STATE OF CONNECTICUT CONNECTICUT SITING COUNCIL

| IN RE: | : | |
|-------------------------------|---|----------------|
| | : | |
| APPLICATION OF HOMELAND | : | DOCKET NO. 509 |
| TOWERS, LLC FOR A CERTIFICATE | : | |
| OF ENVIRONMENTAL | : | |
| COMPATIBILITY AND PUBLIC NEED | : | |
| FOR THE CONSTRUCTION, | : | |
| MAINTENANCE AND OPERATION | : | |
| OF A TELECOMMUNICATIONS | : | |
| FACILITY AT 1837 PONUS RIDGE | : | |
| ROAD, NEW CANAAN, | : | June 20, 2022 |
| CONNECTICUT | | |

<u>RESPONSES OF NEW CANAAN NEIGHBORS ("NCN") TO THE</u> <u>CONNECTICUT SITING COUNCIL PRE-HEARING INTERROGATORIES,</u> <u>SET ONE</u>

Q1. Referring to the New Canaan Neighbors Request for Party and CEPA Intervenor Status, dated May 9, 2022, provide information as to how the

Applicant did not properly evaluate the wetlands on the host parcel,

including but not limited to, identification and delineation, and wetland

characteristics and functions.

A1. NCN retained hydrologist and civil engineer, Chuck Dutill, P.E., D.F.E., to

provide analysis of the impact of the proposed cell facility on nearby wetlands and watersheds. (See, Heritage Services website, Chuck Dutill bio,

<u>https://www.heritageservices.com/chuck-dutill.html</u>, last visited on June 15, 2022.) Mr. Dutill verbally provided NCN his analysis and findings that the proposed cell facility and access road at 1837 Ponus Ridge Road will cause significant harm to adjacent Class I & II watersheds.

Mr. Dutill reviewed all Application materials, including the site plans and engineering reports, as well as remotely analyzed the soil/bedrock, topography, vegetation, and all other information necessary for a hydrogeologic analysis. His research indicated that the proposed site has steep slopes with a shallow to bedrock quagmire. Based on his analysis of the parcel, he stated that if the parcel was still owned by a water company, the proposed site would be classified as Class I land under applicable source water protection statutes.

The analysis performed by Mr. Dutill determined that the slopes and bedrock would create significant stormwater runoff into both the Laurel Reservoir and the intermittent stream next to the site. In this determination, Mr. Dutill referenced multiple case studies that are analogous to the proposed cell construction for the facility at 1837 Ponus Ridge Road, all of which resulted in a contaminated watershed despite mitigation efforts.

In addition to the impacts to the reservoir, Mr. Dutill reported that wells on the property and on the abutting property of 59 Squires Lane are at risk. After analyzing maps of the proposed cell tower property and maps of the abutting property, including the well locations on the properties, Mr. Dutill found that wellwater for these parcels is at risk of contamination.

As mentioned by the Department of Public Health comments, the Applicant provides "little to no analysis" of the proposed cell tower facility's impacts on nearby

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watersheds and drinking water sources despite "the close proximity of this parcel to the drinking water reservoir and the existing slope on this and adjacent land," and despite the fact that the proposed facility's "runoff is a significant concern to drinking water source quality."

Q2. Provide information as to how the proposed facility will significantly impact avian populations. Identify the specific state-listed species that would be significantly impacted by the proposed facility.

A2. NCN provides the following information as to how the proposed telecommunications facility will significantly impact avian populations. (*See*, Shire, et al., *Communication Towers: A Deadly Hazard to Birds*, American Bird Conservancy, Exhibit 1; eBird.org, 'Laurel Reservoir,'

https://ebird.org/hotspot/L1305427?yr=all&m=&rank=mrec, last visited June 20, 2022.) Notably, the Pied-billed Grebe, an endangered state-listed bird, was recently spotted around the Laurel Reservoir on March 5, 2022. (eBird.org., *supra*, "12. Piedbilled Grebe."; *See also*, Connecticut Department of Energy & Environmental Protection ["DEEP"], 'Endangered, Threatened, and Special Concern Birds,' <u>https://portal.ct.gov/DEEP/Endangered-Species/Endangered-Species-</u> <u>Listings/Endangered-Threatened--Special-Concern-Birds</u>, last visited June 20, 2022; New York Natural Heritage Program, 'Pied-billed Grebe,' <u>https://guides.nynhp.org/pied-billed-grebe/</u>, last visited on June 20, 2022-"Television and cell towers pose an extreme danger to nocturnally migrating individuals, for example 65 pied-billed grebes died at a television tower in Florida between 1955 to 1980 [Muller and Storer 1999].".)

In addition, NCN discussed the proposed tower with Albert Manville II and B. Blake Levitt, both of whom are experts on cell tower impacts to avian populations, and both of whom mentioned Dr. Manville's research conducted on impacts to avian populations. (*See*, In the Matter of the Appeal of Chris Nubbe and Alison Baker [No. APPL 18-106835 VE], Testimony of Albert Manville II, Thurston County, WA, 2018, Exhibit 2, pgs. 1-4, 6-8; Manville AM, II. Impacts to birds and bats due to collisions and electrocutions from some tall structures in the United States — wires, towers, turbines, and solar arrays: state of the art in addressing the problems. In: Angelici FM, editor. Problematic wildlife: a cross-disciplinary approach. New York, NY, USA: Springer International Publishers; 2016:415–42 pp. Chap. 20.; Manville AM, II. Towers, turbines, power lines and solar arrays: the good, the bad and the ugly facing migratory birds and bats— steps to address problems. Invited presentation: Earth Science and Policy Class, GEOL 420. George Mason University; 2016.; Manville AM, II, PowerPoint Presentation,

https://www.slideserve.com/johnjohnston/albert-m-manville-ii-ph-d-senior-wildlifebiologist-powerpoint-ppt-presentation, last visited on June 16, 2022.)

DEEP has identified three additional state-listed species that are likely to be impacted by the proposed cell facility: the Little Brown Bat, the Red Bat, and the Eastern Box Turtle. However, DEEP recommends site-specific field investigations such as on-site surveys to identify critical biological populations and habitats of concern. NCN has not been granted access to the proposed site, and it appears the Applicant has only conducted a "desktop analysis" as noted in its Avian Resources Evaluation. Applicant might argue that the New Canaan Land Trust conducted an in-person assessment of flora and fauna on the parcel, including avian populations, prior to 1837 LLC's purchase of the property. It is true that there is some indication that the New Canaan Land Trust may have an interest in the property. Attorney Kay Jex, the attorney who represented 1837 LLC in acquiring 1837 Ponus Ridge Road, seemed to believe that the purchaser, her client, was the New Canaan Land Trust. (See, Exhibit 3, p. 2.) When Mark Buschmann's attorney inquired as to whether the purchaser "intends to erect a cell tower on the property," Ms. Jex stated that "a representative of the Land Trust has scheduled the walk thru to check the house before we close this afternoon" and that she "had no reason to think that the buyer is anyone else." (Ibid.) Furthermore, Town of New Canaan Commissioner Tom Nissley is a member of the 1837 LLC. (See, Exhibit 4.) Prior to the purchase of 1837 Ponus Ridge Road, Commissioner Nissley's wife, Emily Nissley, had previously purchased New Canaan real estate and dedicated the land to the New Canaan Land Trust, as witnessed by Kay Jex. (See, Exhibit 5, pgs. 3-11.) Emily Nissley is also a Board Member of the New Canaan Land Trust. (See, New Canaan Land Trust website, 'Board of Directors,'

<u>https://newcanaanlandtrust.org/staff-board/</u>, last visited on June 16, 2022.)

If the New Canaan Land Trust is an owner of the parcel, NCN concedes that the New Canaan Land Trust has personnel, members, and resources to assess the

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proposed cell facility's impacts on avian populations. However, to date, no information has been provided by the Applicant concerning the New Canaan Land Trust's on-site assessments.

Q3. What specific areas of Centennial Watershed State Forest would have views of the proposed tower? What analysis was used to determine tower visibility from these areas?

A3. NCN received information from CT DEEP that several properties owned by the State of Connecticut were part of the Centennial Watershed State Forest. All these properties were in close proximity to the proposed tower. It is also NCN's understanding that the majority of the land surrounding the Laurel Reservoir, including the remnants of the historic Dantown settlement, is located on Centennial Watershed State Forest land. (*See*, The Stamford Historical Society, Photo Archivist's Selection of the Month: April 2006,

<u>https://www.stamfordhistory.org/ph_0406.htm</u>, last visited June 16, 2022.) This would make the land adjacent to 1837 Ponus Ridge Road, as well as the Downtown ruins, part of the Centennial Watershed State Forest.

However, without additional balloon float tests, NCN cannot confirm definitively what portions of the Centennial Watershed State Forest will have a direct view of the cell tower and during what months of the year the tower will be visible. Q4. Identify the specific scenic resources and scenic vistas that would be impacted by the proposed facility. What entity identified these areas as scenic?

A4. Please see NCN response to Question 3.

Q5. Identify the specific archeological and historic resources that that would be impacted by the proposed facility. What entity identified these areas as archeologic and historic resources?

A5. Please see NCN response to Question 3. Additionally, Preservation Connecticut intends on assessing the archeological importance of the Dantown settlement ruins and whether the Dantown settlement should be a state-listed historic archeological site.

Q6. Provide the names and addresses of all members of the New Canaan Neighbors.

A6. NCN represents the interests of the over 500 people who oppose a cell tower on upper Ponus Ridge Road. (*See*, Change.org, 'Say No to the Proposed Cell Tower on Upper Ponus Ridge,' <u>https://www.change.org/p/say-no-to-the-proposed-cell-tower-on-upper-ponus-ridge?signed=true</u>, last visited June 20, 2022.) Supporters of the NCN and its opposition to the proposed cell facility at 1837 Ponus Ridge Road include a military veteran, real estate professionals, medical professionals, and include everything from a Town of New Canaan elected representative to a Town of New

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Canaan first responder.

The members of NCN are Jane Raveret and Bob Neuhaus of 331 Dans Highway in New Canaan, Maggie Hulce and Bob Smith of 59 Squires Lane in New Canaan (presently in escrow and expected to close on June 22, 2022), and Rose and Justin Nishioka of 60 Squires Lane in New Canaan.

Q7. Did the New Canaan Neighbors take photographs of the balloon test conducted by the Applicant on April 7, 2021? If yes, submit the photographs with descriptive captions.

A7. The majority of the NCN members did not receive notice of the balloon test conducted on April 7, 2021. For one person in the NCN who happened to see the balloon, photos taken depicted a highly visible balloon float from the property located at 331 Dan's Highway in New Canaan. Unfortunately, the photos were deleted to increase memory space.

Photos were also taken by the owner of 59 Squires Lane. Windy conditions made it impossible to accurately portray the height and position of the balloon float. Furthermore, the proposed plans for the site would remove virtually all of the trees impeding view of the cell facility from the locations the photos were taken. (*See*, Exhibit 6, Photos 1 through 6, with descriptions.)

RESPECTFULLY SUBMITTED,

By <u>/s/Justin Nishioka</u> Justin Nishioka, NCN Representative

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was electronically mailed

to the following service list on June 20, 2022.

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> <u>/s/Justin Nishioka</u> Justin Nishioka, NCN Representative

Exhibit 1

COMMUNICATION TOWERS: A DEADLY HAZARD TO BIRDS

REPORT DOCUMENTS A REPORT COMPILED BY AMERICAN BIRD CONSERVANCY JUNE, 2000 KILLING OF 230 BIRD SPECIES

Gavin G. Shire Karen Brown Gerald Winegrad

COMMUNICATION TOWERS: A DEADLY HAZARD TO BIRDS

A REPORT COMPILED BY AMERICAN BIRD CONSERVANCY DOCUMENTING THE KILLING OF 230 BIRD SPECIES

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American Bird Conservancy is dedicated to the conservation of birds and their habitats throughout the Americas. American Bird Conservancy 1250 24th St. NW, Suite 400. Washington, D.C. 20037 Tel (202) 778-9666 Fax (202) 778-9778 www.abcbirds.org

EXECUTIVE SUMMARY

There are over 77,000 communications towers in the US, which provide nationwide coverage for cellular telephone, television and radio, paging, messaging, wireless data and other industries. Nearly 50,000 of these towers are required by the Federal Communications Commission to be lit, either because they are over 199 ft. tall, are in the immediate vicinity of an airport, or are situated along major highway travel routes. About 5,000 new towers are currently being built each year but this rate is expected to increase with developing cellular telephone and digital television networks. Bird kills caused by towers, their guy wires and related structures have been documented for over 50 years but there has been insufficient investigation of the extent of tower kills and which species have been affected. The US Fish and Wildlife Service (USFWS) estimates that four to five million birds are killed annually at such towers, although this could be as many as 40 million. However only a cumulative impacts study will answer that question. This report analyzes 149 documents describing tower kills, 47 of which provide data on both the numbers and species of birds killed at selected towers. No such analysis has been done before. While USFWS indicates that nearly 350 species of neotropical songbirds are vulnerable to collisions with tall structures, this report reveals that 230 species of birds have been documented as being killed at towers, over one quarter of all avian species found in the US. Most birds killed are neotropical migratory songbirds which migrate at night when their navigation systems seem to be confused by the tower lights, particularly in bad weather. This report further documents that 52 of these 230 species killed at towers are on either the USFWS's most recent Nongame Birds of Management Concern (a.k.a. Species of Management Concern) List (SMC) or the Partners in Flight (PIF) Watch List. This means that 52 species that are in decline and need special management attention are killed at towers. One of these species, Tennessee Warbler, is the third most commonly killed bird at towers. One species, Red-cockaded Woodpecker, is listed as Endangered. Swainson's Warbler, Cerulean Warbler, Bachman's Sparrow and Henslow's Sparrow, all listed as Extremely High Priority on the PIF Watch List, were documented being killed in large numbers at towers (see p. 5 for an explanation of the USFWS SMC List and PIF Watch List). A total of approximately 545,250 birds were documented as killed at the tower sites during the periods of study, however, these numbers are just the smallest tip of a much larger iceberg, as most studies were sporadically conducted and many studies lasted for only a few days of one year. This document clearly demonstrates that towers kill many migratory birds, and over one fifth of these species are in need of conservation because of dwindling numbers and limited habitat. Mortality at communication towers is another threat to healthy populations of songbirds. This report illustrates the need for further research to determine the exact cause of bird deaths at towers, and how lighting systems and other aspects of tower construction and operation may be modified to avoid such mortality.

ABC is a central participant in the Communication Tower Working Group (CTWG), which is chaired by USFWS and consists of representatives from government agencies, telecommunication, broadcasting and tower industries, scientists and conservation agencies. The CTWG is attempting, through research, to ascertain mitigation measures that can be applied to towers to avoid such large-scale avian mortality.

INTRODUCTION

There has been unprecedented growth in the communications industry in recent years, causing a dramatic increase in the number of communications towers in the US. The Federal Communications Commission (FCC), the federal agency responsible for registering towers, currently has 77,519 towers on its database, of which 58,339 are lit. The telecommunications act of 1996 (designed to provide the public with universal access to wireless communications technology) and recent developments in digital television technology have resulted in approximately 5,000 new towers being erected each year, a rate expected to further increase in the next decade. When towers are registered, the FCC considers lighting and marking recommendations from the Federal Aviation Administration (FAA), and mandates that for the purposes of aviation safety, all towers over 199 ft above ground level, in the immediate vicinity (within a 3.8 mile radius) of an airport, or situated along major automobile travel routes must be lit. Local zoning restrictions must also be complied with but there is no formal consideration of the Migratory Bird Treaty Act (MBTA) of 1918, one of the oldest conservation statutes in existence, which states that no migratory bird may be killed unless it is specifically exempted under a permit. The MBTA is a strict liability statute, making the 'take' of migratory birds without a permit illegal, even if unintentional, incidental or inadvertent. The Endangered Species Act (ESA) gives further, wide-reaching protection to birds on the Endangered Species List. The USFWS conservatively estimates that between four and five million birds are killed each year at communications towers, though the true figure could be greater by an order of magnitude (Manville 2000).

The earliest published study of bird kills at a communication tower dates back to 1949 (Aronoff) with hundreds of thousands of documented bird kills in the 51 years since. These studies conform to no overall protocol and have been conducted in a haphazard and sporadic manner. There has been a notable geographical bias in where these studies were carried out, with no studies found west of the Rocky Mountains and only 14 west of the Mississippi. No studies were found in 29 of the 50 US states. Study sites were not randomly selected and no control or parallel studies were mentioned. In fact, the majority of studies were instigated because bird kills were observed *a priori*, at lit towers situated in rural or open areas, along migratory flyways. Some such studies were simple reports on the number or species of birds found on one morning, others were systematically conducted over a single migration season, multiple seasons, or in some cases, decades. The longest running continuous study was begun in 1955 at the Tall Timbers Research Station in Leon County, Florida (Crawford, 1981). Another study, begun in 1957 but not running continuously, has collected 121,560 birds of 123 species over 39 years. (Kemper 1996). The level of detail covered in these studies varies widely. Some reported the tower height above ground (AGL) and above sea level (MSL), lighting system, supporting structures, and other relevant details such as weather, while others reported only some of these details or none at all. Some studies reported a total number of bird kills with no further analysis, while others gave details of numbers of each species recovered. This report concentrates on the 47 studies with information on species and numbers, meaning the totals reported are only a very small representative fraction of the total number of birds killed at towers around the US each year. Despite the uncoordinated and unfocussed nature of the studies, what they are able to provide is invaluable information on the types of birds most likely to be killed at towers, identifying species of particular conservation concern.

Initial research of tower kill publications was undertaken by Karen Brown, in conjunction with Hawk Mountain Sanctuary, using library and internet searches. Papers with species and numbers lists were separated out for detailed analysis and cross-referenced with USFWS Endangered Species and Migratory Nongame Birds of Management Concern Lists and the Partners in Flight Watch List.

Results

Of the 149 documents examined with information on bird mortality at communication towers, 121 provided some detail on the numbers of birds and 88 provided some detail regarding the species killed. Only forty-seven included complete lists of both numbers and species. Reporting of tower structure varied significantly between studies. Some gave details of height, lighting, guy-wires and related information but many gave none of these. Many of the studies that did report height above ground (AGL) did not give height above sea level (MSL). The top of a 300 ft. tower situated on a 3,000 ft ridge would be substantially higher than a 1,000 ft. tower at sea level but we have no way of determining this in most cases. All of the 47 papers which gave height, reported lit towers over 199 ft AGL - the average reported height being 1,124 ft AGL. It is therefore not possible to make correlations between lit and unlit towers or short and tall towers. Weather factors can play a significant role in bird collisions at towers but only occasionally were these reported in the studies.

It is evident from compiling the studies that there is a clear geographical bias of the tower kill studies to date. Of the 47 studies included in this report only 14 are west of the Mississippi and none is west of the Rockies. Of the 50 US states, 29 do not show tower studies which list species and numbers (see map p. 16).

The studies providing information on numbers killed document a total of **545,250 birds killed** at the sites during the periods of study.

The 47 studies which provide a more detailed analysis describe **184,797 birds of 230 different species killed**, approximately one quarter of the number of species in the US. Of these 230 species, 51 (22.1%, or over one in five) are on either the USFWS Migratory, Nongame Birds of Management Concern List or the Partners in Flight Watch List. In addition, one species found at a tower, the Red-cockaded Woodpecker, is listed as Endangered.

The USFWS is required, by law, to produce a Migratory, Nongame Birds of Management Concern List (a.k.a. Species of Management Concern - SMC), updated every 5 years by the Office of Migratory Bird Management. This is intended to document bird species with "1. Documented or apparent population declines; 2. Small or restricted populations; and 3. Dependence on restricted or vulnerable habitats." These species of management concern are considered birds that, without additional conservation action, are likely to become candidates for listing under the Endangered Species Act. This listing is an early warning system that these species need special management to ensure their continued population viability. The most recent list was completed in 1995 (Trapp 1995) and contains 124 species, forty-two (or one third) of which have been recorded as killed in tower collisions.

Partners in Flight (PIF) is a cooperative effort by conservation organizations, federal and state agencies, private corporations and academicians, designed to protect the long-term well-being of birds in the Western Hemisphere. Its rigorously peer-reviewed Watch List documents the top 100 species in the highest tiers of conservation concern, behind those already listed under the Endangered Species Act. It takes into account relative abundance, range size, population trends and habitat threats to index birds in three priority ratings; 1. Extremely High, 2. Moderately High and 3. Moderate. Of the 100 species on the list, 29 have been documented as killed by tower collisions (29%). Fourteen of these are 'Extremely High Priority', 9 are 'Moderately High Priority' and 6 are 'Moderate Priority'.

Of particular concern to conservationists and all others involved with avian species is this report's finding that 52 species of birds that are of management concern and that need special focus to prevent their further decline have been killed at communications towers.

Most birds killed are neotropical, migratory songbirds which migrate between North America and Central/South America. Many of these species face grave threats to their populations from habitat loss and modification, introduced species such as cats, poisons such as pesticides, and building strikes. Mortality at communication towers is another threat to healthy populations of these songbirds.

Documented kills include 10 of the 33 species listed as 'Extremely High Priority' on the PIF Watch List and also on the USFWS Species of Management Concern List. These include Black Rail, Bell's Vireo, Golden-winged Warbler, Swainson's Warbler, Henslow's Sparrow, Bachman's Sparrow and McCown's Longspur. Four species, Smith's Longspur, Harris' Sparrow, Nelson's Sharp-tailed Sparrow and Franklin's Gull, are listed on the PIF 'Extremely High' Category but not on the USFWS list.

Also killed at towers and represented on both lists are Yellow Rail, Wood Thrush, Blackthroated Blue Warbler, Bobolink, Prairie Warbler, Worm-eating Warbler, Painted Bunting, Seaside Sparrow, Red-headed Woodpecker and Dickcissel. There are 22 other species killed at towers that are on the USFWS list but not the PIF list, including Alder Flycatcher, Sedge Wren, Least and American Bitterns, Blackpoll Warbler, Blue-winged Warbler, Field Sparrow and Tennessee Warbler - the third most commonly killed bird at towers (17,689 recorded) behind Ovenbird and Red-eyed Vireo. Obviously, the numbers reported are just the tip of an iceberg, since most carcasses are scavenged very quickly and the vast majority of the nearly 50,000 lit towers are not checked for bird mortality, even during spring and fall migration.

Of the 230 species killed, forty-one (17.8%) were warblers (including Ovenbird, Redstart and waterthrushes), twenty-three (10%) were sparrows, and twenty-two (9.5%) were waterfowl (including ducks, grebes and gallinules).

Ninety-two percent of birds killed at towers in the studies were migratory. The majority of these (57% of the total) are known to migrate predominantly or frequently at night (as classified by the *Birds of North America* - Poole *et al*, eds. 1992 -). These include warblers, sparrows (the two largest groups by species), thrushes, flycatchers and vireos. However, studies rarely mentioned at what time of day birds were collected.

For birds listed on USFWS SMC and PIF Watch lists, data were researched to show how these kills were distributed throughout the 47 studies. This reveals whether birds are killed in high numbers at a few towers, or in more moderate numbers per tower but at many more towers. These data show that, even where total kills numbered in the thousands, for all but three species (Tennessee Warbler, Blackpoll Warbler and Prairie Warbler) kills averaged less than 85 individuals of any one species at a single tower. This is evidence that bird mortality at communication towers is not specific to a few, select towers but is rather distributed widely for lit towers over 200 ft.

<u>List of Species Killed at Towers Documented by 47 Studies.</u> <u>Listed by Number Killed, in Descending Order</u>

Key :

USFWS SMC = US Fish & Wildlife Service Migratory Nongame Birds of Management Concern List (Species of Management Concern).

PIF = Partners in Flight Watch List.

Highlighted Species are on either of the above lists or The Endangered Species List.

Y = species is on the USFWS SMC List.

1,2 & 3 are PIF Watch List Designations. 1 = Extremely high. 2 = High. 3 = Moderate.

For example Cerulean Warbler is on USFWS SMC List and PIF Watch List as Extremely High Priority. 164 individuals were recorded at 5 towers.

Number of towers where bird species were found was only calculated for species of management concern.

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|-----------------------------|--------------|-----|----------|-------------------------|
| Ovenbird | | | 22619 | |
| Red-eyed Vireo | | | 19707 | |
| Tennessee Warbler | Y | | 17689 | 32 |
| Common Yellowthroat | | | 10397 | |
| Bay-breasted Warbler | | | 10396 | |
| American Redstart | | | 8392 | |
| Blackpoll Warbler | Y | | 6304 | 32 |
| Black-and-white Warbler | | | 6099 | |
| Philadelphea Vireo | | | 4317 | |
| Swainson's Thrush | | | 3943 | |
| Palm Warbler | | | 3441 | |
| Gray Catbird | | | 3238 | |
| Northern Waterthrush | | | 3148 | |
| Northern Parula | | | 2662 | |
| Magnolia Warbler | | | 2630 | |
| Connecticut Warbler | | | 2624 | |
| Blackburnian Warbler | | | 2538 | |
| Ruby-crowned Kinglet | | | 2336 | |
| Yellow-rumped Warbler | | | 2287 | |
| White-eyed Vireo | | | 2222 | |
| Cape May Warbler | | | 2199 | |
| Black-throated Blue Warbler | Y | 2 | 2061 | 25 |
| Indigo Bunting | | | 1892 | |
| Unidentified birds | | | 1833 | |

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|------------------------------|-----------|-----|----------|-------------------------|
| Gray-cheeked Thrush | Y | | 1793 | 30 |
| Rose-breasted Grossbeak | | | 1580 | |
| Veery | Y | | 1511 | 23 |
| Chestnut-sided Warbler | Y | | 1426 | 32 |
| Savannah Sparrow | | | 1335 | |
| Black-throated Green Warbler | | | 1330 | |
| Hooded Warbler | | | 1245 | |
| Solitary Vireo | | | 1220 | |
| Bobolink | Y | 3 | 1201 | 30 |
| Nashville Warbler | | | 1098 | |
| Golden-crowned Kinglet | | | 1071 | |
| Prairie Warbler | Y | 2 | 1018 | 6 |
| Orange-crowned Warbler | | | 959 | |
| Marsh Wren | | | 888 | |
| Swamp Sparrow | | | 850 | |
| Mourning Warbler | | | 814 | |
| House Wren | | | 804 | |
| Yellow-throated Vireo | | | 801 | |
| White-throated Sparrow | | | 797 | |
| Chipping Sparrow | | | 733 | |
| Canada Warbler | | | 689 | |
| Wood Thrush | Y | 2 | 684 | 25 |
| Sora Rail | | | 657 | |
| Scarlet Tanager | | | 615 | |
| Grasshopper Sparrow | Y | | 582 | 27 |
| Yellow-billed Cuckoo | Y | | 568 | 17 |
| Kentucky Warbler | | | 568 | |
| Traill's Flycatcher | | | 545 | |
| Golden-winged Warbler | Y | 1 | 542 | 15 |
| Prothonotary Warbler | | 2 | 476 | 7 |
| Wilson's Warbler | | | 466 | |
| Lincoln's Sparrow | | | 463 | |
| Song Sparrow | | | 422 | |
| Yellow Warbler | | | 419 | |
| Red-winged Blackbird | | | 410 | |

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|---------------------------|-----------|-----|----------|-------------------------|
| Brown Thrasher | | | 376 | |
| Northern Oriole | | | 362 | |
| Yellow-throated Warbler | | | 339 | |
| Swainson's Warbler | Y | 1 | 336 | 9 |
| Red-breasted Nuthatch | | | 335 | |
| Summer Tanager | | | 323 | |
| Hermit Thrush | | | 302 | |
| Least Flycatcher | | | 280 | |
| Pine Warbler | | | 278 | |
| Worm-eating Warbler | Y | 2 | 255 | 7 |
| Yellow-bellied Flycatcher | | | 251 | |
| Brown-headed Cowbird | | | 243 | |
| Yellow-bellied Sapsucker | | | 228 | |
| Brown Creeper | | | 228 | |
| Rufous-sided Towhee | | | 204 | |
| Vesper Sparrow | | | 191 | |
| Eastern Wood-Pewee | | | 183 | |
| Dickcissel | Y | 2 | 171 | 16 |
| Mourning Dove | | | 165 | |
| Cerulean Warbler | Y | 1 | 164 | 5 |
| Dark-eyed Junco | | | 149 | |
| Field Sparrow | Y | | 147 | 9 |
| Varied Thrush | | | 146 | |
| Warbling Vireo | | | 144 | |
| Virginia Rail | | | 144 | |
| Yellow-breasted Chat | | | 143 | |
| Clay-colored Sparrow | | 3 | 135 | 10 |
| Acadian Flycatcher | | | 134 | |
| Great Crested Flycatcher | | | 128 | |
| Pied-billed Grebe | | | 123 | |
| Sedge Wren | Y | | 107 | 3 |
| Black-billed Cuckoo | | | 104 | |
| Louisiana Waterthrush | Y | | 103 | 9 |
| Cedar Waxwing | | | 102 | |
| Eastern Meadowlark | Y | | 97 | 5 |

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|--------------------------|-----------|-----|----------|-------------------------|
| Fox Sparrow | | | 91 | |
| American Tree Sparrow | | | 90 | |
| Blue Grosbeak | | | 86 | |
| Blue-winged Warbler | Y | | 83 | 4 |
| Northern Flicker | Y | | 79 | 14 |
| Orchard Oriole | - | | 79 | |
| Bachman's Sparrow | Y | 1 | 74 | 2 |
| Purple Finch | - | | 70 | |
| Yellow Rail | Y | 2 | 67 | 15 |
| Winter Wren | - | | 62 | |
| Ring-necked Duck | | | 61 | |
| Northern Cardinal | | | 54 | |
| American Tree Sparrow | | | 54 | |
| Sharp-tailed Sparrow sp. | | 1 | 51 | 6 |
| Green-backed Heron | - | | 50 | |
| Henslow's Sparrow | Y | 1 | 49 | 4 |
| Common Snipe | | | 49 | |
| White-crowned Sparrow | | | 41 | |
| Northern Mockingbird | | | 38 | |
| Eastern Kingbird | | | 37 | |
| Willow Flycatcher | | | 36 | |
| Le Conte's Sparrow | | | 36 | |
| Chimney Swift | | | 33 | |
| Common Gallinule | | | 33 | |
| European Starling | | | 33 | |
| Red-headed Woodpecker | Y | 3 | 33 | 6 |
| American Bittern | Y | | 32 | 4 |
| Common Nighthawk | | | 29 | |
| Blue-Winged Teal | | | 28 | |
| Alder Flycatcher | Y | | 25 | 4 |
| Eastern Phoebe | - | | 23 | |
| American Coot | | | 23 | |
| Least Bittern | Y | | 22 | 4 |
| Unidentified flycatchers | | | 19 | |

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|----------------------------|-----------|-----|----------|-------------------------|
| Pine Siskin | | | 18 | |
| Cattle Egret | | | 17 | |
| Turkey Vulture | | | 16 | |
| Goldfinch sp. | | | 15 | |
| Purple Gallinule | | | 14 | |
| House Sparrow | | | 14 | |
| Tree Swallow | | | 14 | |
| Downy Woodpecker | | | 13 | |
| Rusty Blackbird | | | 12 | |
| Seaside Sparrow | Y | 2 | 12 | 2 |
| Lesser Scaup | | | 12 | |
| Slate-colored Junco | | | 12 | |
| Lapland Longspur | | | 9 | |
| Spotted Sandpiper | | | 9 | |
| Black Rail | Y | 1 | 8 | 1 |
| Green-winged Teal | | | 8 | |
| Ground Dove | Y | | 8 | 2 |
| Harris' Sparrow | | 1 | 8 | 2 |
| Wood Duck | | | 8 | |
| American Woodcock | | 3 | 8 | 4 |
| Clapper Rail | | | 7 | |
| Belted Kingfisher | | | 7 | |
| Snow Bunting | | | 7 | |
| Whip-poor-will | | | 7 | |
| Chuck-will's Widow | | 3 | 6 | 2 |
| Painted Bunting | Y | 2 | 6 | 3 |
| Yellow-crowned Night-Heron | | | 6 | |
| Blue Jay | | | 6 | |
| American Robin | | | 6 | |
| King Rail | | | 5 | |
| Purple Martin | | | 5 | |
| Hooded Merganser | | | 5 | |
| Eastern Bluebird | | | 5 | |
| Barn Swallow | | | 4 | |

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|--------------------------|-----------|-----|----------|-------------------------|
| Bell's Vireo | Y | 1 | 4 | 2 |
| Black Vulture | | | 4 | |
| Blue-headed Vireo | | | 4 | |
| Common Grackle | | | 4 | |
| Herring Gull | | | 4 | |
| Little Blue Heron | | | 4 | |
| Olive-sided Flycatcher | Y | | 4 | 1 |
| Myrtle Warbler | | | 4 | |
| Solitary Sandpiper | | | 4 | |
| Bewick's Wren | Y | | 3 | 1 |
| Carolina Wren | | | 3 | |
| Double-crested Cormorant | | | 3 | |
| Red-bellied Woodpecker | | | 3 | |
| Hairy Woodpecker | | | 3 | |
| Spotted Towhee | | | 3 | |
| American Pipit | | | 3 | |
| American Goldfinch | | | 3 | |
| Common Redpoll | | | 3 | |
| American Wigeon | | | 2 | |
| Evening Grosbeak | | | 2 | |
| Gadwall | | | 2 | |
| Loggerhead Shrike | Y | | 2 | 1 |
| Tricolored Heron | | | 2 | |
| Mallard | | | 2 | |
| Northern Bobwhite | | | 2 | |
| Northern Shoveler | | | 2 | |
| Red Phalarope | | | 2 | |
| Red-breasted Merganser | | | 2 | |
| Red-cockaded Woodpecker | | | 2 | 1 |
| Redhead | | | 2 | |
| Ruddy Duck | | | 2 | |
| Waterthrush sp. | | | 2 | |
| Upland Sandpiper | | | 2 | |
| Western Meadowlark | | | 2 | |
| Sapsucker sp. | | | 1 | |

| SPECIES | USFWS SMC | PIF | # KILLED | # OF TOWERS FOUND AT |
|-------------------------|-----------|-----|----------|-------------------------|
| American Black Duck | | 3 | 1 | 1 |
| American Crow | | | 1 | |
| Baird's Sparrow | Y | 1 | 1 | 1 |
| Bank Swallow | | | 1 | |
| Black-capped Petrel | Y | 1 | 1 | 1 |
| Blue-gray Gnatcatcher | | | 1 | |
| Eared Grebe | | | 1 | |
| Franklin's Gull | | 1 | 1 | 1 |
| Gray Partridge | | | 1 | |
| Great Horned Owl | | | 1 | |
| Horned Grebe | | | 1 | |
| Lark Sparrow | Y | | 1 | 1 |
| Least Sandpiper | | | 1 | |
| MacGillivray's Warbler | | | 1 | |
| Northern Harrier | | | 1 | |
| McCown's Longspur | Y | 1 | 1 | 1 |
| Northern Pintail | | | 1 | |
| Oriole sp. | | | 1 | |
| Red-bellied Woodpecker | | | 1 | |
| Rock Dove | | | 1 | |
| Smith's Longspur | | 1 | 1 | 1 |
| Snowy Egret | | | 1 | |
| Sooty Tern | | | 1 | |
| Unidentified warbler | | | 1 | |
| Western Tanager | | | 1 | |
| White Ibis | | | 1 | |
| White-breasted Nuthatch | | | 1 | |
| Willet | | | 1 | |
| Yellow-headed Blackbird | | | 1 | |
| Semipalmated Sandpiper | | | 1 | |
| Cliff Swallow | | | 1 | |
| "Brewster's" Warbler | | | 1 | |
| Pectoral Sandpiper | | | 1 | |
| Common Tern | Y | | 1 | 1 |
| Kildeer | | | 1 | |

Efforts to Resolve the Killing of Birds at Towers

While most of the research into bird kills at towers has involved conducting body counts and bird speciation, research into mitigation measures has been scant, but progress is being made in the effort to determine causes of bird collisions with communication towers and to uncover solutions to the problem. There are promising - but as yet systematically untested - ideas which involve changes in lighting protocol, the use of infra-sound, bird diverters, visual markers and other devices. On June 29, 1999, 42 stakeholders representing most of the diversity of interests surrounding the issue, met at the environmental dispute resolution group, RESOLVE, to begin a discussion regarding research needs. The Communication Tower Working Group (CTWG) - specifically tasked to develop and implement a research protocol, and chaired by the USFWS - was formed. The CTWG is composed of representatives of USFWS and other Federal and State government agencies, the telecommunications and broadcast industries, tower companies, research scientists and conservation organizations such as ABC. The CTWG met on November 2, 1999 with industry participation and with a representative of the White House Office of Science and Technology Policy present. The group agreed to the appointment of a Research Committee to develop a research protocol and another committee to recommend funding resources.

On August 11, 1999 the first public workshop on Avian Mortality at Communication Towers was held at Cornell University in conjunction with the 117th meeting of the American Ornithologists' Union. At that meeting, essentially all stakeholders from the various agency, industry research, and NGO perspectives were represented on the 17-speaker and 23-member panel discussion (the complete transcript of that meeting is available on the USFWS web site: http://migratorybirds.fws.gov/issues/towers/agenda.html). This workshop was co-sponsored by the USFWS, ABC, and the Ornithological Council. Meanwhile, media interest in the bird-kill issue has been very strong, with articles in Sports Afield, The Boston Globe, Associated Press, Knight Ridder, Reuters, USA Today, Radio World, The Milwaukee Journal, The Wall Street Journal and The Chicago Sun Times, plus segments on National Public Radio's "Morning Edition", CNN, and other media.

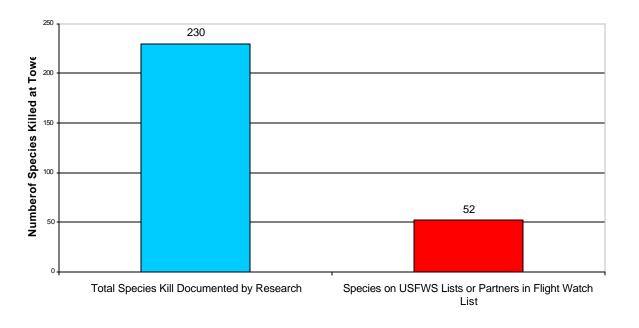
A meeting of the Research Committee was held on April 17, 2000 and hosted by ABC, at which leading scientists on this issue worked to develop a research protocol and appointed sub-committees to further develop these research strategies. Tower industry companies and some environmental groups funded the meeting and are funding the subsequent meeting of the full CTWG. Tom Muir of the White House Office of Science and Technology Policy moderated the meeting that produced a plan for ascertaining why birds are killed at towers and what mitigation measures can be employed. Once the research protocol is approved by the full CTWG, a funding committee will seek the monies to complete the research with the goal of ascertaining what mitigation measures can be employed to end or greatly reduce avian mortality at towers.

ABC continues to meet with federal and industry officials to seek solutions. ABC and Hawk Mountain Sanctuary have joined in filing a petition with the FCC to prevent the construction of a 265 ft., lighted cell tower on the Kittatinny Ridge, near Hawk Mountain. The Federal Communications Commission (FCC) has been requested to require an Environmental Assessment for potential bird mortality at this tower, situated on a major, migratory bird route. No action has been taken by FCC since the petition was filed in September 1999, thus the Hawk Mountain tower application remains blocked. Jamie Clark, the Director of the USFWS, sent a letter to the chairman of the FCC in November 1999, outlining the need for a programmatic Environmental Impact Statement (EIS) on the cumulative impact of towers nationwide, noting the large number of migratory birds killed at towers and requesting a meeting with the Chairman of FCC to discuss the tower mortality situation. While Chairman Kennard's response to Director Clark indicated his agencies lack of support for a programmatic EIS, he did indicate that the FCC would continue to address the impacts of towers on migratory birds on a case-by-case basis. Individuals and conservation groups continue to appeal the location of communication towers in key migratory bird corridors and have been urging research to ascertain measures to prevent avian mortality.

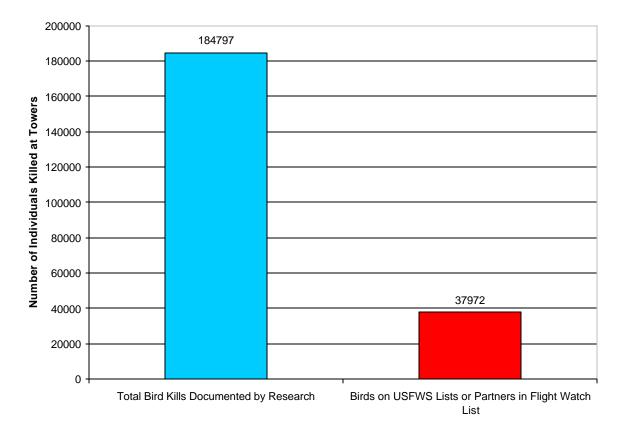
It is hoped that the final research protocol agreed upon by the CTWG will be fully implemented and effective measures will be introduced to end the killing of birds at communication towers. ABC and its partners will be working with the CTWG to ensure that solutions are found and that the protocol is implemented.

Graph 1

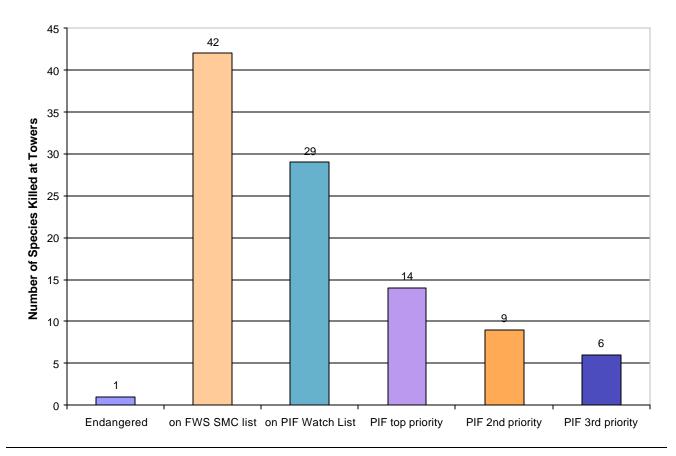
<u>Comparison of Total Number of Birds Species Killed at Towers in 47 Studies</u> <u>With Species on USFWS and Partners in Flight Lists</u>



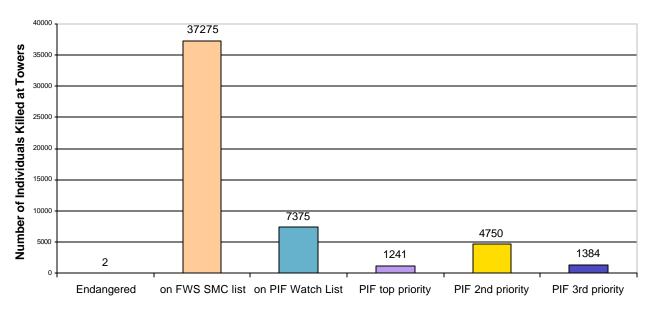
<u>Graph 2</u> <u>Comparison of Total Number of Birds Killed at Towers in 47 Studies</u> <u>With Total Number of Individuals on USFWS and PIF Lists</u>



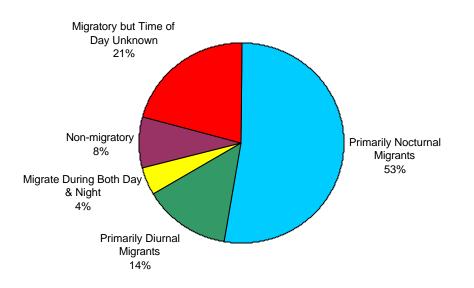
<u>Graph 3</u> <u>Numbers of Species on USFWS SMC List and PIF Watch List</u> (Priorities 1, 2 & 3) Killed at Towers in 47 Studies



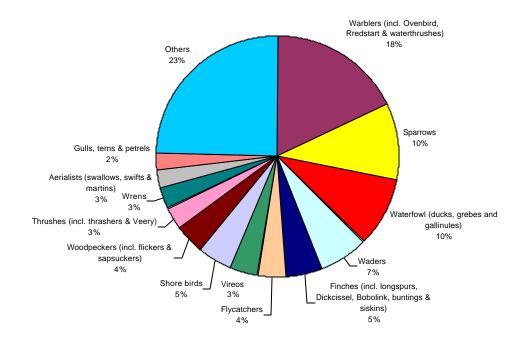
<u>Graph 4</u> <u>Numbers of Birds on USFWS SMC List and PIF Watch List</u> <u>(Priorities 1, 2 & 3) Killed at Towers in 47 Studies</u>



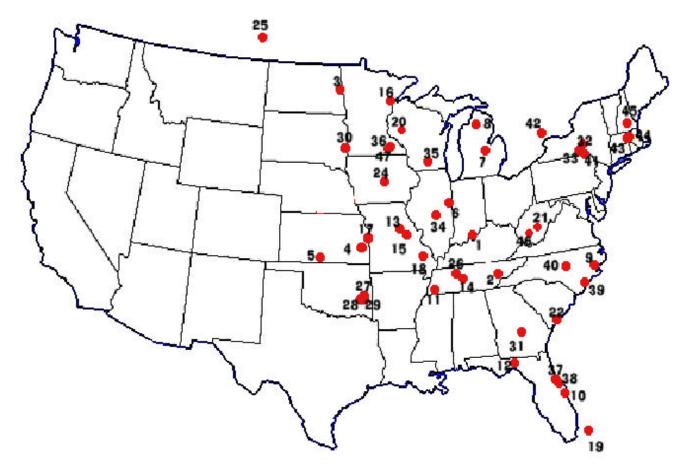
<u>Graph 5</u> <u>The Proportion of Migratory vs. Non-migratory Birds and</u> <u>Nocturnal vs. Diurnal Migrants Killed at Towers in 47 Studies</u>



<u>Graph 6</u> <u>Types of Birds Most Commonly Killed at Communication Towers</u> in 47 Studies (shown as percentage of the overall total)



Distribution Map of 47 Tower Studies Containing Species and Number Data, Throughout the United States and Canada



- 1. Able K.P. 1966, New Albany, IN
- 2. Alsop F.J. & G. O. Wallace 1969, Knoxville, TN
- 3. Avery M. 1972, Eastern, ND
- 4. Ball Lisa G. et al 1995, Topeka, KS
- 5. Boso B.1965, KS
- 6. Brewer R. & J.A. Ellis 1958, Champaign, IL
- 7. Caldwell L.D. & G.W. Wallace 1966, MI
- 8. Caldwell L.D & N.L. Cuthbert 1963, Cadiallac, MI 32. Rosche R.C. 1971, Elmira, NY
- 9. Carter J.H. & J.F. Parnell 1976, Eastern, NC
- 10. Case L.D. et al 1965, Melbourne, FL
- 11. Coffey B. B. 1964, Memphis, TN
- 12. Crawford R.L. 1978 Talahassee, FL
- 13. Elder W.H. & J. Hansen 1967, Columbia, MO
- 14. Ganier A.F. 1962, Nashville, TN
- 15. George W. 1963, Columbia, MO
- 16. Green J.C. 1963, Duluth, MN
- 17. Gregory H. 1975, Kansas City & Lawrence, KS
- 18. Heye P.L. 1963, Cape Giradeau, MO
- 19. Kale H.W. et al 1969, Grand Bahamas
- 20. Kemper C.A. 1995, Eau Claire WI
- 21. Ellis C.D. 1997, Putnam Co. WV
- 22. Kleen V.M. 1973, Springfield & Charleston, SC
- 23. Lupient M. 1961, Chippewa Falls, WS
- 24. Mosman D. 1975, Alleman, IA

- 25. Nero R.W. 1961, Saskatchewan, Canada
- 26. Newman R.J. 1961, Nashville, TN
- 27. Norman J.L. 1975, Coweta, OK
- 28. Norman J.L. 1976, Coweta, OK
- 29. Norman J.L. 1977, Coweta OK
- 30. Pierce M.E. 1969, Flandreau, SD
- 31. Johnston D.W. & T. P. Haines 1957, Macon, GA
- 33. Rosche R.C. 1972, Elmira, NY
- 34. Seets J.W. 1977, Central, IL
- 35. Sharp B. 1971, Madison, WS
- 36. Strnad F. 1962, Ostrander, MN
- 37. Taylor W.K. 1973, Orlando, FL
- 38. Taylor W.K. 1974, Orlando, FL
- 39. Teullings R.P. 1972, Bladen County, NC
- 40. Trott J. 1957, Chapel Hill, NC
- 41. Welles M. 1978, Elmira, NY
- 42. Devitt O. 1984 Simcoe County, Ontario, Canada
- 43. Baird J. 1970, Boylston, MA
- 44. Baird J. 1971, Boylston, MA
- 45. Sawyer J. 1961, Deerfield, NH
- 46. Heron J. 1997, Lewis Co WV
- 47. Strnad F. 1975. Ostrander, MN

Conclusions

It is apparent from analysis of the data that significant numbers of birds are dying in collisions with communications towers, their guy wires and related structures. Occurrences have been recorded of many thousands of bird deaths in a single night at one tower. In 1998 between 5,000-10,000 Lapland Longspurs died at and in the vicinity of three communication towers (the tallest of these was a 420 ft. television tower) and a fourth, non-tower structure in western Kansas. Weather factors, particularly fog or low cloud, may play a significant role in these incidents. Over one-quarter of the bird species in the US have been documented killed at towers, and 22% of those are rare enough to be listed by Partners in Flight or the USFWS as being of conservation concern. The data show that small, nocturnally migrating songbirds such as warblers and sparrows are the most vulnerable to the tower hazard, but more research is needed to ascertain why this is so. Of the larger bird species, waterfowl are most likely to be killed in tower collisions.

The most significant problem with the data is the uncoordinated manner in which it was collected. The majority of studies began when someone noticed, by chance (either because they lived nearby or were conducting a different kind of study at a tower site), that birds were dying by striking a particular tower or group of towers. Studies were then initiated at those towers which, while being undertaken scientifically, did not conform to any overall protocol for the study of the issue of tower kills as a whole. Some studies were simply records of a one-time bird kill, others lasted over a migration season, some continued for decades. Because the towers came to be studied as a result of the discovery of bird kills, it is not possible to make comparisons with towers which kill very few birds and draw conclusions as to why this is i.e. differences in height, presence/absence or method of lighting, surrounding topography and other factors. Until recently, it has not possible to discern which part of the tower in particular - if any - a bird is most likely to hit (guy wires, lights, main structure or even the surrounding ground), but with technological advances, more specific details might be provided.

Little research has been conducted to discover a simple way of preventing birds from striking towers that can be retro-fitted to existing structures, whether this be audible (noisemakers, predator calls) or visual (streamers, sleeves, balls, paint, extra lights, changing the duration of the strobes and the flash rate). Further coordinated study is needed, conforming to a scientifically rigorous protocol, to determine the exact cause of bird deaths at towers and how this may be reduced. Paralleling USFWS draft, voluntary, interim guidelines on tower erection, ABC recommends the following measures to minimize the avian hazard at communications towers:

- Reduce numbers of new towers needed to be built by attempting to use existing structures such as buildings and co-locating multiple antennae on a single structure.
- If new towers must be built, construct them to be below 199 ft. tall to avoid the requirement for aviation safety lighting. Construct unguyed towers with platforms that will accommodate possible future co-locations and build them at existing 'antenna farms', away from areas of high migratory bird traffic, wetlands and other known bird areas.
- Where towers over 199 ft. are absolutely necessary, use the minimum amount and intensity of lighting allowed under FCC regulations.
- Minimize the tower 'footprint' on newly constructed towers.
- Dismantle inactive towers as soon as possible.
- Use visual daytime markers in areas of high diurnal raptor or waterfowl movements.
- Security lighting for on-ground facilities should be minimized, point downwards or be down-shielded.
- Allow access to tower sites for monitoring purposes.
- Existing evidence may suggest that the use of white strobes results in less circling behavior by nocturnal migrants and thus fewer mortalities than red pulsating lights. However, the reasons for these differences are unclear and the data require further, rigorous scientific verification.

REFERENCES

SCIENTIFIC PUBLICATIONS

Aronoff, A. 1949. The September migration tragedy. Linnaean News-Letter 3(1): 2

Able, K.P. 1973. The Changing Seasons. American Birds. 27:1. pp 19-23

Anonymous. 1961. Large bird kills at TV Towers. Bluebird. 28:1. pp 9

Avery, M. and T. Clement. 1972. Bird Mortality at 4 Towers in Eastern North Dakota: Fall 1972. Prairie Naturalist. 4:3/4 pp 87-95

Avery, M., P.F. Springer and J.F. Cassel. 1977. Weather Influences on nocturnal bird mortality at a North Dakota tower. *Wilson Bulletin.* 89:2 pp 291-299

Bagg, A.M. 1969. The Changing Seasons. Audubon Field Notes. 23:1 pp 4-12

Bagg, A.M. 1971. The Changing Seasons. American Birds. 25:1 pp 16-23

Baird, J. 1962. The Changing Seasons: a summary of Fall migration. Audubon Field Notes. 16:1 pp 4-6

Baird, J. 1964. The Changing Seasons. Audubon Field Notes. 16:1 pp 4-6

Baird, J. 1970. Mortality of Fall Migrants at Boylston television tower in 1970. The Chickadee : 40 pp 17-21

Baird J. 1971. Mortality of Birds at the Boylston Television Tower in September of 1971. The Chickadee pp 20-25

Balcomb, Richard. 1986. Songbird Carcasses disappear rapidly from agricultural fields. Auk. 103:4 pp 817-820

Ball, Lisa G., K. Zyskowski and G. Escalona-Segura. 1995. Recent Bird Mortality at a Topeka Television Tower. *Kansas Ornithological Society*. 46:4 pp 33-36

Ball, R.E. 1973. Bird Mortalities at towers in Marysville, MS: fall 1972. *Transactions of the Missouri Acad Sci.* 7:8pp 294

Boso, B. 1965. Bird Casualties at a Southern Kansas TV tower. *Transactions of the Kansas Academy of Science*. 68:1 pp 131-136

Breckenridge, W.J. 1959. Spring migration: western Great Lakes region. *Audubon Field Notes*. 13:4 pp 371-373

Brewer, R and J.A. Ellis. 1958. An Analysis of migrating birds killed at a television tower in east central Illinois. Auk. 75:4 pp 400-414

Browne, M.M. and W. Post. 1972. Black rails hit a television tower at Raleigh, North Carolina. *Wilson Bulletin.* 84:4 pp 491-492

Caldwell, L.D. and N.L. Cuthbert. 1963. Bird Mortality at Television Towers near Cadillac, Michigan. *The Jack-Pine Warbler*. 41:2 pp 80-89

Caldwell, L.D. and G.J. Wallace. 1966. Collections of migrating birds at Michigan television towers. *Jack Pine Warbler*. 44:3 pp 117-123

Carter, J.H. III and J.F. Parnell. 1976. TV tower kills in eastern North Carolina. Chat. 40:1 pp 1-9

Case, L.D., H. Cruickshank, A.E. Ellis & W.F. White. 1965. Weather causes heavy bird mortality. Florida Naturalist. 38:1 pp 29-30

Chamberlain, B.R. 1955. Fall Migration: southern Atlantic Coast region. Audubon Field Notes. 9:1 pp 17-18

Chamberlain, B.R. 1957. Fall Migration: southern Atlantic Coast region. Audubon Field Notes. 11:1 pp 15-18

Chamberlain, B.R. 1958. Fall Migration: southern Atlantic Coast region. Audubon Field Notes. 12:1 pp 19-21

Chamberlain, B.R. 1961. Fall Migration: southern Atlantic Coast region. Audubon Field Notes. 15:1 pp 23-26

Cochran, W.W. and R.R. Graber. 1958. Attraction of Nocturnal migrants by lights on a television tower. *Wilson Bulletin*. 70:4 pp 378-380

Coffey, B.B., Jr. 1964. Two bird kills at WMC-TV, Memphis. Migrant. 35:2 pp 53

Crawford, R.L. 1971. Predation on birds killed at TV tower. Oriole. 36:4 pp 33-35

Crawford, R.L. 1974. Bird Casualties at a Leon County, Florida TV Tower: Bulletin. Tall Timbers Res. Stn. 18 pp 1-27

Crawford, R.L. 1976. Some old records of TV tower kills from southwest Georgia. Oriole. 41:4 pp 45-51

Crawford, R.L. 1978. Autumn bird Casualties at a northern Florida TV Tower: 1973-1975. Wilson Bulletin. 90:3 pp 335-345

Crawford, R.L. 1981. Bird Casualties at a Leon County, Florida TV Tower: A 25 year migration study. *Bulletin of Tall Timbers Research Station.* 22 pp 1-30

Cunningham, R.L. 1964. Fall Migration: Florida region. Audubon Field Notes. 18:1 pp 24-28

Cunningham, R.L. 1964. Spring Migration: Florida Region. Audubon Field Notes. 18:4 pp 442-446

Cunningham, R.L. 1965. Fall Migration: Florida Region. Audubon Field Notes. 19:1 pp 28-33

Devitt, O. 1984 Birds of Simcoe County, Ontario. Bereton Field Naturalists' Club,

Dunbar, R.J. 1954. Bird Mortality - Oak Ridge. Migrant. 25:4 pp 63-64

Eaton, S.W. 1967. Recent tower kills in upstate New York. Kingbird. 17:3 pp 142-147

Edscorn, J.B. 1974. The fall migration: Florida Region. American Birds. 28:1 pp 40-44

Edscorn, J.B. 1975. The fall migration: Florida Region. American Birds. 29:1 pp 44-48

Elder, W.H. and J. Hansen. 1967. Bird Mortality at KOMU-TV tower, Columbia, Missouri, fall 1965 & 1966. Bluebird. 34:1 pp 3-7

Ellis, C.D. 1997. Back to the Tower: Tower Killed Birds at Putnam County, West Virginia. Redstart. 64 pp 112-113

Feehan, J. 1963. Destruction of Birdlife in MN—Birds Killed at the Ostrander TV Tower. Flicker. 35 pp 111-112

Ganier, A.F. 1962. Bird Casualties at a Nashville TV tower. Migrant. 33:4 pp 58-60

George, W. 1963. Columbia tower fatalities. Bluebird. 30:4 pp 5

Gollop, M.A. 1965. Bird Migration collision casualties at Saskatoon. Blue Jay. 23:1 pp 15-17

Goodpasture, K.A. 1974. Fall 1972 television tower casualties in Nashville. Migrant. 45:2 pp 29-31

Goodpasture, K.A. 1974. Fall 1973 television tower casualties in Nashville. Migrant. 45:3 pp 57-59

Goodpasture, K.A. 1975. Nashville tower casualties, 1974. Migrant. 46:3 pp 49-51

Goodpasture, K.A. 1976. Nashville television tower casualties, 1975. Migrant. 47:1 pp 8-10

Goodpasture, K.A. 1978. Television tower casualties, 1976. Migrant. 49:3 pp 53-54

Goodwin, C.E. 1975. The winter season: Ontario region. American Birds. 29:1 pp 48-57

Goodwin, C.E. and R.C. Rosche. 1971. The fall migration: Ontario. American Birds. 25:1 pp 49-54

- Green, J.C. 1963. Destruction of Bird Life in Minnesota Sept 1963. Flicker. 35:4 pp 112-113
- Green, J.C. 1964. Fall migration: western Great Lakes region. Audubon Field Notes. 18:1 pp 33-34

Gregory, H. 1975. Unusual fall tower kill. Bluebird. 42:4 pp 9-10

- Hall, G.A. 1975. The Fall Migration: Appalachian Region. American Birds. 29:1 pp 57-61
- Hall, G.A. 1976. The Fall Migration: Appalachian Region. American Birds. 30:1 pp 67-71
- Hall, G.A. 1977. The Fall Migration: Appalachian Region. American Birds. 31:2 pp 176-179
- Hatch, D.R.M. 1966. Fall Migration: northern Great Plains Region. Audubon Field Notes. 20:1 pp 61-64
- Herdon, L.R. 1973. Bird kill on Holston Mountain. Migrant. 44:1 pp 1-4
- Heron, J. 1997. TV Transmission Tower Kills in Lewis County, West Virginia. Redstart 64 pp 114-117
- Heye, P.L. 1963. Tower fatalities. Bluebird. 30:1 pp 7
- Hoskin, J. 1975. Casualties at the CKVR-TV tower, Barrie. Nature Canada. 4:2 pp 39-40
- James, D. H. and H. Shugart. 1967. Fall Migration: central southern region. Audubon Field Notes. 21:1 pp 45-47
- Janssen, R.B. 1963. Destruction of bird life in Minessota- Sept 1963. Birds killed at the Lewisville television tower. *Flicker*. 35:4 pp 110-111
- Janssen, R.B. 1963. Destruction of bird life in Minessota- Sept 1963. Birds killed at the Lewisville television tower. *Flicker*. 35:4 pp 113-114
- Johnston, D.W. 1957. Bird Mortality in Georgia, 1957. Oriole. 22:4 pp 33-39
- Johnston, D.W. and T.P. Haines. 1957. Analysis of mass mortality in October, 1954. Auk. 74:4 pp 447-458
- Kale, H.W.,II, M.H. Hundley and J.A. Tucker. 1969. Tower-killed specimens & observations of migrant birds from Grand Bahama Isl. *Wilson Bltn.* 81:3 pp 258-263
- Kemper, C.A. 1958. Destruction at the TV tower. Passenger Pigeon. 20:1 pp 3-9
- Kemper, C.A. 1959. More TV tower destruction. Passenger Pigeon. 21:4 pp 135-142
- Kemper, C.A. 1996. A Study of Bird Mortality at a Central Wisconsin TV Tower from 1957-1995. *Passenger Pigeon* 58 pp 219- 235
- Kemper, C.A. 1964. A Tower for TV: 30,000 dead birds. Audubon Magazine. 66:1 pp 86-90
- Kibbe, D.P. 1975. The Fall Migration: western New York and northwestern Pennsylvania. American Birds. 29:1 pp 53-57
- Kibbe, D.P. 1976. The Spring Migration: Niagara-Champlain region. American Birds. 30:1 pp 64-66
- Kleen, V.M. and L. Bush. 1973. The Fall Migration: middle western prairie region. American Birds. 27:1 pp 66-70
- Knauth, O. 1972. Hundreds of Birds die after hitting TV tower. Des Moines Sunday Register. 24 sept pp 3
- Laskey, A.R. 1957. Television tower casualties: Nashville. Migrant. 28:4 pp 54-57
- Laskey, A.R. 1960. Bird Migration casualties and weather conditions, autumns 1958-1959-1960. Migrant. 31:4 pp 61-65
- Laskey, A.R. 1962. Migration data from television tower casualties at Nashville. Migrant.. 33:1 pp 7-8
- Laskey, A.R. 1963. Casualties at WSIX TV tower in autumn, 1962 . *Migrant.* 34:1 pp 15
- Laskey, A.R. 1963. Mortality of night migrants at Nashville TV towers, 1963. Migrant. 34:4 pp 65-66
- Laskey, A.R. 1964. Data from the Nashville TV Tower casualties. *Migrant*. 35:4 pp 95-96
- Laskey, A.R. 1967. Spring mortality of Black poll warblers at Nashville TV tower. Migrant.. 38:2 pp 43
- Laskey, A.R. 1968. Television tower mortality at Nashville, autumn 1967. Migrant. 29:2 pp 25-26
- Laskey, A.R. 1969. TV tower casualties at Nashville in autumn 1968. Migrant. 40:2 pp 25-27
- Laskey, A.R. 1969. Autumn 1969: TV tower casualties at Nashville. *Migrant.* 40:4 pp 79-80
- Laskey, A.R. 1971. TV tower casualties at Nashville: spring and autumn, 1970. Migrant. 42:1 pp 15-16
- Lavendel, Brian. 1999. Special Report: Menace in the Sky. Animals. 132:4 pp 12
- Lister, R. 1965. Fall Migration: Northern Great Plains Region. Audubon Field Notes. 19:1 pp 48-53
- Lupient, M. 1961. Fall Migration: western Great Lakes region. Audubon Field Notes. 15:1 pp 42-44
- Lupient, M. 1962. Fall Migration: western Great Lakes Region.. Audubon Field Notes. 16:1 pp 34-35
- Manual, D.D. 1963. TV Transmitter kills in South Bend, Indiana, fall 1962. Indiana Audubon Quarterly. 41:3 pp 49-53
- Manville, A.M. II. The ABC's of avoiding bird collisions at communication towers: the next steps. Proceedings of the Avian
- Interactions Workshop, Dec 2, 1999. Charleston, SC Electric Power Res. Inst. 14 pp. In Press.
- Mosman, D. 1975. Bird Casualties at Alleman, Iowa TV tower. Iowa Bird Life. 45:3 pp 88-90
- Nero, R.W. 1961. Regina TV tower bird mortalities 1961. Blue Jay. 19:4 pp 160-164
- Newman, R.J. 1957. The Changing Seasons. Audubon Field Notes. 11:1 pp 4-6
- Newman, R.J. 1958. The Changing Seasons. Audubon Field Notes. 12:1 pp 4-9
 - Seasons. American Birds. 29:1 pp 23-28
- Newman, R.J. 1961. Fall migration: central southern region. Audubon Field Notes. 15:1 pp 46-51
- Newman, R.J. and G.H. Lowery, Jr. 1959. The Changing Seasons. Audubon Field Notes. 13:4 pp 346-352
- Niles, D.M., S.A. Rohwar, J.A. Jackson and J.D. Robbins. 1969. An observation of midwinter nocturnal movement and tower mortality of tree sparrows. *Bird Banding*. 40:4 pp 322-323
- Norman, J.L. 1975. Birds Killed at a TV tower near Coweta, Oklahoma. *Bulletin of the Oklahoma Ornithological Society*. 8:3 pp 25-27

Norman, J.L. 1976. Birds Killed at a TV tower near Coweta, OK. *Bulletin of the Oklahoma Ornithological Society*. 9:3 pp 20 Norman, J.L. 1977. Birds Killed at a TV tower near Coweta, Oklahoma in the fall of 1976. *Bulletin of the Oklahoma*

Ornithological Society. 10:1 pp 6-8

Norwood, J.R. 1960. TV tower casualties at a Charlotte station. Chat. 24:4 pp 103-104

Ogden, J. 1960. Observations at a TV tower during a bird fall. Migrant. 31:4 pp 65-67

Parmalee, P.W. and B.G. Parmalee. 1959. Mortality of Birds at a television tower in central Illinois. *Bulletin of the Illinois* Audubon Society. 11:1 pp 1-4

- Parmalee, P.W. and M.D. Thompson. 1963. A Second Kill of Birds at a television tower in central Illinois. *Bulletin of the Illinois Audubon Society*. 12:8 pp 13-15
- Peterson, P.C., Jr. 1959. TV tower mortality in western Illinois. Bulletin of the Illinois Audubon Society. 11:2 pp 14-15
- Peterson, P.C., Jr. 1967. Fall migration: middle western prairie region. Audubon Field Notes. 21:1 pp 44-45

Peterson, P.C., Jr. 1971. Fall migration: middle western prairie region. American Birds. 25:1 pp 64-66

- Peterson, P.C., Jr. 1968. Fall migration: middle western prairie region. Audubon Field Notes. 22:1 pp 44-45
- Pierce, M.E. 1969. Tall Television tower and bird migration. South Dakota Bird Notes. 21:1 pp 4-5
- Poole, A, F. Gills & P.Stettenheim. Eds. 1992- . Birds of North America. American Ornithologists Union., Acad Nat Sci PA
- Potter, J.K. and J.J. Murray. 1949. Fall Migration: middle Atlantic coast region. Audubon Field Notes. 3:1 pp 8-10
- Pulich, W.M. 1962. A Record of the Yellow Rail from Dallas County, Texas. The Auk 78: 639-640
- Purrington, R.D. 1969. Fall Migration: central southern region. Audubon Field Notes. 23:1 pp 65-70
- Robbins, S.D. 1967. Fall Migration: western great lakes region. Audubon Field Notes. 21:1 pp 36-38
- Robbins, S.D. 1969. Fall Migration: western Great Lakes Region. Audubon Field Notes. 23:1 pp 55-56, 64
- Robertson, W.B., Jr. and J.C. Ogden. 1969. Fall Migration: Florida region. Audubon Field Notes. 23:1 pp 35-40
- Rosche, R.C. 1970. The fall Migration: western New York and northwestern Pennsylvania. Audubon Field Notes. 24:1 pp 43-47
- Rosche, R.C. 1971. The fall Migration: western New York and northwestern Pennsylvania. American Birds. 25:1 pp 54-57
- Rosche, R.C. 1972. The fall Migration: western New York and northwestern Pennsylvania. American Birds. 26:1 pp 60-62
- Sawyer, P.J. 1961. Bird Mortality at the WENH-TV Tower in Deerfield, New Hampshire. *New Hampshire Audubon Quarterly*. 14:2 pp 46-49
- Scott, F.R. and D.A. Culter. 1971. The Fall Migration: middle Atlantic Coast region. American Birds. 25:1 pp 36-40
- Seets, J.W. and H.D. Bohlen. 1977. Comparative Mortality of birds at television towers in central Illinois. *Wilson Bulletin*. 89:3 pp 422-433
- Sharp, B. 1971. Heavy Mortality of migrating birds at Madison's TV towers. Passenger Pigeon. 33:4 pp 203-204
- Stevenson, H.M. 1956. Fall Migration: Florida region. Audubon Field Notes. 10:1 pp 18-22
- Stevenson, H.M. 1958. Fall Migration: Florida region. Audubon Field Notes. 12:1 pp 21-26
- Stevenson, H.M. 1958. Spring Migration: Florida region. Audubon Field Notes. 12:4 pp 344-348
- Stevenson, H.M. 1959. Fall Migration: Florida region. Audubon Field Notes. 13:1 pp 21-25
- Stevenson, H.M. 1960. Spring Migration: Florida region. Audubon Field Notes. 14:4 pp 379-383
- Stevenson, H.M. 1966. Fall Migration: Florida Region. Audubon Field Notes. 20:1 pp 30-35
- Stevenson, H.M. 1973. The Fall Migration: Florida Region. Audubon Field Notes. 27:1 pp 45-49
- Stoddard, H.L. 1962. Bird Casualties at a Leon County Florida TV Tower, 1955-1961. Tall Timbers Res Stn Bull.1
- Stoddard, H.L. & R.A. Norris 1967. Bird Casualties at a Leon County Florida TV Tower, an 11 Year Study. *Tall Timbers Research Station Bulletin.*
- Strnad, F. 1962. Birds Killed at the KROC-TV tower, Ostrander, Minnesota. Flicker. 34:1 pp 7-9
- Strnad, F. 1975. More Birds at KROC-TV Tower, Ostrander Minnesota. Loon. 47 pp 16-21
- Taylor, W.K. and B.H. Anderson. 1973. Nocturnal Migrants killed at a south central Florida TV tower, autumn 1969-1971. *Wilson Bulletin* 85:1 pp 42-51
- Taylor, W.K. and B.H. Anderson. 1974. Nocturnal Migrants killed at a south central Florida TV tower, autumn 1972. *Florida Field Naturalist.* 2:2 pp 40-43
- Tenessee Ornithological Society. 1973. Bird Kill on Holston Mountain. Migrant. 44:1 pp 1-4
- Teulings, R.P. 1972. The fall migration: southern Atlantic Coast Region. American Birds. 26:1 pp 45-50

Teulings, R.P. 1974. The Fall Migration: southern Atlantic Coast Region. American Birds. 28:1 pp 37-40

- Teulings, R.P. 1975. The fall Migration: Southern Atlantic coast region. American Birds. 29:1 pp 40-43
- Tordoff, H.B. & R.M. Mengel 1956. Studies of Birds Killed in Nocturnal Migration. Univ. Kansas Publ. Mus. Nat. Hist 10 pp 1-44
- Trapp, J. L. 1995. Migratory Nongame Birds of Management Concern in the United States: The 1995 List. Office of Migratory Bird Management, USFWS, Washington, DC. U.S. Govt. Printing Office 1996:404-991/44014. 22 pp
- Trott, J. 1957. TV tower fatalities at Chapel Hill. Chat. 21:1 pp 28
- Welles, M. 1978. TV tower kills at Elmira. Kingbird. 28:3 pp 159-161
- Whelan, P. 1976. The bird killers. Ontario Naturalist. 16:4 pp 14-16
- Willard, D.E. and B.J. Willard. 1978. The interaction between some human obstacles and birds. *Environmental Management*. 2:4 pp 331-340
- Zimmerman, D.A. 1975. The Changing Seasons. American Birds. 29:1 pp 23-28

BOOKS AND POPULAR ARTICLES

- Avery, M.L., P.F. Springer and N.S. Dailey. 1978. Avian Mortality at man made structures: an annotated bibliography. USFWS, National Power Plant Team. FWS/OBS-78/58 pp 108.
- Bell, Robert N. 1998. Towers in city parks draw opposition. The Indianapolis Star. April 16, pp B3
- Bell, Robert N. 1999. Parks board OK's wireless-tower contract. The Indianapolis Star. February 17. pp. B3
- Borestein, Seth. 1999. Towers serious threat to birds. The Denver Post. August 8. pp. A4
- Bowman, Lee. 1999. Communications Towers Disorient, Kill Thousands of migrating birds. *Pittsburgh Post-Gazette*. Sept 25
- Braile, Robert. 1999. Proliferation of towers poses threat to birds. *The Boston Globe*. May 23, 1999 New Hampshire Weekly, p.1
- Craig-Lich, Alicia. 1998. The hazards Indy park towers pose to birds. The Indianapolis Star. March 9, 1998. Editorial, p. 5
- Jaroslow, B. 1979. A Review of factors involved in bird tower kills, and mitigative procedures. The mitigation symposium: a national workshop on mitigation losses of fish and wildlife habitats. U.S. Forest Service General Technical report RM-65. pp 469-473 in G.A. Swaison, tech. Coord.
- Jones, Meg. 1999. Fast-multiplying communications towers signal lethal threat for migratory birds. *Milwaukee Journal Sentinel*. August 27. News, p.1
- Kelly, Dan. 1999. Local zoning boards win cell phone ruling. Eagle Times. September 27
- Lafee, Scott and Mark Sauer. 1999. As cellular phone sales increase, so do bird deaths; Sound Effect. *The San Diego Union-Tribune*. October 6. Lifestyle, p. E1-2
- Olendorf, R.R.1986. Raptor Collisions with utility lines and fences: an annotated bibliography (rev. draft). U.S. Bureau of Land Management, Sacramento, California. pp 14.
- Pittman, Craig. 1999. Proposed tower might endanger birds. St. Petersburg Times. November 1 pp 1B
- Tordoff, H.B. and R.M. Mengel. 1956. Studies of birds killed in nocturnal migration. University of Kansas Publications, Museum of Natural History pp 10 (1):1-44
- Vosburgh, J.; 1966. Deathtraps in the flyways. Pages 364-371 in: A. Stefferud, ed. Birds in our lives. USFWS, Bureau of Sports Fisheries and Wildlife.
- Watson, Traci. 1999. Communication Towers are Silencing Songbirds. USA Today. Sept 2.
- Weindensaul, Scott. 1999. Tower lights can fatally attract migratory songbirds. Philadelphia Inquirer. July 27, pp. D3
- Weir, R.D. 1976. Annotated Bibliography of bird kills at man made obstacles: a review of the state of the art and solutions.
 - Canadian Wildlife Services, Ontario Region, Ottawa. pp 85.
- Unknown. 1973. Bird Kill on Holston Mountain. Tennessee Ornithological Society.
- Unknown. 1999. Wildlife Refuge no place for tower. The Tampa Tribune. November 9 Nation/World, p. 6
- Unknown. 1999. Towers make skies dangerous for birds. The Arizona Republic. Aug 13. pp. B4

WEB SITE ADDRESSES

American Bird Conservancy: Bird Studies Canada: Cornell Laboratory of Ornithology: Fatal Light Wareness Program (FLAP): National Audubon Society: Tower Kill.Com: USFWS:

WWF Canada:

http://www.abcbirds.org/TowerKills.htm http://www.bsc-eoc.org/migmain.html http://birdsource.cornell.edu/conservation/Towerkill.htm http://www.flap.org/ http://www.audubon.org/bird/watch/ http://www.audubon.org/bird/watch/ http://www.towerkill.com http://www.towerkill.com http://migratorybirds.fws.gov/issues/towers/agenda.html. http://www.wwfcanada.org/

Exhibit 2

BEFORE THE HEARINGS EXAMINER FOR THURSTON COUNTY

In the Matter of the Appeal of Chris Nubbe and Alison Baker On behalf of Deschutes Neighborhood Group, Re: Verizon's August 7, 2018 Applicant's Response to Appellant's Dispositive Motion

No. APPL 18-106835 VE

1

Declaration of: Albert M. Manville, II, Ph.D., C.W.B. (to be Submitted by Appellant)

I, Albert M. Manville, II, Ph.D., C.W.B., declare as follows:

- 1. I make this declaration based on my personal knowledge, academic and field training, and professional experience as the former U.S. Fish and Wildlife Service (USFWS or Service) national agency lead on effects to protected migratory birds from human built structures, equipment and radiation. I am over the age of 18 and competent to testify to the matters herein.
- I am the principal of Wildlife and Habitat Conservation Solutions, LLC, located in Falls Church, Virginia. I have been contracted by the Deschutes Neighborhood Group to analyze and assess likely impacts to migratory birds and other wildlife from the proposed siting of a Verizon Wireless (VW) cellular (cell) Wireless Communications Facility (WCF) near Yelm, Washington.
- 3. I am employed part-time as an Adjunct Professor for the Krieger School of Arts and Sciences, Advanced Academic Programs, Johns Hopkins University, Washington, DC campus. I retired from the Division of Migratory Bird Management, USFWS, in late June 2014, after working for USFWS for 17 years on avian-structural issues.
- 4. I submit the following testimony for the record.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

8/13/2018

DATED: 13th of August of 2018, Falls Church, VA

Albert M. Manville, II, Ph.D., C.W.B.

Testimony of Albert M. Manville, II, Ph.D., C.W.B., and Principal, Wildlife and Habitat Conservation Solutions, LLC, in regard to Applicant's Response to Appellant's Dispositive Motion (August 7, 2018) filed with the Hearings Examiner, Thurston County, for Thurston County Project 2015103966, Re: a Verizon Wireless Cellular (cell) Tower Wireless Communications Facility (WCF) at 16244 Vail Road SE, Yelm, WA 98597. Comments Submitted on Behalf of the Deschutes Neighborhood Group for the record.

Date: August 13, 2018

ISSUES REFUTED BY VERIZON WHICH NEED TO BE CLARIFIED OR CORRECTED FOR THE RECORD

Building Communication Towers Next or Adjacent to Wetlands

Avoiding Risk

Dr. Paul Kerlinger, Verizon's avian risk consultant, continues to dispute the considerable scientific evidence that supports increased risk from placing communication towers next to or adjacent to wetlands. Specifically, "Applicant will present expert scientific evidence by Paul Kerlinger, Ph.D., based on the bird studies undertaken by the Applicant and Appellant, demonstrating that there will be no significant impacts to any such birds or interference with migratory flyways documented by state or federal agencies. See Attachment 3 (Avian Risk Assessment for the Verizon Wireless Vail Road Wireless Communications Facility, by Dr. Kerlinger, April 13, 2018)." (Applicant's Response to Appellant's Dispositive Motion, August 7, 2018).

Quite to the contrary, there is substantial and highly credible scientific evidence of risk from human-built structures (e.g., communication towers, power lines, buildings, bridges and other structures) based on decades of research on many species of migratory birds in and around wetlands where many species tend to concentrate (i.e., to breed, nest, fledge, roost, feed, defend territories, stage and migrate). This risk (called a "taking" — i.e., the unpermitted injury, crippling loss and/or death of a protected migratory bird) results from the placement, operation and maintenance of a communication tower, including this proposed tower at 16244 Vail Road SE, Yelm.

On September 14, 2000, USFWS Director Jamie Clark sent a memo to all Service Regional Directors regarding Service Guidance on Siting, Construction Operation and Decommissioning of Communication Towers which Robert Willis and I co-authored for the Service earlier that year. In her memo, she stated that "... all Service personnel involved in the review of proposed tower sitings and/or evaluation of impacts of towers on migratory birds should use the attached interim guidelines when making recommendations to all companies, license applicants, or licensees proposing new tower sitings. These guidelines were developed by <u>Service personnel from research conducted in several eastern, midwestern and southern States</u>, and have been refined through <u>Regional review</u>. They are based on the <u>best information available</u> at this time, and are the <u>most prudent and effective measures for avoiding bird strikes at towers</u>. We believe they will provide <u>significant protection for migratory birds</u>" (p. 2 of Director Clark's memo; emphasis added).

Specifically on p. 4 of Director Clark's memo, in Service guideline #4, it was stated that, "towers should **not** be sited in or near wetlands, other known bird concentration areas (e.g., State or Federal refuges, staging areas, rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should **not** be cited in areas with a high incidence of fog, mist, and low ceilings" (Attachment p. 4 of the Director's memo). In Service guideline #8 the following was recommended: "If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction site, relocation to an alternate site should be recommended" (Attachment p. 5 of the Director's memo). To suggest as Dr. Kerlinger does that there will be "no significant impacts to

any such birds or interference with migratory flyways documented by state or federal agencies" is preposterous. By implementing these specific guidelines, USFWS believed their use would be key to avoiding or minimizing risk — steps necessary to avoid or minimize "take." As I stated in previous comments rebutting Dr. Kerlinger's risk assessment findings sent to Tony Kantas on May 17, 2018, a "significant impact" was agreed to and defined both by independent scientific experts serving on the Communication Tower Working Group which I chaired and by experts within the USFWS's Division of Migratory Bird Management which I represented as "at least 3 bird deaths/tower/year" (Manville testimony-to Tony Kantas, Thurston County, May 17, 2018:4). Admittedly, this is a small number of annual bird deaths; the concerns, however, are over cumulative (nationwide) impacts resulting in an estimated 7+ million bird deaths/yr. in the U.S.

Revised 2013 USFWS Guidelines.

In 2013, on behalf of the Service, I updated the 2000 interim communication tower guidelines (Manville 2013) to include several additional recommendations based on previous more recent scientific findings on tower lighting (not applicable to the proposed Yelm Road tower), refined suggestions involving avoiding wetlands, buffers for Bald Eagles and other raptors, suggestions for specific types of security lighting, and consultation with members of the Research Subcommittee, Communication Tower Working Group. Most notable are three 2013 guidelines directly applicable to the proposed Vail Road tower. These include:

- Guideline 4: "The topography of the proposed tower site and surrounding habitat should be clearly noted, especially in regard to surrounding hills, mountains, mountain passes, ridge lines, <u>rivers, lakes,</u> wetlands, and other habitat types used by raptors, <u>Birds of Conservation Concern</u>, and state and federally listed species, and other birds of concern."
- 2. Guideline 5: "Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state or federal refuges, staging areas, rookeries, and Important Bird Areas), in known migratory, daily movement flyways, areas of breeding concentration, in habitat of threatened or endangered species, or key habitats of Birds of Conservation Concern (USFWS 2008). Disturbance can result in effects to bird populations which may cumulatively affect their survival. The Service has recommended some disturbance-free buffers, e.g., 0.5 mi around raptor nests during the nesting season, and 1-mi disturbance free buffers for Ferruginous Hawks and Bald Eagles during nesting season [sic: based on studies] in Wyoming (FWS WY Ecological Services Field Office, referenced in Manville 2007:23)."
- 3. Guideline 9: "If, prior to tower design, siting and construction, if it has been determined that a significant number of breeding, feeding and roosting birds, especially Birds of Conservation Concern (US-FWS 2008), state or federally-listed bird species, and eagles are known to habitually use the proposed tower construction area, relocation to an alternate site is highly recommended."

Current April 2018 USFWS Tower Guidelines.

The Service just updated the guidelines published in 2013 (Manville 2013) with new recommended best practices for communication towers (USFWS 2018). These include **virtually all** the recommendations published in 2013. Additionally, there is a new section on vegetation management, some new links to online tools for determining bird breeding seasons and professional contacts, and recent FCC and Federal Aviation Administration lighting changes. These guidelines are intended "to replace all previous recommendations for communication tower construction and operation … modified and updated from previous versions to incorporate the state of the science..." (USFWS 2018:1).

Most notable are recommendations for applicants to "contact the nearest FWS field office; towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state or federal refuges, staging areas, rookeries, and Important Bird Areas; ... towers should avoid wetlands or other known bird concentration areas; ... establish a buffer zone around the nest and no activities will occur within that zone until nestlings have fledged ... (0.5 - 1 mile for hawks and eagles). The buffer should be a distance that does not elicit a flight response by the adult birds and can be 0.5 - 1 mile for hawks and eagles." The Service did recommend "no activities within that [buffer] zone until nestlings have fledged" which would effectively preclude construction, maintenance, and daily operation of the tower until Bald Eagles and other raptors have fledged their young. Bald Eagle nests are "active" (meaning territorial defense, stick placement and nest repair, egg laying, incubation, nestling feeding, and caring for young until chicks are fledged and actually leave the nest — a period that can run from winter into mid-summer depending on nest success, chick loss, and other variables).

Take Homes and Service 2007 Comments to FCC on Effects of Communication Towers to Migratory Birds

Virtually all the aforementioned conditions spelled out in USFWS guidelines in 2000, 2013 and 2018 regarding wetland risk and disturbance apply to the proposed Vail Road tower site. Clearly the Service has <u>recognized for decades</u> that structural risk to birds in or near wetlands is important and <u>should be avoided</u> by <u>not building there</u> and by selecting <u>degraded</u>, <u>more developed areas</u> (e.g., antenna farms, industrial parks, and other degraded areas of low risk to birds — referenced in all 3 sets of guidelines).

In official agency comments I authored submitted to the FCC by USFWS Acting Deputy Director Kenneth Stansell to Louis Peraertz, Esq. of the FCC's Wireless Telecommunications Bureau on February 2, 2007 (Manville 2007: 32 pages), the Service suggested that the FCC adopt our 2000 guidelines as part of an *"environmentally preferred industry standard"* (Manville 2007:25) which FCC did subsequently implement. FCC also used the 2013 guidelines as the *"preferred industry standard."*

Further, in USFWS comments to FCC, it was suggested that "We recommend that FCC implement the Service's 2000 voluntary communication tower guidelines into rulemaking. The FCC would be responsible for informing license permit applicants of the guidelines, overseeing implementation of the guidelines, and would not depend on applicants independently contacting the Service for recommendations" (Manville 2007:26). While FCC did not then nor have they now implemented Service guidelines into rulemaking, FCC strongly encouraged applicants and tower companies to use them, and FCC staff continue to work with Service representatives and tower developers to implement USFWS guidelines as seamlessly as possible today. It remains unclear why Dr. Kerlinger continues to dispute these risk findings and question the agency determinations and actions based on the best scientific evidence available.

Smith Ranch Wetlands Restoration Project

A significant, \$1.6 million wetland restoration mitigation effort by the cities of Olympia, Lacey and Yelm was required in the last several years by the State in exchange for the water rights in and surrounding these wetlands. After completion, the floodplain area will essentially become a new, publicly owned wildlife refuge.

It is exciting to note that the Smith Ranch Wetlands Restoration Project continues to be developed and the new wetlands — adjacent to the proposed Verizon cell tower site — are being colonized in astonishingly quick ways by migratory birds and other wildlife. As recently as July 28, 2018, local landowner Alex Foster photo-documented the presence of Great Blue Herons, Gadwalls, Virginia Rails, and several species of upland songbirds using the site as the wetlands are filling. He intends to submit these photos for the hearing record. It is clear these new wetlands are providing important territorial, feeding, nesting, roosting and staging habitats for a growing list of migratory birds. However, increased bird presence will only elevate the risk of collisions with the proposed Verizon cell tower if it is built. It is also important to note that at the emergent wetland marsh around Lake Lawrence, the 2 other adjacent wetlands, and the surrounding woodland habitats, that at least one nesting pair of Bald Eagles (a species of State concern), Vaux's Swift (species of State concern, especially its nesting forested habitat), and a host of other migratory birds are present in and around this wetland area. The proposed Verizon communication tower 156-ft tall will extend ~ 54 ft above the forest canopy. This will only exacerbate collision risk, especially when fog, rain, winds and other inclement weather events impact birds flying at dawn, dusk, migrating at night,

and unable to effectively navigate in poor visibility during the daytime — conditions which frequently occur in and around the emergent wetlands. Additionally, the checkerspot butterfly (Federally Endangered), the Oregon spotted frog (Federally Threatened), and the Puget Oregonian snail (Federally proposed) may be present in the wetlands areas, further elevating construction and operation risks. Verizon has clearly failed to investigate let alone evaluate these growing risks.

Impacts of Non-thermal, Non-ionizing Radiation from Cell Towers on Migratory Birds 🐭

Applicant's attorney misrepresented the impacts of radiation on migratory birds by stating that the hearings examiner is preempted from considering issues regarding the "environmental effects of RF emissions" (Applicant's Aug. 7, 2018 Response:11), citing the FCC's regulation — based on Section 704 of the 1996 Telecommunications Act (TCA) — implying that these wildlife effects cannot be presented in testimony. While it is true that county, city and state governments have been constrained in some ways by Section 704 of the TCA regarding discussions about radiation effects on human health and safety, there is nothing in the Act or its implementing regulations that prohibit discussion of impacts from radiation on wildlife. In fact, no agency or commission (i.e. FCC) has yet developed any radiation standards for wildlife exposure, including the licensing and regulatory rules and procedures of the FCC. It is also important to note, however, that for human exposures to RF at towers, the FCC has operating rules available to the public. These rules require that power to cell and other broadcast towers must be turned off when workers are on and/or climbing the towers — due to health impacts and safety concerns from the impacts of thermal and non-thermal radiation.

USFWS in coordination with the U.S. Commerce Department's National Telecommunications and Information Administration (NTIA) began a process in 2014 with which I was involved to include impacts from radiation as part of NTIA's National Environmental Policy Act (NEPA) review process, but that effort has since stalled. As I have stated in earlier testimony to Thurston County, impacts from radiation on migratory birds and other wildlife must be evaluated as part of the NEPA review process for cumulative effects analysis. None to date have been performed by Verizon or its consultants. I believe Washington State has similar State NEPA requirements.

While there are many recent published, peer-reviewed studies about impacts from non-thermal radiation on laboratory animals and wildlife — with new findings being published each month — laboratory studies conducted by DiCarlo et al. (2002) are extremely telling. T. Litovitz (2000 pers. comm.) and DiCarlo et al. (2002) irradiated chicken embryos using the standard 915 MHz cell phone frequency at durations of several hours per day. Most striking, they showed that radiation from <u>extremely low levels (0.0001 the level emitted by the average digital cell phone</u>) caused heart attacks and deaths in some embryos while controls were <u>unaffected</u> (DiCarlo et al. 2002). Impacts were based on extremely low, non-thermal effects — now being documented to impact DNA single strands and helices (Manville 2016b). Results of the DiCarlo et al. (2002) study have been replicated by Grigor'ev (2003), Xenos and Magras (2003), and others.

It is important to note that the entire thermal model and all FCC categorical exclusions for all the devices we see today, rests on the incorrect assumption that low-level, non-ionizing non-thermal radiation cannot cause DNA breaks because is it *"so low power"* (B. Levitt and H. Lai, Comments Filed Jointly to FCC, ET Docket No. 13-84, 2013). The evidence to the contrary is clear and growing in laboratory animals and wildlife. The implications — including from this proposed Verizon tower — are very troubling.

While field studies on wildlife, including wild birds, have yet to be conducted in North America, considerable **field research** has been conducted in Europe. For example, in field studies on wild birds in Spain, Balmori (2005) found strong negative correlations between levels of tower-emitted microwave radiation and bird breeding, nesting, roosting and survival in the vicinity of electromagnetic fields. He documented nest and site abandonment, plumage deterioration, locomotion problems, and death in Wood Storks, House Sparrows, Rock Doves, Magpies, Collared Doves, and other species. While these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction and operation of the cell phone towers. Results were most strongly negatively correlated to proximity to antennas and Stork recruitment and survival. <u>Twelve nests</u> (40% of his study sample) were located within 200 m of the antennas and never successfully raised any chicks, while only 1 (3.3%), located further than 300 m, never had chicks. <u>Strange behaviors</u> were observed at Stork nesting sites within <u>100 m of one or several cell tower antennas</u>. Those birds that the main beam impacted directly (i.e., electric field intensity/EFI > 2 V/m) included <u>young that died from unknown causes</u>. <u>Within 100</u> <u>m</u>, paired adults frequently fought over nest construction sticks and failed to advance the construction of the nests with sticks falling to the ground while nests were being constructed. Balmori (2005) reported that some nests were never completed and the Storks remained passively in front of cellsite antennas. The electric field intensity was higher on nests within 200 m (2.36 ± 0.82 V/m) than on nests further than 300 m (0.53 ± 0.82 V/m). However, the EMF levels, including for nests < 100 m from the antennas, were not intense enough to be classified as thermally active. Power densities need to be at least 10 mW/cm2 to produce tissue heating of even 0.5 C (Bernhardt 1992). These troubling findings raise similar potential concerns over impacts from the Verizon tower.

Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations among male House Sparrows and electromagnetic radiation in their studies. In another review, Balmori (2009) reported <u>health effects to birds which were continuously irradiated</u>. They suffered long-term effects including reduced territorial defense posturing, deterioration of bird health, problems with reproduction, and reduction of useful territories due to habitat deterioration. These same conditions will also be present at the Vail Road site, possibly producing the same effects (i.e., "takes").

There are other potential effects on birds which need to be evaluated before tower siting is permitted. Engels et al. (2014) investigated *"electromagnetic noise"* emitted everywhere humans use electronic devices including from cell phones and their towers. While prior to their study on European Robins, no *"noise effect"* had been widely accepted as scientifically proven, the authors in this double-blind experiment were able to show that migratory birds are <u>unable to use their magnetic compass in the presence of urban electromagnetic noise</u>. The magnetic compass is integral to bird movement and migration. Several other more recent scientific studies replicate Engels et al. (2014) findings. The findings clearly demonstrated a non-thermal effect on European Robins and clearly serves as a predictor for effects to other migratory birds including those in North America.

Birds may also be attracted to cell towers, compounding impacts of collisions and radiation. In a cuttingedge study, Beason and Semm (2002) demonstrated that microwave radiation used in cell phones produces non-thermal responses in several types of neurons of the nervous system of Zebra Finches. The brain neurons of anesthetized birds were tested with a 900 MHz carrier, modulated at 217 Hz. Stimulation resulted in changes in the amount of neural activity by more than half of the brain cells with most (76%) of the responding cells increasing their rates of firing by an average 3.5-fold as opposed to controls — a clearly definitive study showing non-thermal effects. The other responding cells exhibited a decrease in their rates of spontaneous activity suggesting potential effects to humans using hand-held cell phones affecting sleep (Borbely et al. 1999). The <u>Beason and Semm (2002) theoretical model could also</u> <u>help explain why birds **may be attracted to cell towers**, an important theoretical premise that they previously hypothesized in regard to Bobolinks (Semm and Beason 1990).</u>

Efficacy of Proposed Bird Hazing Structures on Top of the Monopole Cell Tower

Verizon and its consultants have been attempting to develop an Osprey bird-hazing and nest-deterrent device that would be placed atop the proposed 156-ft. monopole (a so-called "bird-be-gone" nest deterrent structure; Slide 25, Appellant's Dispositive Motion).

As the Service's lead representative serving on the Avian Power Line Interaction Committee (APLIC) for 17 years, as a co-author of the 2005 Service/APLIC Avian Protection Plan Guidelines, co-author of *Sug*-

gested Practices for Avian Protection on Power Lines: State of the Art in 2006 (Edison Electric Institute), co-author of Reducing Avian Collisions with Power Lines: State of the Art in 2012 (EEI); and recipient of the 2016 Morley Nelson Conservation Service Award by APLIC for my work as a Federal wildlife biologist with the electric utility industry, I have a detailed understanding of which deterrent devices (including on structures other than power poles) work and which do not. These assessments are based on field evaluation, testing, monitoring, and collaboration with other agency and industry colleagues and private vendors.

Migratory birds — including Ospreys, Red-tailed Hawks, Bald Eagles and many songbird species — are very adaptable, and frequently use well-intentioned and well designed deterrent devices for purposes opposite those intended. Based on field evaluation and critique, the vast majority of nesting and perching deterrents do **not**, in fact, work as intended. APLIC presented many "short courses" on Avian Power Line Interactions — generally several each year to which I was invited to present. In our "short course" presentations (e.g., PowerPoint slides) and in its peer-reviewed publications, APLIC purposely included photographs of nest deterrents which completely failed. These, for example, included an <u>Osprey nest</u> on a pole with plastic spikes (APLIC 2006, Fig. 6.25:128), a <u>Red-tailed Hawk nest</u> on a pole with triangle perch discouragers (APLIC 2006, Fig. 6.25:128), an <u>Osprey nest</u> on a dead end pole with nest discourager (APLIC 2006, Fig. 6.26:128), and an <u>Osprey nest</u> on a dead end pole with nest discourager (APLIC 2006, Fig. 6.23:127), among numerous others. A copy of Figures 6.23, 6.25, 6.26 and 6.27 is included in the Appendix of this document.

Based on my professional expertise and opinion, the "bird-be-gone" Osprey nest deterrent will **not** preclude Osprey nesting (these birds are ingenious at making an inhospitable nest structure work for them). Further, even if the structure does deter Osprey, other birds may exploit the platform, possibly even Bald Eagles given their need to exploit the tallest structure in the surrounding wetland. It is highly likely that other raptors, songbirds and other avifauna would also exploit this deterrent for purposes of nesting. Both thermal and non-thermal radiation impacts could affect any nesting birds and their offspring, as well as entanglement problems, all resulting in "takings."

Conclusions and Recommendations

- While the proposed VW WCF is relatively short (156 ft AGL), unguided and unlit (at least on the tower), it will extend approximately 54 ft above the tree canopy, significantly elevating collision risk, especially during nighttime inclement weather events when birds are moving/migrating and during instances of daytime high fog episodes. Inclement weather is a significant issue at the site. Migratory birds have been documented killed by collisions with unlit monopole and lattice towers < 200 ft AGL, sometimes in significant numbers of hundreds of birds/cell tower/night (e.g., W. Evans cited in Manville 2007:7). These are facts documented in the literature, in official agency comments, and by leading scientific experts.
- Tall structures adjacent to and surrounding wetlands create high risk habitats for migratory birds. Asserting that they are not fails to be base findings on scientific fact and on decades of research and action by USFWS and other Federal and State agencies and NGOs to "avoid or minimize take."
- USFWS voluntary communication tower guidelines including the most recent April 2018 version have been ignored by Verizon.
- The Smith Ranch Wetlands Restoration Project is turning out to be an incredible success for waterbirds, waterfowl, wading birds, songbirds and others and it is still being constructed. However, a VW cell tower will only exacerbate risk to these and other birds if allowed to be built adjacent to this new wetland.

- The effects of low level radiation are of growing concern and have not been addressed by Verizon or the County. The effects of radiation from field studies conducted on wild birds near cell towers in Europe are troubling, as are the results from studies on laboratory animals here in North America and elsewhere.
- "Electromagnetic noise" and possible bird-radiation attraction to cell towers needs considerable further investigation including through NEPA analysis. It was not.
- The "bird-be-gone" nest deterrent device will likely fail, allowing Ospreys, Bald Eagles, hawks, songbirds and other avifauna to exploit the platform — and subsequently be negatively affected by the radiation as a result.

In conclusion, for all the reasons I stated above — including those previously stated on the record in earlier testimony — I recommend that the Thurston County Hearings Examiner reject this VW tower application.

Respectfully submitted, 8/13/2018

Albert M. Manville, II, Ph.D., C.W.B. Wildlife and Habitat Conservation Solutions, LLC

LITERATURE CITED

Avian Power Line Interaction Committee (APLIC). 2006. Suggested practices for avian protection on power lines: the state of the art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, DC, and Sacramento, CA. 207 pp.

Avian Power Line Interaction Committee (APLIC). 2012. Reducing avian collisions with power lines: the state of the art in 2012. Edison Electric Institute and APLIC, Washington, DC. 159 pp.

Balmori, A. 2005. Possible effects of electromagnetic fields from phone masts on a population of White Stork (*Ciconia ciconia*). Electromagnetic Biology and Medicine 24:109-119.

Balmori, A., and O. Hallberg. 2007. The urban decline of the House Sparrow (*Passer domestics*): a possible link with electromagnetic radiation. Electromagnetic Biology and Medicine 26:141-151.

Balmori, A. 2009. Electromagnetic pollution from phone masts. Effects on wildlife pathophysiology. Electromagnetic Fields (EMF) Special Issue, 16 (2-3): 191-199.

Beason, R.C., and P. Semm. 2002. Responses of neurons to amplitude modulated microwave stimulus. Neuroscience Letters 333 (2002):175-178. Bernhardt, J.H. 1992. Non-ionizing radiation safety: radiofrequency radiation, electric and magnetic fields. Phys. Med. Biol. 37 (1992): 80–84.

Bernhardt, J.H. 1992. Non-ionizing radiation safety: radiofrequency radiation, electric and magnetic fields. Phys. Med. Biol. 37 (1992): 80–84.

Borbely, A.A., R. Huber, T. Graf, B. Fuchs, E. Gallmann, and P. Achermann. 1999. Pulsed high-frequency electromagnetic field affects human sleep and sleep electroencephalogram. Neurosci. Lett. 275 (1999): 207–210.

DiCarlo, A., N. White, F. Guo, P. Garrett, and T. Litovitz. 2002. Chronic electromagnetic field exposure decreases HSP70 levels and lowers cytoprotection. Journal Cellular Biochemistry 84: 447-454.

Engels, S., N-L. Schneider, N. Lefeldt, C.M. Hein, M. Zapka, A. Michalik, D. Elbers, A. Kittel, P.J. Hore, and H. Mouritsen. 2014. Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird. Nature 509 (May 15, 2014). doi:10.1038/nature13290.

Everaert, J., and D. Bauwens. 2007. A possible effect of electromagnetic radiation from mobile phone base stations not he number of breeding House Sparrows (*Passer demesticus*). Electromagnetic Biology and Medicine 26:63-72.

Grigor'ev, I. 2003. Biological effects of mobile phone electromagnetic field on chick embryo (risk assessment using the mortality rate). Radiats Biol Radioecol 43(5):541-3.

Levitt, B.B., and H. Lai. 2013. Comments Filed Jointly to the Federal Communications Commission, ET Docket No. 13-84, 2013.

Manville, A.M., II. 2007. Comments of the U.S. Fish and Wildlife Service submitted electronically to the FCC on 47 CFR Parts 1 and 17, WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking, "Effects of Communication Towers on Migratory Birds." February 2, 2007. 32 pp.

Manville, A.M., II. 2013. U.S. Fish and Wildlife Service (USFWS) revised guidelines for communication tower design, siting, construction, operation, retrofitting, and decommissioning — Suggestions based on previous USFWS recommendations to FCC regarding WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking, "Effects of Communication Towers on Migratory Birds," Docket No. 08-61, FCC's Antenna Structure Registration Program, and Service 2012 Wind Energy Guidelines. Division of Migratory Bird Management, Arlington, VA. 5 pp.

Manville, A.M., II. 2016a. Impacts to birds and bats due to collisions and electrocutions from some tall structures in the United States: wires, towers, turbines and solar arrays — state of the art in addressing the problems. Chap 20, pp 415-442, *In* F.M. Angelici (editor), Problematic Wildlife: a Cross-Disciplinary Approach, Springer International Publishing, Switzerland. DOI 10.1007/978-3-319-22246-2 20

Manville, A.M., II. 2016b. A Briefing Memorandum: What We Know, Can Infer, and Don't Yet Know about Impacts from Thermal and Non-thermal Non-ionizing Radiation to Birds and Other Widlife — for Public Release. July 14: 12 pp.

Semm, P. and R.C. Beason. 1990. Responses to small magnetic variations by the trigeminal system of the bobolink, Brain Res. Bull. 25: 735–740.

United States Department of Interior. 2014. ER 14/0001-14/0004. Letter to Mr. Eli Veenendaal, Natl. Telecommunications and Information Administration, US Dept. Commerce. Signed by W.R. Taylor, Director Office of Environmental Policy and Compliance, Office of Secretary, DOI. February 7, 8 pp, in the public arena.

U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VA. 85 pp. (http://www.fws.gov/migratorybirds/>).

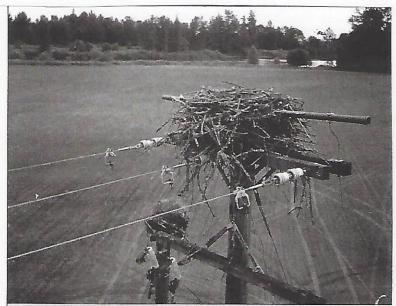
U.S. Fish and Wildlife Service. 2018. Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning. Migratory Bird Program, USFWS, Falls Church, VA. April. 6 pp.

Xenos, T.D, and I.N. Magras. 2003. Low power density RF radiation effects on experimental animal embryos and foetuses In: P. Stavroulakis (Ed.), Biological Effects of Electromagnetic Fields, Springer, 579-602.

APPENDIX

Osprey and Red-tailed Hawks nesting on power poles with nest and perch deterrents previously installed to discourage bird use - all which failed to work.

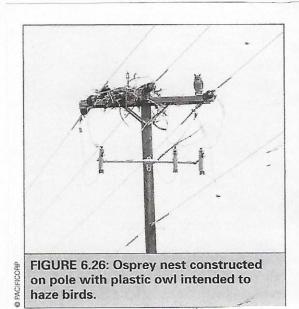
Figures 6.23, 6.25, 6.26, and 6.27 (with photo credits included), Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006. Pier Final Project CEC-500-2006-022, Avian Power Line Interaction Committee, Edison Electric Institute and California Energy Commission, Washington, DC and Sacramento, CA: pp. 127-128



PACIFICORF FIGURE 6.25: Red-tailed hawk nest on

pole with triangle perch discouragers.

FIGURE 6.23: A segment of plastic pipe was installed on a dead-end pole in Oregon to discourage osprey nesting. However, the osprey pair continued nest construction after the pipe was installed.





plastic spikes.

FICORP

(D PACH

10

Exhibit 3



Justin Nishioka <justin.nishioka@gmail.com>

FW: Fwd: Dr. and Mrs. Baron 1837 Ponus Ridge Road

Buschmann, Mark <Buschmann@pjtpartners.com> To: Justin Nishioka <justin.nishioka@gmail.com>

From: mark buschmann

buschmann.mark@gmail.com>

Sent: Tuesday, September 15, 2020 1:17 PM

To: Buschmann, Mark <Buschmann@pjtpartners.com>

Subject: [External] Fwd: Dr. and Mrs. Baron 1837 Ponus Ridge Road

Begin forwarded message:

From: Wilder Gleason <wilder.gleason@gleasonllc.com> Date: September 14, 2020 at 1:15:43 PM EDT To: Mark Buschmann

subject: FW: Dr. and Mrs. Baron 1837 Ponus Ridge Road

[REDACTED]

WG

Wilder G. Gleason, Esq.

Gleason & Associates, LLC

23 Old Kings Highway South, First Floor

Darien, CT 06820

203.655.9696 o

203.655.2999 f

203.803.9530 c

wilder.gleason@gleasonllc.com

From: Kay Parker Jex <kayparkerjex@kayjex.com> Sent: Monday, September 14, 2020 12:10 PM To: Wilder Gleason <wilder.gleason@gleasonllc.com> Subject: RE: Dr. and Mrs. Baron 1837 Ponus Ridge Road Wilder, for your information, a representative of the Land Trust has scheduled the walk thru to check the house before we close this afternoon. I really have no reason to think that the buyer is anyone else. Kay

Kay Parker Jex, Esq. 161 Cherry Street New Canaan, Connecticut 06840 Tel: 203 966 7300 Fax: 203 972 6307

From: Wilder Gleason Sent: Monday, September 14, 2020 10:00 AM To: Kay Parker Jex <kayparkerjex@kayjex.com> Subject: Dr. and Mrs. Baron 1837 Ponus Ridge Road Importance: High

Kay:

I just left word at your office concerning a time sensitive matter. I represent Mark Buschmann, a neighbor of your clients, Dr. and Mrs. Baron or 1837 Ponus Ridge Road. Mark and another neighbor are interested in purchasing the Baron property if it is still possible to do so. They are willing to pay more than we understand may have been agreed with an LLC buyer which my client understands intends to erect a cell tower on the property. My client and the neighbor have no interest in having a cell tower close by.

Could you please give me a call at my cell below or home 203.857.4570 at your earliest convenience.

Thanks,

Wilder

Wilder G. Gleason, Esq. Gleason & Associates, LLC 23 Old Kings Highway South, First Floor Darien, CT 06820 203.655.9696 o 203.655.2999 f

203.803.9530 c

wilder.gleason@gleasonllc.com

Partners have limited liability status.

This message and any attachment are confidential and may be privileged or otherwise protected from disclosure. If you are not an intended recipient of an electronic communication, please notify the sender immediately, delete the message and do not act upon, print, disclose, copy, retain or redistribute any portion or contents to any other person. Please refer to www.pjtpartners.com/email-disclaimer for important disclosures regarding this electronic communication, including information if you are not the intended recipient.

Exhibit 4

| SECRETARY OF THE STATE OF CONNECT | TICUT | | |
|---|--|--|--|
| Annual Report | FILING #0007215396 PG 1 OF 3 VOL A-00758 PAGE 1789 | | |
| 165 CAPITOL AVENUE P.O. BOX 150470 | FILED 03/10/2021 10:58 AM SECRETARY OF THE STATE OF CONNECTICUT | | |
| HARTFORD, CT 06115-0470 | | | |
| 1. Name of Limited Liability Company: | 1837 LLC | | |
| 2. Business ID: | 1349175 | | |
| 3. Report due in the month of: | March, 2021 | | |
| 4. NAICS Code: | 551112 (Offices of Other Holding Companies) | | |
| Changes: | | | |
| 5. This Limited Liability Company is: | DOMESTIC | | |
| Fee is: Business Name: | \$80.00 | | |
| Dusiness Name. | 1837 LLC | | |
| 6. Mailing Address: | C/O RUCCI LAW GROUP, LLC | | |
| | 19 OLD KINGS HIGHWAY SOUTH DARIEN,CT 06820 USA | | |
| Changes: | | | |
| Changeon | | | |
| | | | |
| 7. Principal Office Address: | C/O RUCCI LAW GROUP, LLC | | |
| | 19 OLD KINGS HIGHWAY SOUTH | | |
| Changes: | DARIEN,CT 06820 USA | | |
| Changes. | | | |
| | | | |
| Address Required in State of Formation (Foreign Limited Liability Company): | | | |
| Changes: | | | |
| | | | |
| | | | |

FILING #0007215396 PG 2 OF 3 VOL A-00758 PAGE 1790 FILED 03/10/2021 10:58 AM SECRETARY OF THE STATE OF CONNECTICUT

| 9. | Agent Information | | | |
|----------------------------|--|---|--|--|
| | Agent Type: Agent Name: | BUSINESS RUCCI LAW GROUP, LLC | | |
| | Agent's Business Address: | 19 OLD KINGS HIGHWAY SOUTH DARIEN,CT 06820 | | |
| Agent's Residence Address: | | | | |
| | Agent's Mailing Address: | 19 OLD KINGS HIGHWAY SOUTH DARIEN,CT 06820 | | |
| | Agent's Business Address Changes: | | | |
| | Agent's Residence Address Changes: | | | |
| | Agent's Mailing Address Changes: | | | |
| | Name of person accepting appointment: Title: | | | |
| | Signature Accepting Appointment: | | | |
| | (if agent is a business also print name and title of person signing) | | | |
| 10 | . Date: | 03/10/2021 | | |
| 11 | . Email Address: | tniss@optonline.net | | |
| 12 | 12. I hereby certify and state, under penalties of false statement, that all of the information set forth on this annual report is true. I hereby electronically sign this report. | | | |
| | Print Capacity: | MANAGER MEMBER | | |
| 13 | . Signature of Authorizer: | THOMAS NISSLEY | | |

Report Officers/Directors Business ID : 1349175

1. Full Legal Name: Title(s): Residence Addr:

Business Addr:

Res Changes:

Bus Changes:

FILING #0007215396 PG 3 OF 3 VOL A-00758 PAGE 1791 FILED 03/10/2021 10:58 AM SECRETARY OF THE STATE OF CONNECTICUT

RUCCI LAW GROUP, LLC MANAGER

19 OLD KINGS HIGHWAY SOUTH DARIEN,CT 06820 USA

Exhibit 5

VOL956 PG0679

Return

Kay Parker Jex, LLC Attorney at Law 161 Cherry Street New Canaan, CT 06840



Doc ID: 002563900002 Type: LAN Book 956 Page 679 - 680 File# 3547

STATUTORY WARRANTY DEED

We, MORDECHAI ABEL and SAVYONA ABEL, of 1385 Smith Ridge Road,

New Canaan, CT for ONE MILLION FIVE HUNDRED THOUSAND

(\$1,500,000.00) DOLLARS consideration paid, grant to EMILY B. NISSLEY of 30

Oenoke Lane, New Canaan, CT with WARRANTY COVENANTS:

(See Schedule A attached hereto and made a part hereof)

Said premises being known as 441 Canoe Hill Road, (formerly known as 8 Ferris Hill Road) New Canaan, CT.

Signed this it day of June, 2016.

STATE OF CONNECTICUT)) ss. COUNTY OF FAIRFIELD)

Mordechai Abel

Savvona Abel

Personally appeared Mordechai Abel and Savyona Abel signers and sealers of the foregoing instrument who acknowledged the same to be their free act and deed before me, this / day of June, 2016.

Alan R. Spirer Commissioner of the Superior Court

CONVEYANCE TAX RECEIVED

ï

Town 3750, 9 State 14 750, 00 New Canaan Town Clerk

SCHEDULE A

All that certain piece or tract of land, in the area 2.138 acres together with the buildings, improvements and appurtenances thereon or thereto appertaining, situated in Town of New Canaan, County of Fairfield and State of Connecticut, shown an delineated as "Parcel "A" on a certain map entitled, "Map Prepared for Anna B. Morse, New Canaan, Connecticut", certified "Substantially Correct", Henrici Associates, Henry F. Henrici, Land Surveyor, New Canaan, Conn., May 9, 1955 which map is on file in the Town Clerk's Office of said Town of New Canaan, as Map No. 2482, to which map reference is hereby made, and in accordance with which map said Parcel A is bounded as follows: in the second second

310.00 feet by land now or formerly of The Estate of Casilda Stevens; Northerly:

18.07 feet by Parcel C, as shown on said map; and 369.65 feet by Parcel B, as shown on said map; Easterly:

Southerly: 193.52 feet by Ferris Hill Road;

Southwesterly: 14.11 feet by the curved intersection of Ferris Hill Road and Canoe Hill Road;

Westerly: 366.51 feet by Canoe Hill Road.

Said Premises are conveyed subject to:

- 1. Any and all provisions of any municipal, ordinance or regulation or public or private law with special reference to the provisions of any zoning regulations and regulations governing the said Premises.
- 2. Real property taxes on the current Grand List and any municipal liens or assessments becoming due and payable on or after the delivery of this Deed.
- 3. Right of Way as set forth in a Deed dated August 23, 1957 and recorded in Volume 121 at Page 595 of the New Canaan Land Records; and as shown on said Map.

Received for record on 6-7-16 at 10:30Am and recorded by Claudia A. Weber

VOL 956 PG 0 980

CT Trust for Historic Preservation 940 Whitney Avenue Hamden CT 06517

DECLARATION AND GRANT OF PRESERVATION RESTRICTIONS AND COVENANTS

THIS PRESERVATION RESTRICTION AND COVENANT ("Restriction"), made as of the _9th___ day of June, 2016, by and between _Emily B. Nissley__ ("Grantor") and the Connecticut Trust for Historic Preservation ("Grantee"), a nonprofit corporation specially chartered in the State of Connecticut.

WITNESSETH:

WHEREAS, Grantor is owner in fee simple of certain real property located in the town of New Canaan, Connecticut, more particularly described in Exhibit A attached hereto and incorporated herein (hereinafter "the Property"), said Property including the Hoyt-Burwell-Morse house, built between 1730 and 1740 and later expanded (hereinafter "the Building"), with an associated fieldstone Well and a separate frame Garage constructed between 1967 and 1973; and

WHEREAS, Grantee is authorized to accept preservation and conservation restrictions to protect property significant in national and state history and culture under the provisions of Connecticut General Statutes §§ 47-42a to 47-42d (hereinafter "the Act"); and

WHEREAS, because of its architectural, historic, and cultural significance the Property was listed in the Connecticut State Register of Historic Places on 1 June 2016; and

WHEREAS, the Property is historically significant for its association with the origin of New Canaan as a distinct geographic entity; for its apparent occupancy by Onesimus Brown, who is thought to have been the last living person born into slavery in Connecticut; and for its association with the Birdsall, Steven, and Morse families, who were instrumental in transforming the town from a declining rural area to a fashionable suburb in the late nineteenth and early twentieth centuries; and

WHEREAS, the Property possesses integrity of materials and workmanship and is architecturally significant as a well-preserved example of an early eighteenth-century center-chimney house with an integral leanto which has been expanded and modified over the years in ways that preserve and enhance its original character; and

WHEREAS, Grantor and Grantee recognize the architectural, historic, and cultural values (hereinafter "conservation and preservation values") and significance of the Property, and have the common purpose of conserving and preserving the aforesaid conservation and preservation values and significance of the Property; and

WHEREAS, the Property's conservation and preservation values are documented in a set of reports, drawings, and photographs listed and described in Exhibit B (hereinafter, "Baseline Documentation") incorporated herein by reference, which Baseline Documentation the parties agree provides an accurate representation of the Property as of the effective date of this grant. In the event of any discrepancy between the two counterparts produced, the counterpart retained by Grantee shall control; and

WHEREAS, the grant of a preservation and conservation restriction by Grantor to Grantee on the Property will assist in preserving and maintaining the Property and its architectural, historic, and cultural features for the benefit of the people of the Town of New Canaan, the State of Connecticut, and the United States of America; and

WHEREAS, to that end, Grantor desires to grant to Grantee, and Grantee desires to accept, a preservation and conservation restriction in perpetuity on the Property pursuant to the Act;

NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, receipt of which is hereby acknowledged, and pursuant to Connecticut General Statutes

NO CONVEYANCE TAX COLLECTED New Canaan Town Clerk



§§ 47-42a to 47-42d, Grantor does hereby voluntarily grant and convey unto the Grantee a preservation and conservation restriction in perpetuity over the Property described in Exhibit A.

PURPOSE

1. Purpose. It is the purpose of this Restriction to assure that the architectural, historic, cultural, and archaeological features of the Property will be retained and maintained forever substantially in their current or better condition for conservation and preservation purposes and to prevent any use or change of the Property that will significantly impair or interfere with the Property's conservation and preservation values (hereinafter the "Purpose").

GRANTOR'S COVENANTS

2.1 Grantor's Covenants: Covenant to Maintain.

(a) Grantor agrees at all times to maintain the Building in the same or better structural condition and state of repair as that existing on the effective date of this Restriction. Grantor's obligation to maintain shall require repair, reconstruction, and/or replacement by Grantor whenever necessary to preserve the Building in substantially the same structural condition and state of repair as that existing on the date of this Restriction.

(b) Subject to the casualty provisions of paragraphs 7 and 8, the obligation to maintain shall require repair, reconstruction, and/or replacement of the exterior portions of the Building whenever necessary in accordance with The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings, and The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (36 C.F.R. 68), as these may be amended from time to time (hereinafter the "Secretary's Standards"); a summary of the Secretary's Standards is attached to this agreement as Exhibit C. As used in this subparagraph, the right to maintain and repair shall mean the use by Grantor of in-kind materials, applied with workmanship comparable to that which was used in the construction or application of those materials being repaired or maintained, for the purpose of retaining in good condition the appearance and construction of the Building. The right to maintain and repair as used in this paragraph shall not include the right to make changes in appearance, materials, and workmanship from that existing prior to the maintenance and repair without the prior written approval of Grantee in accordance with the provisions of paragraphs 3.1 and 3.2.

2.2 Grantor's Covenants: Prohibited Activities. The following acts or uses are expressly forbidden on, over, or under the Property:

(a) The Building and Well shall not be demolished, removed, or razed except as provided in paragraphs 7 and 8.

(b) Nothing shall be erected or allowed to grow on the Property which would impair the visibility of the Property and the Building from the street level or other public rights of way.

(c) The Property shall not be divided or subdivided in law or in fact and the Property shall not be devised or conveyed except as a unit. For the purposes of this Restriction the term "subdivision" shall include a long term lease or other use of the Property that creates the characteristics of a subdivision of the Property, as determined in the sole discretion of the Grantee.

(d) The dumping of trash, rubbish, ashes, or any other unsightly or offensive materials is prohibited on the Property.

(e) No above-ground utility transmission lines, except those reasonably necessary for the existing Building, may be created on the Property, subject to utility easements already recorded.

GRANTOR'S CONDITIONAL RIGHTS SUBJECT TO APPROVAL

3.1 Conditional Rights Requiring Approval by Grantee. The following acts require the prior express written approval of the Grantee, which approval shall not be unreasonably withheld or conditioned:

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(a) Increasing or decreasing the height of, making additions to, changing the exterior construction materials of, or moving, improving, altering, reconstructing, or changing the facades (including fenestration) and roofs of the Building.

(b) Erecting additional structures on the Property, such as garages, sheds, barns, or other outbuildings.

(c) Erecting or allowing to be erected any external signs or external advertisements except: (i) such plaque permitted under paragraph 19 of this Restriction; (ii) a sign stating solely the address of the Property; and (iii) a temporary sign to advertise the sale or rental of the Property, and (iv) temporary signs associated with local, state, or federal elections, as permitted by town regulations.

(d) Making permanent substantial topographical changes, such as, by example, excavation for the construction of roads, swimming pools, and recreational facilities.

(e) Erecting satellite receiving dishes, antennas, cellular communications transmitters, or similar electronic frequency receiving or emitting devices on the property.

3.2 Review of Grantor's Requests for Approval.

(a) Pursuant to paragraph 3.1, Grantor shall submit in writing to Grantee for Grantee's approval information (including plans, specifications, and designs where appropriate) together with a specific request identifying the proposed activity. In addition, Grantor shall also submit to Grantee a timetable for the proposed activity which is sufficient to permit Grantee to monitor such activity. Grantor shall not make changes or take any action subject to the approval of Grantee unless expressly authorized in writing by an authorized representative of Grantee.

(b) Grantee reserves the right to consult with governmental agencies, nonprofit preservation and conservation organizations, and/or other advisors deemed appropriate by the Grantee, concerning the appropriateness of any activity proposed under this Restriction.

(c) All approval rights of the Grantee shall be exercised in the reasonable discretion of Grantee.

(d) Grantee shall respond in writing to any request for approval within 60 days of receipt; if Grantee does not respond, the request shall be deemed approved.

(e) In the event that the Grantor does not implement any approval granted pursuant to 3.1 and 3.2, for a period of one (1) year, such approval shall be void. Grantor may resubmit the request for approval; however, such approval may be given or denied in the sole discretion of the Grantee.

4. Standards for Review. In exercising any authority created by this Restriction to inspect the Property or the exterior or interior of the Building; to review any construction, alteration, repair, or maintenance; or to review casualty damage or to reconstruct or approve reconstruction of the Building following casualty damage, Grantee shall apply the Secretary's Standards.

GRANTOR'S RESERVED RIGHTS

5. Grantor's Reserved Rights Not Requiring Further Approval by Grantee. Subject to the provisions of paragraphs 2.1, 2.2, and 3.1, the following rights, uses, and activities of or by Grantor on, over, or under the Property are permitted by this Restriction and by Grantee without further approval by Grantee:

(a) the right to engage in all those acts and uses that:
 (i) are permitted by governmental statute or regulation;
 (ii) do not substantially impair the conservation and preservation values of the Property; and
 (iii) are not inconsistent with the Purpose of this Restriction;

(b) pursuant to the provisions of paragraph 2.1, the right to maintain and repair the Building strictly according to the Secretary's Standards. As used in this subparagraph, the right to maintain and repair shall mean the use by Grantor of in-kind materials, applied with workmanship comparable to that which was used in the construction or application of those materials being repaired or maintained, for the purpose of retaining in good condition the appearance and construction of the Building. The right to maintain and repair as used in this paragraph shall not include the right to make changes in appearance, materials, and workmanship from that existing prior to the maintenance and repair without the prior written approval of Grantee in accordance with the provisions of paragraphs 3.1 and 3.2; and

(c) the right to continue all manner of existing use and enjoyment of the Building, including but not limited to the maintenance, repair, and restoration of existing fences; the right to maintain the existing driveway with the use of same or similar surface materials; the right to maintain existing utility lines, gardening and building walkways, steps, and garden fences; the right to cut, remove; and clear grass or other vegetation and to perform routine maintenance, landscaping, horticultural activities, and upkeep, consistent with the Purpose of this Restriction.

PUBLIC ACCESS AND STUDY

6. Public Access and Study. At reasonable times, upon request of Grantee made with reasonable notice to Grantor, persons affiliated with educational organizations, professional architectural associations, and historical societies shall be admitted to study the Property. In addition, Grantee may make photographs, drawings, or other representations documenting the significant historical, cultural, and architectural character and features of the property and may use or publish them (or authorize others to do so) to fulfill its charitable or educational purposes.

CASUALTY DAMAGE OR DESTRUCTION; INSURANCE

7. Casualty Damage or Destruction. In the event that the Building or any part thereof shall be damaged or destroyed by fire, flood, windstorm, hurricane, earth movement, or other casualty, Grantor shall notify Grantee in writing within fourteen (14) days of the damage or destruction, such notification including what, if any, emergency work has already been completed. No repairs or reconstruction of any type, other than temporary emergency work to prevent further damage to the Building and to protect public safety, shall be undertaken by Grantor without Grantee's prior written approval. Within thirty (30) days of the date of damage or destruction, if required by Grantee, Grantor at its expense shall submit to the Grantee a written report prepared by a qualified restoration architect and an engineer who are acceptable to Grantor and Grantee; this report shall include the following:

(a) an assessment of the nature and extent of the damage;

(b) a determination of the feasibility of the restoration of the Building and/or reconstruction of damaged or destroyed portions of the Building; and

(c) a report of such restoration/reconstruction work necessary to return the Building to the condition existing at the effective date of this instrument.

8. Review after Casualty Damage or Destruction. If, after reviewing the report provided in paragraph 7 and assessing the availability of insurance proceeds after satisfaction of any mortgagee's/lender's claims under paragraph 9, Grantor and Grantee agree that the Purpose of the Restriction will be served by such restoration/reconstruction, Grantor and Grantee shall establish a schedule under which Grantor shall complete the restoration/reconstruction of the Building in accordance with plans and specifications consented to by the parties up to at least the total of the casualty insurance proceeds available to Grantor.

If, after reviewing the report and assessing the availability of insurance proceeds after satisfaction of any mortgagee's/lender's claims under paragraph 9, Grantor and Grantee agree that restoration/ reconstruction of the Property is impractical or impossible, or agree that the Purpose of the Restriction would not be served by such restoration/reconstruction, Grantor may, but only with the prior written consent of Grantee, alter, demolish, remove, or raze the Building, and/or construct new improvements on the Property. Grantor and Grantee may agree to extinguish this Restriction in whole or in part in accordance with the laws of the State of Connecticut and paragraph 23.1 of this instrument.

9. Insurance.

(a) Grantor shall keep the Property insured by an insurance company rated "Secured" by Best's, or another insurance agency that meets with the prior express written approval of Grantee, for the full replacement value against loss from the perils commonly insured under standard fire and extended

coverage policies and comprehensive general liability insurance against claims for personal injury, death, and property damage.

(b) Property damage insurance shall include change in condition and building ordinance coverage, in form and amount sufficient to replace fully the damaged Property and Building without cost or expense to Grantor or contribution or coinsurance from Grantor. Such insurance shall include Grantee's interest and name Grantee as an additional insured.

(c) Grantor shall deliver to Grantee a certificate of insurance annually or when coverage is renewed by Grantor. If Grantor fails to submit proof of insurance coverage annually or at the time of renewal, Grantor must deliver proof of coverage, within ten (10) business days of Grantee's written request for documentation of coverage.

(d) Whenever the Property is encumbered with a mortgage or deed of trust, nothing contained in this paragraph shall jeopardize the prior claim, if any, of the mortgagee/lender to the insurance proceeds.

INDEMNIFICATION AND TAXES

10. Indemnification. Grantor hereby agrees to pay, protect, indemnify, hold harmless and defend at its own cost and expense, Grantee, its agents, trustees, directors, officers and employees, or independent contractors from and against any and all claims, liabilities, expenses, costs, damages, losses, and expenditures (including reasonable attorneys' fees and disbursements hereafter incurred) arising out of or in connection with injury to or death of any person; physical damage to the Property; the presence or release in, on, or about the Property, at any time, of any substance now or hereafter defined, listed, or otherwise classified pursuant to any law, ordinance, or regulation as a hazardous, toxic, polluting, or contaminating substance; the Grantor's independent valuation of or application for public incentives, rebates, or credits related to this Restriction; or other injury or other damage occurring on or about the Property, unless such injury or damage is caused by Grantee or any agent, trustee, director, officer, employee, or independent contractor of Grantee. In the event that Grantor is required to indemnify Grantee pursuant to the terms of this paragraph, the amount of such indemnity, until discharged, shall constitute a lien on the Property with the same effect and priority as a mechanic's lien. Provided, however, that nothing contained herein shall jeopardize the priority of any recorded lien of mortgage or deed of trust given in connection with a promissory note secured by the Property.

11. Taxes. Grantor shall pay immediately, when first due and owing, all general taxes, special taxes, special assessments, water charges, sewer service charges, and other charges which may become a lien on the Property unless Grantor timely objects to the amount or validity of the assessment or charge and diligently prosecutes an appeal of the charge, in which case the obligation to pay such charges as defined in this paragraph shall be suspended for the period permitted by law for prosecuting such appeal and any applicable grace period following completion of such action. In place of Grantor, Grantee is hereby authorized, but in no event required or expected, to make or advance upon three (3) days prior written notice to Grantor any payment relating to taxes, assessments, water rates, sewer rentals and other governmental or municipality charge, fine, imposition, or lien asserted against the Property. Grantee may make such payment according to any bill, statement, or estimate procured from the appropriate public office without inquiry into the accuracy of such bill, statement, or assessment or into the validity of such tax, assessment, sale, or forfeiture. Such payment if made by Grantee shall constitute a lien on the Property with the same effect and priority as a mechanic's lien, except that such lien shall not jeopardize the priority of any recorded lien of mortgage or deed of trust given in connection with a promissory note secured by the Property.

ADMINISTRATION AND ENFORCEMENT

12. Written Notice. Any notice which either Grantor or Grantee may desire or be required to give to the other party shall be in writing and shall be delivered by one of the following methods: by overnight courier postage prepaid, facsimile transmission, registered or certified mail with return receipt

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requested, or hand delivery; if to Grantor, to ___30 Oenoke Lane, New Canaan, CT 06840__, and if to Grantee, then to 940 Whitney Avenue, Hamden, Connecticut 06517.

Each party may change its address set forth herein by a notice to such effect to the other party.

13. Evidence of Compliance. Upon request by Grantor, Grantee shall promptly furnish Grantor with a certification that, to the best of Grantee's knowledge, Grantor is in compliance with the obligations of this Restriction, or that otherwise describes the status of this Restriction to the extent of Grantee's knowledge.

14. Inspection. With appropriate prior notice to Grantor, Representatives of Grantee shall be permitted at all reasonable times to inspect the Property, including the interior of the Building.

15. Grantee's Remedies. Grantee may, following reasonable written notice to Grantor, institute suit(s) to enjoin any violation of the terms of this Restriction by ex parte, temporary, preliminary, and/or permanent injunction, including prohibitory and/or mandatory injunctive relief, and to require the restoration of the Property and Building to the condition and appearance that existed prior to the violation complained of in the suit. Grantee shall also have available all legal and other equitable remedies to enforce Grantor's obligations contained in this instrument.

In the event Grantor is found to have violated any of its obligations, Grantor shall reimburse Grantee for any costs or expenses incurred in connection with Grantee's enforcement of the terms of this Restriction, including but not limited to all reasonable court costs, and attorney's, architectural, engineering, and expert witness fees.

Exercise by Grantee of one remedy hereunder shall not have the effect of waiving or limiting any other remedy, and the failure to exercise any remedy shall not have the effect of waiving or limiting the use of any other remedy or the use of such remedy at any other time.

16. Notice from Government Authorities. Grantor shall deliver to Grantee copies of any notice of violation or lien relating to the Property received by Grantor from any government authority within five (5) days of receipt by Grantor. Upon request by Grantee, Grantor shall promptly furnish Grantee with evidence of Grantor's compliance with such notice or lien where compliance is required by law.

17. Notice of Proposed Sale. Grantor shall promptly notify Grantee in writing of any proposed offer to sell the Property or of any listing of the Property for sale and provide the opportunity for Grantee to explain the terms of the Restriction to the real estate listing agent and potential new owners prior to sale closing.

18. Liens. Any lien on the Property created pursuant to any paragraph of this Restriction may be confirmed by judgment and foreclosed by Grantee in the same manner as a mechanic's lien, except that no lien created pursuant to this Restriction shall jeopardize the priority of any recorded lien of mortgage or deed of trust given in connection with a promissory note secured by the Property.

19. Plaque. Grantor agrees that Grantee may provide and maintain a plaque on the Property, which plaque shall not exceed 24 by 24 inches in size, giving notice of the significance of the Property and the existence of this Restriction.

BINDING EFFECT AND ASSIGNMENT

20. Runs with the Land. Except as provided in paragraphs 8 and 23.1, the obligations imposed by this Restriction shall be effective in perpetuity and shall be deemed to run as a binding servitude with the Property. This Restriction shall extend to and be binding upon Grantor and Grantee, their respective successors in interest and all such persons in the future claiming under or through Grantor and

Grantee; the words "Grantor" and "Grantee" when used in this instrument shall include all such persons. Any right, title, or interest granted in this instrument to Grantee also shall be deemed granted to each successor and assign of Grantee and each following successor and assign; the word "Grantee" shall include all such successors and assigns.

An owner of the Property shall have no obligation pursuant to this instrument where such owner shall cease to have any ownership interest in the Property by reason of a bona fide transfer. The restrictions, stipulations, and covenants contained in this Restriction shall be inserted by Grantor, verbatim or by express reference, in any subsequent deed or other legal instrument by which Grantor divests itself of either the fee simple title to or any lesser estate in the Property or any part thereof, including by way of example and not limitation, a lease of all or a portion of the Property.

21. Assignment. Grantee may convey, assign, or transfer this Restriction to a unit of federal, state, or local government or to a similar local, state, or national organization that is a "qualified organization" under Section 170(h) of the Code whose purpose, among other things, is to promote preservation or conservation of historical, cultural, or architectural resources, provided that any such conveyance, assignment, or transfer requires that the Purpose for which the Restriction was granted will continue to be carried out.

22. Recording and Effective Date. Grantee shall do and perform at its own cost all acts necessary to the prompt recording of this instrument in the land records of the Town of New Canaan, Connecticut. Grantor and Grantee intend that the restrictions arising under this Restriction take effect on the day and year this instrument is recorded in the land records of the Town of New Canaan, Connecticut.

EXTINGUISHMENT

23.1 Extinguishment. Grantor and Grantee hereby recognize that circumstances may arise that may make the continued ownership or use of the Property in a manner consistent with the Purpose of this Restriction impossible and that extinguishment of the Restriction may be necessary. Such circumstances may include, but are not limited to, partial or total destruction of the Building resulting from casualty. Extinguishment must be the result of a judicial proceeding in a court of competent jurisdiction.

23.2 Condemnation. If all or any part of the property is taken under the power of eminent domain by public, corporate, or other authority, or otherwise acquired by such authority through a purchase in lieu of a taking, Grantor and Grantee shall join in appropriate proceedings at the time of such taking to recover the full value of those interests in the Property that are subject to the taking and all incidental and direct damages resulting from the taking.

INTERPRETATION

24. Interpretation. The following provisions shall govern the effectiveness, interpretation, and duration of the Restriction.

(a) Any rule of strict construction designed to limit the breadth of restrictions on alienation or use of Property shall not apply in the construction or interpretation of this Restriction, and this instrument shall be interpreted broadly to effect its Purpose and the transfer of rights and the restrictions on use contained in this instrument.

(b) This instrument may be executed in two counterparts, one of which may be retained by Grantor and the other, after recording, to be retained by Grantee. In the event of any disparity between the counterparts produced, the recorded counterpart shall in all cases govern.

(c) This instrument is made pursuant to the Act, but the invalidity of such Act or any part thereof shall not affect the validity and enforceability of this Restriction according to its terms, it being the intent of the parties to agree and to bind themselves, their successors, and their assigns in perpetuity to each term of this instrument whether this instrument be enforceable by reason of any statute, common law,

or private agreement in existence either now or hereafter. The invalidity or unenforceability of any provision of this instrument shall not affect the validity or enforceability of any other provision of this instrument or any ancillary or supplementary agreement relating to its subject matter.

(d) Nothing contained in this instrument shall be interpreted to authorize or permit Grantor to violate any ordinance or regulation relating to building materials, construction methods, or use. In the event of any conflict between any such ordinance or regulation and the terms of this instrument, Grantor promptly shall notify Grantee of such conflict and shall cooperate with Grantee and the applicable governmental entity to accommodate the purposes of both this Restriction and such ordinance or regulation.

(e) To the extent that Grantor owns or is entitled to development rights which may exist now or hereafter under any applicable zoning or similar ordinance, that would permit the Property to be developed to a use or uses more intensive (in terms of height, bulk, number of structures, assemblage of lots, subdivision, or other criteria related by such ordinances) than that to which the Property is devoted as of the date of this Restriction, such development rights shall not be exercisable on, above, or below the Property during the term of the Restriction, nor shall they be transferred to any adjacent or other parcel.

(f) To the extent that any action taken by Grantee pursuant to this Restriction gives rise to a claim of breach of contract, Grantor and Grantee agree that the sole remedy on the part of Grantor shall be reimbursement of actual direct out-of-pocket expenses reasonably incurred by Grantor as a result of such breach and that Grantor shall not have any right to indirect, consequential, or monetary damages in excess of such actual, direct, and reasonable out-of-pocket expenses.

OTHER PROVISIONS

25. Amendment. If circumstances arise under which an amendment to or modification of this Restriction would be appropriate, Grantor and Grantee may by mutual written agreement jointly amend this Restriction, provided that no amendment shall be made that will adversely affect the qualification of this Restriction or the status of Grantee under any applicable laws, including Sections 170(h) and 501(c)(3) of the Code and the laws of the State of Connecticut. Any such amendment shall, to the extent practically feasible: be consistent with the protection of the conservation and preservation values of the Property and the Purpose of this Restriction; not affect its perpetual duration; not permit any private inurement to any person or entity; and not adversely impact the overall architectural, historic, natural habitat, and open space values protected by this Restriction. Any such amendment shall be recorded in the land records of New Canaan, Connecticut. Nothing in this paragraph shall require Grantor or Grantee to agree to any amendment or to consult or negotiate regarding any amendment.

26. Protection of Entire Building. Grantor and Grantee agree that that the restrictions of this Restriction shall apply to the entire exterior of the Building (including the front, sides, rear, and height of the Building), as well as to interior spaces and features as listed in Section 3.1, and that no change to the exterior of the Building may be made by Grantor except as provided herein.

27. Inconsistent Changes Prohibited. Grantor and Grantee agree that Grantor shall not undertake, and Grantee shall not permit, any change to the exterior of the Building which would be inconsistent with the historical character of such exterior.

28. Mediation. In the event that one party notifies the other in writing that it disagrees with the other party's determinations or actions under any provision of this Restriction, the parties shall participate in good faith in mediation before a mutually agreed mediator who has substantial education or experience regarding preservation of historically significant properties within thirty (30) days of such notice. Mediation shall occur at a place to be agreed upon by both parties, and each party shall bear its own costs of mediation. If the parties cannot agree on one mediator, the parties shall request that the American Arbitration Association propose a list of mediators. If the parties are unable to agree upon a single mediator from that list, each party shall select one qualified mediator and the other two mediators so named shall within ten (10) days select a third qualified mediator.

THIS RESTRICTION reflects the entire agreement of Grantor and Grantee. Any prior or simultaneous correspondence, understandings, agreements, and representations are null and void upon execution of this agreement, unless set out in this instrument.

TO HAVE AND TO HOLD, the said Preservation and Conservation Easement, unto the said Grantee and its successors and permitted assigns forever. This DEED OF PRESERVATION RESTRICTION AND COVENANT may be executed in two counterparts and by each party on a separate counterpart, each of which when so executed and delivered shall be an original, but both of which together shall constitute one instrument.

IN WITNESS WHEREOF, Grantor and Grantee have set their hands under seal on the days and year set forth below.

WITNESSES GRANTEE: CONNECTICUTITRUST FOR HISTORIC PRESERVATION By Daniel Mackay, its duly authorized Executive Director STATE OF CONNECTICUT New Cunaan JUNE 9 ,2016 SS. COUNTY OF FAIRFIELD Personally appeared <u>Emily B.</u> and <u>Missley</u>, signers and sealers of the foregoing instrument, and acknowledged the same to be his/her free act and deed and the free act and deed of """ said corporation, before me, AY P. JEX Notary Public MY COMMISSION HAY commission expires **EXPIRES** CCommissioner of the Superior Court 7/31/2018 FONNE OF STATE OF CONNECTICUT) 1/11, 2016 SS. COUNTY OF NEW HAVEN)

Personally appeared Daniel Mackay, Executive Director of the Connecticut Trust for Historic Preservation, signer and sealer of the foregoing instrument, and acknowledged the same to be his/her free act and deed and the free act and deed of said corporation, before met.

Notary Public

My commission expires_____ Commissioner of the Superior Court

EXHIBIT A: Legal Property Description

All that certain piece or tract of land, in the area 2.138 acres together with the buildings, improvements and appurtenances thereon or thereto appartaining, stuated in Town of New Canash, County of Painfald and State of Connecticut, shown an delineated as "Parcel "A" on a certain map entitied, "Map Prepared for Anna B. Morse, New Canash, Connecticut", certified "Substantially Correct", Henrici Associates, Henry F. Henrici, Land Surveyor, New Canash, Conn., May 9, 1955 which map is on file in the Town Cleric's Office of said Town of New Canasen, an Map No. 2482, to which map reference is hereby made, and in accordance with which map said Parcel A is bounded as follows:

Northerly: 310.00 feet by land now or formerly of The Estate of Caelida Stavens;

Ensterity: 18.07 feet by Parcel C, as shown on said map; and 369.66 feet by Parcel B, as shown on said map;

1.1

Southerly: 193.62 feet by Ferris Hill Road;

Southwesterly: 14.11 feet by the curved intersection of Ferris Hill Road and Canos Hill Road;

Westerly: 385.51 feet by Canoe Hill Road.

Said Premises are conveyed subject to:

- Any and all provisions of any municipal, ordinance or regulation or public or private law with spacial reference to the provisions of any zoning regulations and regulations governing the said Premises.
- 2. Real property tooss on the current Grand List and any municipal tiens or assessments becoming due and payable on or after the delivery of this Dead.
- Right of Way as set forth in a Deed dated August 23, 1967 and recorded in Volume 121 at Page 595 of the New Canash Land Records; and as shown on said Map.

. 8 -

EXHIBIT B: List and Description of Baseline Documentation

The following materials documenting the Property's historic significance and current condition are in the possession of both Grantor and Grantee and are incorporated by reference into the Restriction:

1. State Register of Historic Places nomination dated 18 May 2016, prepared by Erin Marchitto and Wes Haynes

2. Photographs and copies of documents provided by the 8 Ferris Hill Road Group, assembled Winter 2016.

3. Photographs taken by Christopher Wigren, 7 June 2016

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EXHIBIT C: Secretary of the Interior's Standards for Rehabilitation

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

For interpretive material and examples, see <u>http://www.nps.gov/tps/standards/rehabilitation/rehab/stand.htm</u> (26 May 2016).

CTHP_sample_easement_EH2014.doc

Received for record on <u>6-10-16</u> at <u>11:05</u> Am and recorded by <u>Claudia A. Weber</u> TOWN CLERK

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Return to:

Kay Jex, Esq. 161 Cherry Street New Canaan, CT 06840



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OUIT CLAIM DEED

EMILY B. NISSLEY of 30 Oenoke Lane, New Canaan, Connecticut 06840, for consideration paid, grants to EMILY B. NISSLEY AND THOMAS W. NISSLEY of 30 Oenoke Lane, New Canaan, Connecticut 06840, as Tenants in Common, with QUIT CLAIM COVENANTS,

All that certain tract, piece or parcel of land, together with any buildings, improvements and appurtenances thereto appearing, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, shown and delineated as parcel "A. 2.138 Acres" on a certain map entitled, "Map Prepared for Anna B. Morse, New Canaan, Connecticut", certified "Substantially Correct", Henrici Associates, Henry F. Henrici, Land Surveyor, New Canaan, Conn., May 9, 1955 which map is on file in the Town Clerk's Office of said Town of New Canaan as Map No. 2482, to which map reference is hereby made, in accordance with which map said Parcel A is bounded as follows:

| NORTHERLY: | 310.00 feet by land now or formerly of The Estate of Casilda Stevens; |
|----------------|---|
| EASTERLY: | 18.07 feet by Parcel C, as shown on said map and 369.65 feet by Parcel B, as shown on said map; |
| SOUTHERLY: | 193.52 feet by Ferris Hill Road; |
| SOUTHWESTERLY: | 14.11 feet by the curved intersection of Ferris Hill Road and Canoe Hill Road; and |
| WESTERLY: | 366.51 feet by Canoe Hill Road. |

Signed this 18th day of August, 2016.

Witnessed by: a Parker Jex

Loraine Hession

Emily B. Nissky

STATE OF CONNECTICUT)

) ss: New Canaan

COUNTY OF FAIRFIELD)

On this 18th of August, 2016, personally appeared EMILY B. NISSLEY, signer and sealer of the foregoing instrument and acknowledged the same to be her free act and deed, before me.

in lan

Commissioner of the Superior Court/ Kay Parker Jex

NO CONVEYANCE TAX COLLECTED New Canaan Town Clerk

Received for record on 8-19-16 at 10:06 Am and recorded by Claudia A. Weber TOWN CLERK

Page 1 of 5 Return to: Kathleen M. Merrigan, Esq. Cummings & Lockwood LLC Two Greenwich Plaza Greenwich, CT 06830

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Oenoke Lane, Tax Lot 204 901, New Canaan, Connecticut

AFFIDAVIT OF FACTS AFFECTING TITLE TO REAL PROPERTY

| STATE OF CONNECTICUT | Γ)) ss. | March 10 2017 | |
|----------------------|--|---|--|
| COUNTY OF FAIRFIELD |) | ,2017 | |
| Subject Property: | sources considered by alloundered by allounder | Oenoke Lane, New Canaan, Connecticut; noke Lane, Tax Lot 204 900, New Canaan, Connecticut; and | |

Record Owner: Emily A.B. McKay

The undersigned, being duly sworn, deposes and says:

- 1. The undersigned is over the age of eighteen (18) years and believes in the obligation of an oath.
- 2. This Affidavit is made with respect to certain real property known as and situated at 30 Oenoke Lane, New Canaan, Connecticut, together with parcels known as Oenoke Lane, Tax Lot 204 900, New Canaan, Connecticut and Oenoke Lane, Tax Lot 204 901, New Canaan, Connecticut, all of which are more particularly described in Schedule A attached hereto and made a part hereof (the "Subject Property").
- 3. Robert McKay and the undersigned were the named Grantees in a certain Warranty Deed from Special Properties, LLC to Robert McKay and Emily A.B. McKay as joint tenants with rights of survivorship dated August 21, 1995, and recorded in the New Canaan Land Records on August 21, 1995 in Book 442, page 969.
- 4. Robert McKay died a resident of New Canaan, Connecticut, on June 26, 2006.
- 5. At the time of his death, Robert McKay and the undersigned were still married to each other and were the owners of the Subject Property as joint tenants with rights of survivorship.
- 6. On August 22, 2006, an Appointment of Fiduciary was recorded in the New Canaan Land Records in Book 750, Page 487, evidencing the appointment of K. William Kolbe and Emily B. McKay as co-Executors of the Estate of Robert McKay.
- On May 20, 2015, a Certificate Releasing the Estate of Robert McKay from any Connecticut Estate Tax Lien was filed in the New Canaan Land Records and recorded on June 4, 2015 in Book 938, Page 35.
- 8. On August 3, 2008, the undersigned married Thomas W. Nissley and changed her legal name to Emily B. Nissley.
- 9. The undersigned remains the owner in fee of the Subject Property.



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The undersigned executes this Affidavit pursuant to the provisions of Section 47-12a of 10. the Connecticut General Statutes for purposes of confirming the above facts relating to the title to the Subject Property.

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Dated as of the 10^{n_2} day of \cancel{March} , 2017.

Emily B. Nigsley (f/k/a Emily A./B. McKay)

IRA W. BECI NOTARY PUBLIC MY COMMISSION EXPIRES MAR. 31, 2021

Ck 1

Subscribed and sworn to before me by Emily B. Nissley

this 10 day of 111, 2017.

Notary Public

My Commission Expires:

VOL 9 70 PG 0 b 9 1

I.

Schedule A

TRACT I:

ALL THAT CERTAIN piece, parcel or tract of land, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, designated as Parcel No. 900 on that certain map entitled, "Map Showing Subdivision of Oenoke Glen prepared for Special Properties, L.L.C. New Canaan, Connecticut Total Area -10.882 Ac." prepared by John R. O'Brien, L.S. dated March 30, 1994, April 21, 1994, which map is on file in the Office of the Town Clerk of said New Canaan as Map No. 6845. Said parcel contains 1.031 acres, more or less. TOGETHER WITH the right, if any, to use a certain forty foot right of way running from the premises in a southerly direction to St. John's Place in common with owners of abutting property as a means of egress and ingress to and from their respective properties to and from St. John's Place. TOGETHER WITH an easement for a right-of-way for ingress and egress over "Access to Serve Lots 897, 898, 899 and 900" as shown on said map.

TRACT II:

ALL THAT CERTAIN piece, parcel or tract of land, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, designated as Parcel No. 901 on that certain map entitled, "Map Showing Subdivision of Oenoke Glen prepared for Special Properties, L.L.C. New Canaan, Connecticut Total Area - 10.882 Ac." prepared by John R. O'Brien, L.S. dated March 30, 1994, April 21, 1994, which map is on file in the Office of the Town Clerk of said New Canaan as Map No. 6845. Said parcel contains 1.661 acres, more or less. TOGETHER WITH the right, if any, to use a certain forty foot right of way running from the premises in a southerly direction to St. John's Place in common with owners of abutting property as a means of egress and ingress to and from their respective properties to and from St. John's Place. TOGETHER WITH an easement for a right-of-way for ingress and egress over "Access to Serve Lots 897, 898, 899 and 900" as shown on said map.

TRACT III:

ALL THAT CERTAIN piece, parcel or tract of land, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, designated as Parcel No. 902 on that certain map entitled, "Map Showing Subdivision of Oenoke Glen prepared for Special Properties, L.L.C. New Canaan, Connecticut Total Area - 10.882 Ac." prepared by John R. O'Brien, L.S. dated March 30, 1994, April 21, 1994, which map is on file in the Office of the Town Clerk of said New Canaan as Map No. 6845. Said parcel contains 1.353 acres, more or less. TOGETHER WITH the right, if any, to use a certain forty foot right of way running from the premises in a southerly direction to St. John's Place in common with owners of abutting property as a means of egress and ingress to and from their respective properties to and from St. John's Place.

 \mathbf{I}

TOGETHER WITH a right-of-way over and across "Access to Serve Parcels 902 and 903," as shown on said map.

TRACT IV:

ALL THAT CERTAIN piece, parcel or tract of land, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, designated as Parcel No. 903 on that certain map entitled, "Map Showing Subdivision of Oenoke Glen prepared for Special Properties, L.L.C. New Canaan, Connecticut Total Area - 10.882 Ac." prepared by John R. O'Brien, L.S. dated March 30, 1994, April 21, 1994, which map is on file in the Office of the Town Clerk of said New Canaan as Map No. 6845. Said parcel contains 1.168 acres, more or less. TOGETHER WITH the right, if any, to use a certain forty foot right of way running from the premises in a southerly direction to St. John's Place in common with owners of abutting property as a means of egress and ingress to and from their respective properties to and from St. John's Place. TOGETHER WITH a right-of-way over and across "Access to Serve Parcels 902 and 903," as shown on said map.

TRACT V:

ALL THAT CERTAIN piece, parcel or tract of land, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, designated as Parcel No. 904 on that certain map entitled, "Map Showing Subdivision of Oenoke Glen prepared for Special Properties, L.L.C. New Canaan, Connecticut Total Area - 10.882 Ac." prepared by John R. O'Brien, L.S. dated March 30, 1994, April 21, 1994, which map is on file in the Office of the Town Clerk of said New Canaan as Map No. 6845. Said parcel contains 1.000 acres, more or less. TOGETHER WITH the right, if any, to use a certain forty foot right of way running from the premises in a southerly direction to St. John's Place in common with owners of abutting property as a means of egress and ingress to and from their respective properties to and from St. John's Place. TOGETHER WITH a right-of-way over and across "Access to Serve Parcels 904 and 905," as shown on said map.

TRACT VI:

ALL THAT CERTAIN piece, parcel or tract of land, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, designated as Parcel No. 905 on that certain map entitled, "Map Showing Subdivision of Oenoke Glen prepared for Special Properties, L.L.C. New Canaan, Connecticut Total Area -10.882 Ac." prepared by John R. O'Brien, L.S. dated March 30, 1994, April 21, 1994, which map is on file in the Office of the Town Clerk of said New Canaan as Map No. 6845. Said parcel contains 1.329 acres, more or less. TOGETHER WITH the right, if any, to use a certain forty foot right of way running from the premises in a southerly direction to St. John's Place in common with owners of abutting property as a means of egress and ingress to and from their respective properties to and from St. John's Place.

TOGETHER WITH a right-of-way over and across "Access to Serve Parcels 904 and 905," as shown on said map.

Said premises are also known as 30 Oenoke Lane, New Canaan, Connecticut.

Received for record on <u>3-21-17</u> at <u>2:02</u>pm and recorded by <u>Claudia A. Weber</u> TOWN CLERK

3245819_1.docx 3/9/2017

VOL 983 PG 1098

ID: 002645190001 Type: LAN k 983 Page 1098

Return to:

Kay Jex, Esq. 161 Cherry Street New Canaan, CT 06840

QUIT CLAIM DEED

EMILY B. NISSLEY AND THOMAS W. NISSLEY of 30 Oenoke Lane, New Canaan, Connecticut 06840, for consideration paid, grants to FERRIS 8, LLC, a Connecticut Limited Liability Company doing business at 30 Oenoke Lane, New Canaan, Connecticut 06840, with QUIT CLAIM COVENANTS,

All that certain tract, piece or parcel of land, together with any buildings, improvements and appurtenances thereto appearing, situated in the Town of New Canaan, County of Fairfield and State of Connecticut, shown and delineated as parcel "A. 2.138 Acres" on a certain map entitled, "Map Prepared for Anna B. Morse, New Canaan, Connecticut", certified "Substantially Correct", Henrici Associates, Henry F. Henrici, Land Surveyor, New Canaan, Conn., May 9, 1955 which map is on file in the Town Clerk's Office of said Town of New Canaan as Map No. 2482, to which map reference is hereby made, in accordance with which map said Parcel A is bounded as follows:

NORTHERLY: 310.00 feet by land now or formerly of The Estate of Casilda Stevens;

EASTERLY: 18.07 feet by Parcel C, as shown on said map and 369.65 feet by Parcel B, as shown on said map;

SOUTHERLY: 193.52 feet by Ferris Hill Road;

SOUTHWESTERLY:

Hill Road; and

14.11 feet by the curved intersection of Ferris Hill Road and Canoe

WESTERLY:

366.51 feet by Canoe Hill Road.

Signed this $\%6^{k}$ day of January, 2018.

Witnessed by an Kay Parker Jex

Loraine Hession

STATE OF CONNECTICUT)

) ss: New Canaan

)

COUNTY OF FAIRFIELD

On this 26th of January, 2018, personally appeared EMILY B. NISSLEY AND THOMAS W. NISSLEY, signers and sealers of the foregoing instrument and acknowledged the same to be their free act and deed, before me.

Commissioner of the Superior Court/

Kay Parker Jex

NO CONVEYANCE TAX COLLECTED New Canaan Town Clerk

Received for record on 1-29-18 at 9:20 Am Claudia A. Wel and recorded by



TOWN OF NEW CANAAN CONNECTICUT 06840

INLAND WETLANDS COMMISSION

PERMIT TO CONDUCT A REGULATED ACTIVITY PERMIT NO. 19-20-27-A ASSESSOR'S: MAP L BLOCK 204 LOT 897-901

Pursuant to the Inland Wetlands and Watercourses Act of the State of Connecticut and the Regulations of the Inland Wetlands Commission of the Town of New Canaan, it is hereby certified that:

INLAND WETLANDS AGENT ACTION

The Inland Wetlands Agent has considered the application received from New Canaan Land Conservation Trust and Emily Nissley, as the owner(s) of record, to conduct such activity that will have no greater than minimal impact on any wetlands or watercourses in the Town of New Canaan. The Inland Wetlands Agent granted the permit applied for subject to the following conditions:

Street Address: 1 and Records:

Lots 897 - 901 Oenoke Lane Volume 436 Page(s) 220 (New Canaan Land Trust Volume 970 Page 689 (Nissley)

STANDARD CONDITIONS OF THE PERMIT

- 1. The permit shall be recorded on the Land Records of the Town of New Canaan, and is effective as of the filing date.
- 2. Completion of the permitted activity shall be within five (5) years after the effective date of this permit. If such work is not completed within said time period the permit shall terminate and be null and void. The Commission may grant an extension of time for a period not to exceed five (5) years provided the permittee requests such extension in accordance with Section 14.2 of the Regulations.
- 3. If an approval or permit is granted by another Agency and contains conditions affecting wetlands and/or watercourses, the applicant must resubmit the application for further consideration by the Commission for a decision before work on the activity is to take place.
- 4. Prior to the commencement of any work on the site the Contractor Compliance Agreement (enclosed) must be signed and returned to the Commission's Office by the contractor who will perform the permitted activity.
- 5. The wetland boundaries shall be clearly marked for easy identification prior to the commencement of the permitted activity and the markings shall remain in place throughout the duration of the activity.
- 6. All activities for the prevention of soil erosion, such as silt fences and hay bales shall be under the direct supervision of a certified engineer, who shall employ the best management practices, consistent with the terms and conditions of this permit, to control stormwater discharges and to prevent erosion and sedimentation to otherwise prevent pollution, impairment, or destruction of wetlands or watercourses. Erosion controls are to be inspected by the permittee weekly and after rains and all deficiencies must be remediated within twenty-four hours of finding them.
- 7. The permittee shall take all necessary steps to control stormwater discharges to prevent erosion and sedimentation, and to otherwise prevent pollution of wetlands and watercourses.
- 8. The Commission's Agent shall be notified at least forty-eight (48) hours in advance of the initiation of the permitted activity and completion of any part of the activity.
- The permittee shall immediately inform the Inland Wetlands Agent of problems involving sedimentation, erosion, downstream siltation or any unexpected adverse impacts, which develop in the course of or are caused by the work.
- 10. Any material, man-made or natural which is in any way disturbed and/or utilized during the work shall not be deposited in any wetlands or watercourse, either on or off the site, unless so specifically authorized by this permit.
- 11. The importation and exportation of any earth, loam topsoil, humus, sand, gravel, clay, stone or quarry stone to and from the property shall be subject to Section 6.6 of the Zoning Regulations of the Town of New Canaan.
- 12. This permit shall not be assigned or transferred by the permittee or any party without the written consent of the Commission.
- 13. This permit does not obviate the permittee's obligation to obey all appropriate federal, state and local laws, or to obtain any federal, state or local permits.

- 14. This permit may be revoked or suspended if the permittee exceeds the conditions or limitations of this permit, or has secured this permit through deception or inaccurate information.
- 15. Upon completion of the permitted activity, the permittee shall file the attached Statement of Compliance with the Inland Wetlands Agent along with the appropriate recording fee. A final field inspection will be conducted by the Agent to check for compliance. If all conditions of the permit have been satisfied, the Agent will file the Statement of Compliance on the Land Records of the Town of New Canaan.

Detailed Description of Proposed Activity

Construct a 25' wooden footbridge across an unnamed stream along Oenoke Lane. Both ends of the footbridge will be laid on stone footings. The bridge will allow walkers to walk on Land Trust property, instead of Oenoke Lane, which contains a blind curve. The trail itself will require minimal construction and disturbance: mostly pruning tree branches and shrub, or removing those that are in the way of the trail (mostly invasive burning brush). The trail will be delineated using this cut material. No wood chips or gravel will be added to create the new trail but left as a natural dirt path. Soil and erosion controls will be installed as needed.

SPECIAL CONDITIONS OF THE PERMIT (As imposed by the Commission or the Agent of the Commission)

None.

Reminder: Upon completion of the permitted activity, the permittee shall file a completed Statement of Compliance form along with the appropriate inspection and recording fee. A final field inspection will be conducted by the Agent to check for compliance. If all conditions of the permit have been satisfied, the Agent will file the Statement of Compliance on the Land Records of the Town of New Canaan.

PLEASE NOTE: The Commission and/or Agent prior to the commencement of any work must approve any and all proposed changes.

All work shall be in substantial conformance to information submitted with the application including, but not limited to: Application Number 19-20-27-A; Abutter's List, DEEP reporting Form; Trail Map dated September 5, 2018; Wetland Soils GIS Map dated March 12, 2020; Footbridge Cross Sectional Drawing by A. Sillo Construction and Survey Map #6845, dated October 13, 1994 prepared by Moody and O'Brien.

LEGAL NOTICE:

- This permit shall become void should the permitted activity not be completed in a timely manner as required.
- A Statement of Compliance (form enclosed) shall be filed with the Agent of the Commission. (See number 15 above for instructions)

Dated at New Canaan, Connecticut this 6 day of April 2020.

Katkleen Holland

Kathleeh Holland, Director, Inland Wetlands

cc: Aaron Lefland, New Canaan Land Trust

Received for Record at New Canaan, CT On 04/22/2020 AL 1:58:36 pm

Claudia A. Weber

Doc ID: 002736700001 Type: LAN Book 1020 Page 139 File# 445

> TOWN OF NEW CANAAN INLAND WETLANDS COMMISSION

AUG 0 3 2020

INLAND WETLANDS

Date

WETLAND PERMIT NUMBER 19-20-27-A

STATEMENT OF COMPLIANCE

Pursuant to Section 13.11 of the Inland Wetlands and Watercourses Regulations, it is the responsibility of the owner to file a Statement of Compliance with the Authorized Agent upon completion of a permitted activity. Upon final inspection by the Agent, this document will be filed on the Land Records of the Town. Until the Certificate of Completion is signed by the Agent and filed, the Land Records will show that the requirements of the permit have not been satisfied.

STATEMENT OF COMPLIANCE

The activities conducted under the permit granted me by action of the Inland Wetlands Commission and filed on the Land Records of the Town of New Canaan,

Volume <u>1013</u> Page <u>501</u> Dated <u>April 22, 2020</u> has been completed and is in compliance with all requirements, conditions and limitations stated in the permit.

New Canaan Land Conservation Trust and Emily Nissley

Owner of Record Acron

Owner of Record or Agent's (Signature)

0 Oenoke Lane - Lots 897–901 Oenoke Lane Address of Completed Activity

Address of Owner - (if different)

Lefland - NCLT E.D.

FEE SUBMITTAL REQUIRED WITH FORM: Final Inland Wetlands Site Inspection Fee is \$100.00. Town Clerk Recording Fee is \$60.00.

Submit two separate checks made payable to the Town of New Canaan and attach to this form.

Do not write below this section.

CERTIFICATE OF COMPLETION

I have inspected the above activities and find that all requirements set forth in the permit have been complied with.

Kathleen Holland, Authorized Agent

Note:

Date filed on the Land Records_

/Users/Aaron/Desktop/Bills/19-20-27-A - 0 Oenoke Lane - NC Land Trust.Nissley.doc

Received for Record at New Canaan, CT On 08/05/2020 At 8:45:59 am

Claudia A. Weber

RETURN TO: Attorney Peter Ambrose 1100 Kings Highway East Fairfield, CT 06825

WARBANTY BEED

Sarvivorship

To all People to Whom these Presents shall Come. Greeting:

Know Ye, That Shaun P. McMenamey of 67 Belden Hill Road, Wilton, CT

Doc ID: 002760910003 Type: LAN Book 1031 Page 195 - 197 File# 2615

06897, herein designated as the Grantors,

for the consideration of Two Hundred Fifty Thousand and No/100 (\$250,000.00) Dollars

received to the full satisfaction of the Grantors, from Thomas Nissley and Emily Nissley of 30 Oenoke

Lane, New Canaan, CT 06840 herein designated as the Grantces, do hereby give, grant, bargain, sell and convey to the Grantees and to the survivor of them and to such survivor's heirs and assigns forever

All that certain piece or parcel of land with the buildings and improvements thereon situated in the Town of New Canaan, County of Fairfield and State of Connecticut and being known and designated as 228 Park Street, Unit 8, New Canaan Connecticut and being more particularly bounded and described on Schedule A attached hereto and made part hereof.

To Have and to Hold the premises hereby conveyed, with the appurtenances thereof, unto the Grantees and unto the survivor of them and unto such survivor's, heirs and assigns forever, to their proper use and behoof, and the Grantors do for themselves, their heirs, successors and assigns, covenant with the Grantees and with the survivor of them and with such survivor's heirs, successors and assigns, that the Grantors are well seized of the premises as a good indefeasible estate in FEE SIMPLE; have good right to grant and convey the same in manner and form as herein written and the same are free from all incumbrances whatsoever, except as herein stated.

And Furthermore, the Grantors do by these presents bind themselves and their heirs, successors and assigns forever to WARRANT AND DEFEND the premises hereby conveyed to the Grantees and to the survivor of them and to such survivor's heirs, successors and assigns against all claims and demands whatsoever, except as herein stated.

In all references herein to any parties, persons, entities, or corporations the use of any particular gender or of the plural or singular number is intended to include the appropriate gender or number as the text of the within instrument may require.

CONVEYANCE TAX RECEIVED

Town 625. State 1.8-75.

In Witness Whereof, the Grantors have hereunto set their hands and seals, or if a corporation, it has caused these presents to be signed by its corporate officers and its corporate seal to be affixed hereto, this 7 day of January, 2021

| Signed, Sealed and Delivered in the pres or attested by | ence of | | | |
|--|----------------------|--------------------|--------------------|--------------|
| | | Sh. P | M'Men | 1 |
| Ovitness, Peter Ambrose | | Shaun P. N | McMenamey | |
| Susan Barber | | | | |
| witness Susan Barke | (| | | |
| | | | | |
| STATE OF CONNECTICUT | } | | | |
| COUNTY OF FAIRFIELD | } ss. Fairfield } | | | 23 |
| The foregoing instrument was acknow | vledged before me o | n January 7 | , 2021, by Shaun 1 | P. McMenamey |

Peler Ambrose Commissioner of the Superior Court

SCHEDULE A PROPERTY DESCRIPTION

All that certain piece, parcel or tract of real property located in the Town of New Canaan, County of Fairfield and State of Connecticut, being part of a condominium dated March 27, 1980, the Declaration of which is recorded in Volume 258 at Page 713, as amended by First Amendment to Declaration of Condominium dated November 7, 1980, and recorded November 10, 1980, in Book 263 at Page 142 of the New Canaan Land Records, as known and designated as Unit No. 8, Building 2, "PARK MEAD CONDOMINIUM" together with a 1.867% undivided interest in the common elements of said condominiums and appurtenances thereto.

The entire condominium premises are laid down and delineated to two certain maps, one entitled, "Map Prepared for J. Elliott Smith, New Canaan, Connecticut," which map is certified "Substantially Correct" by Henry F. Henrici, Land Surveyor, January 7, 1957, and is on file in the office of the Town Clerk of the Town of New Canaan as Map No. 3711 and the other entitled, "Unit Numbering Plan of Park Mead Condominiums, located at New Canaan, Connecticut, Scale 1"=20' March 20, 1980," which survey is certified "Substantially Correct" by Donald C. Barbee, Land Surveyor, and is on file together with the floor plans of Park Mead Condominums in the office of the Town Clerk of the Town of New Canaan as file number 5032.

Together with the benefits, rights, privileges, easements and subject to the burdens, covenants, restrictions, by-laws, rules, regulations and easement, all as more particuarly set forth in condominium documents filed and recorded as referred to herin, and as more particuarly set forth in the New Canaan Land Records.

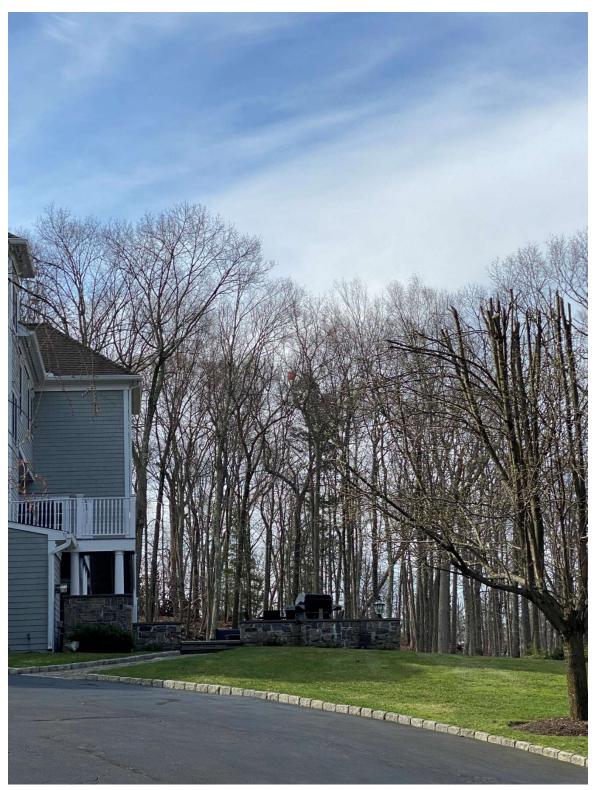
SUBJECT TO:

- 1. Any and all provisions of any municipal regulation or ordinance, and any Federal, State or local public or private laws, with special reference to the provisions of any zoning rules and regulations governing the subject premises.
- 2. Any assessments or pending assessments for which a lien or liens have not as yet been filed or recorded in the Town Clerk's Office.
- 3. Taxes on the List of October 1, 2019 to the Town of New Canaan, payments are reported to be current.
- 4. Taxes on the List of October 1, 2020 to the Town of New Canaan, payments are not yet due and payable.
- 5. Sewer Use Charges as may be due and payable to the Town of New Canaan, payments are reported to be current.
- 6. Effect, if any, of a letter dated December 13, 1955 and recorded in Book 129 at Page 151 of the New Canaan Land Records.
- 7. All of the terms, covenants, conditions, agreements, obligations, restrictions, and easement as set forth in the Declaration of Park Mead Condominum, togther with the By-Laws, and all exhibits, appendices, schedules, agreements, documents, maps and plans attached thereto or referred to therein, dated March 27, 1980 and recorded in Volume 258 at Page 713 of the New Canaan Land Records, as the same may be amended, supplemented or restated.

Received for Record at New Canaan, CT On 01/12/2021 At 2:09:24 pm

Claudia A. Weber

Exhibit 6



NCN EXHIBIT 6, Photos 1 through 6, taken on April 7, 2021.

PHOTO 1: 59 Squires Lane- Photo from driveway of the rear of the property. Windy conditions made it difficult to accurately portray height or placement of balloon.

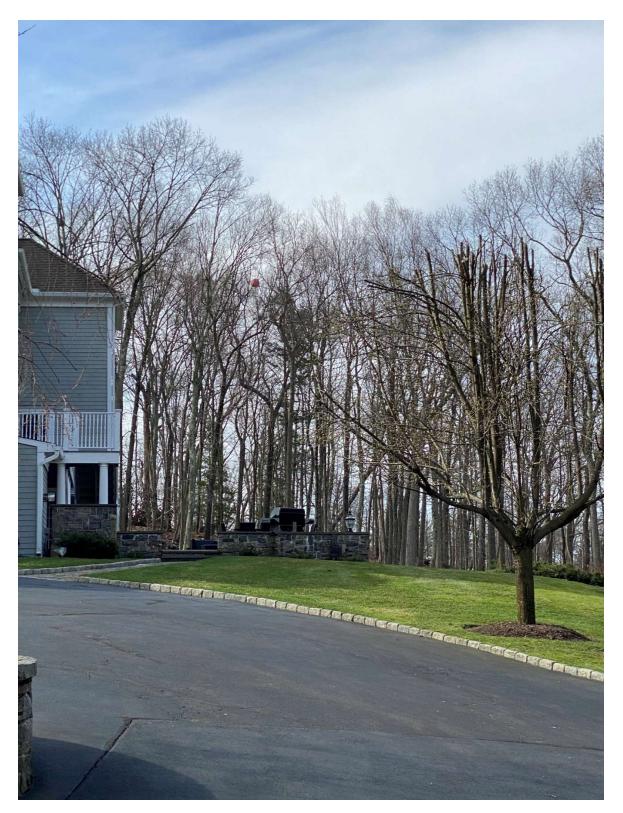


PHOTO 2: 59 Squires Lane- Photo from driveway of the rear of the property. Windy conditions made it difficult to accurately portray height or placement of balloon. Taken immediately after taking Photo 1.



PHOTO 3: 59 Squires Lane- Photo from entrance walkway in the front of the home. Windy conditions made it difficult to accurately portray height or placement of balloon.

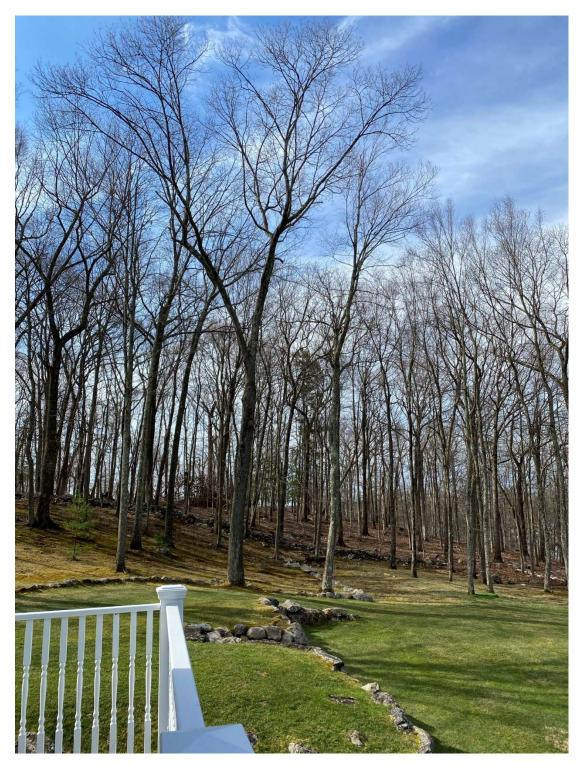


PHOTO 4: 59 Squires Lane- Photo from back porch in the rear of the property. Windy conditions made it so the balloon dipped significantly down on occasion, as portrayed in this photo.



PHOTO 5: 59 Squires Lane- Photo taken from back deck in the rear of the property. Windy conditions made it difficult to accurately portray height of balloon.

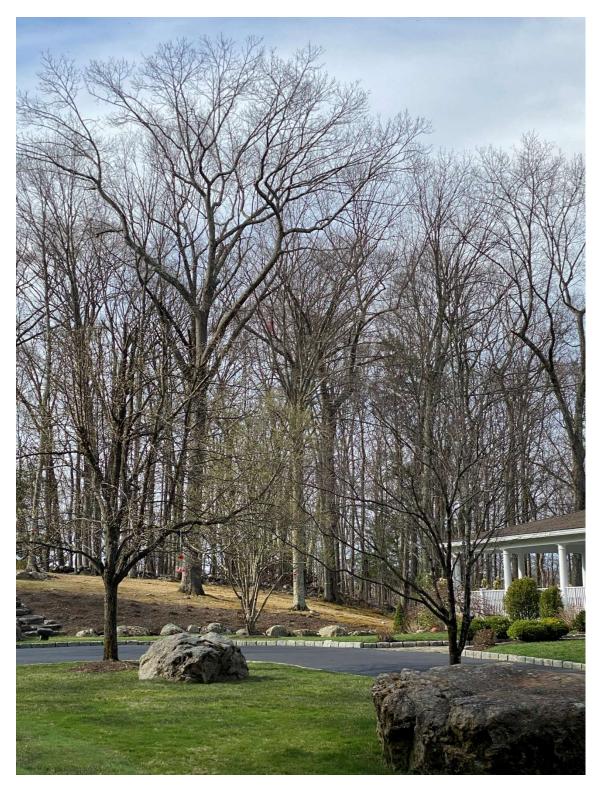


PHOTO 6: 59 Squires Lane- Photo taken from front yard of the property. Windy conditions made it difficult to accurately portray height and location of balloon.