursuant to the Delaware Regulations Governing the Use of Subaqueous Lands for any maintenance dredging activity.

#### 3. Parking

Applicants for marina alterations that include an increase in the number of slips must comply with Section II.E.8, above.

#### 4. Stormwater Management

Marina alterations that involve changes to, or disturbance of, the upland portion of the property, must comply with Section II.E.9 of these Regulations for the disturbed or altered portion of the upland property, and to the extent practicable, for the existing, unaltered portions of the property.

5. Operations and Maintenance Plan

An updated Operations and Maintenance Plan must be submitted for the entire marina at the time of application. The plan must cover the operation and maintenance of the original, existing portions of the marina, as well altered portions of the marina.

## IV. PERMIT APPLICATION REQUIREMENTS FOR NEW CONSTRUCTION OF SMALL MARINAS AND MINOR ALTERATIONS TO EXSTING MARINAS

In order to reduce environmental impacts by encouraging consolidation of vessel docking facilities, permitting requirements for small, new marinas and minor alterations to existing marinas may be governed under this Section. Applicants for marina projects that meet the applicability criteria described in Section IV.A, below, qualify to submit a modified permit application as described in Section IV.B.

Applicants who qualify for small marina permitting status are not relieved from complying with the requirements identified in Sections I, II, III or V of this regulation. However, small marina permitting status does allow the applicant to submit a marina permit application that has been modified so that application requirements will be less burdensome.

### A. APPLICABILITY

An applicant may apply for a permit under this Section if the proposed new marina or marina alteration can be described by any one of the following:

1. It is a commercial, recreational, or public marina of more than 4 but not more than 25 slips.

2. It is a commercial or public boat ramp.

3. It is a recreational boat ramp in conjunction with more than 4 but not more than 25 slips.

4. It is a facility that has fewer than five slips, but is classified as a marina because one or more headboats are docked there.

5. It is a minor alteration. Minor alterations are those that expand an existing marina by 25 slips or fewer, or involve no new water- based structures or activities.

In addition to the above five items, the proposed marina or proposed alteration must not include fuel storage or delivery facilities, or vessel maintenance or repair facilities in order to qualify for permitting status under this section.

Alterations can only be permitted under this section once unless the proposed alteration expands the marina by fewer than 25 slips, in which case, future alterations may be permitted under this section until the total number of additional slips from the combined alterations reaches 25.

If the Department determines that this section does not apply to a proposed marina or marina alteration, the proposed new facility or alteration shall be required to comply with all requirements of the preceding sections of the Marina Regulations and shall not be eligible for the small marina permit application and processing procedures identified in Sections IV.B, C and D, below.

B. PERMIT APPLICATION: MODIFIED REQUIREMENTS

The requirements for marina permit applications identified in Sections I, II, III, and V of this Regulation have been modified in Sections IV.B, C, and D, below, to accommodate small new marinas and minor alterations. Applicants for marina projects that meet the applicability criteria described in Section IV.A, above, may submit an application and follow the permit processing procedures that have been modified as described below.

1. Siting and Design Study

   a. Applicants need not provide justification for wet slip vessel storage as required in Section II.D.l.

   b. The applicant may provide published data representative of site conditions in lieu of site specific field studies to satisfy the requirements of the Water Quality Assessment (Section II.D.2). If published data is not available, an abbreviated sampling strategy that has been mutually developed and agreed upon by the applicant and the Department may be submitted to satisfy this requirement.

   c. The benthic resources assessment required in accordance with Section II.D.7 need not be performed.

2. Joint Application Form - All appropriate appendices of the Joint Application Form shall be completed. However, applicants may submit the appendices modified for small marina projects in lieu of the standard appendices.

3. Operations and Maintenance Plan (O&M Plan). Applicants for new small marinas may use the Department's Standard Operations and Maintenance Plan and need not prepare a specialized plan. This requirement is satisfied by providing the information required in the Standard Operations and Maintenance Plan Information Sheet (Sheet is obtained from the Department). Water quality monitoring will not be required as part of the O&M Plan for small marinas or minor alterations. Applicants proposing minor alterations to existing marinas need only modify their existing O&M Plan as appropriate.

4. Fees

The fee for minor, new marinas or minor marina alterations will apply as appropriate.

C. BONDING

The applicant will not be required to post a bond for project construction.

## D. PUBLIC NOTICE REQUIREMENTS

The initial public notice and 45 day comment period will not be required for small, new marinas or minor marina alterations. The first public notification will be the 20 day notice, during which requests for a public hearing may be received.

## V. MARINA OPERATION REQUIREMENTS FOR NEW AND EXISTING MARINAS

### A. PUMPOUT REQUIREMENTS

Regardless of the number of slips, any marina providing other than transient berthing for any vessel containing a Type III marine sanitation device shall provide access to a sewage pumpout or dump station as required by 7 Del. C. §6035. In addition, the marina owner shall post signs to identify the location of the marina's pumpout/dump stations. If the marina is not required to provide this service, the marina owner shall post a sign identifying the location of the nearest pumpout station.

### B. MARINA OPERATIONS AND MAINTENANCE (O&M) PLAN

This section of the Regulations presents the requirements for obtaining a marina operations and maintenance (O&M) plan. It applies to all marinas in the State of Delaware, whether existing, under construction, or proposed. The intent of the operations and maintenance plan is to address compliance with statutory requirements and permit programs and to protect the aquatic and terrestrial environment. Once the plan is approved, marina owners are responsible for:

- ensuring that marina personnel comply with all aspects of the plan,
- providing copies of the plan to all marina tenants, and
- taking appropriate action to deal with marina tenants who violate any provision of the plan.

#### 1. Periodic Review and Approval

All marinas governed by this Regulation shall be required to update and submit their previously approved O&M plan for Department review and re-approval based upon the following schedule:

| | |
|---|---|
| Marinas with 0-50 slips - | due for re-approval four years after O&M plan approval date |
| Marinas with 51-100 slips - | due to re-approval three years after O&M plan approval date |
| Marinas with >100 slips - | due for re-approval two years after O&M plan approval date |

#### 2. Standard O&M Plans

Applicants for the following types of marinas may request a Standard O&M Plan Information Sheet from the Department:

- Any existing marina with 50 slips or less which does not contain fueling or maintenance facilities,
- Any new marina that qualifies for permitting status under Section IV of this Regulation,

- Facilities that have less than 5 slips, but provide dockage for one or more headboats,

- Public, commercial, and recreational boat ramps.

Upon completion, the standard O&M Plan Information Sheet is submitted to the Department for incorporation into the Department approved Standard O&M Plan. The plan is then returned to the applicant for final signatures. The Department may request modifications to tailor the standard plan to the particular operation before final approval.

Applicants owning or operating more than one marina on freshwater impoundments where the marinas are substantially equivalent in size, services offered, and the potential to cause pollution, may submit one O&M plan to cover these facilities.

Applicants for marinas that must comply with the Federal Aid in Sportfish Restoration Act (Dingell-Johnson Program), may submit documents that satisfy these federal program requirements and cover the intent of the O&M plan, to satisfy the requirements of the O&M plan.

3. O&M Plans: Required Information

This section describes the minimum information required in the O&M plan. New marinas and alterations to existing marinas must submit a draft plan with their marina permit application and a final plan six months after operation commences. Existing marinas must submit the plan within one year of the effective date of this Regulation. Whenever the marina ownership or leasehold changes, the O&M plan must be revised and resubmitted for Department approval.

a. Water Quality Management

(1). All O&M plans shall include a plan to reduce the seasonal wet storage of vessels to the maximum extent practicable, including dates for autumn vessel removal and spring launching.

(2). Stormwater Runoff - All O&M plans shall include a plan for managing stormwater. Included in this plan shall be practicable steps to eliminate sources of pollution associated with rainfall runoff. For new marinas, the operation and maintenance of all stormwater management facilities and structures shall be discussed. For existing marinas, major retrofitting will not be required. However, where practicable, all activities that may cause or contribute to pollution such as maintenance facilities and storage areas for wastes, or for materials such as solvents, paints, oils, and greases, shall be placed under roof. In all maintenance areas, housekeeping procedures shall be instituted to minimize the accumulation of maintenance wastes and to provide proper storage for maintenance materials. Wherever practicable, vegetated buffer areas between non-porous surfaces and the water should be planted

and/or maintained. Owners of existing commercial marinas that provide major vessel maintenance services should install a sand filter or other water quality management practice as a means to treat wastewater from maintenance activities and stormwater run-off.

b. Storage and Handling of all Materials Used in Maintenance

The O&M plan must describe all methods used for material storage and handling. All methods must be in accordance with applicable regulations. Materials of concern include fuels, paints, preservatives, pesticides, solvents, oils, greases, epoxies, corrosive cleaners, and other materials used in the maintenance of vessels or marina structures and facilities.

c. Storage, Handling and Disposal of Wastes

The O&M plan must describe methods for storage, handling, and disposal of wastes. All methods must comply with Department regulations.

d. Shoreline Structures Maintenance

(1). All maintenance and repair of bulkheads, piers, etc., shall be conducted with minimal adverse impact to the existing aquatic environment, and with prior approval of the Department, when required by the Delaware Regulations Governing the Use of Subaqueous Lands.

(2). The O&M plan shall include a description of techniques that will be used to protect the environment during regular maintenance operations. The Marina Guidebook may be used for information on best management practices for shoreline structure maintenance.

e. Emergency Operations

The marina owner/operator shall develop plans of action for the following emergencies:

(1). Fuel/Oil Spill Prevention and Containment Plans

All marinas that provide fuel facilities shall have a spill contingency plan approved by the Department.

i. Marina operators shall immediately notify the Department in the event of any oil or fuel spill in accordance with 7 Del. C., §6028.

ii. It is the responsibility of the marina operator to properly contain and clean up any spills that are a result of marina

operations in a timely and diligent manner. Litigation, compensation, and/or remediation of impacts resulting from spills, shall be required by the Department. If the marina operator does not promptly act to clean up the spill, the Department may order a cleanup, compensation, and/or remediation using whatever means are available to it and shall hold the marina operator financially responsible for all costs incurred by the State for the cleanup.

(2) Sewage Spill Prevention and Containment Plan

(3) Fire

(4) Hurricane/Severe Weather: The hurricane/severe weather preparedness plan shall include, but not be limited to, the following:

i. Knowledge of local Civil Defense and State Marine Patrol hurricane/severe weather notification practices.

ii. Preparation and distribution to boaters of a copy of marina policies, rules, and regulations regarding severe weather procedures.

iii. Procedures to be used by vessel owners for securing and evacuating vessels in preparation for severe weather events.

iv. Procedures to be used by marina personnel for securing/evacuating marina facilities and any unattended or derelict vessels.

(5) Emergency telephone numbers.

f. Rules and Regulations for Marina Users (Includes full time slip renters and transient boaters)

To ensure compliance with this Regulation, rules and regulations applying to boaters and governing the day-to-day operations and activities at the marina as they relate to environmental pollution shall be included in the marina O&M plan. When developing Rules and Regulations, applicants shall demonstrate consistency with this Regulation. Categories of rules and regulations that shall be addressed include, but are not limited to, the following:

(1) Restrictions on overboard sewage discharge and rules on the uses of marine sanitation devices and pump out facilities;

(2) Boater responsibilities for fuel and sewage spills, clean-up costs, and reporting requirements;

(3) Proper procedures for vessel fueling operations;

(4) Proper disposal of waste oils;

(5) Policies and procedures for removal of oil from bilges;

(6) Rules pertaining to fire prevention and fire protection;

(7) Policies and procedures for trash and garbage disposal;

(8) Policies and procedures for vessel maintenance activities;

(9) Restrictions on vessel speeds and wake conditions if applicable;

(10) Marina user responsibilities during emergencies.

g. Additional Required Information for O&M Plans

(1) Tidal Range - Mean high water and mean low water elevation, referenced to National Geodetic Vertical Datum (N.G.V.D.);

(2) Marina Layout - The location of all property boundaries, public telephones, slips, launching ramps, piers, buildings, roadways, walks, parking areas, vessel storage facilities, extent of roof coverage, and other items deemed appropriate;

(3) Water Depths - The depth of water at mean low water in all areas used for berthing, mooring, and maneuvering of vessels within the marina;

(4) Capacities - the size of each berth and dry stack space, including the total number of each type;

(5) Fueling Facilities Location and Rules - Fuel type, location, and capacity of each storage tank; location and type of each fuel pump; location of emergency cut- off valves on fuel lines and pumps;

(6) Sanitation Facilities Location and Rules - Location and type of sewage pumpout and dump stations or the location of the nearest pumpout/dump station, including any dedicated pumpout locations for live-aboard vessels; locations of public restrooms; types of facilities employed at the marina for handling wastewater (i.e., sewer, septic, holding tank); cite permit numbers where applicable;

(7) Numbers and types of marine sanitation devices on board vessels berthed at the marina. For proposed marinas, this information should be estimated based on anticipated vessel types and sizes.

(8) Fire Protection Equipment Locations and Rules - Location, size, and capacity of each hydrant, standpipe, or other water supply source; location, type, and capacity of each portable fire extinguisher; location of any fire alarm pull stations;

(9) Other Rules and Regulations - Additional rules and regulations contained in the approved O&M plan that apply to boaters using the marina.

C. POSTING OF APPROVED PLANS

Copies of the Department-approved Marina Operations & Maintenance plan shall be distributed to all marina tenants (full time slip renters), and shall be posted in the harbormaster's office or other prominent place within the marina, where it shall be readily available for inspection at all times.

D. WATER QUALITY MONITORING

Marinas may be required to perform water quality monitoring to ensure compliance with Delaware water quality regulations. The determination of whether a water quality monitoring plan is required will be based upon the ecological sensitivity of the site and evidence that water quality regulations may be violated. If monitoring is required, the Department will consider logistics and costs in determining the appropriate nature and scope of the water quality monitoring plan.