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- Buoy Inventory May 4, 2011
- Swing radius with boat
- Swing radius without boat. 10ft mooring line assumed.
- Eelgrass Habitat Area (DNR)
- Herring Spawning Areas (WDFW)
- Privately Owned Aquatic Parcels
- Maury Island Aquatic Reserve
- King County Parcels 2010
- Depth Contours (NOAA), Depths in Feet, 0 = MLLW

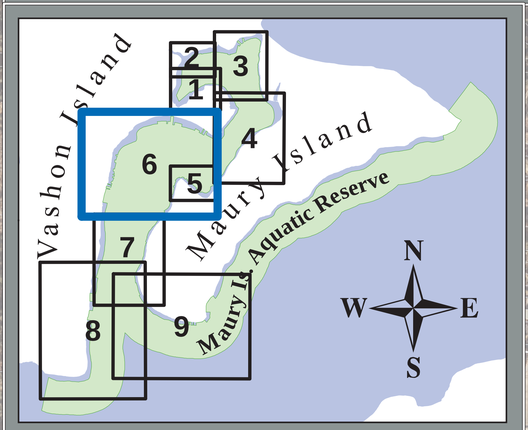
Imagery: 2010 King County Orthophoto, 6 inch Resolution

0 480 960 1,440 1,920 Feet

0 80 160 240 320 400 Meters

1:3,000

Map updated 9/13/2011 by DTM.



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

Extreme care was used during map compilation to ensure accuracy. However, due to the need to rely on outside sources for information and changes in ownership, the Department of Natural Resources cannot accept responsibility for errors or omissions of data. Therefore, no warranties accompany this data.

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Herring Spawning Area (WDFW)

Maury Island Aquatic Reserve Boundary

Quartermaster Harbor

Eelgrass Habitat Area (DNR)

Eelgrass Habitat (DNR)

Herring Spawning Area (WDFW)

Maury Island Aquatic Reserve Boundary

Dockton

Image source: http://www.dnr.wa.gov/Publications/aq/_mooring_buoy_brochure.pdf

VESSEL SWING
ANCHOR
CAUTION
Vessel may hit anything located within the vessel swing.
MHHW
Mean higher high water tidal datum
MLLW
Mean lower low water tidal datum
EXTREME HIGH TIDE
EXTREME LOW TIDE
DEHT
DELT
L
VESSEL SWING
DEHT
Water Depth at Extreme High Tide.
DELT
Water Depth at Extreme Low Tide.
L (Length)
Anchor line Length.
SCOPE
Ratio of anchor line length to water depth. Washington State Parks recommends between 4 and 7 feet of anchor line for every foot of water depth.
DETERMINE YOUR BUOY MEASUREMENTS
The following mathematical formula may help you calculate the **anchor line length (L)** and **vessel swing**. Call your DNR Aquatic District office for help with the calculation (phone numbers on back).
Anchor line Length (L) = Scope x DEHT
Vessel Swing = $\sqrt{(L^2) - (DELT)^2}$ + Mooring line + Vessel length

Vessel Swing Radius, Scope = 4

Anchor line length and vessel swing radius calculated as follows:

Measured depths were adjusted to the MLLW and MHHW datums by adding an assumed 1foot depth-finder transducer offset and adjusting for an estimated tidal height for each buoy site.

Using tide data for Commencement Bay from the National Oceanic and Atmospheric Administration website (http://co-ops.nos.noaa.gov), the adjustment was calculated by (1) subtracting feet relative to MLLW, and (2) adding feet relative to MHHW. The differences between the mean and extreme water levels were then (1) subtracted from the MLLW and (2) added to the MHHW to find the extremes. DELT and DEHT were then used to find anchor line length and swing radius by the following formulas:

Anchor line length = SCOPE x DEHT where SCOPE is the ratio of anchor line length to water depth. Washington State Parks recommends between 4 and 7 feet of anchor line for every foot of water depth. SCOPE = 4 was used in these calculations.

Swing Radius = $\sqrt{(L^2) - (DELT^2)}$ + mooring line (10ft assumed) + vessel length

These formulas are described in the brochure:
"How to Moor Your Boat On State-Owned Aquatic Lands"

These results are based on Commencement Bay tide data and the assumptions described above. Various sources of error including tide prediction error and variation in the position of the depth sounder relative to the mooring buoy anchor are not considered here.