

Living on the Water:

A Guide for Floating Homeowners and Marina Managers

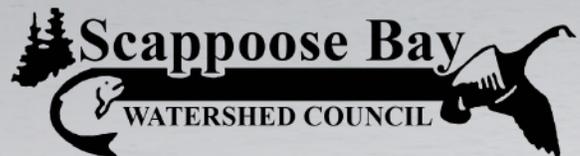
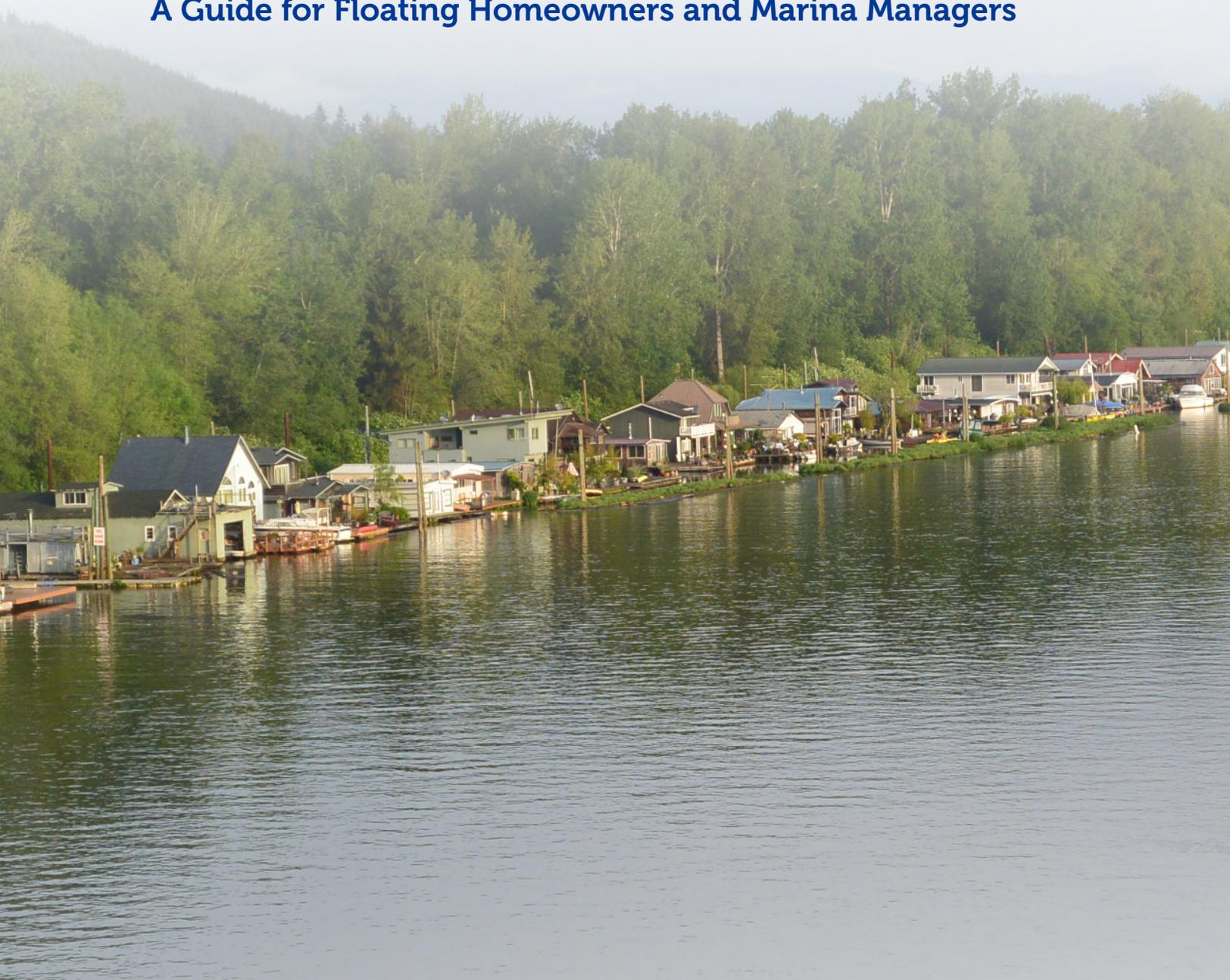


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Introduction and Purpose

The purpose of this guide is to provide floating home residents and managers of floating marinas with information on effective and practical methods to protect property and minimize the impacts of living on the water. This includes general information on safety, construction, repair, and maintenance, particularly as these activities affect water quality. Information is also provided on enhancing associated aquatic habitat, living with and enjoying wildlife, and managing invasive species. Included is a summary of regulations specific to floating home communities located in Oregon, the City of Portland, Multnomah County, and along Multnomah Channel (for informational purposes only).

The creation of this guide is a collaborative effort by several organizations and marina managers, owners and residents. It was developed in response to interest expressed by many members of the floating home community, after outreach by the West Multnomah Soil & Water Conservation District starting in 2013.

The chapters in this guide provide information specific to: 1) moorage facilities, 2) individual home operation, 3) plants and animals, and 4) recreational craft around moorages. The final chapter includes a list of resources available to moorage operators and homeowners.

A few highlights include:

- Fire prevention: Protecting homes and moorages and emergency response tips
- General facility management practices to reduce impacts—small things can make a big difference
- How to keep belongings from getting blown away
- The benefits of native vegetation (including less work)
- Local wildlife—what to expect and how to better enjoy our wild neighbors
- Where moorage managers and homeowners can find for more information, local services, and grant funding

The guide is meant to be a work in progress. We hope to provide updates as new ideas and methods to improve our life on the water become available, both in response to this guide, and through future workshops and other outreach programs.

Regarding the use of “moorage”, “houseboats” and “marina”: these terms are used interchangeably in this guide. Local information on floating home communities use these terms for the same or similar descriptive elements; i.e., named communities may be ‘Name Moorage’ or ‘Name Marina’; the codes appear to use ‘marina’, as does the Sauvie Island/ Multnomah Channel Rural Area Plan.

Moorage Facilities

1.1 Fire Prevention and Preparedness

All homeowners and marinas should discuss and develop written fire prevention plans for both individual homes and for each dock. Know fire codes, identify safety practices, and rehearse fire escape plans at regular intervals. Key items to consider include:

- A dry standpipe system: Piping installed on the docks used to pump water from the river in case of fire; these are highly recommended (and required in some areas).
- Air Horns: To alert neighbors in the event of a fire (They are inexpensive and can be found a home improvement store).
- Fire extinguishers: Required for all homes; homeowners and all residents should be familiar with their location and operation. Keep one both inside and outside the home.
- Water Hose: Know where the nearest one is on your dock and how to use it.
- Gas and water shut-offs—know where they are and how to turn them off.
- Fire buckets—have them available in multiple locations along the dock.

1.1.1 Fire Safety Facilities

Marinas have fire pump stations located at critical locations along their docks. Homeowners should be familiar with the nearest station and the operation of all fire safety equipment, in accordance with instructions from your local fire jurisdiction.



*fire pump house
photo courtesy of Pat Welle*

Fire safety codes for the City of Portland regarding floating homes and marinas can be found in Chapters 28.05.020-A and 28.06.050 of the City of Portland Charter. These codes prescribe fire safety access, ramp size, required space between homes, and other criteria. Most Multnomah County floating homes are required to follow City of Portland codes, but homes located in North Multnomah County and South Columbia County are part of the City of Scappoose Fire District and should comply with their fire codes.

1.1.2 Fire Drills and Practice

Fire drills that include the use of escape routes and fire suppression activities should be practiced regularly. It is recommended that the floating home community conduct a training so that residents can watch a fire pump demonstration and practice operating one on their own. All homeowners and residents should be familiar with the location and operation of the fire pumps in their moorage, especially the one closest to their homes. Always have an escape plan, particularly in case a fire prevents you from reaching the main access ramp to the moorage. Always call **911** in the case of fire.

1.2 Moorage Facilities—General Information

Floating home communities are typically owned or run by a single entity or association. Home spaces are either rented by individual homeowners, or the rights to deck space are owned by an association through an undivided interest. The entity or association then provides and maintains facilities (including docks and ramps), such as water, sewer, utility hookups, and parking.

Regardless of the owner, choices related to facility and land management, and landscape design and practices can affect the environment. Positive contributions can be made in these areas:

- Parking lots: Provide for drainage and minimize water runoff with pervious material and surrounding vegetation; this can include vegetated swales or other buffers on the downslope end. *Chapter 6 includes links to resources for swale construction.*
- Upland areas: Manage invasive weeds and plant native vegetation; provide garden and composting space; where irrigation is needed, use water-conserving systems such as drip irrigation; minimize pesticide and fertilizer use.
- Regularly monitor and maintain the property to detect any leaks, spills, or litter, which could end up in the waterway.

- Lighting: Use energy-efficient systems and those that minimize pollution of the night sky. See the link to the International Dark Sky Association in Chapter 5.

- Docks and walkways: Use recycled plastic materials or untreated lumber.

- Storm drain catch basins can be installed in upland areas and along docks; use bilge socks to filter oily water and prevent the petroleum components from entering the ground or waterways.

- Other areas: Fish-cleaning stations and pet-waste baggie holders are simple ways to improve environmental conditions around marinas.

1.3 Home Mooring Connections

Floating homes are generally moored along docks; recommended attachments are rigid standoffs or galvanized chains. This allows homes to rise and fall with water levels, putting less stress on moorage docks and home mounting points. Utility lines for gas and power, phone, sewer and water are typically suspended from the underside of docks and connected to each home. These lines should be checked regularly by residents and managers for leaks or maintenance issues. In addition to protecting the environment, regular preventive maintenance can reduce utility costs and avoid larger, more expensive problems.



mooring connection of galvanized chains
photo courtesy of Pat Welle

1.4 Deck & Marina Protection

Living on the water usually means more exposure to wind. Along the Multnomah Channel, for example, winds from both the north and the south can be more severe than elsewhere as it is funneled along the Tualatin hills. Outdoor decks and furnishings are an integral part of living in a floating home and it is important to assure they are secured.

1.4.1 Securing Outdoor Items

Here are some tips to keep outdoor home items from flying away or floating downriver:

- Use tie-downs, racks, or ramps for items such as small boats, kayaks, canoes and inflatable rafts.
- Fold chairs and small deck tables or overturn against a wall or large planter. Lightweight items may need additional tie-downs.
- Secure chair cushions, deck umbrellas, and other items such as small foam coolers in storage units so they are not easily transported by the wind.
- Tie tarps to decking or hooks, or secure them with a heavy weight so they are not picked up by the wind.

1.5 Moorage Water and Waste Management Systems

Moorages generally get their fresh water from a well on the property, or through municipal services. The water is piped directly to individual homes. Equipping water systems with individual meters can reduce water use significantly by identifying system leaks. Additionally, low-flow faucets and fixtures can be installed in individual homes to reduce water use.

Each floating home has a sewage holding tank and a float-regulated pump, known as a "honey pot." The honey pot grinds sewage into a slurry, which is pumped to the dock connection through a flexible hose. *Honey-pot operation and maintenance is described in section 3.1.1.*

Sewer pipes from the moorage are connected to a public sewer system or the moorage's private system. Sometimes moorages have a tank that holds the waste before sending it to a public system. Sewage systems may include a drainfield, the location of which should be known by residents, protected from damage, and maintained.

1.5.1 Water Systems in Northern Climates

Water is supplied to homes via deck lines and care is needed to prevent freezing pipes in colder climates. Pipes above the water lines should be insulated and during cold-temperature periods (below approximately 35°F) keeping an indoor



insulation
photo courtesy of Pat Welle

faucet dripping can prevent water and sewer lines from freezing. Ideally, the faucet farthest from the home hook-up should be left dripping.

1.6 Moorage Lighting and Signing Regulations

City regulations (generally followed by county governments) specify how extensive lighting should be to illuminate gangways, ramps, and walkways. Installing low-angle spotlights or deck lighting with covers focuses the light down to the dock surface where it's needed and reduces light pollution to individual homes and neighbors. Marinas are encouraged to be aware of light pollution and take energy saving measures such as replacing incandescent bulbs with fluorescent lights or other energy efficient lighting. Timers and other controls can also be installed to use light only when needed. Additional information on fixtures and methods to reduce light pollution can be found from the International Dark Sky Association: darksky.org/lighting/lighting-basics

1.7 Boat Wakes and Marinas

1.7.1 How Wakes Affect Houseboats

Wakes can seriously erode and degrade the banks of rivers and other water bodies, as well as cause damage to moored structures. Wakes also create water turbulence and



*a downward-facing light on the dock
photo courtesy of Pat Welle*

can be dangerous to swimmers, canoers, kayakers and boat anglers.

The Oregon State Marine Board's (OSMB) message is "Play Away," meaning that wakeboard boats or yachts should operate in areas away from docks, moored or unmoored boats, and other paddle craft. When in crowded areas, owners should operate craft in a way that minimizes wakes. *Additional information and OSMB regulations for wakes are provided in Resources, Chapter 5.*

1.7.2 Minimizing Wake-caused Damage

Floating homeowners can help reduce wake-caused damage by:

- Having an outer deck and keeping adequate floatation under both the outer deck and home to lessen wake-induced impact. A floating berm between the main channel and homes can also help minimize impact.
- Know the wake regulations for your area and encourage motorboats to reduce speed either by posting "Wake Watch" or other signs, or by using horns to alert boat users. "No Wake" buoys are anchored at most regulated sites. For a list of those sites, visit the OSMB website. *A link to the Multnomah County regulations is in Chapter 5.*
- Plant and maintain trees, shrubs and other woody vegetation to provide stability and minimize erosion along riverbanks. *More details on appropriate vegetation is described in Section 3. Information is also available from West Multnomah Soil & Water Conservation District (WMSWCD) at 503/238-4775, wmswcd.org/programs/healthy-streams/.*

1.7.3 Minimizing Wakes from Recreational Craft

Reducing a boat's wake is a matter of common sense and courtesy. Boat operators should come completely off plane (level the boat) when entering a

no-wake zone or any area where the wake could compromise the safety of other boats. Slowing the boat slightly can actually increase the size of a wake, depending on the speed.

No wake means NO WAKE. The first rule is to slow down so that the boat is level (without using trim tabs) and the size of the wake is negligible. Operators should watch their wake to make sure they have slowed down enough. Repositioning passengers toward the center of the boat to keep it level can reduce the size of your boat's wake. Too much aft weight lowers the stern and increases the size of the wake. Finally, operators should keep an eye on their depth sounders; shallow water increases the impact of a boat's wake.

Damaging wakes can also be caused when an operator waits too long to pull back on the throttle. Even a small boat in the stern-down position can cause a large wake.

Individual Home Operation, Maintenance and Repair

2.1 Water, Waste Management, and other Utilities

Proper maintenance and operation of home facilities is essential to prevent local spills and pollution. Regularly checking home conditions and fixing problems early can reduce costly and significant issues. The following describes general operation of utilities used by floating homes.

2.1.1 Honey Pot Operation and Maintenance

Honey pots, usually located under the home deck near the dock end of the structure, are



*covered honey pot
photo courtesy of Pat Welle*



*uncovered honey pot
photo courtesy of Pat Welle*

typically made of fiberglass or steel. Steel honey pots will rust and leak over time and should be replaced with a plastic model as soon as possible. Ideally, you'll find an access panel to the honey pot on the deck. Most honey pots employ a pump to send sewage from the pot to the sewer line and the pump needs regular servicing. Replacing the honey pot and pump may be required every five years or so and can cost upwards of \$600.

Floating homeowners must take care to only send human waste and toilet paper through these systems because they use flexible hoses that can become plugged easily.

Homeowners should limit their use of cleaning chemicals inside the home as standard cleaners are not good for the environment. Alternatives include baking soda, borax, vinegar and others. More information is available in the Oregon Department of Environmental Quality's Household Hazardous Waste Guide: deq.state.or.us/lq/pubs/docs/sw/hhw/WhatisHHW.pdf, and from Metro's waste transfer website: oregonmetro.gov/tools-living/garbage-and-recycling/garbage-recycling-hazardous-waste-disposal-portland.

2.1.2 Other Utilities, Including Heating and Cooling

Electrical: Individual floating homes are connected to moorage electrical systems and are metered in the same way as land-based homes. You can find the requirements for electrical wiring in Titles 26 and 28.07 of the City of Portland Code and Charter.

Water Pipes: Pipes coming from the moorage dock will be exposed in places and subject to outside temperatures. They should be wrapped in insulation to prevent breaking in cold weather. When temperatures drop to freezing or below for extended periods, faucets farthest from where the pipe enters the home should be left dripping.

Insulation: Floating homes have various structures between the floorboards and the floats. Insulation may be minimal, if at all, and cool floor temperatures are often a concern. Area rugs can be used to keep floors comfortable. The amount of insulation also varies in walls and ceilings and homeowners may wish to increase insulation where structurally possible.

Heating and Cooling Systems: The systems for floating homes are similar to those for land-based homes. Geothermal can be a good option, and split-system heat pumps are gaining in popularity because they allow the user to direct heat to specific areas of



*heat pump system—inside
photo courtesy of Pat Welle*



*heat pump system—outside
photo courtesy of Pat Welle*

the home. Homeowners are asked to be mindful of noise pollution and modify or replace older heating and cooling systems if they are noisy and annoying to neighbors.

2.2 Home Floatation

Most floating homes are placed either on a float constructed of logs and wooden stringers or on a concrete system. Steel stringers may also be used. Encapsulated blocks of foam are placed strategically under the float to fully support the constructed home's weight. Each block provides between 600 and 800 pounds of lift. A licensed and certified diver should install the foam blocks to ensure the home is floating evenly on the water. A minimum of four-to-six inches of clearance must be maintained between the waterline and the base of the stringers. The objective is to keep the logs as low

in the water as possible (to prevent rot), while providing enough floatation for winter snow and ice accumulation on the roof and decks.

Older homes may use un-encapsulated foam. If a homeowner notices foam pellets around their floats, it's a sign the blocks may be deteriorating or water animals may be chewing on them. It's a good time to replace the old foam with the encapsulated variety to limit the amount of foam in the water and loss of floatation.

Floatation can also wear out over time so homeowners should keep an eye on the float level. Additional foam blocks can be added as necessary; any new ones must be encapsulated. Additionally, heavy items such as firewood should be carefully balanced around the home if stored on the float.

2.2.1 Float Inspections

Float inspections are required for the sale and purchase of a floating home and are critical for buyers. Banks require floats to pass an inspection with a minimum life condition (usually 20 years, but can be up to 30) if a loan is required for purchase. A professional inspection should include a dive assessment of the float.

2.3 External Structure Cleaning and Maintenance

2.3.1 Pressure Washing

Homes, decks, and other surfaces may require pressure washing or other cleaning methods. Make sure no toxic substances enter the water body, whether they are cleaning products or paint and wood sealants/preservatives that may be knocked loose in the process. Many cleaning projects can (and should) be accomplished without chemical use, or with natural and biodegradable products.

2.3.2 Paint, Stain and Deck Sealants

If you are painting or using sealants on your floating home, make sure you prevent any products from falling into the water. Here are some guidelines:

- Wrap work areas with a tarp to trap any paint chips or dust.
- Keep the paint in small containers.
- Vacuum or sweep frequently to keep chips from getting airborne.
- Use a tarp or drip pan when mixing or transferring paint or chemicals.
- Always clean and contain paint and toxic substance spills immediately.

Paint and varnish spills are considered oil spills and treated according to state regulations. See *Section 4.2*.

Be very careful when using paint and products such as deck stains and wood preservers around floating homes to prevent accidental water spills. These types of products contain ingredients toxic to the environment and wildlife. Paint, pesticides and insecticides should not be sprayed due to the potential for transmission from the air to the water. Favor “environmentally-friendly” products and non-toxic cleaners to avoid the possibility of harmful elements entering our waterways.

Take any left-over toxic product to the Metro transfer station at 6161 NW 61st Avenue, Portland. *More information, such as hours of operation and fees, can be found on Metro’s website and in Chapter 5.*

Always store potentially toxic chemicals under cover and at a constant temperature. Containers exposed to the elements can degrade and crack over time. Store toxic chemicals in a tub or container in a storage shed to limit leaks or spills that could enter the Multnomah Channel or other waterway.

Vegetation and Animals

Opportunities to enjoy and manage vegetation around floating homes and moorages depend on several issues: the upland and riparian or wetland space available; dock, walkway and deck space; and individual and community interest. Native trees and shrubs on the shoreline play a critical role in protecting riverbanks from excessive erosion, enhance an area's aesthetics, and attract birds and other desirable species. Furthermore, continuous native vegetation along the river or channel provides a vital corridor for wildlife movement, as well as critical food and cover. In contrast, invasive weeds compete with desirable native plants and pose a management challenge, as do invasive animals.

The following sub-sections provide information on the types and uses of native plants in various moorage settings—container gardening, composting and fertilizer, invasive species, and wildlife. A number of website links with additional information on vegetation, wildlife and other natural resources, are provided in Chapter 5.

3.1 Adding Native Vegetation

Adding native plants to upland and wetland areas, and around moorages and homes, is beneficial because they improve the aesthetic experience and support local

wildlife, including birds and pollinators that are adapted to their plant blooming and fruiting cycles. Watching wildlife adds to our quality of life, and because native plants are adapted to our soil, climate and pests, they do not need as much water, fertilizer or pest control as non-native vegetation. This saves you time and money!

Most moorage properties contain some area where new habitat types can be created or where existing ones can be restored or enhanced by controlling invasive weeds and/or planting diverse native vegetation. A potential new habitat is a raingarden or bioswale below a parking lot to capture and filter possibly polluted stormwater run-off, or a native species hedgerow along an access road or fence. Habitats to enhance or restore in the upland environment include native Oregon white oak woodland, savanna and meadow; the latter of which can be converted from lawn. They also include riparian forest along the river or channel, or a wetland pond or wet meadow in the lower areas of the property. You can also create microhabitats by planting native shrubs, grasses and wildflowers in containers on decks and along walkways. Create a mini-meadow in a pot and support pollinators!

Well-adapted plant species for Willamette River and Multnomah Channel shorelines are Oregon ash and black cottonwood (vital trees for songbirds and heron, hawk

and eagle nests), red alder, and a number of smaller native trees and shrubs. Red osier dogwood and various willow species (such as Pacific, Sitka and Scouler) are easy to establish and helpful for stemming soil erosion. Local native plant nurseries often can provide live stake cuttings, which are harvested locally and particularly suited to riverbank or wetland planting. Also appropriate are pacific ninebark, Douglas spirea, swamp (or clustered) rose, salmonberry, elderberry, Western crabapple, Douglas hawthorne (as opposed to the invasive English hawthorne), and native chokecherry.



Douglas spirea
photo courtesy of WMSWCD



Black cottonwood forest
photo courtesy of WMSWCD

In higher riparian or upland areas, Oregon white oak is of particular interest because it is an important piece of our heritage and wildlife habitat, and is increasingly rare. Other upland tree options include Willamette Valley Ponderosa pine—which co-habitates well with Oregon oak, bitter cherry—frequented by cedar waxwings—and the small cascara tree. Some popular and suitable native upland shrubs are red-flowering currant, Nootka rose, serviceberry, mock orange, and Oregon grape. Snowberry is particularly useful to imperiled native bees because it blooms into late summer when few native species are still blooming. Native willows on the other hand, provide good early season forage (flowers) for bees and hummingbirds.

Many local nurseries carry a selection of native plants and you can find a list of both retail (for container plants) and wholesale (for economical, bareroot) native plant nurseries on the WMSWCD and Metro websites, identified in Chapter 5.

Contact WMSWCD if you want help with a habitat improvement project at a marina or moorage in west Multnomah County.

3.2 Container Gardening

Gardening on floating homes generally means using containers on decks and walkways. Special considerations include container weight (plastic weighs less than ceramic but can blow away if too light);

the need to prune roots every year or two to keep large plants from outgrowing their pots; and the need to repot plants or add soil every three years or so. You might even try your hand at growing vegetables in a container. Keep in mind that fertilizer added to soil may be flushed out by rainwater, so consider organic and slow release fertilizer if needed (see Section 3.4 below for details about responsible gardening and landscape practices).

There are a number of native plants that will grow in large containers that fit on decks. These include small trees and shrubs such as vine maples, mock orange, and Pacific ninebark. Flowers and grasses to plant underneath them could include camas, tufted hairgrass and coastal strawberries for a sunny spot. For shady areas a good selection may be a vine maple with fringe cup, lady fern and woodland strawberry underneath. Plants can be added for a specific purpose, such as milkweed plants to attract and support the survival of monarch butterflies, elderberry blooms to attract pollinators and provide berries for birds, and red-flowering current and black twinberry to attract hummingbirds.



Camas
photo courtesy of WMSWCD

3.3 Composting

Composting is the process by which organisms such as bacteria, worms and insects help turn fruit and vegetable waste into a nutrient-rich soil amendment. Adding compost to soil can promote vegetation health and growth while reducing fertilizer use and cost; compost is also a more stable and organic source of plant nutrients. For floating home residents who typically lack outdoor space for a compost heap, worm bins can be a realistic way to use food scraps and plant debris.

3.3.1 Using Worm Bins

Worm composting uses red worms in an enclosed container to create worm castings, or vermicompost, which is even more nutrient-rich than regular compost. All you need to make worm compost is a worm bin, bedding, food, and moderate temperatures.

The Metro Recycling Information hotline (503.234.3000) has a list of outlets where you can buy bins as well as designs for building your own. If you're putting your bin outside, make sure it's in the shade in the summer and insulated during the winter (fill it with straw and cover with a tarp).

Bedding is important because it maintains the balance of air and water that worms need to survive. The worm's source of food is the bacteria that grows on the food and the bedding supports the bacteria.

Some of the best bedding is shredded newspaper (tear into long strips, fluff up and dampen with water; mix with leaves and straw to keep from getting too compacted). Add bedding at the beginning and during harvest time (to about $\frac{3}{4}$ of the way to the top of the bin) and then add a few handfuls of garden soil to provide bacteria and grit to help worms digest. Keep fruit and vegetable scraps in a container and empty them into the worm bin once a week. Always keep worms and food covered with two-to-three inches of damp bedding. Harvest three-to-six months after setup and at least once a year thereafter.

3.4 Using Fertilizers, Herbicides & Pesticides

If you like to have potted plants around your floating home, use pots that don't drain at the bottom or make sure pots have large containment trays to keep water from spilling. State and federal Clean Water Act regulations prohibit any household or garden chemical, solution or product from entering any water body. This includes fertilizers and pesticides.

When tackling garden pests, always begin by practicing Integrated Pest Management: Identify the pest, disease, or weed you need to control; decide what level of damage you can tolerate; and look for the least toxic and most specific method(s) to control the problem effectively. This may be hand

weeding a small area or even introducing ladybugs to control aphids on your roses. For specific invasive weed control recommendations, contact WMSWCD (wmswcd.org, 503.238.4775), and for garden pest and disease troubleshooting, contact Multnomah County Master Gardeners at 503.445.4608 or mcmastergardeners@yahoo.com.

Never apply herbicides or other pesticides around a water body or in an area where rain can carry the chemical(s) into the water unless the product is specifically labeled for aquatic use and applied by a licensed applicator. And for fertilizers, choose “natural organic” or “slow release” products since they are less likely to pollute runoff, and use only the amount you need. You can also put your vermicompost to use. Instead of fertilizing lawn areas, rake ½ inch of compost evenly across the grass when it is actively growing. And to reduce reliance on fertilizers, in general, consider using native plants in the landscape since they are adapted to our climate and soil conditions and need little or no supplements.

For specific guidance on gardening without pesticides, consult the Grow Smart, Grow Safe consumer guide: growsmartgrowsafe.org; copies are also available from WMSWCD.

3.5 Invasive Plant Identification and Control

Invasive plant species displace beneficial native plants and negatively impact wildlife, exacerbate erosion, and decrease water quality. Once established, they spread aggressively and typically create monocultures, or biological wastelands. Waterways are especially susceptible because many weed species can spread through floating plant material, such as seeds and root fragments. There are many resources for identifying and controlling invasive weeds.

Information on each of the worst local invasive weeds, including those on the



Ludwigia on raft
photo courtesy of Oregon Department of Agriculture

“Early Detection, Rapid Response” (EDRR) list, is available at: wmswcd.org/types/invasive-species/. These weeds are targeted because they pose the greatest threat in our region but still aren’t widespread. Aquatic plant species such as the non-native, common reed (*Phragmites australis*) and the non-native water primrose (*Ludwigia* species) are examples of EDRR weeds actively managed along shorelines in our area. Note that there are very similar native reed and ludwigia plants. Call WMSWCD if you think you have the invasive type.

Some common weeds such as English ivy and Old Man’s Beard (*Clematis vitalba*) can climb trees and shrubs along the shoreline and in the uplands. The weeds rob desirable trees of water and sunlight, sometimes weakening them so they fall and die. Other examples of invasive plants found along shorelines include Armenian (or Himalayan) blackberry, Japanese knotweed, reed canary grass, purple loosestrife, indigo bush, and yellow flag iris.

Invasive plant species can also be an issue on floating logs. Some of them spotted in local moorages include jewelweed, yellow flag iris, yellow archangel, reed canary grass, and climbing nightshade.

The best method for removing most invasive species is to pull them by hand, which is particularly easy with patches on floating logs. Be sure you know that you have an invasive species before you

remove it, and get help with identification if you are not sure. Take great care when using chemicals to control weeds near water, making sure hired contractors use water-approved herbicides.

3.6 Aquatic Invasive Species

A number of high priority aquatic invasive species have been documented in Oregon waters and are targeted for control by the Aquatic Invasive Species Prevention Program of the US Department of Fish & Wildlife and the Oregon State Marine Board. Some of the aquatic invaders are plants; others are animals such as snails and mussels.

Some invasive aquatic plants such as hydrilla (*Hydrilla verticillata*) and flowering rush (*Butomus umbellatus*) are not yet established in Oregon, while others such as South American waterweed (*Egeria densa* or *Elodea*) and Eurasian watermilfoil (*Myriophyllum spicatum*) (former aquarium plants) infest water bodies throughout western Oregon. As noted above, non-native common reed (*Phragmites australis*) and non-native water primrose (*Ludwigia* species) are EDRR weeds under active control along shorelines in our area, including Sauvie Island and the Multnomah Channel.

To learn more about aquatic invaders already present in Oregon visit the United States Geological Survey, Nonindigenous

Aquatic Species database, nas.er.usgs.gov/queries/StateSearch.aspx.

Zebra or quagga mussels, which adhere to submerged natural and man-made surfaces can destroy boat motors and aquatic ecosystems, are not yet established in Oregon. Statewide efforts are underway to keep them out of Oregon. The Oregon State Marine Board has a website to help identify aquatic invasive species and learn how to prevent their spread: oregon.gov/OSMB/boater-info/Pages/Aquatic-Invasive-Species-Program.aspx. In addition, the US Department of Fish & Wildlife has many helpful publications found at protectyourwaters.net.



*Zebra mussel (left) and Quagga mussel (right)
photo courtesy of U.S. Geological Survey*

What can you do? Prevention and early response are the best tactics for minimizing the spread of aquatic invasive species. Be sure to CLEAN, DRAIN, and DRY boats and other watercraft and equipment, including fishing waders and boots, before moving to a new waterway. If you suspect you have a priority aquatic invasive species on your craft, report it to the Oregon Invasive Species hotline at oregoninvasiveshotline.org or call 1-866-INVADER.

To learn more about aquatic invaders already present in Oregon, such as bull frogs, visit the United States Geological Survey, Nonindigenous Aquatic Species database, nas.er.usgs.gov/queries. For more information on aquatic invasive plants see the Water Weeds guide at your.kingcounty.gov/dnrp/library/water-and-land/weeds/Brochures/Water_Weeds_AquaticWeedGuide_2013_WEB.pdf.

3.7 Wildlife Around Moorages and Floating Homes

One of the joys of living in a floating home community is the abundance of wildlife, including waterfowl, riverine mammals, and birds. There are a number of things homeowners can do to encourage desirable wildlife activity and reduce conflicts.

Birds and birdhouses: A successful way to attract purple martins is to hang gourds

or carefully sized nestboxes from pilings, decks or other elevated structures. Be sure to hang them high enough so they aren't under water when levels rise in the spring. Nestboxes with just the right size opening can attract swallows, which are great mosquito control agents along with martins. Clean nest boxes annually to keep these avian visitors interested and healthy.

Bats: They are our friends in mosquito control. To encourage bats, mount boxes in quieter areas of the moorage near the water. For guidance on how to build and mount bat boxes correctly, including height and location, see: batcon.org/pdfs/BHBuildersHdbk13_Online.pdf. For placement guidance, see: barninthesticks.com/how-and-where-to-put-up-a-new-bat-house.

Nutria: These non-native, aquatic rodents are a nuisance around moorages as they can damage banks by borrowing and eating native vegetation. Control measures for nutria are described on the Oregon Department of Fish and Wildlife's website: dfw.state.or.us/wildlife/living_with/nutria.asp.

Beaver and otter: These native species are frequent visitors around floating homes and marinas. Playful otters are fun to watch and beavers are essential wetland engineers, so we want to learn to live with them. However, both animals can chew on pellet foam blocks under floating

homes. Homeowners should watch for pellets in the water, and if necessary, replace un-encapsulated foam blocks with encapsulated varieties.

Frogs and salamanders: Several of our local native species breed in wetlands and attach their eggs to emergent vegetation. Long-toed salamanders also use tiny willow branches that dip into the water. An effort was started three years ago to assist the population of red-legged frogs—a sensitive species—that travel from above Harborton Road, across Hwy 30, and into the wetlands just upstream of Fred's Marina and then back to the forest. Migration of these frogs plus chorus, or tree frogs, and long-toed and northwestern salamanders occurs between December and March each



*Rough skinned newt
photo courtesy of WMSWCD*



*Pacific tree frog
photo courtesy of WMSWCD*

year. Motorists driving Marine Drive and Harborton Road are encouraged to slow down as volunteers help the amphibians across the road to safety. If you have ponds or wetlands, you can install shoreline vegetation and add branches to the water. Protecting or enhancing nearby woods gives frogs and salamanders a safe place to overwinter and thrive as adults.

Native turtles: Both the Western painted and the pond turtle are shy creatures who like quiet waters. They might be found in less trafficked wetland or slough areas near marinas and on log booms, if properly angled for basking. Help them by placing logs or small wooden rafts (such as small untreated packing pallets) in the water and enjoying them from a distance if you spot them.

Fox and Coyote: Keep in mind the potential for such predators in nearby upland areas, especially if you have pets.

Pollinators: Install a variety of native flowering vegetation around marinas to support imperiled native bees (and honey bees) that are vital to our food production and ecosystems. Certain flowering herbs are especially attractive to pollinators, which include hummingbirds. Native honeysuckle is particularly attractive to “hummers” as are clean, full hummingbird feeders. For guidance on creating pollinator habitat and selecting plants with a range of bloom times, see: wmswcd.org/wp-content/uploads/2015/04/Pollinator_blooming_in_WM_with_Title_and_Logo.pdf?2f460d.

Songbirds: Our songbirds also benefit from a variety of native flowering and fruiting plants, either along the shoreline, along the edge of woods or wetlands, or in a created meadow or hedgerow. Feeders can help attract songbirds too.

Waterfowl: Moorages are a great viewing place for many ducks and other waterfowl, such as wood ducks, teals, scaups, and bufflehead. Canada geese are common and trumpeter swan can be seen during the nonbreeding season. It is best to enjoy these birds without feeding them, because it interferes with their natural foraging behavior and nutrition.

Eagles, herons, and osprey are also seen near moorages. They particularly benefit from tall and dead trees for perching and nesting. Keep or plant trees like cottonwoods along the shoreline and in nearby locations that don't pose a hazard to human infrastructure.



*American coot
photo courtesy of Michael Ahr*

Recreational Craft, Swimming and Other Activities

Many floating homeowners are active recreational boaters, and moorages often have recreational craft alongside their homes. Consider the following guidelines and rules for maintaining and using water craft to minimize their impact on the natural environment and moorage structures.

4.1 Invasive Species Boat Permits

Because of the negative impacts of invasive species to our waterways and the need to fund prevention and control programs, operators of motorboats or paddle craft 10 feet or longer are required to purchase and carry an Aquatic Invasive Species Permit when boating in Oregon state waters. The cost is fairly minimal. More information is available at the Oregon Department of Fish & Wildlife website: dfw.state.or.us/conservationstrategy/invasive_species/quagga_zebra_mussel.asp.

4.2 Gas & Oil Spills

Gasoline, diesel, oil and other petroleum products used in boats and power equipment are harmful to the marine environment. These products can kill fish, mammals and birds or cause cancer, mutations and other birth defects. They also can harm plants, which supply needed food and oxygen to marine life.

If you spill any petroleum product in the water, call **1-800-OILS-911** immediately. Then call the marina and the Coast Guard at 1-800-424-8802 if the spill causes a sheen on the water. Don't try to clean up oil spills in the water with soap or detergent; that will cause some of the oil to scatter deeper into the water, which is why it's against the law to use those products in water bodies. Detergents also contain chemical ingredients that are harmful to marine life.

When fueling a boat, refer to the Oregon Clean Boater Guide. In brief, the guide directs you to monitor the fuel nozzle at all times, making sure it's connected to the fuel tank to avoid spilling. Only fill the tank to 90% because fuel expands as it warms up. Fill portable gas tanks on land where spills are easier to clean up. If your vessel has a built-in fuel tank, install a fuel/air separator in the vent line to prevent air vent spills.

Consider replacing your two-stroke engine; they release up to 30% of their gas/oil mixture into the water. Choose a quieter and cleaner direct-injection two-stroke or a four-stroke engine.

4.3 Refueling Stations for Boats

Moorages with refueling stations for recreational craft can modify their operations to limit impacts on water quality. Suggestions include installing

catch basins for filling tanks on land and guidelines for the types of absorbent materials used to clean up spills. The Oregon State Marine Board has information on these practices at: oregon.gov/OSMB/boater-info/Pages/Boater%20Info%20Home.aspx.

4.4 Water Quality for Swimming and Fishing

Many moorage residents and visitors enjoy recreating on the water—be it wading swimming, paddling or fishing—and some worry if it's safe to come in contact with water in the Willamette and Columbia rivers. The water quality of the Lower Willamette River is improving, according to the State Department of Environmental Quality, and there has been greater attention to understanding and cleaning up the river in recent years. The 2015 Willamette River Report Card, issued by the Meyer Memorial Trust, describes key indicators experts used to give the river a B- grade. However, the health of the river decreases as it flows downriver, with the lowest grade (C) assigned to the Lower Willamette and Multnomah Channel. The publication is available at: ecoreportcard.org/report-cards/willamette-river/publications/.

The Oregon Health Authority has a regular sampling program for water quality in the Willamette River. Recreational advisories are available on its website: public.health.

oregon.gov/newsadvisories/Pages/RecreationalAdvisories.aspx. Sampling results and more information specific to the Lower Willamette are available: portlandoregon.gov/bes/57781.

Oregon Department of Environmental Quality experts indicates the river is generally safe for all activities, except for regular consumption of fish from the river. An August 27, 2014 DEQ Fact Sheet (Is it Safe to Swim in the Willamette River in Portland) states that the river's last violations of health standards occurred in December 2009. That was related to a large rain event and before a massive installation of larger new pipes to better manage combined sewer overflows (The Big Pipe Project). Nonetheless, caution should still be used after large storm events and in the late summer when higher temperatures and lower water levels can cause algae blooms and related exposure to harmful bacteria. *The Oregon Health Authority recommends not swimming in cloudy water, not swallowing river water while swimming, showering after swimming, and washing hands before eating.*

Electricity and water are a dangerous combination, especially for swimmers. It's critical that owners of floating homes regularly inspect their utility lines and wiring to make sure they are secure and intact. "Electric Shock Drowning" is drowning after paralysis caused by electrical currents

in the water, which can come from faulty electrical equipment and wiring, and improper grounding. Find more information at: electricshockdrowning.org/.

Resources

5.1 Policies and Codes Regulating Floating Homes and Marinas

The City of Portland Harbor Master is responsible for inspection and oversight for floating structures within city limits, including moorages. But a number of jurisdictions have relevant documents that pertain to floating homes in the greater Portland area. Many are listed below, but others may exist for neighboring cities such as Scappoose and St. Helens.

5.1.1 City of Portland Title 28— Floating Structures

Title 28 of the City of Portland Charter and Code covers floating structures. The regulations recognize that waterborne structures interact with the environment differently and have distinctive design requirements than land-based structures. The Harbor Master has responsibility for moorage inspection and permitting, and inspection and testing of standpipes. The nine chapters within the City Charter and Code include detailed information on the following topics:

- Purpose, scope, and definitions

- Administration and enforcement—this includes information on responsibility and identifications, permits and inspections, fees, appeals, and enforcement
- General regulations for floating structures
- Regulations pertaining to existing construction and those pertaining to new construction
- Electrical, plumbing, and mechanical installations

Title 28 of the City of Portland Charter and Code can be found online at: portlandonline.com/Auditor/index.cfm?c=28192

5.1.2 Additional Planning and Code Documents

Sauvie Island Multnomah Channel Rural Area Plan (RAP): multco.us/landuse/sauvie-island-multnomah-channel-rural-area-plan

Multnomah County Comprehensive Plan Policy 26, Houseboat Locational and Expansion Criteria: multco.us/landuse/comprehensive-framework-plan

Statewide Planning Goals 11 and 14: oregon.gov/LCD/Pages/goals.aspx

City of St. Helens floating home regulations: codepublishing.com/OR/StHelens/StHelens15/StHelens1516.html

5.13 Oregon State Marine Board



The Oregon State Marine Board (OSMB), established in 1959, serves recreational boaters and marine owners by establishing statewide boating regulations, promoting safety, providing law enforcement and training, and education and outreach programs. OSMB also has responsibility for issuing certificates of title and identifying floating home number plates. The OSMB's Clean Marina program works to protect and improve local water quality by promoting the use of environmentally safe practices at marinas. Those certified as 'Clean Marinas' receive recognition and are provided free pollution prevention supplies and technical assistance for environmental compliance. The program is described on the Oregon State Marine Board web site: marineboard.wordpress.com/tag/floating-homes/.

5.1.4 OSMB and Multnomah Channel Wake Regulations

An excerpt from OSMB regulations:

“Wakeboard boats are generating more complaints than any other type of boat in Oregon, chasing away fishing boats and enraging shoreside residents. Wakeboat operators must take steps to resolve complaints or face restrictive regulations.

Operate wakeboats away from other water recreationists. Avoid operating in narrow rivers or canyons where steep banks reflect the wake creating more turbulence. The operator of the boat is responsible for damage caused by the wake, including damage to boats, docks or injury to persons.

Add-on ballast tanks may destabilize a boat. Depending on the boat’s design, on-board water bags can shift the boat’s center of gravity and, in some circumstances, increase the likelihood that the boat will capsize or pitch sharply during turns, especially if bags are not securely fastened down and shift during maneuvers. Add-on ballast bags also take up floor space, increasing the tripping hazard on boats.

Add-on ballast tanks may make a boat illegal to operate. If an 18-foot ski boat has an 8-person/1200 pound capacity and it is loaded with 750 pounds of

ballast bags, there is now only room for 450 pounds of people and gear. Since boarding and skiing is a three-person job (skier, operator and spotter) that load limit will likely be exceeded.”

The OSMB has been asked by the public to consider regulatory restraints on operation of these types of craft, but the Board has ruled that, for now, new regulations will not be necessary if people learn to operate these craft safely, responsibly and avoid conflict with other users.

The Multnomah Channel wake regulations are available at:
oregon.gov/osmb/pages/access/accesspages/multnomahcounty/multnomahchannelmultnomahco.aspx

5.2 Natural Resource, Vegetation and Wildlife Information Links

Oregon DEQ’s guidance on biofilters:
deq.state.or.us/wq/stormwater/docs/nwr/biofilters.pdf

Portland Stormwater Solutions Handbooks:
for design—
portlandoregon.gov/bes/article/129057
for plant choices—
portlandoregon.gov/bes/article/129060

5.2.1 Local Plant Related Links

Native plant sources can be found on the WMSWCD website:
wmswcd.org/wp-content/uploads/2015/06/native_plant_sources_2014.pdf?525e89

Native Plants for Willamette Valley Yards, a useful and descriptive brochure, is available at WMSWCD, or on the Metro website: oregonmetro.gov/sites/default/files/native_plants_for_willamette_valley_yards_booklet.pdf

For plants particularly relevant to areas along waterways (as well as upland plants), see the *Guide for Using Native Willamette Valley Plants Along Your Stream*: wmswcd.org/wp-content/uploads/2015/06/Guide-for-Using-Willamette-Valley-Native-Plants-Along-Your-Stream.pdf?2f460d

Find additional guidance on using native plants at the Native Plant Society of Oregon website: npsoregon.org/landscaping1.html

Information on worm bins from Metro: oregonmetro.gov/sites/default/files/2010_worm_bin_basics.pdf

5.3 Grants and Programs

Oregon State Marine Board Clean Marina Program: marineboard.wordpress.com/tag/floating-homes/

West Multnomah Soil & Water Conservation District—Free technical assistance is available to help develop a conservation plan for your land and funds may be available for some rural habitat projects, including moorages.

- For information on conservation planning: wmswcd.org/services/conservation-planning/
- For information on habitat restoration: wmswcd.org/types/habitat-restoration/
- For information on the Healthy Streams Program: wmswcd.org/programs/healthy-streams/

5.4 Insurance Providers

All homeowners should have insurance. Below are some local companies that specialize in floating homes. Floating home owners should be aware of differences in policies offered, including with (or without) the Perils of the Sea coverage (fortuitous accidents or casualties of the sea). This listing does not constitute endorsement of any company, program or product.

Red Shield Insurance, Portland OR
redshield.com/floating.html

United Heritage Insurance
unitedheritage.com/pc_landing.shtml

Ace American
acegroup.com/us-en/

5.5 Contractors

<u>Structural:</u>	John Glen, Marine Services Kent Moulton, Columbia Maintenance
<u>Stringers:</u>	Harbor Services Riverbank
<u>Divers:</u>	2-Deep Dive Tim Clackum John Glen Richie Rich

The above private companies and contractors are listed for information purposes only and do not constitute any kind of endorsement. Always ask for references and check the Oregon Construction Contractors Board website to verify license status and related issues: oregon.gov/ccb/pages/index.aspx

5.6 Additional Resources / Materials

The following is a list of documents available with additional information relative to marinas. These documents are available on the WMSWCD website: wmswcd.org/types/water/.

Boat-Related

Aquatic Invasive Species

Stopping the spread of AIS around boats

New Zealand Mud Snail

Preventing the spread in Oregon

Bilge Care

Controlling oil and other pollutants from bilges

Boat Bottom Paint

Maintain your hull wisely

Boat Cleaning

Alternatives and ideas to cleaning your boat gently

Boat Waste Collection Facilities

Gas and Oil

Tips for careful use

Pump Out and Dump Stations

Sewage and Gray Water information

Vessel Maintenance

General upkeep information

Clean Marinas

List of Certified Clean Marinas in Oregon
Clean Marina Program—program details
Fish Cleaning & Garbage Around Marinas
List of Pollution-Control Certified Facilities

Vegetation and Gardening

Fertilizing

Frequently Asked Questions

Liverwort

Controlling this troublesome weed in
container gardens

Log Weeds

List of plants found on logs at sampling of
Multnomah Channel moorages

Waterway Recreation

Safe-to-Swim

DEQ water quality fact sheet about
swimming in the Willamette River

Willamette Riverkeepers

Information on water quality in the
Willamette River

Produced by:

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Emergency Numbers

**Fire/Medical/Police Emergency:
Call 9-1-1.**

Non-emergency number:

503-823-3333

Multnomah County Sheriff:

503-255-3600

Columbia County Sheriff:

1-503-366-4611

NW Natural:

1-800-882-3377

Oregon Poison Control 24-hour Hotline:

1-800-222-1222

PGE:

503-464-7777 or 1-800-542-8818

Columbia River PUD:

503-397-1844

Sauvie Island Fire Department:

Non-emergency number:

503-621-1242

U.S. Coast Guard:

Nautical emergency watch:

503-240-9301

Report oil spill:

1-800-OILS-911 (1-800-645-7911)

Waste Management Garbage Service:

503-249-8078



WEST MULTNOMAH

Soil & Water Conservation District

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