



Memo

To:	Joe Martella, RIDEM
From:	David Heislein, Amec Foster Wheeler
cc:	Greg Simpson, Textron Melinda Ferullo, Amec Foster Wheeler
Date:	June 15, 2016
Re.	Parcel C-1 Restored Wetlands Assessment Monitoring Report #1, Mashapaug Inner Cove and Mashapaug Pond Former Gorham Manufacturing Site, Providence, Rhode Island

Consistent with the approved Remedial Action Work Plan and Order of Approval, Amec Foster Wheeler conducted an assessment of the restored wetlands along Mashapaug Inner Cove (Parcel C-1, southern and eastern shoreline) and Mashapaug Pond (Parcel C-1 Phase III Area north-slope). Wetland planting activities were completed by Charter on November 6, 2015 and completion of Parcel C and C-1 remediation occurred in December 2015. Amec Foster Wheeler representatives were on site May 19 and June 9, 2016. During our site visits we observed many healthy plants in both the restored fringe and perimeter wetland areas (Photo #1). However, some of the fringe wetland plants warrant repair/replacement. The perimeter areas appeared healthy and we don't recommend any repair work there.

During our weekly Soil Erosion and Soil Control Plan inspections we have observed a female fox with her pups living on the western peninsula and white swans, Canadian geese, blue herons, mallards, fish, turtles and other species that returned to the Mashapaug Inner Cove indicating a healthy return to the habitat.

Following is a summary report and recommendations of the restored wetland plants. Representative photos are included as an attachment to this memorandum.

Fringe Wetland:

Plants Installed: 788
Plants Alive: 624
= Dead/Missing: 164

Many plants were observed with exposed roots likely attributable to the settling of the soil along the Inner Cove edge. Many of the plants with partially exposed roots were alive and growing well (Photo #2). These can be replanted and were not included in the dead/missing count. Possible other factors that contributed to the observed mortality might be related to the dry weather conditions immediately following planting in November and the elevated water surface during the winter and early growing season. Amec Foster Wheeler personnel righted or re-dug several of the plants that were exposed, but alive. Charter will replant the remaining plants, as necessary. We observed little herbaceous growth in the fringe wetland. Wetland seed that was

broadcast there has shown minimal germination (Photo #3). Seed growth is expected to continue through spring/summer months.

We requested that Charter work with their subcontractor under the plant warranty to replace the dead plants in the fringe wetland. Many of these plants were Swamp Rose or Virginia Rose variety. We suggest replanting the 164 plants with a mix of these two roses, plus Speckled Alder if available. This species was not included in the original mix due to the limited availability at the time of ordering the plants, but was observed on site and would likely perform well in the site conditions. The fringe wetlands will also be over seeded with the New England Wetland Plants "Wetmix".

Recommended plants for re-installation June 2016:

- 50 Swamp Rose (*Rosa palustris*)
- 64 Virginia Rose (*Rosa virginiana*)
- 50 Speckled Alder (*Alnus incana*), if available, otherwise split evenly between Swamp and Virginia Rose

Seed mix (hand spread)

- New England Wetland Plants "Wetmix" 1 lb per 2500 sf; (for 11,000 sf fringe wetland = 4.5 lbs)
- Straw mulch spread by hand

Important: irrigate all plants after installation and spray with water the entire planting area after seeding.

Perimeter Wetland:

Plants Installed: 445
Plants Alive: 394
= Dead/Missing: 51 (estimated)

Almost all of the plants observed in the perimeter wetland were healthy at the time of inspection. The few not-as-healthy plants were blueberry and sweet pepperbush that experienced dieback of the woody tops, but had healthy sprouts and leaves near ground level. The grass mix growing in the perimeter wetland was generally healthy (Photo #s 4 and 5). Some plants may have been missed during counting because of the dense grass growth; therefore the number of live plants is likely higher than counted. We recommend leaving the perimeter area in its current state with no replanting.



Photo #1: Perimeter and Fringe Wetlands Phase III Area Western Slope facing West



Photo #2: Phase I Area Fringe Wetland Plant exposed roots, to be replanted



Photo #3: Phase I Area Fringe Wetland requires reseeding with Wetland Mix, facing Northeast



Photo #4: Phase III Area Perimeter Wetland growth, facing Southeast



Photo #5: Phase III Area Western Slope Perimeter Wetlands facing Northwest