TPWD Clean/Drain/Dry Procedures and Zebra Mussel Decontamination Procedures for Contractors Working in Inland Public Waters

The zebra mussel (*Dreissena polymorpha*), a highly invasive aquatic species, has been documented in Texas lakes, **See map** at http://tpwd.texas.gov/huntwild/wild/species/exotic/ including lakes in the Red River Basin, Trinity River Basin, and Brazos River Basin. The zebra mussel larvae and post-larval forms are known to spread between waters via contaminated equipment; post-larval forms can survive several days out of water before being carried to other waters. Post-larval zebra mussels attach to hard surfaces, such as boats, intake structures and piers. The larvae, called veligers, are microscopic and are visually undetectable, thus they are unknowingly carried to other waters via live wells, bait buckets, scuba equipment, and anything that carries small amounts of water.

Statewide rules have been enacted per Texas Administrative Code (TAC) Title 31, Part 2, Chapter 57, Subchapter N that requires persons leaving or approaching public fresh water to drain all water from their vessels and on-board receptacles (includes live wells, bilges, motors and any other receptacles or water-intake systems coming into contact with public waters). This rule applies to all sites where boats can be launched and includes all types and sizes of boats whether powered or not, personal watercraft, sailboats, kayaks/canoes, or any other vessel used to travel on public waters. Furthermore, per TAC Title 31, Part 2, Chapter 57, Subchapter A, it is an offense for any person to possess, transport, or release into the water of this state any species, hybrid of a species, subspecies, eggs, seeds, or any part of any species defined as a harmful or potentially harmful exotic fish, shellfish, or aquatic plant. This rule applies not only to zebra mussels (live or dead) and their larvae but also to any species (or fragments thereof) designated as harmful or potentially harmful under this subchapter (e.g. giant salvinia, hydrilla, Eurasian watermilfoil).

Request: Because construction equipment, temporary fills, and gear can also retain water or debris, TPWD requests that contractors follow clean, drain and dry procedures for all construction equipment and gear that comes in contact with any public waters prior to being used on another site to prevent unintentional spread of zebra mussels or other aquatic invasive species that are illegal to possess or transport. The water draining rules apply to all public inland waters, thus cleaning, draining and drying should be conducted every time equipment and gear leaves a waterbody. If equipment and gear come in contact with public waters that are known to be infested with zebra mussels, then TPWD requests that additional procedures be taken as noted below.

- **Be Informed:** Construction personnel should be informed of the serious threat of zebra mussels spreading to other waters and should be able to identify zebra mussels. Clean, drain and dry information, links to the complete list of prohibited harmful or potentially harmful aquatic organisms, and other valuable resources can be found on our website at https://tpwd.texas.gov/fishboat/boat/protect_water/. Clean, drain and dry your equipment and gear every time it leaves a water body.

- **Clean:** Inspect your equipment and gear. Remove all plants, animals, mud, and debris and thoroughly clean equipment and gear (vessels/trailers/construction equipment/gear/clothing/boots/waders/wheels/axles/pumps/bladder dams/etc.) that have come in contact with rivers, lakes or bays. A quick trip to the car wash to use a high-pressure sprayer can help clean crevices and hidden areas. (Remember that equipment/materials with long-term contact with infested waters may need to be professionally decontaminated.) If equipment and gear cannot be cleaned at the project site, it is important that cleaning procedures be conducted at a location where the mud/debris/mussels/water/plants/etc. will not drain to or contaminate another water body.

- **Drain:** Drain or eliminate all water from equipment and gear before leaving the area.

- **Dry:** Allow time for construction equipment/vessels/vehicles/gear to dry completely before using them in other waters. **Use this calculator** offered on the 100th Meridian Initiative website at http://www.100thmeridian.org/emersion.asp to help determine recommended drying time for your location, climate and season. In general, allow equipment and gear to dry for 5-10 days in the hotter and dryer months, or 15-20 days in the wetter and cooler months before using in another water body. If unable to dry the equipment and gear completely for the recommended drying times, then use a high-pressure washer (preferably hot and ideally ≥140°F) to ensure all equipment is clean.

- **Report:** Report any zebra mussel sighting (preferably with specimens, photos and location) to TPWD staff via 1-800-792-4263. Reports of zebra mussels can provide valuable information regarding their distribution and expansion. If zebra mussels are encountered on equipment or gear, then coordinate with TPWD, do not allow the organisms to be returned to the water body, and dispose of the organisms properly. Reports of other aquatic invasive species can be made to www.texasinvasives.org/action/.

- **For fill material that may be reused in another waterway following exposure to waters or substrate:** If temporary fill materials are to be reused in other waters, they should be de-contaminated by stockpiling the material in an open flat field and periodically grading the material to level, exposing the material to as much sunlight as possible. Two weeks of turning this material over, through periodic grading and exposure to sunlight, should kill any zebra mussels or larvae in the fill material.

- **Additional Procedures for equipment and gear that come into contact with infested waters:**

  - For equipment and gear that has come in contact with infested waters, TPWD requests that equipment and gear be decontaminated before being used on another job site. Decontamination can occur by cleaning equipment and gear using high-pressure scalding hot water (≥140°F). If heated water is not available then tap water can be used followed by complete drying over the course of many days or weeks (see dry time calculator link above). In some instances, soft rubber materials cannot withstand high-pressure and high-temperature, thus on those materials, spray at a softer pressure using 104-120°F water for a longer period of contact time. Use of ≥140°F water will kill zebra mussels in as little as 10 seconds of contact time. Water temperatures of ≥104°F are lethal to zebra mussels under longer durations of contact time (maintain contact for approximately 1-2 minutes). Most residential or commercial water heaters are set to heat water to about 120°F. These steps followed by completely drying the equipment and gear should be effective at limiting the risk of accidentally moving zebra mussels from one waterbody to the next.

  - Small gear such as waders, nets, boots and buckets can be cleaned by using a heated/high pressure washer or soaking for 1-2 minutes in water that is maintained at a minimum of ≥104°F and then allowed to dry completely before next use.

  - If the gear and equipment cannot be cleaned using hot water and/or allowed to thoroughly dry for the recommended time, the use of chemical disinfectants can be used as an alternative. However, care needs to be taken to ensure appropriate concentrations and contact times are achieved and that any used chemicals are collected and disposed of properly. Chemical disinfection can also damage certain pieces of equipment and gear. For these reasons, TPWD typically does not recommend chemical disinfection.