



A Service-Disabled Veteran-Owned Small Business

14 June 2017

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

Re: **2016 Phase 4C Floodplain Property Vernal Pool Survey**
Contract W912WJ-14-D-0004, Task Order 4
GE-Pittsfield/Housatonic River Site
DCN: AE-061417-AEAG

Dear Mr. Tagliaferro:

Attached please find a summary memorandum titled “*2017 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).

Avatar subcontracted Stantec under contract W912WJ-14-D-0003, with the US Army Corps of Engineers, New England District Task Order 0004 to conduct a survey of the restored vernal pool at Parcel I6-1-106 within the Phase 4C Floodplain Properties Removal Action Area on April 28, 2017.

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,

A handwritten signature in blue ink that reads "Izabela Zapisek". The signature is enclosed in a thin black rectangular border.

Izabela Zapisek
Deputy Program Manager

Cc: DCN Files (Avatar)
Robert Leitch, USACE
Christopher Ferry, EPA
MA & CT Public Information Repositories

To: Scott Campbell
Avatar Environmental LLC

From: Daniel Nein
Stantec Consulting Services

File: 195601048

Date: June 7, 2017

Reference: 2017 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts

On April 28, 2017, Stantec Consulting Services Inc. (Stantec), under contract with Avatar Environmental LLC (Avatar), under contract to 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) adjacent to the 1 ½ Mile Reach of the Housatonic River in Pittsfield, Massachusetts. Certified Wildlife Biologist Dan Nein of Stantec conducted the survey with Izabela Zapisek and Scott Campbell of Avatar in attendance. Post remediation assessments of Vernal Pool 4C began in 2009 as outlined in General Electric's *Final Completion Report for Removal Action for Housatonic River Floodplain - Non-Residential Properties (FCR 2010)*¹ and 2017 marks the ninth year of the survey.

The survey of the vernal pool began at approximately 10:15 AM under mostly to partly cloudy skies with temperatures of approximately 55 degrees Fahrenheit (°F). The vernal pool and surrounding landscape were 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 follows Kenney and Burne (2001)²; however, frog taxonomy follows Frost et al. (2012)³. Representative water depths within the vernal pool ranged from approximately 1 to 3.5 feet (ft) and were considered similar to water depths observed at this pool in past years' surveys.

SURVEY RESULTS

Hundreds to thousands of wood frog (*Lithobates sylvatica*) tadpoles were observed along the western edge and central portion of the pool (Photo 3). Based on their 0.25 inch (in) to 0.5 in size (Photo 4), the tadpoles hatched from egg masses fertilized and deposited in the vernal pool in April 2017. Approximately 6 adult green frog (*Lithobates clamitans*), 1 spring peeper (*Pseudacris crucifer*), and 1 northern leopard frog (*Lithobates pipiens*) were also observed during the survey.

Stantec did not observe breeding evidence (i.e., egg masses, spermatophores, or breeding congress) of spotted salamanders (*Ambystoma maculatum*) at the pool during this survey. Spotted salamander breeding can overlap with wood frogs; however, spotted salamander breeding activity may also occur later in the spring season, so use of the pool as breeding habitat by spotted salamanders could not be definitively determined at the time of the April 2017 survey.

¹ Arcadis. 2010. Final Completion Report for Removal Action for Housatonic River Floodplain – Non-Residential Areas. General Electric Company. Pittsfield, Massachusetts. 1102 pgs. Document ID 462575.

² Kenney, L. and M. Burne. 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.

³ Frost, D., R. McDiarmid, J. Mendelson, and D. Green. 2012. Anura - Frogs. *IN* B. 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 https://ssarherps.org/wp-content/uploads/2014/07/HC_39_7thEd.pdf. Accessed May 30, 2017.

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Macroinvertebrates observed during the survey included abundant fairy shrimp (*Eubranchipus vernalis*) (Photos 4 and 5), water striders (Family Gerridae), water mites (Order Acariformes), water boatmen (Family Corixidae), mosquito larvae (Family Culicoidea), fingernail clams (Class Bivalvia), amphipods (Order Amphipoda), caddisflies (Order Trichoptera), and isopods (Class Isopoda).

Fairy shrimp have been observed within the vernal pool for 5 consecutive years, suggesting that the pool completely or nearly dried out during the years prior to each survey. For successful reproduction and in response to the threat of predation, fairy shrimp eggs laid in vernal pools require desiccation in the year (or years) following deposition.⁴ Further evidence of complete or nearly complete dry pool condition is the composition of the wetland vegetation present in the pool, including cottongrass bulrush (*Scirpus cyperinus*)⁵, uptight sedge (*Carex stricta*), and purple loosestrife (*Lythrum salicaria*), all of which do not typically grow in permanently inundated habitats.

RESULTS AND RELATIONSHIP TO RESTORATION REQUIREMENTS

Section 7.2 of the FCR 2010 notes that the Obligate Species Method, as defined by the Massachusetts Division of Fisheries and Wildlife, will be used during surveys of Vernal Pool 4C. 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.

In 2017, Vernal Pool 4C met the physical certification criterion of lacking a permanently flowing outlet. The vernal pool also met the biological criteria based on the presence of fairy shrimp and evidence of obligate amphibian vernal pool breeding (i.e., wood frog tadpoles). As evident by the results of the 2017 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

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

⁵ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings.* Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

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Photo 1. Vernal Pool 4C looking east from the west edge. Stantec. April 28, 2017.



Photo 2. Vernal Pool 4C looking south from the northwest edge. Stantec. April 28, 2017.

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Photo 3. Wood frog tadpoles in Vernal Pool 4C that hatched in April 2017. Stantec. April 28, 2017.



Photo 4. Fairy shrimp and wood frog tadpole captured from Vernal Pool 4C. Stantec. April 28, 2017.

Reference: 2017 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts



Photo 5. Fairy shrimp and wood frog tadpole captured from Vernal Pool 4C. Stantec. April 28, 2017.