

APPENDIX D

VERNAL POOL INVESTIGATION,

DATED APRIL 26, 2019

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INTRODUCTION

This vernal pool report has been prepared by ERS Consultants, Inc. in support of an environmental impact statement for the Hudson Highlands Reserve Project. The Project is a proposed residential subdivision on approximately 205+/- acre site located in the Town of Philipstown, Putnam County, New York. The property is irregularly shaped, lying between US Route 9 to the west, East Mountain Road South to the east, Horton Road to the south and East Mountain Road North to the north. The Project is known as Section 17, Block 1, Lots 39, 76.111, 76.112, 76.21, and 77.2 on the Putnam County tax maps.

METHODOLOGY

For purposes of this field study ERS Consultants, Inc. adopted the New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program definition of vernal pools as follows: Vernal pools are intermittently to ephemeral ponds, small, shallow depressions usually located within an upland forest. They are typically flooded in spring or after a heavy rainfall, but are usually dry during summer. Many vernal pools are filled again in autumn. The substrate is dense leaf litter over hydric soils. Vernal pools typically occupy a confined basin (i.e., a standing waterbody without a flowing outlet), but may have an intermittent stream flowing out of it during high water. Since vernal pools cannot support fish populations, there is no threat of fish predation on amphibian eggs or invertebrate larvae. Characteristic animals of vernal pools include species of amphibians,

reptiles, crustaceans, mollusks, annelids, and insects. Vernal pool amphibians include spotted salamander (*Ambystoma maculatum*), blue-spotted salamander (*A. laterale*), Jefferson's salamander (*A. jeffersonianum*), marbled salamander (*A. opacum*), and wood frog (*Rana sylvatica*). Fairy shrimp (*Anostraca*) are obligate vernal pool crustaceans, with *Eubbranchipus* spp. being the most common.

This definition of vernal pools, like many other definitions of vernal pools contain language referring to “obligate” species. However, several obligate species, such as spotted salamanders and wood frogs, breed in other wetland areas such as roadside ditches and small ponds (Calhoun & Klemens 2002).

Vernal pool surveys consisted of meandering surveys conducted over the entire subject site by myself, a Certified Wildlife Biologist and Professional Wetland Scientist with over twenty years of experience and I am familiar with vernal pool resources during the recommended timeframes for identifying amphibian egg masses. I am experienced in threatened & endangered species surveys and habitat assessment. I am qualified as an environmental inspector for utility projects, licensed timber rattlesnake biologist in New York, New Jersey and Connecticut, and an environmental monitor for bog turtle, Blanding's turtle, bald eagle, and timber rattlesnake. My resume can be found at the end of this report. Seasonal and weather conditions were considered when conducting the surveys which occurred during April 6, 2019 (6.0 hours), April 13, 2019 (5.5 hours), April 18, 2019 (5.5 hours) and April 23, 2019 (5.0 hours). The New York State Department of Environmental Conservation (NYSDEC) states on their web page that “April is generally a good month to visit vernal pools in New York”.

RESULTS

The site is dominated by upland deciduous forest, typically Oak-Tulip and Chestnut-Oak forests as described by Edinger et al (2014). Several wetland and watercourses have been delineated on the subject site. A hillside wetland and watercourse is located east of the Horton Road extension into the project site and flows west into a 6+/- acre pond on site. The pond drains south, under Horton Road and eventually into Clove Creek to the west. A small portion of Clove Creek lies within the subject site before flowing northwest under US Route 9.

The hillside wetland is fed by seeps and surface water and ephemeral streams drain these wetlands down to the pond. This wetland system is dominated by red maple (*Acer rubrum*) in the overstory, spicebush (*Lindera benzoin*) in the shrub layer and jewelweed (*Impatiens capensis*), skunk cabbage (*Symplocarpus foetidus*) and cinnamon fern (*Osmunda cinnamomea*) in the herbaceous layer. The wetland would be classified by the US Fish & Wildlife Service as a Palustrine Forested Broad-leaved deciduous (PFO1) Wetland (Cowardin, 1979). The pond is impounded by an earthen dam and has a distinct edge around it. Largemouth bass (*Micropterus salmoides*) and bluegill sunfish (*Lepomis macrochirus*) were observed in the pond along with Eastern painted turtles (*Chrysemys picta*) and common snapping turtles (*C. serpentina*).

During the field survey of the entire subject site no vernal pools were observed. This study is consistent with previous studies conducted in the subject site. Those reports include the Wetland Delineation and Environmental Assessment – Initial Report by Stephen W. Coleman Environmental Consulting (2014) and the Wetland Delineation and Environmental Assessment – Supplemental Report by Hudson Highlands Environmental Consulting (2015). In the latter report on page 246, the authors state “No areas were observed that contained evidence of or would support the seasonal presence of vernal pools. Additionally, no endangered, threatened or species of concern were observed. No egg masses were observed within the subject property. During the same time period egg masses were observed on two sites north and east of

the subject site. Table 1 below is a list of reptiles and amphibians found on the property.

TABLE 1	
COMMON NAME	SCIENTIFIC NAME
Eastern Painted Turtle	<i>Chrysemys picta</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Eastern Garter Snake	<i>Thamnophis sirtalis</i>
Pickerel Frog	<i>Lithobates palustris</i>
Green Frog	<i>Lithobates clamitans</i>
Spring Peeper	<i>Pseudacris crucifer</i>
Eastern Red-backed Salamander	<i>Plethodon cinereus</i>
Northern Dusky Salamander	<i>Desmognathus fuscus</i>
Eastern Newt	<i>Notophthalmus viridescens</i>
Northern Two-lined Salamander	<i>Eurycea bislineata</i>

REFERENCES

Calhoun, A.J., M.W. Klemens. 2002. Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper #5. Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Coleman, Stephen W. 2014. Wetland Delineation and Environmental Assessment – Initial Report. Stephen W. Coleman Environmental Consulting.

Cowardin, L.M. 1979. Classification of Wetlands and Deepwater Habitats of the United States.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York Department of Environmental Conservation, Albany, NY.

Gross, Stephen M. 2015. Wetland Delineation and Environmental Assessment – Supplemental Report. Hudson Highlands Environmental Consulting.

New York Natural Heritage Program. Available online at <https://guides.nynhp.org/vernal-pool/>

A handwritten signature in black ink, appearing to read "David Griggs". The signature is written in a cursive style with a large initial "D".

David Griggs

Senior Scientist

ERS Consultants, Inc.

April 26, 2019

EDUCATION Duke University, MS - Environmental Management
SUNY College of Environmental Sciences & Forestry, BS Wildlife Biology & Mgmt
Syracuse University, BS Biology
Brevard College, North Carolina, AS Forest Biology

TECHNICAL TRAINING US Fish and Wildlife Service Habitat Evaluation Procedures (HEP), Certified
Adamus Wetland Functional Assessment Methodology (WET), Certified
US Fish and Wildlife Service Instream Flow Incremental Methodology (IFIM)
NYSDEC Certificate of Erosion and Sediment Control

RESPONSIBILITIES Principal Scientist. As a Certified Wildlife Biologist and Professional Wetland Scientist, Mr. Griggs is responsible for coordinating and supervising environmental impact statements, natural resource/endangered species inventories and assessments, wetland delineations and mitigation projects, environmental permitting and technical training in wetland ecology.

EXPERIENCE Twenty years of professional experience in wetlands ecology and wildlife management in the US and overseas.

Representative Projects include:

Pipeline Projects including Millennium Pipeline; Tennessee Gas Pipelines; Spectra Energy's Algonquin Pipeline, and Columbia Gas Pipelines, NY, NJ, PA. Environmental Inspector and conducted environmental monitoring for endangered species including timber rattlesnake, bog and Blandings turtles. Complied with Federal Energy Regulatory Commission (FERC).

Ramapo Mountain Land Company, Rockland County, New York. Conducted endangered species assessment including flora and timber rattlesnake; habitat assessment; mark and recapture; radio-tracking.

Manhattan Woods Golf Course, Rockland County, New York. Supervised wetland delineation for a 220-acre proposed golf course. Services also included wetland permits; preparation, approval and implementation of mitigation (wetland creation) plans.

Pine Barrens Work, New York, New Jersey, New Hampshire. Utility ROW corridor work conducted presence/absence as well as habitat assessments and restoration for endangered & threatened species. Species included various flora, Eastern tiger salamander, Northern pine snake, timber rattlesnake, Pine Barrens tree frog, barred owl, and Karner blue butterfly.

Harmon Meadow Wetland Mitigation Design and Construction Services, Secaucus, New Jersey. Field Manager for a 150-acre wetland mitigation project, including design, federal and state regulatory coordination and approvals, pre/post project environmental monitoring and coordination of public presentations. Preparation of environmental assessments using a computer-based Habitat Evaluation Procedures (HEP) and Adamus (WET) analysis development and coordination of biologic, water and sediment quality sampling programs.

Landfill Design and Environmental Studies for Major New York State Regional Landfill. Performed wildlife and habitat inventories of proposed landfill and resource recovery sites for environmental impact statements conducted under NYSEQRA. Ecological assessments included methods to avoid and mitigate impacts. Evaluation of sensitive environmental features including endangered species and wetlands, including a Wetlands Delineation and Permitting.

Wetland Investigation, Permitting and Mitigation, New York and New Jersey. Responsible for wetlands delineation, report preparation and permitting, in accordance with U.S. Army Corps of Engineers, New Jersey Department of Environmental Protection and New York State Department of Environmental Conservation regulations. Preparation of freshwater and brackish wetland mitigation plans. Clients included the U.S. Navy, United Parcel Service, Hartz Mountain Development Corporation, Bellemead Development Corporation, Rivervale Realty Company, numerous land developers, golf courses, municipalities, and engineering firms.

Virginia Department of Transportation - Environmental Services (statewide). Field Manager of Williamsburg and Alexandria Environmental Assessments and Springfield Bypass 4(f) statements for the Virginia Department of Highways and Transportation to meet FHWA environmental requirements. Conducted biotic surveys, including the computer-based Biotic of Virginia (BOVA) analysis, Phase 1 bog turtle surveys, and preparation of mitigation concepts for wetland impacts.

Air Force Base Joint Use Master Plan and Environmental Assessment, Illinois. Technical Specialist responsible for the coordination of the environmental assessment for the proposed expansion of the air base and introduction of civil air traffic for the Illinois Department of Transportation. Analysis focused on impacts to the natural resources including wetlands and farmlands, and mitigation plans for bottomland hardwoods. Endangered turtle survey work included spotted, Eastern river, yellow mud, and Blandings turtles.

Pumped Storage Hydroelectric Project and FERC License Application, New Jersey. Assessment of existing conditions and potential impacts on terrestrial and aquatic fauna and flora for the FERC license application. Endangered species surveys included Indiana bat, timber rattlesnake, copperhead, and bog turtle.

Wetland Mitigation Plan and Permitting, New Jersey. Vegetative survey for the Bellemead Development Corporation EPA Section 309 Order and environmental analysis using the HEP program. This work was conducted on the Hackensack River, Berry's Creek, Mill Creek and Cromakill Creek in New Jersey.

New York University Medical Center (Laboratory for Experimental Medicine and Surgery in Primates). Consultant for primate release program in tropical portions of Africa. Responsible for breeding and behavior analyses and monitoring environmental conditions for 300 primates.

Lawler, Matusky and Skelly Engineers, New York. Field Technician responsible for the analysis of ichthyoplankton samples, seining, identifying and sorting various species of fish for the FHWA/NYS DOT Westway project.

MEMBERSHIPS

**Society of Wetland Scientists-Certified Professional Wetland Scientist
Wildlife Society-Certified Wildlife Biologist
Adjunct Faculty for Continuing Education, Rutgers University**