

20 May 2015

Mr. Dean Tagliaferro
Project Manager
GE-Pittsfield/Housatonic River Site
USEPA - Region 1
5 Post Office Square –Suite 100
Boston, MA 02109-3912

**Re: 2015 Phase 4C Floodplain Property Vernal Pool Survey
Contract W912WJ-14-D-0003, Task Order 0002
GE-Pittsfield/Housatonic River Site
DCN: AE-052015-ABAQ**

Dear Mr. Tagliaferro:

Attached please find a summary memorandum titled “*2015 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts*” prepared by Stantec Consulting Services Inc. (Stantec) per request of Avatar Environmental LLC (Avatar).

As of October 1, 2014, Avatar assumed a role as the prime contractor for the GE-Pittsfield/Housatonic River Site under contract W912WJ-14-D-0003, with the US Army Corps of Engineers, New England District. Avatar subcontracted Stantec under Task Order 0002 to conducted a survey of the restored vernal pool at Parcel I6-1-106 within the Phase 4C Floodplain Properties Removal Action Area

Should you have any comments or questions regarding this document, please contact me (508) 414-1762 or via e-mail at izapisek@avatarenviro.com

Sincerely,



Izabela Zapisek
Deputy Program Manager

Cc: DCN Files (Avatar)
Robert Leitch, USACE

To: Scott Campbell
Avatar Environmental LLC

From: Matt Arsenault
Stantec Consulting Services Inc.

File: 195601048

Date: May 14, 2015

Reference: 2015 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts

On April 28, 2015, Stantec Consulting Services Inc. (Stantec), under contract with Avatar Environmental LLC (Avatar), who collectively are under contract to the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE), conducted a survey of the restored vernal pool at Parcel I6-1-106 within the Phase 4C Floodplain Properties Removal Action Area (hereafter, Vernal Pool 4C) along the Housatonic River in Pittsfield, Massachusetts. Matt Arsenault of Stantec conducted the survey with representatives from Avatar in attendance.

A survey of the vernal pool was initiated at approximately 10:30 AM during mostly clear skies with temperatures of approximately 50 degrees Fahrenheit (°F). The vernal pool and surrounding landscape was free of snow and ice (Photos 1 and 2).

Stantec methodically waded the vernal pool to visually characterize and document biota and ecological conditions. Species identification and taxonomy followed Kenney and Burne (2001);¹ however, frog taxonomy followed Frost et al. (2012).² Representative water depths within the vernal pool ranged from 1.3 to 3.5 feet (ft). Water depths were consistent with field surveys conducted in 2014.

SURVEY RESULTS

Amphibian observations during the survey included approximately 96 wood frog (*Lithobates sylvatica*) egg masses attached to shrub vegetation along the western edge of the pool (Photo 3), 1 dead adult female wood frog (Photo 4), and a green frog (*Lithobates clamitans*) tadpole. The wood frog egg masses were advanced in maturity and approximately one week from hatching.

No breeding evidence of spotted salamanders (*Ambystoma maculatum*) was observed in 2015 (e.g., egg masses or spermatophores); however, since breeding activity may occur at a later date, their use of the pool as breeding habitat could not be definitively determined at the time of the April 28, 2015 survey.

Macroinvertebrates observed during the survey included fairy shrimp (*Eubranchipus vernalis*; Photo 5), water striders (family Gerridae), backswimmers (family Notonectidae), mosquitos (family Culicoidea), caddisflies (Order Trichoptera), and aquatic worms (Class Oligochaeta). Several hundred fairy shrimp were observed throughout the vernal pool, but primarily in deeper water in the center and along the eastern shoreline of the pool.

¹ Kenney, L. and Burne, M. 2001. A Field Guide to the Animals of Vernal Pools. Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program, Westborough, MA. Vernal Pool Association, Peabody, MA.

² Frost, D., R. McDiarmid, J. Mendelson, and D. Green. 2012. Anura - Frogs. *I/VB*. I. Crother (ed.), Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, With Comments Regarding Confidence In Our Understanding pp. 11–22. SSAR Herpetological Circular 39:1-92. Available at http://www.ssarherps.org/pdf/HC_39_7thEd.pdf. Accessed April 24, 2014.

Reference: 2015 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts

Fairy shrimp have been observed within the vernal pool for three consecutive years, suggesting that the pool completely or primarily dried out during the previous calendar years. To avoid predation, fairy shrimp employ a reproductive strategy that relies upon the desiccation of their eggs that are laid in the pool, which may happen in the year (or years) following deposition.³ Further evidence of complete or nearly complete pool desiccation is evidenced by the presence of rooted emergent terrestrial herbaceous vegetation including woolgrass (*Scirpus cyperinus*), tussock sedge (*Carex stricta*), and purple loosestrife (*Lythrum salicaria*) present throughout most of the pool. Water plantain (*Alisma* sp.), an aquatic to semi-aquatic species is present only in the deeper portions of the pool, suggesting that a proportionately small area of the vernal pool may remain partially inundated throughout most of the year.

RESULTS AND RELATIONSHIP TO RESTORATION REQUIREMENTS

Section 7.2 of the Phase 4C Floodplain Properties Final Completion Report notes that the Obligate Species Method, as defined by the State Division of Fisheries and Wildlife, will be used to document breeding evidence of vertebrate and invertebrate species dependent on vernal pool habitat. The Obligate Species Method specified in the March 2009 Natural Heritage and Endangered Species Program (NHESP) *Guidelines for the Certification of Vernal Pool Habitat in Massachusetts* requires evidence of breeding activity by obligate vernal species or the presence of fairy shrimp, and evidence of no permanently flowing outlet to meet certification criteria.

Vernal Pool 4C on Parcel I6-1-106 met the physical criterion of lacking a permanently flowing outlet. The vernal pool also met the biological criteria based on evidence of five or greater egg masses for obligate amphibian vernal pool breeding species (i.e., wood frog) and the presence of fairy shrimp. Based on the results of the 2015 survey, this vernal pool continues to be eligible for certification under the March 2009 NHESP *Guidelines for the Certification of Vernal Pool Habitat in Massachusetts*.

Stantec Consulting Services Inc.



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Attachment: Photographs

³ Ward, M. and P. deMaynadier. 2009. Fairy Shrimp: Coming Soon to a Wetland near You? *The Maine Entomologist* 13(1):4-5.

Reference: 2015 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts



Photo 1. Vernal Pool 4C looking south from northern edge. Stantec. April 28, 2015.



Photo 2. Vernal Pool 4C looking north from southern edge. Stantec. April 28, 2015.

Reference: 2015 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts



Photo 3. Wood frog egg masses in Vernal Pool 4C. Stantec. April 28, 2015.



Photo 4. Dead wood frog in Vernal Pool 4C. Stantec. April 28, 2015.

Reference: 2015 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts



Photo 5. Fairy shrimp specimen from Vernal Pool 4C. Stantec. April 28, 2015.