STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: December 19, 2018
SUBJECT: Update on Contaminant Spill Response Program at Reservoirs

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COMMITTEE: Water Policy & Oversight

X INFORMATION
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John J. Gregoire, Program Manager, Reservoir Operations
Preparer/Title

David W. Coppes, P.E
Chief Operating Officer

RECOMMENDATION:

For information only. This staff summary presents a periodic update on the plans, equipment and efforts for containment spill response at source and emergency reservoirs. A PowerPoint presentation, including drone footage of a recent Reservoir boom deployment exercise, will be presented at the meeting.

DISCUSSION:

In order to mitigate the impact of accidental or intentional releases of petroleum and other vehicle fluid contaminants from watershed roads, MWRA staff maintain a Spill Response Program at source and emergency reservoirs. Equipment such as emergency response trailers, oil containment booms, and on-water response equipment are staged at critical locations. Annual professional training for personnel from MWRA operations, Department of Conservation and Recreation (DCR) Watershed Protection, and local fire departments on this equipment has evolved to include tributary fast-water boom deployment, terrestrial spills, boat operations, night and winter operations, personnel safety, and Incident Command System. Well trained and equipped MWRA and DCR personnel have responded to actual petroleum releases at reservoirs and in the watersheds, and have minimized the impact of these spills.

Equipment: The spill response program in place for the Quabbin Reservoir and the Wachusett Reservoir include different types of pre-positioned containment booms at strategic locations, mobile response trailers, and site-specific equipment staging. Permanent shoreline boom anchors have been placed at numerous strategic locations around the reservoirs for rapid connection of the boom to contain spills.

Types of containment booms in the inventory range from short 10-inch boom for fast-water deployments (photo below left) to 18-inch "harbor boom" such as that staged for Cosgrove Intake protection (photo below right), and up to 56-inch deep containment boom for open water applications. Also in inventory is a large quantity of floating fragment barriers for invasive plant

control, which can also be put into service as a floating petroleum containment boom. Booms are in lengths ranging from 10 feet to 100 feet to allow for a variety of applications. In addition, a large volume of petroleum-absorbent "sausage" boom is staged at all of these locations.

Remote Quabbin boom shed (L) and staged boom at Wachusett near Cosgrove Intake (R)

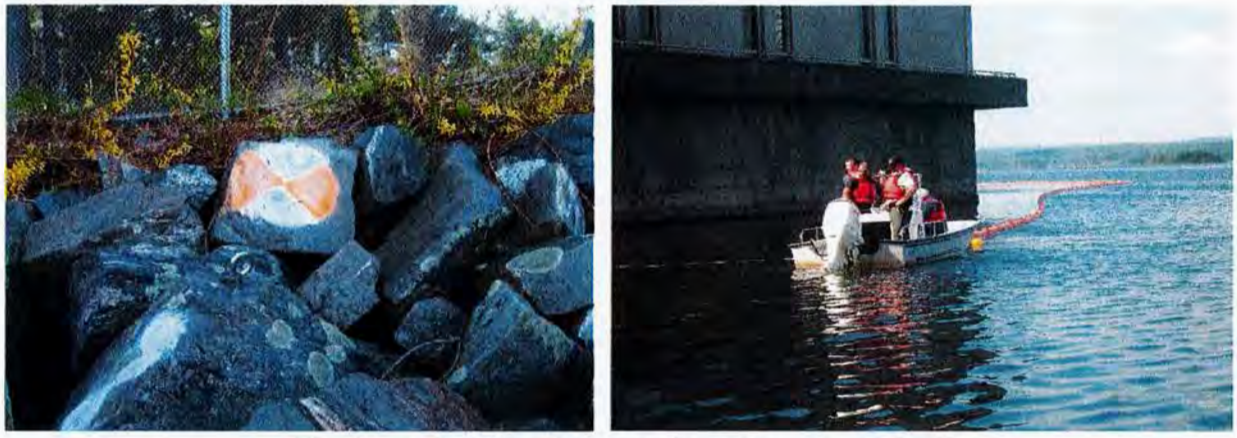
MWRA's Shaft 8 Intake at the Ware River also includes pre-positioned equipment and trained MWRA personnel.

Boats: At both source reservoirs, DCR maintains several large and small boats, each equipped for towing boom and materials. At Wachusett, MWRA has a Water Quality Assurance boat and an algae treatment boat, both of which can be put into spill response service if needed. All boats are docked in the reservoirs or nearby on trailers in ice-free months. Most local fire departments have boats, which have participated in the spill response program. MWRA has purchased and provided special boom towing bridles for the local fire department boats. The MWRA Emergency Service Unit (ESU) maintains two boats for on-water spill response, one kept at Weston Reservoir and the other at Chelsea Facility.

Vehicles: MWRA-plated spill response trailers are staged at Quabbin Reservoir and Wachusett Reservoir and have hitches and pins that permit many vehicles to tow them, including MWRA, DCR, and local watershed fire department vehicles. MWRA ESU maintains two spill response/reservoir support trucks, as well as several trailers for different applications, both are kept at the Chelsea Facility.

MWRA Boom Trailer (L) and On-water support Trailers (R)

At the Wachusett Reservoir, special floating boom definition cans are anchored in the reservoir in front of Cosgrove Intake. In conjunction with shoreline anchor points, drills have shown that a spill containment boom can be deployed by boat to protect the intake in under 20 minutes.



Shoreline anchor (L) and Boom enclosing Cosgrove Intake (R)

Personnel: At the Quabbin and Wachusett Reservoirs, the primary personnel tasked with spill response are DCR staff given their close proximity. These staff come from the ranks of Watershed Maintenance, Environmental Quality, Civil Engineering, and Ranger sections. MWRA Western Operations personnel participate in all training. While the MWRA ESU spill response role is primarily focused on metropolitan area emergency reservoirs, and does periodic training on Spot Pond, ESU staff routinely participate at the source reservoirs training for added depth should additional personnel be needed. Outside organizations, such as watershed fire departments and DEP, also occasionally participate.

Training: MWRA arranges for training for all potential response staff using outside vendors. So far in FY19, eight training exercises have been provided at Quabbin, Wachusett, Ware River, and Spot Pond. Training includes hands-on exercises, boat operations, railroad release response and specific hazardous materials training.

Watershed Tributary "fast water" boom exercise (L) and Reservoir spill containment (R)

Actual Spill Responses: MWRA, DCR, and local fire department staff have successfully responded to a number of spills since the program began. A recent example occurred on November 20, 2018, when a Jeep Cherokee went off the road adjacent to the Ware Rive Intake in Barre. The driver was not severely injured, but the vehicle was totaled. Although there was no release threat to the intake, MWRA deployed boom and absorbent materials to the crash site (photo below left) to detain/absorb any vehicle fluids or petroleum release that could ultimately get into the Ware River.

Vehicle crash into the Shaft 8 bypass canal

Elimination of direct discharges: DCR and MassDOT recently completed removal of 50 direct roadway stormwater discharges at Wachusett Reservoir through creation of detention and treatment basins (see photos below). Design was funded by MWRA through the Water Supply Protection Trust and managed by DCR. MassDOT funded the construction costs.

Wachusett Reservoir Direct Discharge Elimination System basins

Remaining challenges: The PanAm Railroad owns an 8-mile easement through the Wachusett watershed, including a 1-mile causeway across the lower basins of Wachusett Reservoir (photos below). This railroad was built in 1872, so the crossing predates the reservoir. This location presents response challenges to a train derailment since it has water on both sides.

PanAm RR Track within Wachusett Reservoir watershed (L) and causeway (R)

MWRA and DCR have conducted several railroad spill response drills and trainings including a multi-agency tabletop exercise in 2004, a field training on train car components at Pan Am's Ayer, MA rail yard in 2009, a railroad release tabletop and field exercise in 2015 and, more recently, a boom deployment exercise around the railroad track on the causeway (above photo) in 2017.

DCR and MWRA staff at the 2015 Tabletop exercise

Afterward, staff added a railroad release component to the MWRA professional training contract. Railroad release specific boom deployment training was done recently in 2016 and is scheduled under the current contract. Additionally, with PanAm cooperation, staff have tracked the materials that transit the watershed and developed a database to detail specific properties of materials upon release to the air, ground, or water. Further research into water treatment approaches to these materials is ongoing in an MWRA contract with UMass/Amherst Civil and Environmental Engineering Department.

BUDGET/FISCAL IMPACT:

The FY19 CEB includes funding for professional spill response training and for spill response equipment maintenance and upgrades. Equipment that is damaged, worn out or deployed (e.g., absorbents, personal protection gear, etc.) is replaced as needed.