

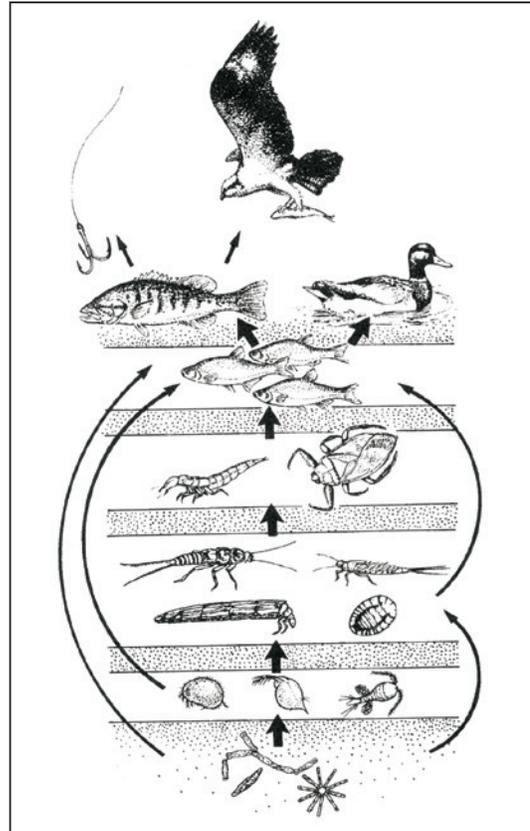
# STORM WATER RUN-OFF

## Applicability

*This section applies to new, expanding, or existing marinas.*

## Background

Storm water run-off from paved parking areas, maintenance buildings, hull maintenance areas, and other impermeable surfaces or structures can be a significant contributor of nonpoint source pollutants. Some of the common pollutants potentially found in marina storm water run-off include oils, grease, fuel, solvents, sandings and paint chips, copper and other heavy metals. If untreated, these pollutants can concentrate in the marina basin, leading to poor water quality. Metals and oils can settle along the bottom where they can be consumed by a number of organisms. Eventually, these contaminants can be passed up the food chain in concentrated levels in a process known as bioaccumulation. Excessive use of fertilizers can cause nutrients to leach into the water. This can result in excessive aquatic plant growth and a decline in water quality. Pet waste leaching into the water can also supply an excess of nutrients and also allow pathogens to get into the water. Additionally, some of these pollutants can create visually unappealing surface films that can adhere to boat hulls or result in noxious smells.



Aquatic food web (Source: Cornell University Cooperative Extension)

## Existing Federal and State Laws

Storm water is regulated under a number of programs within Indiana at the federal, state, and local level. The National Pollutant Discharge Elimination System (NPDES) program has been established to control pollutant discharges to the nation's waters. In Indiana, this program is administered by the Indiana Department of Environmental Management. In 2003, IDEM revised its general NPDES rules to bring its programs into compliance with Phase II of the U.S. Environmental Protection Agency's regulations. Phase II of the industrial storm water program requires a general NPDES permit for the point source discharge of storm water exposed to industrial activity (327 IAC 15-6 or Rule 6). Under Rule 6, there are 32 regulated Standard Industrial Classification (SIC) Codes, which include SIC Codes 4493 (marinas) and 3732 (boatyards and boat builders that repair, clean, and/or fuel boats).

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Facilities that are “primarily engaged” in operating marinas are classified as SIC Code 4493 (marinas). These facilities rent boat slips, store boats, and generally perform a range of other marine services including boat cleaning and incidental boat repair. For those facilities that are classified as SIC Code 4493 that are involved in vehicle (boat) maintenance activities (including vehicle rehabilitations, mechanical repairs, painting, fueling, and lubrication) or equipment cleaning operations, those portions of the facility are considered to be associated with



Vegetated areas can function as a buffer, filtering out pollutants between impervious surfaces and the marina basin.

industrial activity and are covered under the NPDES storm water regulations. Facilities classified as SIC Code 4493 that are not themselves involved in equipment cleaning or vehicle maintenance activities but allow patrons to work on their boat either in-water or out of the water would also be covered under the storm water permit regulations. Marine facilities that are “primarily engaged” in the retail sale of fuel and lubricating oils are best classified as SIC Code 5541 (marine service stations). These facilities are not covered by the NPDES storm water regulations.

If you, as a marina owner/operator, have a question relating to your status under the storm water regulations found in 327 IAC 15-6, you should contact IDEM at (800) 451-6027 or speak with a representative from IDEM’s confidential Compliance and Technical Assistance Program at (800) 988-7901.

Under Phase II, storm water discharges associated with construction and/or land-disturbing activities that disturb one acre or more of land will require an NPDES permit (327 IAC 15-5). Additionally, IDEM established rule 327 IAC 15-13, which regulates municipal separate storm sewer systems (MS4s). MS4s are defined as a conveyance or system of conveyances owned by a state, city, town, or other public entity that discharges to waters of the United States and is designed or used for collecting or conveying storm water. A regulated conveyance system includes roads with drains, municipal streets, catch basins, curbs, gutters, storm drains, piping, channels, ditches, tunnels and conduits. Marinas owned by an MS4 community could be subject to both requirements of the industrial storm water permit and MS4 permit. The marina should develop the storm water pollution prevention plan for all of the marina’s activities while referencing the presence of such a document under the community’s MS4 storm water quality management plan. Questions pertaining to these rules should be addressed to the MS4-Rule 13 coordinator in the Wetlands and Storm Water Section within IDEM’s Office of Water Quality at (800) 451-6027, Ext. 4-1601.

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## Best Management Practices

Following is a list of recommended best management practices provided by U.S. EPA (2001) that can be used by marinas to reduce pollutants associated with storm water run-off.

- Perform boat repair and maintenance inside work buildings as much as possible. This will protect the work area from wind and rain. It allows for easier cleanup and localized contamination.
- If work buildings cannot be utilized, perform sand blasting and sanding within enclosed spray booths or tarps. This will help eliminate the spread of residue from the sandblasting activities. Work should only be allowed on clear, nonwindy days. The dust and residue should be cleaned away daily.
- Provide clearly designated hull and boat maintenance areas. These areas should be located well away from the water's edge. The area should be well marked and posted with a list of rules. Work should not be allowed outside of the work area. Tarping the area under the boat should be a recommended practice. The work area should be protected from wind and enclosed if possible.
- Design hull maintenance areas to minimize contaminated run-off. Hull maintenance should be done over impervious surfaces such as a concrete pad. If a pad is not feasible, temporary ground cover such as tarps can be effective. The areas should be cleaned at least daily and should only be swept or vacuumed. The blowing of dust and debris should be prohibited.
- Use or provide sanders equipped with vacuums to remove paint from hulls. By vacuuming the paint dust and debris as work is performed, the chance of contamination is lessened. There is less cleanup work and fewer respirable particles for the person performing the work. To insure the vacuum sanders are used, yard rules should be posted and a vacuum sander should be available for rent. Marina staff should be trained in the operation of the sander.



Dustless vacuum sanders are one of the best ways to control paint dust before it can become a pollutant (Source: Jay Tanski, New York Sea Grant).

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- Establish a list of “yard rules” which boaters and contractors must follow when performing debris-producing boat maintenance. Allowing do-it-yourself boat repair work could result in an increase in marina liability costs. Marinas are increasingly requiring that only trained technicians with an understanding of state-approved environmental management practices be used.
- Clean hull maintenance areas regularly and dispose of collected material properly. Areas should be cleaned after work is performed or at a minimum of once daily. All trash, visible paint chips and other debris should be collected before they can be washed or blown away. Any collected waste should be stored under cover and in a secure container to reduce the possibility of it coming into contact with storm water. The area should be swept or vacuumed. Dust and debris should never be blown or rinsed off the pad as this could lead to the same contamination that you are trying to prevent.

- Capture and filter pollutants out of run-off waters with permeable tarps, screens or filter cloths. Tarps should be readily available and placed under cradles or stands before the boat is dry docked. If exposure to wind and/or rain is not an issue, regular plastic tarps can be used. These can be easily swept and cleaned off. If the work area could be exposed to adverse weather, fabric tarps are a better option. These tarps will hold onto the debris better. The area should



Perform boat repairs on an impervious surface over reusable permeable tarps, screens or filter cloth (Source: Jay Tanski, New York Sea Grant).

- be swept daily. The dust and debris should never be blown off the tarp. When disposing of the sweepings and tarpaulins, you must first determine if your waste is hazardous. Hazardous waste cannot be placed in the marina’s regular trash. Information on how to determine if the waste is hazardous is available in Appendix D, Complying With the Hazardous Waste Rules, on pages 105-110.
- Sweep or vacuum around hull maintenance areas, roads, and parking lots regularly. This will help prevent pollutants from reaching the basin or other areas of the marina. Personal and commercial vehicles and foot traffic can carry sand and dirt to the parking lots. Debris blowing in from the street or tossed out as litter from careless people can end up on the pavement. Storm water will carry the dirt and debris to the marina basin or to

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inlet drains that lead to the body of water. If you employ any sort of filtering devices in your catch basins or inlet drain, regular sweeping or vacuuming of the parking lots will lead to reduced cost by requiring less change outs. A clean parking lot is also more pleasing to look at.

- Plant or maintain vegetated areas between impervious surfaces (e.g., parking lots, roads, etc.) and the marina basin. Vegetated areas can function as a buffer, filtering out pollutants between impervious surfaces and the marina basin. When possible, use native plants in these vegetated areas.
- Use lawn fertilizers sparingly and follow manufacturers' application instructions to prevent nutrient run-off.
- Construct new or restore wetland areas where feasible and practical. This depends on space and cost. Wetlands are extremely efficient at removing pollutants from water.
- Use porous pavement where feasible. There are two types of porous pavement—porous asphalt and pervious concrete. Porous asphalt is an aggregate that is held together with binding material but with enough void space to allow water to permeate it. Pervious concrete is a mixture of Portland cement, aggregate, admixtures and water. It is mixed in such a way that there are interconnected voids for the passage of water. The pervious concrete should be placed on top of a filter layer, stone reservoir and a filter fabric. Porous pavement helps to recharge ground water and provides excellent pollutant removal (up to 80 percent of sediment, trace metals and organic material).
- Install oil/grit separators and/or vertical media filters to capture pollutants in run-off. These separators or filters are useful where oil or other petroleum products could be spilled. They are also good for areas where there is a large load of sand deposited with the storm water run-off. Oil/grit separators, if maintained properly, should have a life span of 50 years. Vertical media filters are usually used in parking lots and can help remove sediments, nutrients, metals, petroleum products and solid matter such as trash. This type of filter media can be adapted to fit the needs of the user.



This rain garden installed in Porter County captures and treats run-off from the parking lot (Source: Indiana Lake Michigan Coastal Program).

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- Use catch basins where storm water enters the marina in large pulses. Catch basins allow the sediment that comes with the storm water to settle to the bottom of the catch basin, which is usually two to four feet below the outfall pipe. These catch basins and traps will require periodic cleaning and proper disposal of the sediment. Catch basins have a life span expectancy of 50 years.
- Add filters to storm drains that are located near designated work areas. Different filters can be installed to remove different materials. These filters are usually designed to be disposable and, while less expensive than an oil/grit separator, will require more maintenance and frequent replacement.
- Place absorbents in drain inlets. These disposable products will help remove any oils or greases from entering the drain pipe. Catch basins are only designed to remove sediment. You should use absorbents around the storm drain inlets if you utilize catch basins. These pads will need to be cleaned or replaced regularly.