**Equipment Decontamination Procedures**

**For 2020 DWM-WPP Monitoring**

**(revised 6/17/2020)**

**Purpose:** To avoid or minimize the unintentional transport of invasive organisms from one waterbody to another.

**Background:** The spread of invasive organisms is a serious problem in Massachusetts. DWM-WPP’s general policy regarding the spread of invasives is to “do no harm” as a result of monitoring activity. In late May 2013, *Didymosphenia geminata* was detected and confirmed in the Green River in Alford and Egremont, MA. This was the first confirmed appearance of “Didymo” in Massachusetts. Since 2013, a number of studies have suggested that Didymo is native to New England (<https://academic.oup.com/bioscience/article/64/6/531/290068>) and the Vermont ban on use of felt-soled waders (instituted to reduce the chance of spread of Didymo) was repealed in May 2016 (<https://legislature.vermont.gov/bill/status/2016/H.570>). To be conservative, DWM-WPP will continue to decontaminate equipment between any sites where Didymo blooms are observed or documented. Zebra mussels have also been found in Laurel Lake, Lee, MA and a few other downstream sites in the Housatonic watershed since 2009. Asian clams have been documented in the Charles River since 2001, and more sightings have been made in different regions of Massachusetts since.

In 2020, DWM-WPP plans (1) targeted macroinvertebrate monitoring in western watersheds (Housatonic, Hudson, Westfield, Connecticut and Deerfield), (2) targeted fish population (CWF), dissolved oxygen and temperature monitoring in central/eastern watersheds (Chicopee, Millers, Nashua, Blackstone, Concord, Charles, Neponset, Shawsheen), (3) chloride monitoring in the Blackstone watershed, (4) macroinvertebrate and temperature monitoring at the Northeast Regional Monitoring Network (RMN), and (5) fish toxics monitoring at public request lakes. Decontamination shall be implemented as needed according to the schedule outlined below.

**General Decontamination Rules:**

1. If in doubt, decontaminate it (procedures and solutions below).
2. If no decontamination is possible (when required), do not sample.
3. **Supplies**: Crew leaders are responsible for assuring that they have appropriate supplies of decontamination solution in appropriate containers for a survey and making additional solutions if there is a deficit.
4. **Didymo**: At any sites where Didymo blooms have been documented, decontaminate with a 5% sodium chloride (NaCl) salt solution (~55 g/L) between sites and at the end of the sampling day (unless the equipment will dry for more than a month before the next use).
5. **In the Housatonic watershed** (zebra mussel risk), decontaminate with a 5% potassium chloride (KCl) salt solution.
6. **Lakes:** If sampling more than one lake per day where there are known or suspected aquatic invasive species (AIS), use multiple boats, motors, trailers, and equipment to prevent the transfer of AIS from one lake to another. If this is not possible to have multiple sets of equipment, use a 5% salt solution sprayer to wash/soak equipment between lakes (e.g., waders, sampling pole, etc. for shoreline sampling of multiple lakes), and use a nearby self-serve car wash to decontaminate the boat and trailer. In general, boats, trailers and equipment should be as free as possible of plant fragments and other visible contaminants when going from one lake to another.
7. **Felt-soled boots:** The use of felt-soled boots continues to be prohibited in view of the difficulty of adequately decontaminating them.
8. For **other projects**, no special decontamination required, except in cases where invasive species of concern are newly-found and positively confirmed. In these situations, the crew lead notifies staff to initiate decontamination protocols as appropriate for all future visits to that location.

Since no studies were found that tested the effectiveness of a 5% KCl salt solution on didymo, we are assuming that the solution will also be effective against didymo and will only use it in the Housatonic watershed to be conservative. Use KCl for bivalves (mussels, clams).

**Recipes for Decontamination Solutions:**

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| **Recipes (based on weight to weight):** | |
| **Equipment** | **5% NaCl or KCl Salt Solution (Use Hot Water)** |
| Decon sprayer\bucket | 8-11 L H2O, 500 ml of salt (610g) |
| 3” Decon Tube | 3 L H2O, 140 ml of salt (165 g) |
| Small decon cooler | 20 L H2O, 1 L of salt (1210 g) |
| Decon trash cans | 72 L H2O, 3½ L of salt (4000g) |
| **Minimum Contact Time** | **1 Minute** |

**Do not soak multiprobe sondes in any salt solution for more than 10 minutes**

(5% salt=50 ppt brine solution)

**Survey Types & Decon Equipment:**

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| **Survey Type (lakes and rivers)** | **Needed Decontamination Equipment** |
| Water Quality | Decon sprayer |
| Multiprobe and Temperature Probe Deployment | Decon sprayer |
| Multiprobe Intermediate QC Check | Decon sprayer, 3” decon tube |
| Multiprobe Pickup | Decon sprayer, 3” decon tube, and small decon cooler |
| Temperature Probe Pickup | Decon sprayer and small decon cooler |
| Macroinvertebrates, Fish, Periphyton, Macrophytes | Pressure washer (~3000PSI); decon sprayer and small decon cooler |

**Equipment Decontamination Procedure:**

| **Equipment (H2O contact items)** | **Action1** |
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| Waders | Spray with decontamination solution and maintain a wet surface on all areas (including soles) for the minimum contact time. |
| Attended Multiprobes | Soak in 3” decontamination tube for the minimum contact time. (w/ probe guard ON). At the next site, rinse the probe thoroughly with river water prior to collecting readings. After decontamination at the last site rinse the probe **thoroughly** with fresh water. Back at the office, wash with detergent. |
| Unattended Multiprobes  (pickup ONLY) | **In the field:** Retrieve the deployed multiprobe from the river, rinse the probe end 3X with DI water using the storage cup and store in ¾ cup of tap water. Spray the exterior of the multiprobe (with storage cup on) and the exterior and interior of the deploy tube with decontamination solution. Place back in the deploy tube for transport.  **In the office:** Remove the storage cups from the multiprobes and replace with the probe guards. Place the multiprobes back into the deployment tube and soak in a large trash can containing decontamination solution for the minimum contact time. The entire tube will not fit into the solution so you will have to flip it to decontaminate the other end. Following decon, rinse the sondes **thoroughly** with fresh water and wash the sondes (storage cup ON) and tubes with detergent. |
| Temperature Probes | **In the field:** Retrieve the deployed tube and spray the tube and logger assembly with decontamination solution. Place back in the deploy tube for transport.  **In the office:** Place the deploy tubes containing the loggers in a small decon cooler or trash can containing decontamination solution for the minimum contact time. Following decon, rinse the probes **thoroughly** with fresh water and wash the probes and tubes with detergent. |
| Nets | Pressure wash2, or soak net head in decontamination solution for the minimum contact time. Spray the handle of the net with decontamination solution and maintain a wet surface for the minimum contact time. |
| Misc Equipment | Soak or spray with decontamination solution and maintain a wet surface for the minimum contact time (soak is preferred where feasible). |
| 1 Decontamination with a salt solution is not required if the equipment is used at only one site during the entire sampling period and there will be significant drying time (>1 month) before the equipment is used again. Any protocol involving washing the equipment with detergent should still be followed.  2 Pressure wash large equipment for physical removal. Contain large particles that wash off from entering the storm drain system at 8 New Bond St. loading dock using fabric cloth underneath catch basin grate (replace as needed). | |

**Boat Cleaning and Decontamination Procedures**

**Inspection and cleaning**: For all lakes, check the boat and do a thorough inspection and clean off any visible plants (or segments), animals and mud by hand, rinse, or pressure wash if possible, before leaving a water body if the boat and equipment is going to be used on another lake that same day (if not, the boat and equipment can be cleaned back (e.g. power washed) at the DWM lab).

**Decontamination**: if the boat has been to an AIS infested water body, based on historical and current conditions, decontamination is needed in the nearby self-serve car washing stations if the boat and equipment is going to be used on another lake that same day (if not, the boat and equipment can be cleaned back (e.g. power washed) at the DWM lab). .

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| **Clean** | Clean off any visible plants (or segments), animals and mud by hand, rinse, or pressure wash if possible before leaving water access; Dispose of unwanted bait, worms, and fish parts in the trash |
| **Drain** | Drain motor, bilge, livewell, bait well, and other water containing devices before leaving water access |
| **Dry** | Dry everything for five days or more or wipe with a towel before reuse |