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Examples of deballasting operations: Summary provided by the Office of Water, based on previous stakeholder supplied information, in response to question from EPEC Ballast Water Advisory Panel.

This document summarizes a few examples of deballasting operations that occur away from dock; this summary is not intended to be comprehensive. The examples are organized by (1) the location of the deballasting operation, and (2) deballasting operations categorized by vessel type.

Examples by location: There are many locations where, in the course of normal operations, large commercial vessels need to de-ballast while in transit or at anchor. Factors that make this necessary include navigational constraints such as harbor water depth versus river/canal water depth, bridge clearance, a vessel's "air draft" (height above water), a vessel's navigational draft (depth below keel plus a buffer to reduce risk of grounding), and the locations of the facilities the vessel needs to call.

Example 1: Vessels transiting San Francisco Bay enroute the shallow river ports of Stockton or Sacramento: Large commercial vessels that call at these two ports frequently enter SF Bay with ballast water on board to ensure appropriate stability during the approaches and/or to clear the various bridges they may encounter in the Bay. These vessels then typically need to de-ballast in SF Bay to reduce their navigational draft so they can steam up river to the ports of Stockton and Sacramento. Conversely, these vessels will uptake ballast water in SF Bay after they have called at these ports and before they head back out into the open ocean.

Example 2: Delaware Bay Lightering Zone: A significant number of VLCC's (Very Large Crude Carriers) and other large liquid bulk carriers draw too much water to transit up Delaware Bay, and so they discharge ballast water when they conduct lightering operations (i.e. transfer their liquid bulk cargo to barges and smaller vessels that tie-up alongside) at anchor inside Delaware Bay. The volumes of ballast water discharged during these lightering operations are fairly substantial and are captured in the NBIC database for Delaware under "Big Stone Anchorage". Here's a link to the 2010 data in the NBIC: <http://invasions.si.edu/cgi/search-nbic?do=dump&state=DE&port=Big+Stone+Anchorage&t0=2010-01-01&tend=2010-07-31&submit=See+Table+Results+for+this+Port>

Example 3: New York Harbor Lightering Zones: Per the NBIC database, ballast water discharges are occurring at a number of anchorages in and around New York Harbor. The NBIC database shows these locations as "Stapleton Anchorage" and "New York Harbor". (Note: The NBIC database differentiates between vessels calling at "New York", vessels calling at named facilities in the port of New York (e.g. "APM Terminal"), and vessels calling at "New York Harbor"). Here's a link to the New York data in the NBIC: <http://invasions.si.edu/NBICCharts/ArrivalsPlot.jsp?state=NY&t0=2010-01-01&tend=2010-07-31&submit=Arrivals+by+Ship+Type>

There are other locations in the US where BW discharges are occurring at anchorages and in lightering zones. The USCG maintains a list of Captain of the Port (COTP) approved lightering

zones that would bear this out. The NBIC records also include the latitude/longitude coordinates where the discharges occur (click on “ballast tank records”). It might be helpful to determine if there are chart plots showing where these reported discharges have occurred nationwide.

In addition to these examples in which vessels regularly discharge ballast water, there *may* be situations in which vessels that normally de-ballast dockside would need to de-ballast while awaiting a berth assignment (at anchorage) or while transiting US waters enroute their berths.

Examples by vessel type: Ships will carry ballast only in an amount necessary for the safety of the vessel e.g. safe maneuvering characteristics (rudder and screw properly immersed to depth that provides adequate steerage), stability and trim. While a vessel may load additional ballast during a transit if dictated by weather conditions expected during the transit, the vessel will discharge that extra (storm) ballast and any additional carried transocean to make a more comfortable "ride" prior to making arrival in its destination port which in most cases is when the vessel is still in the deep sea. This practice is for the purpose of allowing the vessel to conduct cargo operations on arrival at the dock and is unrelated to mitigating the impact of invasive species.

The ballast water operations of vessels varies significantly with vessel type. Compared to bulk (dry and liquid), containerships and cruise lines conduct ballast operations more frequently to assure proper stability and trim, but they do so in lesser volumes. Bulkers typically take on ballast in large volumes (especially crude oil tankers which typically have a ballast leg (no cargo) and a load leg (all cargo) and only conduct ballast operations during half of the voyage....load ballast at the discharge port, discharge ballast enroute and at the load port.

TANKERS (LPG/LNG/Crude/Product/Chemical. Ballast is generally discharged ashore at the load berth. It is relatively rare for these vessels to adjust draft for passing under bridges. On the bigger tankers the deballasting rate could be as high as 5000 m/t per hr.

CONTAINER. These vessels are continuously ballasting/deballasting to keep the vessel upright and trimmed for the gantry's to be able to work cargo at the pier. It is relatively rare for these vessels to adjust draft for passing under bridges.

BULK CARRIERS. These vessels mainly deballast at the berth. A major challenge here would be loading from barges in the Mississippi where shore piping of deballasted water may not be feasible. It is very seldom for these vessels to adjust draft for passing under bridges (though more than for tankers and container vessels).