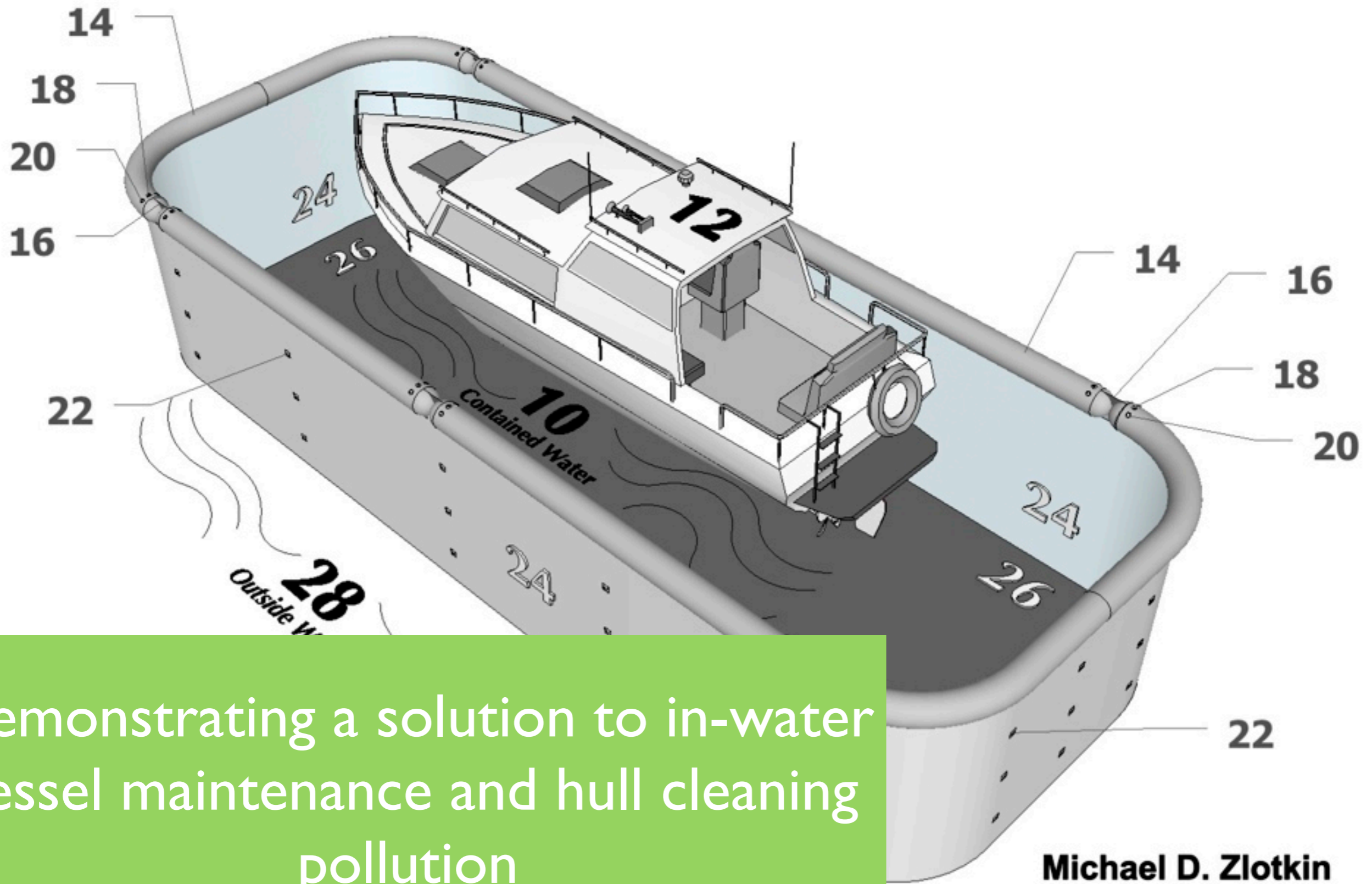


# Innermost Containment Systems



Demonstrating a solution to in-water vessel maintenance and hull cleaning pollution

Michael D. Zlotkin

Being a diver for hire on the Monterey Bay for more than 10 years, has left me with quite a guilty conscious



# Under water hull cleaning

- In California alone there are over 800,000 registered vessels. My home, the Monterey Bay has over 2,000 berthed all of which are in or adjacent to the Monterey Bay Sanctuary.
- More populated areas like Marina Del Rey and the central San Francisco Bay, hold more than 4-5 thousand vessels.
- Under water hull cleaning is necessary and occurs often.

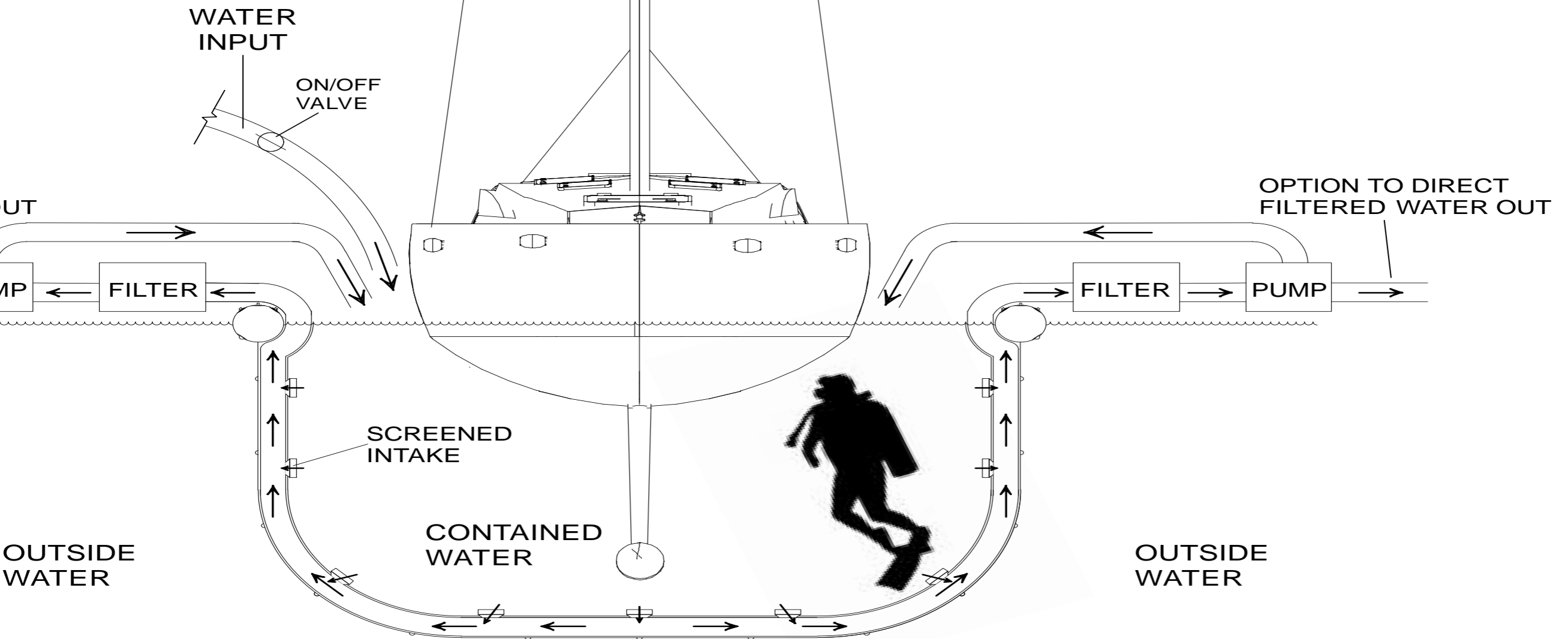




Copper and zinc are the most used biocides in hull paint. Soluble metals enter surrounding water as a result of hull cleaning

**These toxic biocides can be contained!**

The containment systems developed by Innermost allow for divers to work inside a fully contained environment and for current hull cleaning practices to continue without Pollution.



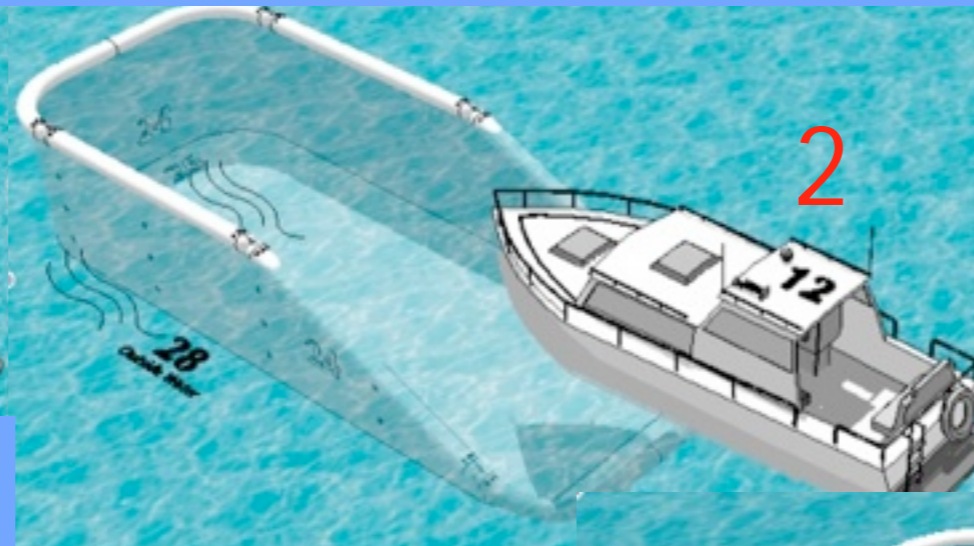
**Michael D. Zlotkin**  
**12/12/2012**



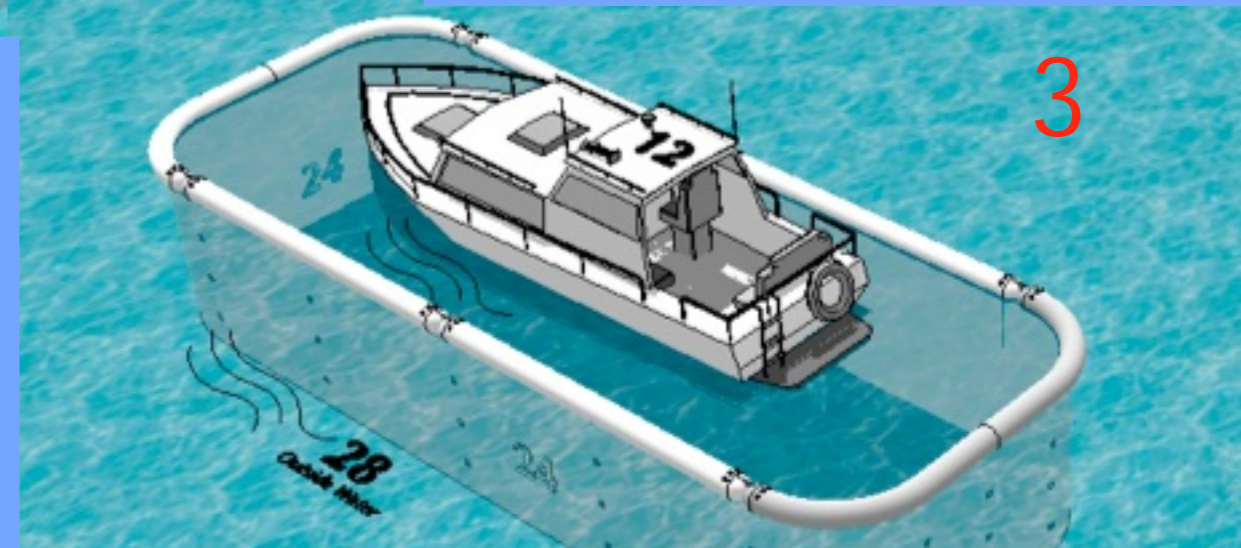
# As easy as 1-2-3



Container is lowered by deflation



Boat drives in



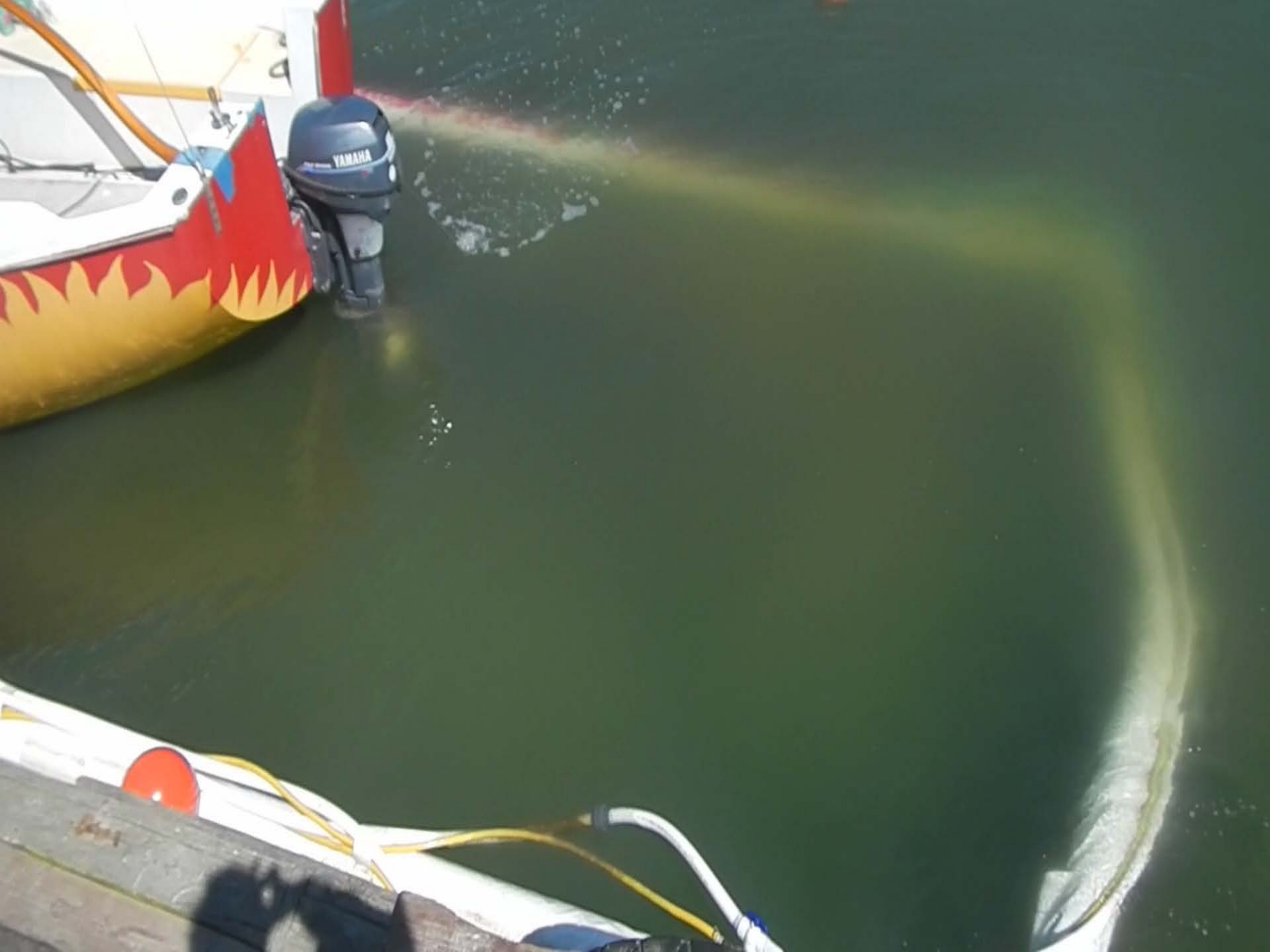
**100%** containment once perimeter is inflated





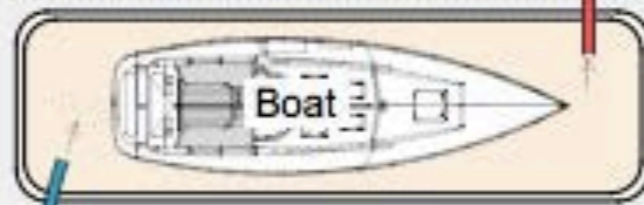








Gas 3"  
Trash Pump



3" Hose

Current  
prototype facility  
in Moss Landing  
CA

Return  
to  
Container

Harbor  
Discharge

Moss Landing Harbor

Gravelles  
Boat Yard

2" Discharge  
Hose

Roll Off Bin  
Phase Separator

Organoclay / Media  
Vessels

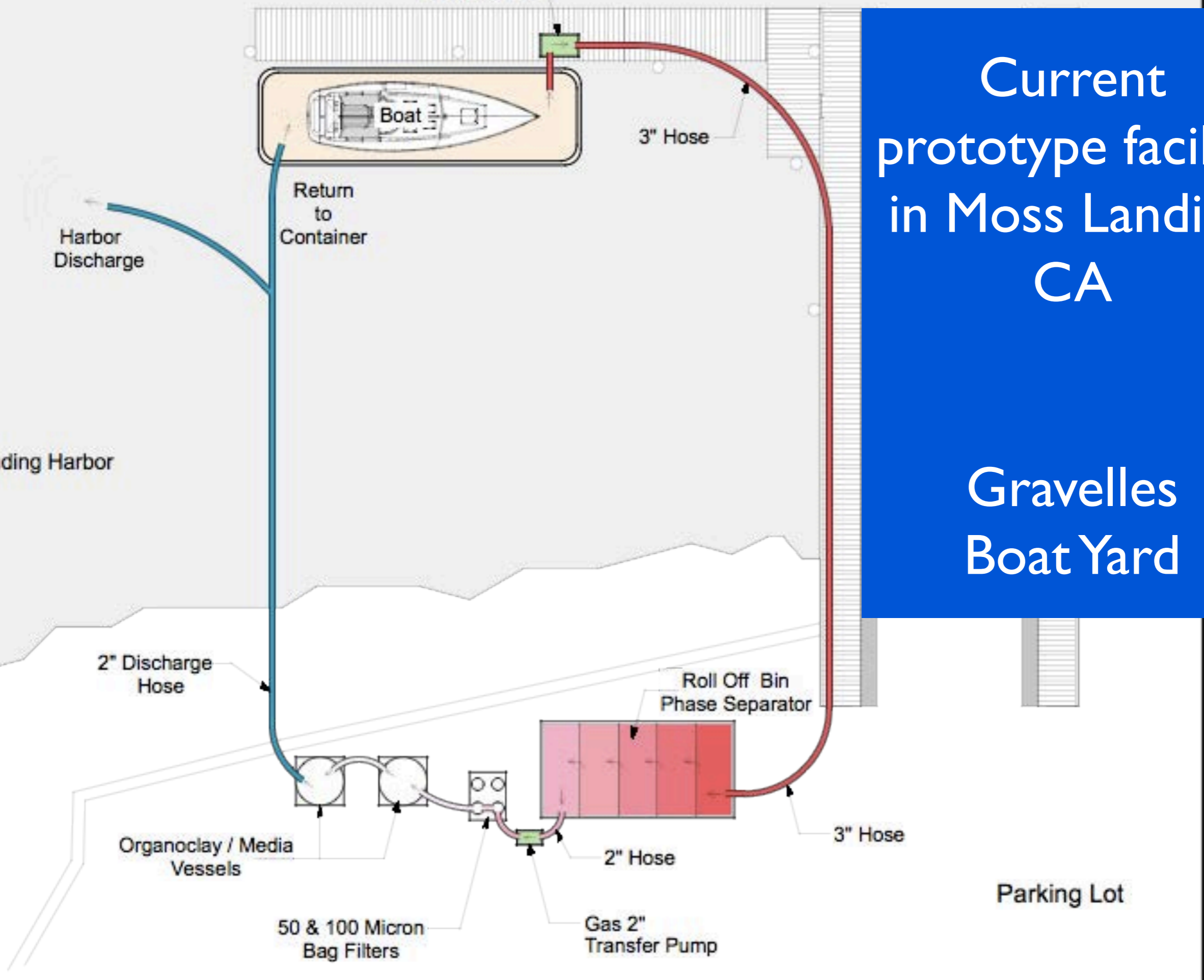
50 & 100 Micron  
Bag Filters

Gas 2"  
Transfer Pump

2" Hose

3" Hose

Parking Lot







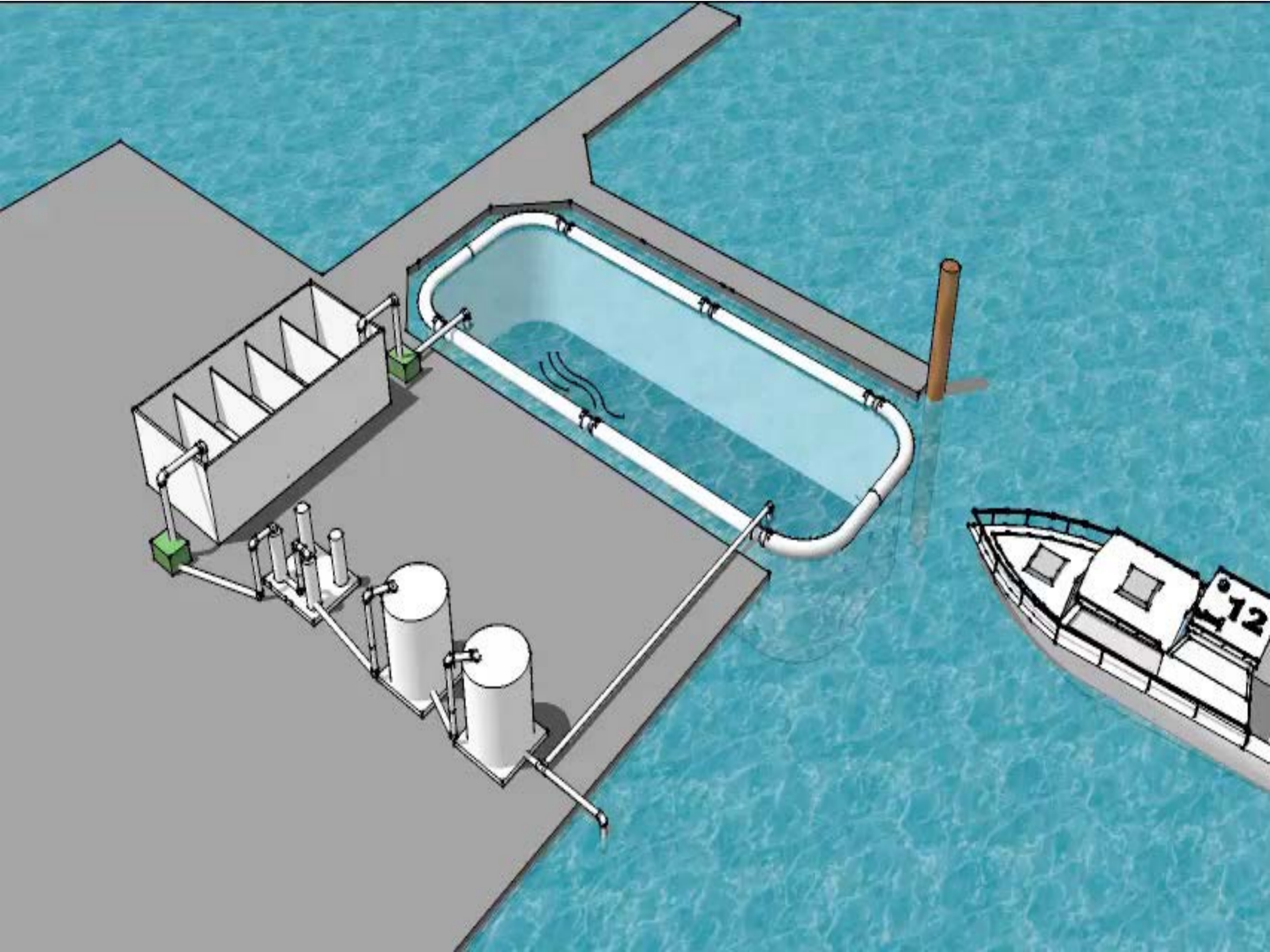
**48 foot fishing boat in an Innermost Container  
August 2014**

Big Thank You to  
David Elias @  
San Francisco Bay Regional  
Water Board

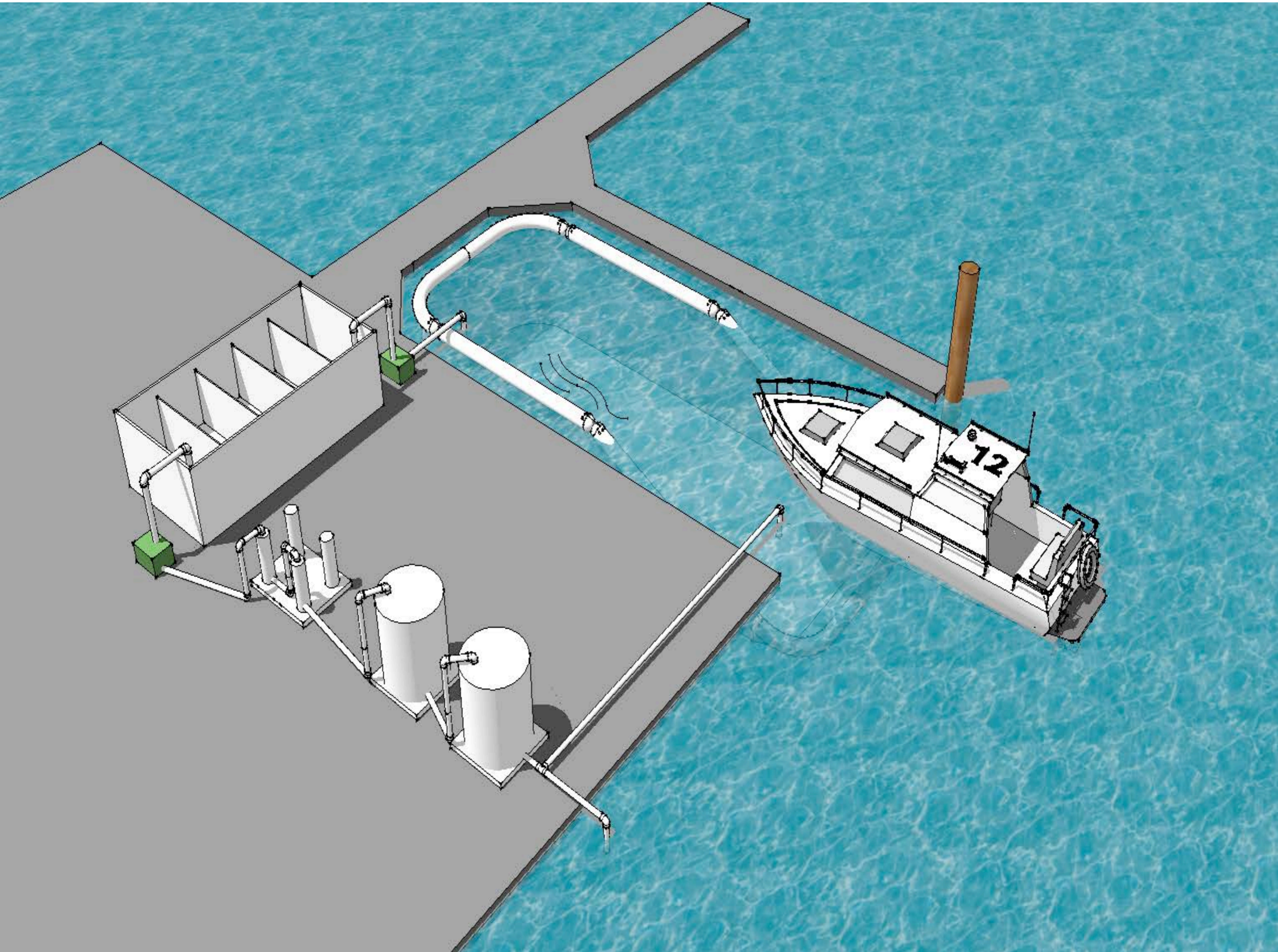


**IN-WATER VESSEL  
HULL CLEANING Best Management Practice Fact  
Sheet – July 2013**

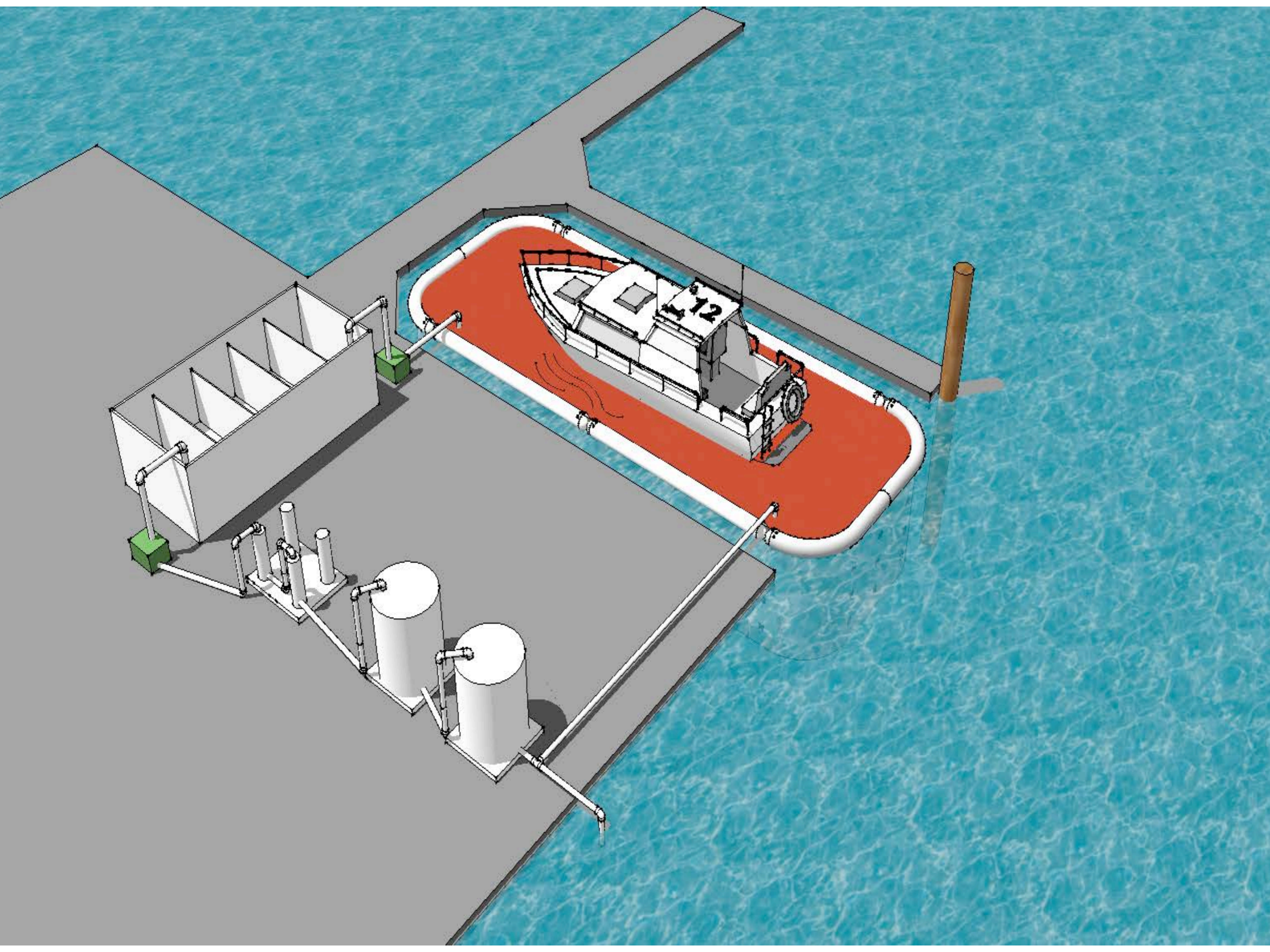




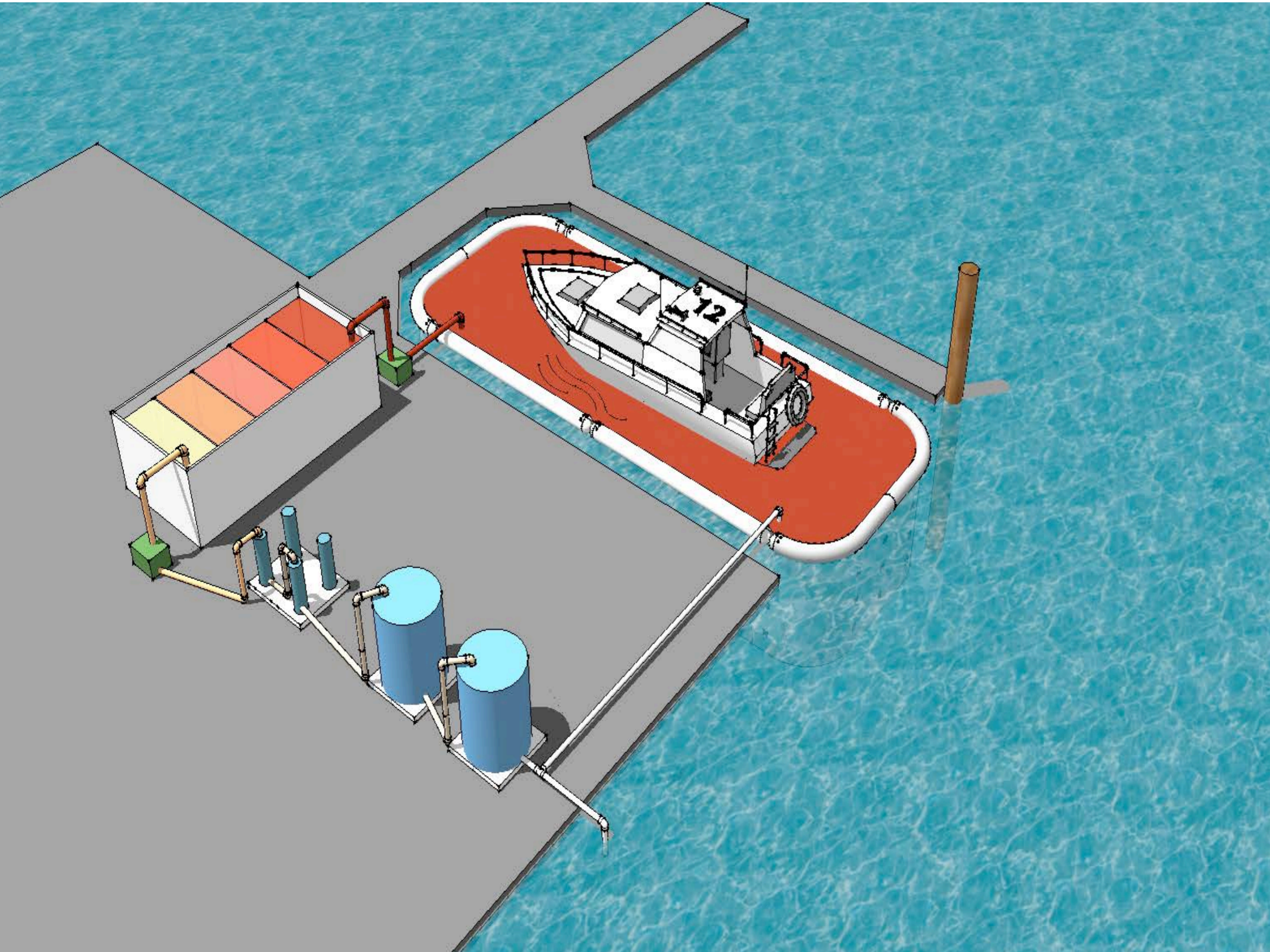




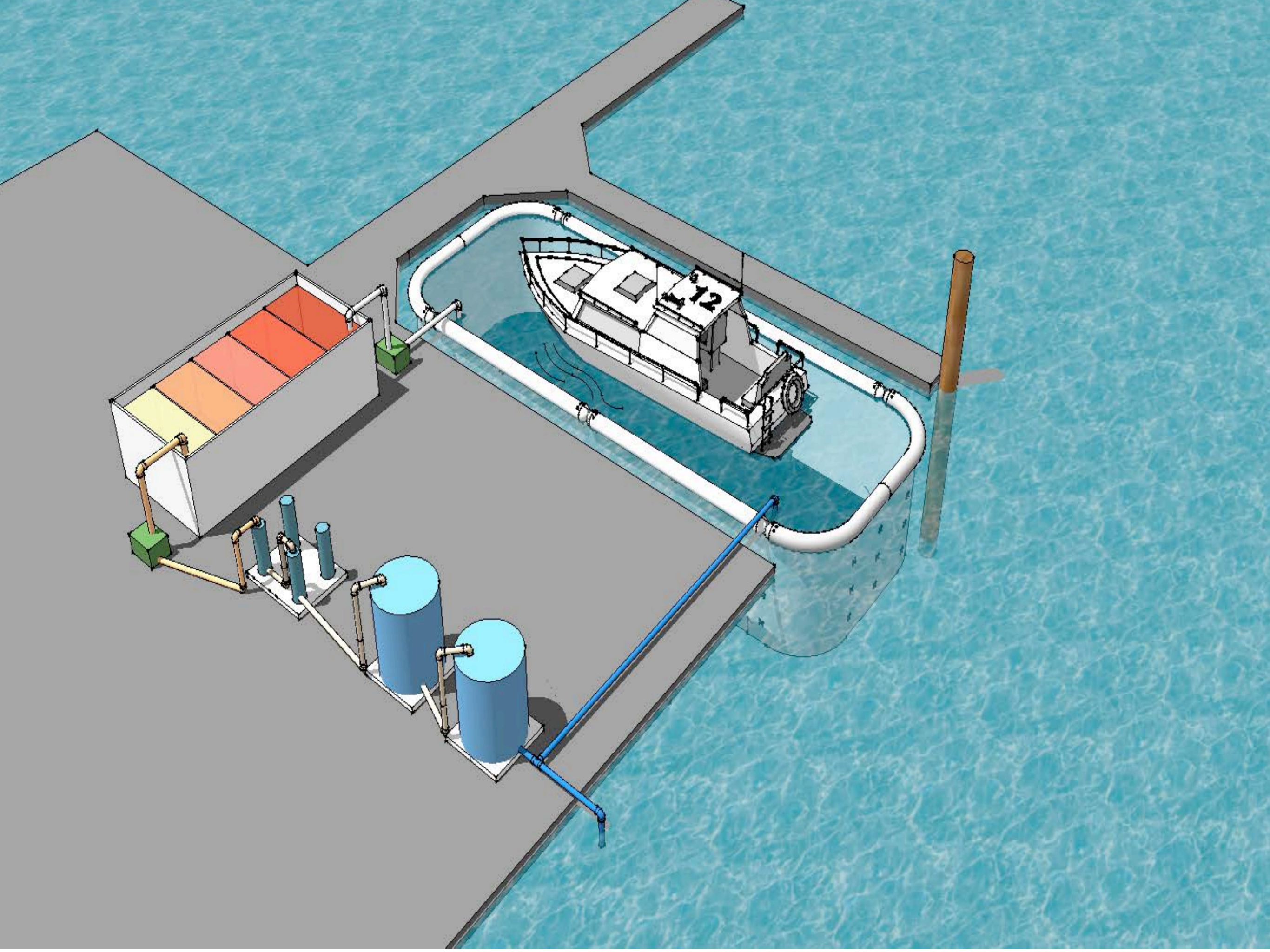
















Water Buoyancy Brings  
Everything to collection

Once contained,  
water is pumped through filtration











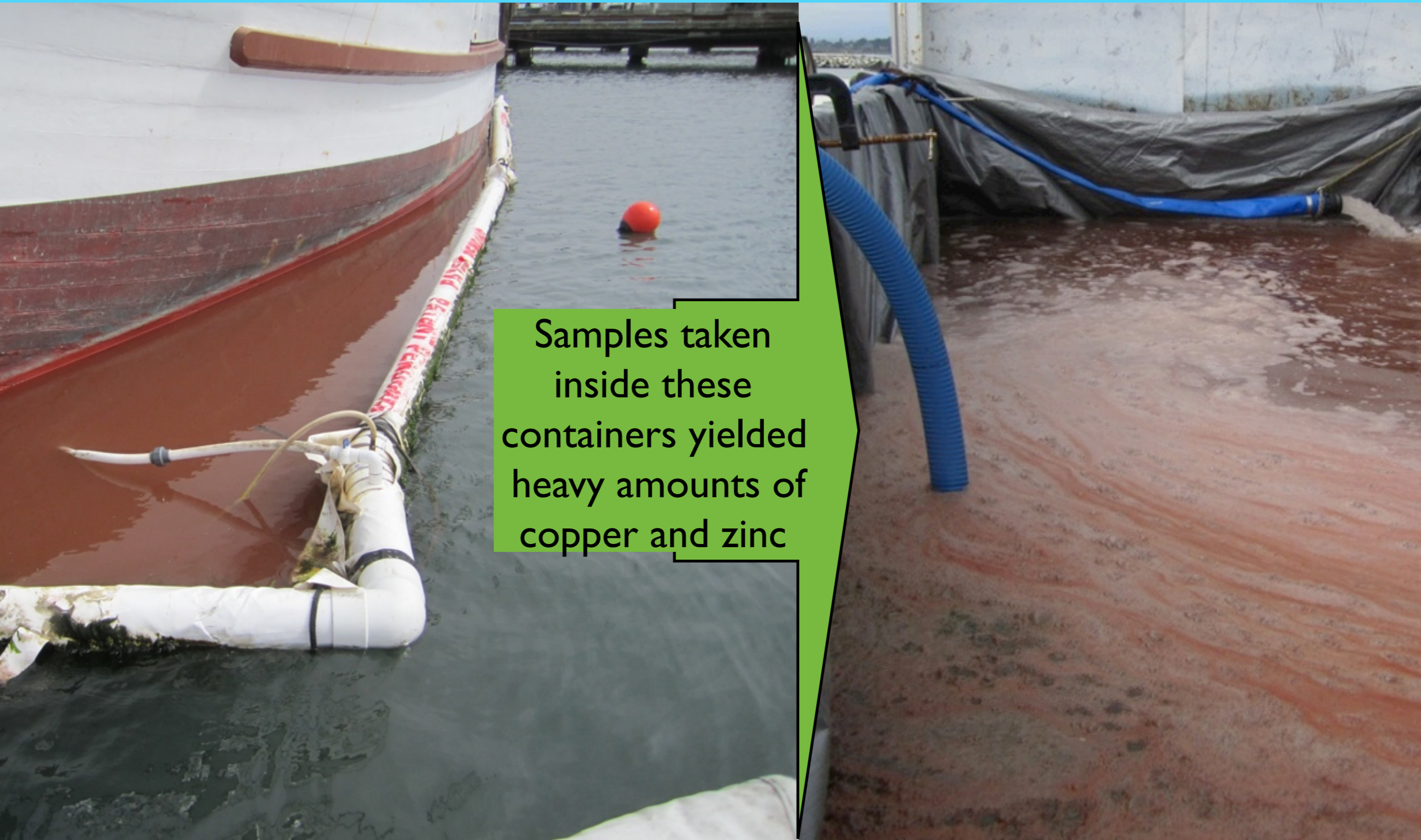


Organoclay  
Media vessels

100 -50  
Micron bag  
filters



# Prototype testing with the Cecilia B



Samples taken inside these containers yielded heavy amounts of copper and zinc





After filtration Copper and Zinc were Not Detected

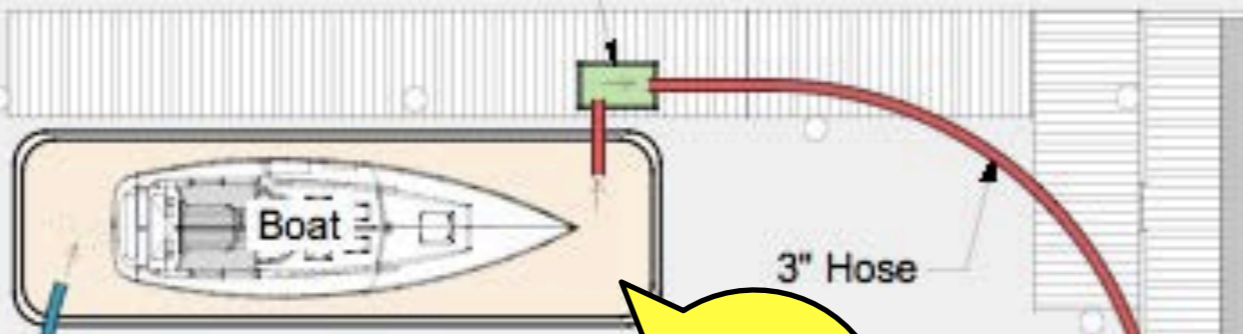






# 27 foot Sailboat Hard paint

Gas 3"  
Trash Pump



Copper  
1400  
micrograms  
per liter

Return  
to  
Container

Harbor  
Discharge

Moss Landing Harbor

Copper  
None  
Detected

Copper  
380-290  
micrograms  
per liter

Copper  
1000  
micrograms  
per liter

2" Discharge  
Hose

Roll Off Bin  
Phase Separator

Organoclay / Media  
Vessels

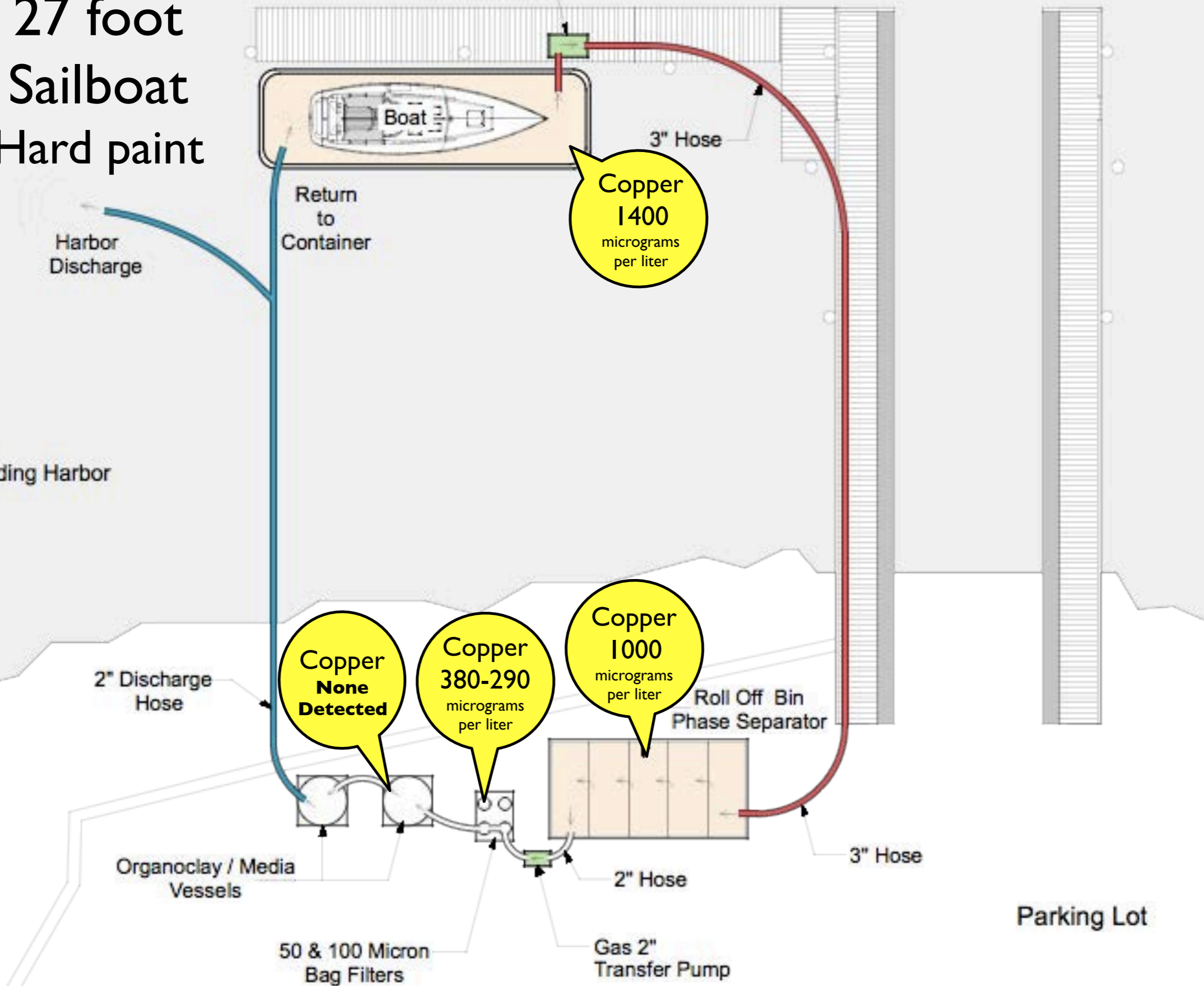
2" Hose

3" Hose

50 & 100 Micron  
Bag Filters

Gas 2"  
Transfer Pump

Parking Lot

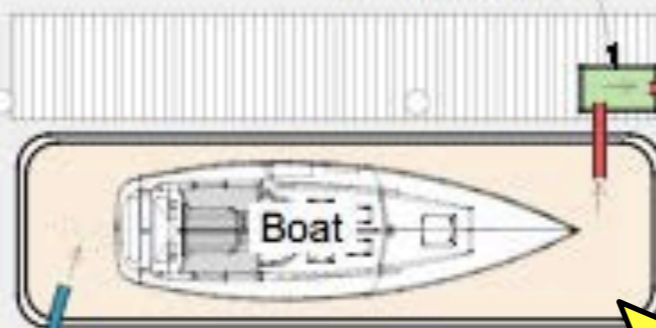






# 48 foot Fishing boat hard paint

Gas 3" Trash Pump



Copper 1600  
Zinc 1100

Measurements in Micrograms per Liter

Harbor Discharge

Return to Container

3" Hose

Moss Landing Harbor

None Detected

Copper 3500  
Zinc 2000

2" Discharge Hose

Roll Off Bin Phase Separator

Organoclay / Media Vessels

Copper 410-360  
Zinc N/D

2" Hose

3" Hose

50 & 100 Micron Bag Filters

Gas 2" Transfer Pump

Parking Lot



ICS containers contain more than just hull cleaning

- Above the waterline cleaning, sanding, washing, waxing and polishing
- Invasive marine species
- Overall in-water vessel maintenance
- Oil spill
- Vessel salvage
- Targeted water pollution



# An Affordable Solution

Less expensive than alternative paints

Doesn't require more frequent cleaning-  
Divers

Able to accommodate more boats than haul  
out facilities and less expensive

Also doesn't create runoff or use fresh water  
resources



# 2014-2015 GOALS

- Gain support to pursue our mission and prevent further pollution
- Provide a standard for government agencies and paint manufactures in order to gain a more clear awareness towards hull cleaning frequency and subsequent pollution
- Engineer, produce and distribute- turn key ICS containment and filtration systems to municipalities, boat yards and marinas



# Upcoming Improvements

- Water circulation within containment to keep the diver in clean water
- Suction hose integration for cleaning apparatuses
- Larger buoyant perimeter
- Vacuum assisted control for faster lowering timer



# Key Players

- Vessel Asst. Boat US
- Government agencies- USCG, EPA, Water Boards, Coastal Commission etc.
- Paint Manufactures
- Marina and boat yard owner/facilities
- Dive companies



# Coming this October

- Water samples on newly painted boats and boat washing run off
- On site demonstrations
- Acceptance of deposits for 2015 delivery



Innermost Containment Systems is committed to improving the water quality of the world's oceans and waterways.



Our patents pending system provides simple, unique and effective solutions to the problems caused by in-water vessel cleaning and maintenance.



[innermostcontainment.com](http://innermostcontainment.com)