

SPECIAL PERMIT APPLICATION
TOWN OF NORTH HAMPTON
2015



DRAGON MOSQUITO CONTROL, INC.
SARAH MACGREGOR
PRESIDENT

Application No: _____
Date Received: _____

Special Permit Application-Mosquito/Black Fly
NH Division of Pesticide Control
PO BOX 2042 Concord NH 03302-2042

12/10

OFFICE USE ONLY

Referred to:

	Approve	Disapprove	Signature	Date
Dept. Environ. Services	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
Dept. Res. & Econ. Dev.	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
Fish & Game Department	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
State Entomologist	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
Division Public Health	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
Div. of Pesticide Control	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Check here if there are attached comments or conditions, or use space below
Comments: _____

APPLICANT INFORMATION

1. Name of applicant (Individual, Municipality, Organization, Agency or Firm.):

Dragon Mosquito Control, Inc

Address: P.O. Box 46

City: Stratham State: NH Zip: 03885 License#: S-1521396

Tel: 734-4144 Fax: 734-4420 Cell* _____

Contact Name: Sarah MacGregor

Tel: 734-4144 Cell* _____ E-mail* Sarah@DragonMosquito.com

2. Licensed pesticide applicator(s) (if other than the party named on Line 1):

Address: _____

City: _____ State: _____ Zip: _____ E-Mail _____

Tel: _____ Fax: _____ Cell* _____ License#: _____

3. Client on whose behalf the application is being made (if other than shown on Lines 1 or 2):

Name (Person, Organization, Town): Town of North Hampton

Address: P.O. Box 710

City: North Hampton State: NH Zip: 03862

Tel: 964-8650 Fax: 964-1514 E-Mail _____

Contact/Spokesperson (if other than above): Kevin Kelley

Tel: _____ Cell* _____ E-mail* _____

* Cell # and E-mail address Optional

TREATMENT INFORMATION

4. Have there been any previous special permits issued to conduct pesticide applications at this site (whether or not pesticide were actually applied)? Yes No .
If Yes, indicate permit number and year of most recent permit:
Permit #: SP# - 029 Year: 2014

5. Reason for Pesticide Application

- a. State factor(s) that will be applied to determine need for treatment. Include or attach any surveys or other data, as available. _____

- b. Who will make the determination? _____

6. Description of Application

- a. Target organism(s): _____

- b. Application Method(s) – Type of Equipment, Nozzles, etc.
- (1) For Adulthood: _____

- (2) For Larviciding: _____

- c. Calibration – Describe method and frequency of calibration for each type of equipment used: _____

- d. Pesticides to be used (check here if list is attached):
[ATTACH COPIES OF COMPLETE LABELS]

Product Name	EPA Reg. No.	Formulation	Application Rate

7. Treatment and Monitoring Area(s)

a. Attach map(s) of a scale of 1:24000 or greater, where the scale is sufficient to show important details of the treatment and surrounding areas, where such maps include:

- (1) Proposed Treatment areas, including
 - (a) Adulticiding routes
 - (b) Larviciding locations
- (2) Adjacent areas
- (3) Land types and vegetation
- (4) Surface waters
- (5) Public water supply surface waters and wells
- (6) Topographic features

b. Description of treatment area(s) (Attach as necessary):

(1) Location and Description of treatment areas (reference to map):

(2) Are there potential treatment sites on state-owned land? Yes No .
If "Yes" delineate on map and name the site(s): _____

(3) List all activities or entities that might be affected by the treatments, such as apiaries, schools, recreational areas, crops, ornamental nurseries, etc.

(4) Name(s) and location(s) of any public water supply wells or surface waters. Include well type (i.e. gravel packed, drilled, etc), if known: _____

c. Location(s) of Survey Sites (reference to map): _____

8. Notifications and "No-Spray" requests

a. What methods of notification to abutters and others who might be affected by the proposal have been used? Newspaper, Direct Mailing, Other.
(If Other, please specify): _____

b. Please attach copies or samples of notifications sent to Newspapers, Residents, Health Officials, Beekeepers, and any others who are required to be notified of pending application.

c. Are there any persons who have requested no pesticides be applied to, or in the vicinity of their property? Yes No . If yes, what is the basis of their objection (if known) and what actions will be taken by the pesticide applicator to accommodate such requests? _____

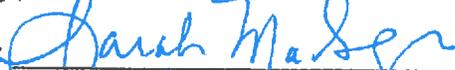
9. Has this proposed control program been approved by vote at a town meeting?
Yes No . If "No" certain restrictions on the conduction of larviciding programs will go into force. These limitations will be delineated in the special permit, if issued.

10. Will the proposed program be conducted in accordance with the current *New Hampshire Arboviral Illness, Surveillance, Prevention and Response Plan* guidelines? Yes No . If "No," certain restrictions to the program may be imposed and will be delineated in the special permit, if issued.

SIGUATURES

11. By the signature(s) below, the signatories attest that the information provided in this application is accurate and true, and they acknowledge that falsification of information will result in denial of a special permit.

Applicant (Person named under Line 1 of this form):

Signature:  Date: 11-20-14

* Print or Type Name and Title: Sarah MacGregor, President

Affiliation: Dragon Mosquito Control, Inc

Pesticide Applicator (From Line 2, if not the Applicant)

Signature: _____ Date: _____
* Print or Type Name: _____

Client (Person named on Line 3 of this form):

Signature: [Handwritten Signature] Date: 2/5/2015
* Print or Type Name and Title: KEVIN KELLEY HEALTH OFFICER & C.E.O.
Affiliation: TOWN OF NORTH HAMPTON

*** INCOMPLETE FORMS, OR FORMS WITH ILLEGIBLY PRINTED NAMES WILL
BE RETURNED**

NOTE: An Original, Signed Application must be submitted, to include all maps, labels, and support information. Four (4) complete copies must also be submitted. In some cases the copies, or portions thereof, may be submitted electronically. Contact the Division of Pesticide Control to determine the form in which copies may be submitted. Submit the application to the address shown at the head of this form. Where electronic copies will be allowed, the appropriate e-mail address will be provided, as needed.

ALLOW 120 DAYS FOR PROCESSING

This package contains (please check all that apply):

- Signed, dated, and completed application form with legible name(s)
- Maps of appropriate scale containing all required information
- Copies of complete labels of pesticides being proposed
- Copies of all required notices
- Copy of current NHB Report

**SPECIAL PERMIT APPLICATION
TOWN OF NORTH HAMPTON
2015**

1. DRAGON MOSQUITO CONTROL, INC.
Office: 29 Commercial Drive, Brentwood, NH
Mail: P.O. Box 46, Stratham, NH 03885
Phone: 603-734-4144
Fax: 603-734-4420
License: S-1521396
SARAH T. MACGREGOR, President
Email: Sarah@DragonMosquito.com

2. Same as Line 1

3. TOWN OF NORTH HAMPTON
Kevin Kelley, Health Officer
235 Atlantic Avenue
North Hampton, NH 03862-0575
Phone: 603-964-5500
Fax: 603-964-7249

4. PREVIOUS PESTICIDE APPLICATIONS

In 2014, the Town of North Hampton received Special Permit SP-029 to conduct a mosquito control program. Areas treated for mosquito larvae included salt marshes, swamps, cattail marshes, woodland pools, ditches, ponds, depressions, swales, containers and catch basins. There was no adulticiding done last season.

5. REASON FOR PESTICIDE APPLICATION

A. Last year, the snowy winter gave way to a dry spring. Dry conditions continued all summer and into the fall. The late season mosquito population was low but the species found in our traps were all potential carriers of Eastern Equine Encephalitis (EEE). EEE was found in 18 mosquito batches trapped in ten towns including Portsmouth. New Hampshire had more EEE than any other state with three human cases occurring in the towns of Conway, Hopkinton and Manchester. Two of the three cases resulted in death. A mule in Candia, a horse in Nottingham and one in Sanbornton also contracted EEE. One mosquito batch from the town of Greenland tested positive for West Nile Virus (WNV).

This Special Permit Application details North Hampton's plan to combat the mosquito population and reduce the threat of mosquito borne disease.

Eastern Equine Encephalitis

Dr. John-Paul Mutebi, a public health entomologist from the Centers for Disease Control (CDC), has visited NH several times in recent years and convened a regional EEE conference in Concord. He continues to evaluate the arboviral surveillance and control programs employed in NH. Dragon was advised on the timing of adulticide treatments to most effectively reduce the spread of EEE to birds and mammals. Dr. Mutebi told us to adulticide before EEE shows up in the mosquito population. The CDC encouraged NH to continue a sustainable surveillance effort to maintain consistency year to year. EEE is considered the most deadly arbovirus in North America and possibly the world therefore we must continue to improve our control and surveillance techniques and learn more about this disease.

The primary vector of EEE is *Culiseta melanura*. Largely a bird biter, this species plays a critical role in the bird-mosquito transmission cycle helping to amplify the disease in the environment. Another significant mosquito in the EEE cycle is *Cs. morsitans*, a species that has consistently tested positive in NH. Research in Connecticut indicates that *Cs. melanura* could be the primary vector as well as a bridge vector. Other potential bridge vectors include *Culex salinarius*, *Anopheles quadrimaculatus*, *Ochlerotatus canadensis*, *Coquillettidia perturbans*, *Aedes vexans* and *An. punctipennis*. *Culex salinarius* is the stronger bridge vector of the six species listed above since it bites birds 30% of the time and mammals 30+% of the time. The number of species that have tested positive for EEE in New Hampshire holds at eleven since there is a restriction on the mosquito species being tested for arboviruses at the State Lab in Concord.

Aedes cinereus
Aedes vexans
Coquillettidia perturbans
Culex pipiens
Culex pipiens/restuans
Culex salinarius
Culiseta melanura
Culiseta morsitans
Ochlerotatus canadensis
Ochlerotatus triseriatus
Psorophora ferox

All of these species have been collected in North Hampton. *Aedes cinereus*, *Ae. vexans*, *Coquillettidia perturbans*, *Ochlerotatus canadensis*, *Oc. triseriatus*, and *Psorophora ferox* all bite humans, while *Culex* and *Culiseta* species prefer birds but will occasionally bite mammals.

A total of 31 species of mosquitoes have been identified in North Hampton. The main species collected in 2014 were *Coquillettidia perturbans*, *Culiseta melanura*, *Aedes cinereus*, and *Ochlerotatus cantator*. A complete list of adult species collected is located in Appendix B.

West Nile Virus

In 2014, 1 mosquito batch tested positive for WNV from Greenland. New Hampshire had no human cases of West Nile Virus in 2014.

Culex pipiens is the primary vector of West Nile Virus and in NH is also known to carry EEE. *Culex pipiens* prefers to bite birds and has never been considered a serious public health threat until the arrival

of WNV. Studies have shown that five mosquito species have high enough viral competency rates to indicate viral transmission in the field: *Culex pipiens*, *Cx. salinarius*, *Cx. restuans*, *Aedes vexans*, and *Ochlerotatus triseriatus*. Many experts believe *Ochlerotatus japonicus* and *Culex restuans* play an important role in viral transmission to humans. We have trapped these species throughout the state. These mosquitoes are very adaptive and have been proven to be efficient vectors of WNV.

The species that have tested positive for WNV in NH are:

Anopheles punctipennis
Anopheles walkeri
Coquillettidia perturbans
Culex pipiens
Culex restuans
Culex salinarius
Culiseta melanura
Ochlerotatus canadensis
Ochlerotatus japonicus
Ochlerotatus triseriatus

All of these species have been collected in North Hampton and are commonly found throughout the state. Many of these species are found in catch basins, sewage lagoons, discarded tires, clogged rain gutters, flower pots or any backyard container. Homeowners can have a tremendous impact on the population of larvae developing in their backyards by turning over or covering containers. Controlling these disease carrying mosquitoes in container habitats requires weekly attention. We constantly remind homeowners of this as an easy way to eliminate mosquitoes.

Research shows that 50-75% of all catch basins produce mosquitoes. In 2014, dry conditions throughout the spring and summer months favored larval development in catch basins. The four species most commonly found in catch basins are:

Culex pipiens
Culex restuans
Ochlerotatus japonicus
Ochlerotatus triseriatus

In coastal areas, mosquito control exists because of the salt marsh mosquito. These mosquitoes emerge by the millions if left untreated. The sheer number of salt marsh mosquitoes can be such an annoyance they ruin any outdoor activity, day or night. Municipalities have cancelled sporting events during severe infestations to protect the children. Salt marshes produce a new batch of mosquitoes every 2-4 weeks, resulting in eight to ten broods per season. The mosquito control program in North Hampton has relied on larval population monitoring and well timed larviciding to control the salt marsh mosquitoes. *Bacillus thuringiensis israelensis*, (Bti) has been used on the marshes to control mosquito larvae.

The salt marsh provides a habitat for the following larval species:

Ochlerotatus cantator
Ochlerotatus sollicitans
Ochlerotatus taeniorhynchus
Culex salinarius

The summer salt marsh mosquito, *Ochlerotatus sollicitans*, is unbelievably annoying and a potential vector of EEE and WNV, testing positive in New England. Both CDC and Rutgers University recognize that *Oc. sollicitans* is an important bridge vector that transmits EEE to humans and other mammals. This species flies and bites during the day in full sun and loves to rest on lush green lawns. People may feel captive in their own home when simply walking to the car can trigger an attack by hundreds of these mosquitoes. The bite of *Ochlerotatus sollicitans* is painful and leaves a burning sensation, and the presence of this species has had an economic impact on tourism in the seacoast in the past.

Culex salinarius tested positive for EEE and WNV in NH. This mosquito utilizes many different habitats, including the upland edge of salt marshes. *Cx. salinarius* is an aggressive human biter known to enter houses to find a blood meal. Other species that have been collected on the upland edge of the salt marsh include: *Aedes vexans*, *Anopheles walkeri*, and *Culiseta morsitans*. All of these species have tested positive for EEE and/or WNV in NH.

The Larval Survey

Mosquito season begins after the snow melts. Larval surveys are conducted from April into October. Freshwater sites are checked in the spring after the snow and ice melt or after heavy rains and salt marshes are checked after flood tides or heavy rains. Catch basins are checked from late May into September. Inspection of a site reveals the location of any mosquito activity, the life stage of the mosquitoes (1st-4th instar larvae or pupae), the density of the population (#/dip), the condition of the site (water depth or distribution) and other site characteristics. Workers randomly sample the stagnant water using 500 ml cups known as dippers. The number of mosquitoes sampled in each positive dip is averaged. The average per dip and larval instar are recorded in addition to their distribution throughout the site, site name and location, date, inspectors, access points and comments. All these variables help determine the need for treatment, type of insecticide, timing of treatment, and size of spray crew. A list of sites surveyed in 2014 can be found in Appendix B as well as a list of larval species collected.

Larval surveys are conducted in areas where stagnant water collects such as red maple and cedar swamps, roadside ditches, woodland depressions, and salt marshes. Containers such as birdbaths, rain barrels, flower pots, children's swimming pools can be emptied of water, eliminating the developing larvae. Streams clogged with debris can overflow creating stagnant pockets which allow larval survival. Clearing debris keeps a stream moving and washes away any mosquito larvae. Old tire tracks might hold enough water to provide a larval habitat for mosquitoes, but can be filled in to eliminate the habitat.

B. DETERMINATION TO SPRAY

Integrated Mosquito Management (IMM) guides all treatment decisions. IMM is a knowledge-based, surveillance-driven control strategy designed to employ all available control methods emphasizing human, animal, and environmental health, rational use of pesticides, and proper timing of applications. This technique has been in use for decades and is the foundation of a successful control program.

Larviciding must be well timed to provide good control. Frequent surveys monitor activity in the larval habitat. Applicators review the larval survey results to determine whether treatment is needed and how many applicators will be used. Larviciding is deemed necessary if a larval survey reveals an average of one larva every other dip. This is our action threshold. The survey information also helps determine which insecticide is appropriate for the situation. Larviciding and catch basin treatment dates from 2014 are located in Appendix C. The map of all survey sites and a site list are located in Appendix D.

Adulticiding is conducted when concerns of disease arise or when surveillance data depicts alarming vector species or numbers of mosquitoes. In 2014, North Hampton was placed in the Low Risk Category 2, based on the State DHHS Arboviral Illness Surveillance, Prevention and Response Plan. Spot adulticiding may be done along the perimeters of the North Hampton Elementary School, Knowles Field, Dearborn Park and The Town Common in response to disease activity or severe mosquito outbreaks to protect residents, especially children and the elderly. We assess the need for adulticiding by relying on trap data, disease test results, resident complaints, and field observations. Weather monitoring will help determine the best spray schedule. There was no adulticiding done in 2014. The adulticide sites are located on the Town maps in Appendix D.

6. DESCRIPTION OF APPLICATION

A. TARGET ORGANISMS: Mosquitoes

Anopheline species
Aedes species
Culex species
Culiseta species
Coquilletidia perturbans
Ochlerotatus species
Psorophora species

B. APPLICATION METHOD

(1) ADULTICIDE EQUIPMENT

Clarke Cougar cold aerosol insecticide generator with ULV nozzle
Stihl SR-400 knapsack power mist blower with mist nozzle & ULV nozzle

(2) LARVICIDE EQUIPMENT

Maruyama knapsack power mist blower with granular spreader
Stihl SR-400 knapsack power mist blower with misting nozzle
Birchmeier Senior 20 litre backpack hand pump sprayer with brass nozzle
Birchmeier Iris 15 litre backpack hand pump sprayer with brass nozzle

C. METHOD OF CALIBRATION: Larviciding with gas powered sprayers

Set up a calibration grid in a typical larval habitat. Divide grid into 1/4 acre increments.

Fill hopper with material. Vibrate the contents until settled and top off spray tank again.

Choosing a random setting on the dial (notch 2 for example), walk the 1/4 acre.

After spraying the test site, measure the amount of material it takes to refill the hopper to the original level. Multiply that figure by 4 to calculate the pounds per acre sprayed.

To lower the flow rate, close the dial (to notch 1) or slide the flow adjustment bar toward the Less mark. This closes the holes in the hopper where insecticide exits.

To increase the flow rate, open the dial one notch at a time. Measure the flow rate. If it is still too low, continue going up one notch until the desired flow rate is exact or close.

If the flow rate is close, then move the slide adjustment bar in small increments until the exact flow is measured for that sprayer when used by that applicator.

METHOD OF CALIBRATION: Larviciding with hand pump sprayers

Add a measured amount of material to the spray tank.

Spray the material while walking the calibration area as described above.

Measure the material remaining in the spray tank and subtract from the original amount to determine the amount sprayed in the 1/4 acre test site. Multiply this figure by 4 to calculate the gallons per acre.

If flow rate was too low, then pump harder to deliver more material and/or walk slower. If the flow rate was too high, then pump slower, increase the swath of the wand and/or walk faster.

METHOD OF CALIBRATION: Adulticiding with ULV sprayer

Disconnect the pesticide discharge line from the nozzle.

Allow the pump to drive all air bubbles from the insecticide line. Catch all insecticide in a measuring cup and return to spray tank. Or, if the line will reach, pump the insecticide directly into spray tank.

Set the desired flow rate for 10mph on the meter.

Measure the flow rate for a specific period of time. Longer periods of measurement increase accuracy.

Use the Flow Rate adjustment screws to set the desired flow rate; re-measure to double check the rate.

Models with the SmartFlow pumping system can be programmed to maintain the target application rate.

If the correct flow rate has been set, proceed to the next step. Otherwise, repeat the steps listed above. If unable to set the flow rate due to mechanical problems, contact Clarke Mosquito Control for help.

Droplet size must be measured next. Manual methods have been replaced by computerized droplet measurement, which accurately measures and records upward of 1300 droplets as they are discharged from the nozzle, calculates the mass median diameter (MMD) and volume mean diameter (VMD). A printout gives the date and time of calibration, sprayer type and model, number of droplets at a particular size, time used to measure droplets, MMD and VMD. This method measures more droplets than the manual method, and is more sensitive, measuring smaller droplets than would have adhered to a Teflon slide. Clarke Mosquito Control provides this service.

Sprayer engine adjustments are made and further droplet measurements are taken until the desired VMD is achieved. Sprayer droplets can be accurately calibrated within minutes saving time and money.

METHODS OF CALIBRATION: Adulticiding with a backpack sprayer

Add a measured amount of water to the spray tank.

To determine ounces per minute, set a random flow rate on the dial (white lever located on the flexible pipe) and record the time needed to empty the tank.

If the flow rate per minute is too high or low, adjust the setting on the dial. Measure the flow rate again.

If the measured flow rate is 10 oz/min for example and the desired flow rate is 5 oz/min, then adjust the spray volume or engine speed. Lowering the volume of insecticide discharged is recommended. Once the desired flow has been achieved, check the calibration again.

To determine ounces per acre, measure the amount of material sprayed on one acre (or 1/2 or 1/4 acre and multiply accordingly). Compare this figure to the desired flow rate.

If the rate is too high, then reduce the insecticide discharge on the dial or at the nozzle (black dial numbered 1-4). Increasing your pace will also decrease the amount of material sprayed per acre.

If the flow rate is too low, increase the flow at the white dial on the flexible pipe and/or the setting on the black dial at the nozzle. Decreasing your pace will also increase the ounces sprayed per acre.

If no insecticide is being discharged, then check for leaks in the lines and tank. This sprayer must operate as a closed system in order to properly spray liquids.

FREQUENCY OF CALIBRATION: Larvicide equipment

Each backpack sprayer is calibrated for a particular applicator's use. Calibration is checked at the beginning of the season, after adjustment or repair to the spray system, and when switching insecticides.

FREQUENCY OF CALIBRATION: Adulticide equipment

The sprayers are calibrated at the start of the spray season. Recalibration is done if any changes are made to the insecticide discharge system or when the flow rate appears light or heavy.

D. PESTICIDES TO BE USED: Larvicides

Altosid Pellets WSP
AI Methoprene 4.25%
EPA Reg # 2724-448
Water soluble pouch
1 pouch/135 sq ft
Wellmark International

AquaBac 200 G
AI *Bacillus thuringiensis israelensis* 2.86%
EPA Reg # 62637-3
Ready to use granular
6-10 lb/A
Becker Microbial Products, Inc.

BVA 2 Mosquito Larvicide Oil
AI Highly refined petroleum distillate 97%
EPA Reg # 70589-1
Ready to use oil
3-5 gal/A
BVA Oils

CocoBear Mosquito Larvicide Oil
AI Mineral Oil 10%
EPA Reg # 8329-93
Ready to use oil
3-5 gal/A
Clarke Mosquito Control Products, Inc.

Natular G
AI Spinosad (A mixture of spinosyn A and spinosyn D) 0.5%
EPA Reg # 8329-80
Ready to use granular
3.5-20 lb/A
Clarke Mosquito Control Products, Inc.

Natular T30
AI Spinosad (A mixture of spinosyn A and spinosyn D) 8.33%
EPA Reg # 8329-85
Ready to use tablet
1 tablet/100 sq ft
Clarke Mosquito Control Products, Inc.

VectoBac GS Biological Larvicide
AI *Bacillus thuringiensis israelensis*, strain AM 65-52, 2.80%
EPA Reg # 73049-10
Ready to use granular
6-10 lb/A
Valent BioSciences Corporation

VectoBac GR Biological Larvicide
AI *Bacillus thuringiensis israelensis*, strain AM 65-52, 2.80%
EPA Reg # 73049-486
Ready to use granular
8-10 lb/A
Valent BioSciences Corporation

PESTICIDES TO BE USED: Adulticides

Anvil 10+10 ULV
AI Sumithrin 10.0%
EPA Reg # 1021-1688-8329
Undiluted ULV
0.0036 lb AI per acre
Clarke Mosquito Control Products, Inc.

Cross Check Plus
AI Bifenthrin 7.9%
EPA Reg #279-3206-10404
Flowable diluted in water
1 fl oz/1000 sq ft
Lesco Inc.

Duet
AI Prallethrin 1%, Sumithrin 5%, Piperonyl Butoxide 5%
EPA Reg # 1021-1795-8329
Undiluted ULV
0.75 fl oz per acre
Clarke Mosquito Control Products, Inc.

Mavrik Perimeter
AI Tau-Fluvalinate 22.3%
EPA Reg # 2724-478
Flowable diluted in water
0.04-0.1 fl oz/gal
Wellmark International

Permanone 10% EC
AI Permethrin 10.0%
EPA Reg # 432-1132
Emulsifiable concentrate diluted 1:1 in water
17.5 oz/A; 0.1 lb AI per acre
Bayer Environmental Science USA

Zenivex E20
AI Etofenprox 20%
EPA Reg # 2724-791
ULV diluted 1:1 – 1:2 in dormant oil
0.00175-0.00700 lb AI per acre
Wellmark International

Copies of the insecticide labels are located in a separate publication kept on file at the Division of Pesticide Control. Copies of the labels are located in Appendix A on the CDs and in select hard copies distributed to clients.

RATE OF APPLICATION

All insecticides will be used according to the label. The listed rates of application have been found to yield the best results with the minimum amount of insecticide. When a range is listed, the higher flow rate is used to control larger instars, heavier populations, or deeper or more polluted water. All larvicide formulations are ready to use with no mixing. Adulticide formulations can be diluted with a dormant spray oil or water according to the label. Anvil and Duet can be sprayed undiluted for best results.

E. APPLICATION SCHEDULE

(1) NUMBER OF APPLICATIONS AND DATES

Beginning in April, habitats are checked for mosquito activity after melting snow and spring rains fill swamps, marshes, ditches, vernal pools, and woodland depressions with stagnant water. First instar larvae hatch from the overwintering mosquito eggs as their habitats are filled with the cool, fresh water. There is no exact date when freshwater larviciding begins since the meteorological conditions affect mosquito development. The majority of freshwater mosquito larvae are developing by April 1st and the adults hatch by early May. Catch basin surveys are conducted throughout the season and treatment generally begins in June.

The salt marshes are surveyed after every flood tide and after heavy rains. Flood tides coincide with the full and/or new moon phase. Tide levels increase during these moon phases bringing water over the surface of the marsh washing mosquito eggs into previously dry pools, pannes, plugged ditches and other depressions. The tide recedes, leaving mosquito larvae to develop in these shallow, stagnant areas. Well timed rain falling on a dry marsh can also trigger larval mosquito hatching. One or two days following a flood tide, crews begin checking the water for mosquito activity. Tiny, translucent larvae can be found with careful scrutiny of water sampled. Our action threshold is one larva every other dip. When an average of one larva every other dip is found, treatment is recommended. Application dates are dependent upon meteorological conditions. Cold water and air temperature slow mosquito development, while warmer temperatures speed development. During July and August, mosquitoes can go from egg to adult in less than seven days; therefore timing is crucial when controlling mosquito larvae. Since the

recommended biological insecticide, Bti, breaks down quickly in sunlight offering no residual control, treatment must be done quickly and without error. There may be no second chance to kill mosquito larvae if the applicator misses any pools.

Control of salt marsh mosquitoes begins 1-2 days after the highest flood tide and when sufficient numbers of mosquito larvae are found. Flood tide levels vary throughout the season, which changes the extent and location of water on the salt marsh. This creates unique larval distribution with each flood tide. A thorough survey reveals the level of the flooding, the location, density and developmental stage of mosquito larvae, and other factors. These variables help determine the need for treatment, type of insecticide, timing of treatment, and crew size.

Once the adult mosquitoes have emerged, monitoring is the next line of defense. Adult mosquito population monitoring begins in July and continues into October. Surveillance is done every week using light traps baited with dry ice and white light. Traps are run for 18 to 24 hours at fixed sites in North Hampton. The results of the trapping indicate peaks in the population, and changes in density or species. Specimens are tested for EEE and WNV at the State lab in Concord. A complete list of adult species collected is located in Appendix B.

Adulticiding is recommended when EEE or WNV becomes a public health threat. This may be determined when disease positive mosquitoes, birds, horses or humans are found in or near North Hampton. Adulticiding is used as a last line of defense after considering the use of larvicides. Adulticiding will be used to reduce the disease threat to the citizens of North Hampton.

(2) POTENTIAL APPLICATION AREAS

Application areas vary by the availability of water at any given time during the season. The size of the treatment area is dependent upon the amount of rainfall received or the height of the flood tide. Therefore, the number and size of the application areas can only be an average figure varying year to year and month to month. The Town of North Hampton is a coastal community with total land acreage of 8704 acres. The town is very rural except along Route 1 where most businesses are located. Dragon has identified and mapped 145 larval habitats, which include salt marshes, swamps, woodland depressions, roadside ditches and tire tracks. Last season 879 catch basins were treated to combat EEE and WNV mosquitoes. North Hampton Town Officials have identified four potential adulticide sites. These sites may be sprayed when EEE or WNV become a public health threat or when the population of adult mosquitoes becomes a nuisance and interferes with daily activities.

Adulticide Sites	Acreage
North Hampton Elementary School	6.1
Knowles Field	5.8
Dearborn Park	4.2
Town Common	0.7

The locations of the adulticide sites and larval habitats can be found on the town maps in Appendix D with an accompanying site list. Spray dates from 2014 are located in Appendix C.

F. ENVIRONMENTAL CONSIDERATIONS

(1) The Shoreland Protection Act prohibits the application of pesticides within 50' of the reference line of any Public Water except where granted under Special Permit. **We are requesting a waiver from this setback requirement for the Town of North Hampton.**

Integrated mosquito management techniques employed to reduce risk to the environment while enhancing control of mosquitoes include insecticide selection, formulation preference, weather analysis and population monitoring.

Population monitoring (larval surveys and adult surveillance) establishes the best time and location of treatment eliminating unnecessary or ineffective spraying. Meteorological information is used to track development cycles, and timing of treatment. Tide levels, rainfall amounts, rain dates, wind and temperature are all important factors used to determine spray dates and locations.

Periodically evaluating and rotating the pesticides we use is an important practice for effective Integrated Mosquito Management.

Insecticides with low toxicity, low persistence, low nontarget impact and acceptable mortality rates for target insects are important components for choosing the best product. Three organic products are being added to our list of control options.

A product we have used with continued success is the biological insecticide, *Bacillus thuringiensis israelensis* (Bti), which is the best choice for sensitive habitats where many species coexist. Bti is very specific to mosquito larvae, breaks down rapidly in sunlight, has low toxicity to non-target organisms, and effectively controls mosquito larvae when applied properly. The granular formulation provides a visual guide for the applicator to avoid any overlap or gaps which are common with liquid formulations. Bti has been the insecticide of choice for larviciding despite the cost.

Altosid is an effective way to control container mosquitoes where several lifestages and species may coexist. It has a longer residual than Bti and will kill a wider range of mosquito lifestages than Bti.

When mosquitoes advance to the pupal stage, they stop feeding. Bti, Natular™, and Altosid are rendered useless at this stage. Suffocating pupae with a thin film of BVA 2 MLO or CocoBear MLO is the only effective control method available. During the summer, the pupal stage will last one day before adult mosquitoes emerge ready for a blood meal. Therefore, surfactants are the last easy way to control pupae before they hatch into winged adults and disperse.

(2) A popular adulticiding product is ANVIL (sumithrin). The oral LD50 of sumithrin is >10,000. ANVIL does not knock down the mosquitoes as fast as other products and may not be as effective at lower rates. We found the higher rate was necessary to get acceptable mortality rates. A recent study found higher mortality rates using Anvil undiluted. When the same AI per acre is applied, the undiluted formulation performed better than the dilute mix. Duet has been added to our choice of adulticides. The dual action adulticide causes the mosquitoes to become agitated whereby they fly and come into contact with the spray droplets. We are always eager to use new, safer products therefore we have added Zenivex E20, an adulticide with an oral LD50 > 42,000.

The synthetic pyrethroids have label precautions to safeguard bees, water, and applicators. Drift is of constant concern to the applicator. Adult mosquitoes are killed when they come in contact with the

adulticide. However, off target drift may endanger surface waters, apiaries, or other sensitive species, so we pay close attention to wind and buffer zones in sensitive areas. These pyrethroids would be applied via backpack sprayers to control severe outbreaks of biting species at recreation areas or athletic fields.

Bifenthrin has the benefit of a longer residual, meaning it can provide active control for weeks at a time. This makes it a valuable addition to our inventory. Another new pesticide that we have selected is Mavrik Perimeter. This pyrethroid is non-toxic to bees once dry, therefore would be an excellent choice for sensitive areas where bees may forage. A variety of pesticides allows for the most effective insecticide to be chosen for each application.

All available mosquito adulticides have label restrictions regarding drift and toxicity to bees, water and associated organisms. These pyrethroids are chosen because of their relative safety. They are not organophosphates or cholinesterase inhibitors. They will photodegrade quickly in the environment. They do not leach through the soil, but bind to it and are broken down by microorganisms and sunlight.

(3) The New Hampshire Natural Heritage Bureau (NHB) has searched their database for endangered and threatened wildlife species that could be impacted by mosquito control pesticides. There are currently no recorded occurrences for any of the species in the Town of North Hampton. The NHB letter is located in Appendix D. Maps are no longer provided.

7. TREATMENT AND MONITORING AREAS

A. Town maps have been included with this application. ArcGIS software has greatly improved our efficiency and accuracy in map production. The capabilities of the software have enabled us to render comprehensive maps for crews and State Special Permit applications. We can combine layers generated by Dragon with State supplied layers such as setbacks, wells, and conservation lands to create a more easily interpretable map. The maps include larval habitats, adulticide sites, trap locations, conservation lands, wells, locations of EEE and WNV activity, and the 250' setback from public water supplies and tributaries. There is also a list of wells. The town maps and list of wells are located in Appendix D.

B. DESCRIPTION OF TREATMENT AREAS

(1) A description of the treatment area could simply be listed as the Town of North Hampton. Wetlands occupy over 30% of the total land area. Salt marshes are cut off from the ocean by coastal Route 1A. Tidal marsh covers over 300 acres. Larval habitats are located along the upland edge. There are over 2000 acres of freshwater wetlands in North Hampton. Since we do all our larviciding on foot using backpack sprayers, we could never cover thousands of acres. Fortunately, many wetlands do not support mosquitoes. Freshwater sites are divided into two categories: temporary and permanent. Temporary sites include woodland depressions, ditches, tree holes, tire ruts, and artificial containers such as rain barrels, buckets, boats and flower pots. These sites dry up during the summer but may flood again after heavy rains. Permanent sites include cedar swamps, red maple swamps, cattail marshes, and catch basins. These sites may hold water year round and produce multiple broods. Red maple swamps are important sites due to the disease carrying potential of mosquitoes utilizing these habitats. Special attention will be paid to these numerous habitats. Catch basins are home to four different species of mosquitoes that carry WNV and EEE. These habitats may produce mosquitoes from June into October and are considered important areas to treat to combat WNV.

One of the main sources of mosquitoes in this town is the salt marsh. The population density of mosquitoes found in salt marshes is far greater than any freshwater site. Thus, the bulk of mosquito control occurs in salt marsh sites. After the flood tides recede, water is trapped in the many pools, pannes, plugged ditches and low spots on the marsh surface. Most of the mosquitoes are located on the upper marsh near the tree line where these features are located.

Town officials have identified four sites considered to be high use areas. These sites have been chosen for spot adulticiding in the event that EEE or WNV become a health threat. The sites are listed below and can be found on the town map in Appendix D.

Adulticide Sites	Location
North Hampton Elementary School	Atlantic Avenue
Knowles Field	Birch Rd
Dearborn Park	Exeter Rd
Town Common	Post Rd

(2) Currently, no potential treatment sites are located on state-owned lands in the Town of North Hampton. If any potential treatment sites are found, we will follow the specifications laid out in the *Policy for Mosquito Control on State Lands*.

(3) Activities in the treatment area would be affected by adulticiding, not larviciding. Human activity in salt marshes is quite limited or nonexistent. The use of larvicides poses little threat to people in the treatment areas. According to label warnings, most adulticides may harm bees therefore a large buffer zone is in place around all known apiaries. If town wide adulticiding is conducted, then the applicator will shut off the insecticide flow at least 300' before the hive and will not turn on until at least 300' after the hive, giving the apiary a 600' buffer. Beekeepers are notified of the spray operations and precautions employed for their apiaries through certified mail in early spring. A large buffer is also set up for organic farms. Spraying at public parks and schools is done at night when people are not present and to avoid foraging bees.

(4) Aquarion Water Company provides the water for the Town of North Hampton. There are four wells located in North Hampton, five in Hampton and one in Rye. All the North Hampton wells are gravel packed. In addition, there are several public wells in mobile home parks and a public golf course. Several homes are on private wells. Public water supply wells and surface waters are delineated on the town maps located in Appendix D along with a list of wells. The wellhead information has been reviewed with insecticide treatment in mind.

C. LOCATION OF SURVEY SITES

Larval site surveys are conducted from April into October. Freshwater larval habitats are checked in the spring after the snow and ice melts or after heavy rains and salt marshes are checked all season long after flood tides and heavy rains. Catch basins can also be checked throughout the season, and treatment can begin in late May or early June. A list of all sites surveyed in 2014 is located in Appendix B. The species of mosquitoes collected during larval surveys, as well as adult mosquitoes collected in light traps are located in Appendix B. All larval habitats are plotted on the town maps located in Appendix D.

8. NOTIFICATIONS

A. Residents are notified of pending spray operations via public notices in the local newspapers, postings at the Town Offices, School, Library, and Post Office, Town website, Dragon website, Dragon's Twitter account and any community bulletin boards such as the local store. The Selectmen, Town Administrator and Health Officer will also receive a notice. This notice tells the resident what to do if they do not want their property treated and where to get more information about the control program. They are given a telephone number to call and an email and mailing address to write. Residents may sign up for the No-Spray registry on our website. Residents are encouraged to contact the office every year to re-establish any no spray zones since towns may switch contractors year to year or people may move out of town. Anyone who does not want their property sprayed for mosquitoes will be excluded from any treatment operations.

Beekeepers receive a notice of pending spray activity each spring via certified mail. A list of all known active apiaries can be found in Appendix E. Although road spraying is not planned, this protocol is in place. The location of all apiaries is plotted on the maps used for adulticiding. Special attention is given to avoid spraying these colonies. If roadside spraying occurs, the spray is shut off at least 300' before the hives and turned on at least 300' after the hives.

B. Samples of the public notice posted for residents and sent to Selectmen and the notice mailed to beekeepers can be found in Appendix E. These samples are copies from 2014 and are subject to change. The actual 2015 notice will be written in March when the start date for the season has been determined.

C. Each year a handful of residents call or write requesting their property be excluded from any mosquito spraying. Reasons range from medical concerns, suspicions about insecticides, organic gardeners, and odor complaints. There is also a subset of residents that support larval control on their property but want to be excluded from potential adulticide treatments. Dragon provides email alerts for residents who request them and also uses Twitter to notify subscribers of important news such as emergency adulticiding.

9. This mosquito control program straddles 2 fiscal years. The proposed control program was voted in May 2014 for Fiscal year July 1, 2014 to June 30, 2015. Funding for the FY2015-2016 program is voted on the town meeting in May 2015. Permit applications are submitted prior to this vote to ensure special permits are issued in time to begin larviciding in April.

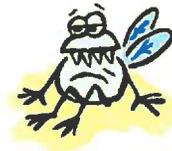
10. The proposed control program will be conducted in accordance with the current *New Hampshire Arboviral Illness, Surveillance, Prevention and Response Plan* guidelines. The phased response plan is very similar to the response Dragon has recommended to its municipalities for decades. Although nuisance mosquito control is not a goal of public health based control, it is a reality for New Hampshire town control programs. Residents are interested in disease control along with improved quality of life through mosquito control. Salt marshes mosquitoes hatch by the millions and larviciding is the best method for controlling these mosquitoes that may affect tourism or any outdoor activity.

The previous pages outline control of mosquitoes using insecticides, however, conventional and alternative methods for control are integrated into this program. Dragon Mosquito Control Inc. continues

to work with individuals using non-chemical methods such as bird houses, bat houses, mechanical control (eliminate artificial containers) and cultural control (source reduction) since chemical control is inappropriate in some situations.

11. SIGNATURES

Refer back to application for original signatures.



APPENDIX A: INSECTICIDE LABELS

Altosid Pellets WSP
AquaBac 200 G
BVA-2 MLO
CocoBear MLO
Natular G
Natular T30
VectoBac GR
VectoBac GS

Anvil 10+10 ULV
Cross Check Plus
Duet
Mavrik Perimeter
Permanone 10%EC
Zenivex E20

APPENDIX B: SURVEILLANCE

Larval Site Survey
Larval Mosquito Species
Adult Species Collected

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
4-07	19	14 Ship Rock Rd	0	
4-07	100	left of 8 Ship Rock Rd	0	
4-07	133	across from 8 Ship Rock Rd	0	
4-07	20	10 Rockrimmon Rd	3	1st 2nd 3rd
4-07	132	51 Chapel Rd	0	
4-07	17	21 Cotton Farm Ln	0	
4-07	12	between 8 & 10 Squier Dr	0	
4-07	109	behind 8-31 Squier Dr	1	1st 2nd
4-22	61	behind 13 Boutillier Dr	0	
4-22	142	right & behind 5 Boutillier Ln	2	2nd
4-22	46	188 Mill Rd	4	1st 2nd 3rd 4th
4-22	106	169 Mill Rd	1	1st 2nd
4-22	109	behind 8-31 Squier Dr	1	1st 2nd 3rd 4th
4-22	41	left of 41 Chapel Rd	2	2nd 3rd
4-29	87	right of 115 Woodland Rd	0	
4-29	86	across from 44 Woodland Rd	0	
4-29	100	left of 8 Ship Rock Rd	0	
4-29	94	across from 76 Post Rd	0	
4-29	52	89 Post Rd	0	
4-29	53	95 Post Rd	0	
4-29	57	behind 63 Mill Rd	0	2nd
4-29	46	188 Mill Rd	0	
4-29	93	left of 75 Post Rd	0	
4-29	85	intersection of Mill Rd & Atlantic Ave	0	
4-29	56	behind 63 Mill Rd	1	2nd 3rd
4-29	115	behind 63 Mill Rd	4	2nd 3rd 4th
4-29	84	right of 50 Mill Rd	3	2nd 3rd 4th
		woodland pools		
		large drainage pools		
		woodland pools		
		woodland pools		
		shrub swamp		
		swamp		
		woodland pools		
		large cattail marsh		
		small pond & stream		
		sluggish stream & pools		
		ditch & swamp w/ pond		
		woodland pools & swamp		
		large cattail marsh		
		swamp & pools		
		roadside ditch & pools		
		flooded field		
		large drainage pools		
		cattail marsh		
		hockey rink		
		wet meadow		
		red maple & shrub swamp		
		ditch & swamp w/ pond		
		woodland pools		
		woodland swamp		
		cattail marsh & ditches		
		pools & depressions		
		roadside pools		

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
4-29	106	169 Mill Rd	1	2nd 3rd
4-29	107	behind 143 Post Rd	3	2nd 3rd
4-29	42	left of 115 Woodland Rd	2	2nd 3rd
4-29	18	80 Woodland Rd	5	1st 2nd 3rd 4th
4-29	22	22 Woodland Rd	3	2nd 3rd
4-29	133	across from 8 Ship Rock Rd	1	1st 2nd
5-08	5	Ocean Blvd	0	
5-08	121	right of 187 Atlantic Ave	0	
5-08	9	Ocean Blvd	2	2nd 3rd 4th
5-08	8	Old Locke Rd	2	3rd 4th
5-08	7	Ocean Blvd	2	2nd 3rd
5-08	6	Old Locke Rd	5	2nd 3rd 4th
5-08	2	Runnymede Dr	1	2nd 3rd
5-08	4	Appledore Ave or Runnymede Dr	1	1st 2nd 3rd 4th pupae
5-08	3	Appledore Ave	1	2nd 3rd
5-15	67	across from 30 Birch Rd	dry	
5-15	82	intersection of Birch Rd & Evergreen Dr	dry	
5-15	92	behind Knowles Ground Maint, 16A Woodknoll Dr	dry	
5-15	136	Hobbs Field, Atlantic Ave	dry	
5-15	11	Dancer's Image Ln	0	
5-15	10	Dancer's Image Ln	0	
5-15	1	Atlantic Ave	0	
5-15	58	87 Atlantic Ave	0	
5-15	138	Hobbs Field, RC Model Club Atlantic Ave	0	
5-15	36	229 Atlantic Ave	0	
5-15	25	across from 65 North Road	0	
5-15	140	across from 12 Highlander Dr	> 1	2nd

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
5-15	68	Knowles Field, 8 Birch Rd	0	
5-15	80	behind 23 New Rd	0	
5-15	81	229 Atlantic Ave	1	1st 2nd
5-15	37	37 Atlantic Ave	2	3rd 4th pupae
5-21	3	Appledore Ave	0	
5-21	2	Runnymede Dr	2	4th pupae
5-21	4	Appledore Ave or Runnymede Dr	1	3rd 4th pupae
5-21	143	right of driveway 71 Mill Rd	2	3rd 4th pupae
5-21	30	2-8 Boutillier Rd	1	3rd 4th
5-21	8	Old Locke Rd	3	1st 2nd 4th pupae
5-21	7	Ocean Blvd	2	2nd 3rd 4th
5-21	6	Old Locke Rd	2	3rd 4th pupae
5-26	9	Ocean Blvd	0	
5-26	5	Ocean Blvd	0	
5-26	2	Runnymede Dr	0	
5-26	10	Dancer's Image Ln	0	
5-26	11	Dancer's Image Ln	0	
5-26	1	Atlantic Ave	0	
5-26	4	Appledore Ave or Runnymede Dr	0	
5-26	44	end of Appledore Ave	6	3rd 4th pupae
5-26	57	behind 63 Mill Rd	1	1st 2nd 3rd 4th pupae
5-26	56	behind 63 Mill Rd	2	1st 2nd 3rd 4th pupae
5-28	3	Appledore Ave	0	
5-28	68	Knowles Field, 8 Birch Rd	0	
5-28	92	behind Knowles Ground Maint, 16A Woodknoll Dr	0	
5-28	9	Ocean Blvd	0	
5-28	4	Appledore Ave or Runnymede Dr	0	
		woodland pools & swamp		
		pond		
		swamp		
		swamp		
		Appledore Salt Marsh		
		Runnymede Salt Marsh		
		Garland Brook Salt Marsh		
		large swamp with shrubs & woodland poo		
		woodland pools		
		Old Locke Road Salt Marsh		
		Ocean Boulevard North Salt Marsh		
		Rye Line Salt Marsh		
		Ocean Boulevard South Salt Marsh		
		Viano Island Salt Marsh		
		Runnymede Salt Marsh		
		Dancer's Image (Right) Salt Marsh		
		Dancer's Image (Left) Salt Marsh		
		Atlantic Salt Marsh		
		Garland Brook Salt Marsh		
		brackish woodland pools		
		red maple & shrub swamp		
		cattail marsh & ditches		
		Appledore Salt Marsh		
		woodland pools & swamp		
		ditch		
		Ocean Boulevard South Salt Marsh		
		Garland Brook Salt Marsh		

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
5-28	2	Runnymede Dr	0	
5-28	6	Old Locke Rd	0	
5-28	7	Ocean Blvd	0	
5-28	8	Old Locke Rd	0	
5-28	67	across from 30 Birch Rd	0	
5-28	80	behind 23 New Rd	0	
5-28	90	left of 96 South Rd	0	
5-28	91	between 56 & 58 South Rd	0	pupae
5-28	93	left of 75 Post Rd	0	
5-28	94	across from 76 Post Rd	0	
5-28	53	95 Post Rd	0	
6-02	43	left of 51 Chapel Rd	0	
6-02	41	left of 41 Chapel Rd	0	
6-02	23	4 Pond Path	0	2nd
6-02	114	behind 9 Squier Dr to Mill Rd	0	
6-02	13	15-19 Squier Dr	0	
6-02	141	beind 31 Squier Dr to left and directly behind house	0	
6-02	128	right of 16 Pond Path	0	
6-02	104	right of 8 Squier Dr	1	2nd 3rd 4th
6-02	11	Dancer's Image Ln	1	2nd 3rd 4th
6-02	6	Old Locke Rd	1	2nd 4th pupae
6-06	84	right of 50 Mill Rd	0	
6-06	115	behind 63 Mill Rd	0	
6-06	57	behind 63 Mill Rd	0	
6-06	56	behind 63 Mill Rd	0	
6-06	143	right of driveway 71 Mill Rd	0	pupae
6-06	85	intersection of Mill Rd & Atlantic Ave	0	

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
6-06	106	169 Mill Rd	0	
6-06	46	188 Mill Rd	0	
6-06	68	Knowles Field, 8 Birch Rd	0	
6-06	67	across from 30 Birch Rd	0	
6-06	82	intersection of Birch Rd & Evergreen Dr	0	4th pupae
6-06	20	10 Rockrimmon Rd	0	
6-06	33	left of 11 Rockrimmon Rd	0	
6-06	34	left of 13 Rockrimmon Rd	0	
6-06	95	between 103 & 105 Walnut Ave	0	
6-06	96	right of Walnut Ave to I-95 N	0	
6-06	144	behind 58 & 60 Walnut Ave	> 20	1st 2nd 3rd 4th pupae
6-11	97	across from 5 Goss Rd	0	
6-11	47	behind & left of 11 Goss Rd	0	
6-11	26	left of 19 Goss Rd	0	
6-11	27	21 Goss Rd	0	
6-11	28	28 Goss Rd	0	
6-11	95	between 103 & 105 Walnut Ave	0	
6-11	144	behind 58 & 60 Walnut Ave	0	
6-11	41	left of 41 Chapel Rd	0	
6-11	38	between 34 & 38 Chapel Rd	0	
6-11	123	15 Highlander Rd	0	
6-11	140	across from 12 Highlander Dr	0	
6-11	77	1 Park Circle	0	
6-11	125	behind 2 Park Circle	0	
6-11	42	left of 115 Woodland Rd	0	
6-11	87	right of 115 Woodland Rd	0	
6-11	18	80 Woodland Rd	0	

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
6-11	86	across from 44 Woodland Rd	0	
6-17	4	Appledore Ave or Runnymede Dr	1	1st
6-17	2	Runnymede Dr	3	1st
6-18	10	Dancer's Image Ln	2	1st 2nd 3rd
6-18	2	Runnymede Dr	1	1st 2nd 3rd
6-18	11	Dancer's Image Ln	4	1st 2nd 3rd
6-18	8	Old Locke Rd	4	1st 2nd 3rd
6-18	4	Appledore Ave or Runnymede Dr	7	1st 2nd 3rd 4th
6-18	6	Old Locke Rd	7	1st 2nd 3rd 4th
6-18	7	Ocean Blvd	3	1st 2nd 3rd
6-19	9	Ocean Blvd	2	2nd 3rd
6-19	5	Ocean Blvd	1	3rd 4th
6-19	70	left of 7 Appledore Ave, trail to salt marsh	5	2nd 3rd
6-19	1	Atlantic Ave	0	
6-19	3	Appledore Ave	0	
6-21	10 au	Dancer's Image Ln	0	
6-21	11	Dancer's Image Ln	0	
6-21	5	Ocean Blvd	0	
6-21	4	Appledore Ave or Runnymede Dr	<1	4th pupae
6-21	6	Old Locke Rd	<1	4th
6-21	10	Dancer's Image Ln	0	
6-21	3	Appledore Ave	0	
6-21	7	Ocean Blvd	0	
6-21	9	Ocean Blvd	0	
6-21	8	Old Locke Rd	2	3rd 4th
7-04	3	Appledore Ave	0	
7-04	9	Ocean Blvd	6	1st

Town of North Hampton

Larval Site Survey

2014

Date	Site Location	Avg/ Dip	Lifestage
7-04	4 Appledore Ave or Runnymede Dr	6	1st
7-10	4 Appledore Ave or Runnymede Dr	14	3rd 4th
7-10	3 Appledore Ave	3	3rd 4th
7-10	5 Ocean Blvd	3	3rd 4th
7-10	6 Old Locke Rd	> 10	3rd 4th pupae
7-10	7 Ocean Blvd	> 15	3rd 4th
7-10	11 Dancer's Image Ln	8	3rd 4th
7-10	10 Dancer's Image Ln	1	3rd 4th
7-10	1 Atlantic Ave	1	3rd 4th
7-10	9 Ocean Blvd	6	3rd 4th
7-10	8 Old Locke Rd	> 10	3rd 4th
7-11	9 Ocean Blvd	0	
7-11	5 Ocean Blvd	0	
7-11	4 Appledore Ave or Runnymede Dr	< 1	1st
7-11	15 30 Maple Rd	4	3rd 4th
7-11	6 Old Locke Rd	3	1st 3rd 4th
7-11	2 Runnymede Dr	2	3rd 4th
7-11	8 Old Locke Rd	2	4th pupae
7-15	56 behind 63 Mill Rd	0	
7-15	57 behind 63 Mill Rd	0	
7-15	85 intersection of Mill Rd & Atlantic Ave	0	
7-15	7 Ocean Blvd	2	2nd 3rd
7-15	10 Dancer's Image Ln	1	2nd 3rd
7-15	11 Dancer's Image Ln	3	2nd 3rd 4th
7-15	4 Appledore Ave or Runnymede Dr	5	1st 2nd 3rd 4th
7-15	3 Appledore Ave	1	2nd 3rd
7-15	5 Ocean Blvd	1	2nd 3rd 4th
	Garland Brook Salt Marsh		
	Garland Brook Salt Marsh		
	Appledore Salt Marsh		
	Viano Island Salt Marsh		
	Rye Line Salt Marsh		
	Ocean Boulevard North Salt Marsh		
	Dancer's Image (Left) Salt Marsh		
	Dancer's Image (Right) Salt Marsh		
	Atlantic Salt Marsh		
	Ocean Boulevard South Salt Marsh		
	Old Locke Road Salt Marsh		
	Ocean Boulevard South Salt Marsh		
	Viano Island Salt Marsh		
	Garland Brook Salt Marsh		
	woodland pools		
	Rye Line Salt Marsh		
	Runnymede Salt Marsh		
	Old Locke Road Salt Marsh		
	cattail marsh & ditches		
	red maple & shrub swamp		
	woodland swamp		
	Ocean Boulevard North Salt Marsh		
	Dancer's Image (Right) Salt Marsh		
	Dancer's Image (Left) Salt Marsh		
	Garland Brook Salt Marsh		
	Appledore Salt Marsh		
	Viano Island Salt Marsh		

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
7-15	6	Old Locke Rd	3	2nd 3rd 4th
7-17	8	Old Locke Rd	0	
7-17	9	Ocean Blvd	0	
7-17	1	Atlantic Ave	0	
7-17	1 AU	Atlantic Ave	0	
7-17	2	Runnymede Dr	0	
7-17	4	Appledore Ave or Runnymede Dr	20	1st 2nd 3rd 4th
7-18	3	Appledore Ave	0	
7-18	5	Ocean Blvd	0	
7-18	1	Atlantic Ave	0	
7-18	10	Dancer's Image Ln	0	
7-18	11	Dancer's Image Ln	0	
7-18	8	Old Locke Rd	2	2nd 3rd 4th
7-18	6	Old Locke Rd	3	2nd 3rd 4th pupae
7-18	7	Ocean Blvd	2	3rd 4th pupae
7-18	9	Ocean Blvd	1	3rd 4th
7-18	4	Appledore Ave or Runnymede Dr	4	3rd 4th
7-23	121	right of 187 Atlantic Ave	dry	
7-23	124	No. Hampton Elem School, Atlantic Ave	dry	
7-23	134	No. Hampton Elem School, Atlantic Ave	dry	
7-23	67	across from 30 Birch Rd	dry	
7-23	82	intersection of Birch Rd & Evergreen Dr	dry	
7-23	43	left of 51 Chapel Rd	dry	
7-23	41	left of 41 Chapel Rd	dry	
7-23	86	across from 44 Woodland Rd	dry	
7-23	101	left of 34 Woodland Rd	dry	
7-23	136	Hobbs Field, Atlantic Ave	dry	
		ditch	1	pupae

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
7-23	137	right of Hobbs Field, Rc Model Club Atlantic Ave	0	
7-23	133	across from 8 Ship Rock Rd	0	
7-23	126	No. Hampton ELEM School, Atlantic Ave	1	2nd
7-23	135	No. Hampton ELEM School, Atlantic Ave	1	2nd
7-23	68	Knowles Field, 8 Birch Rd	0	
7-23	100	left of 8 Ship Rock Rd	0	
7-23	102	Woodland Rd, at Rye town line	0	
7-23	19	14 Ship Rock Rd	2	2nd 3rd 4th
7-23	38	between 34 & 38 Chapel Rd	2	2nd 3rd
7-23	138	Hobbs Field, RC Model Club Atlantic Ave	10	2nd 3rd 4th pupae
7-31	2	Runnymede Dr	0	
7-31	106	169 Mill Rd	0	
7-31	56	behind 63 Mill Rd	1	3rd
7-31	7	Ocean Blvd	1	1st 2nd
7-31	1	Atlantic Ave	0	
7-31	74	behind 13-15 Runnymede Dr	0	
7-31	57	behind 63 Mill Rd	1	3rd 4th
7-31	115	behind 63 Mill Rd	1	3rd
7-31	83	behind 9 Runnymede Dr	2	1st 2nd 3rd
7-31	6	Old Locke Rd	1	1st 2nd 3rd
7-31	11	Dancer's Image Ln	5	2nd 3rd 4th pupae
7-31	8	Old Locke Rd	2	1st 2nd
8-01	4	Appledore Ave or Runnymede Dr	3	2nd 3rd 4th
8-04	47	behind & left of 11 Goss Rd	dry	
8-04	8	Old Locke Rd	0	
8-04	11	Dancer's Image Ln	0	
8-04	27	21 Goss Rd	0	

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location	Avg/ Dip	Lifestage
8-04	6	Old Locke Rd	1	1st 2nd 3rd 4th pupae
8-04	4	Appledore Ave or Runnymede Dr	1	1st 2nd 3rd 4th pupae
8-11	141	beind 31 Squier Dr to left and directly behind house	dry	
8-11	104	right of 8 Squier Dr	0	
8-11	109	behind 8-31 Squier Dr	0	
8-11	114	behind 9 Squier Dr to Mill Rd	0	
8-11	1	Atlantic Ave	0	
8-11	67	across from 30 Birch Rd	0	
8-11	68	Knowles Field, 8 Birch Rd	0	
8-11	2	Runnymede Dr	1	1st
8-11	3	Appledore Ave	0	
8-11	11	Dancer's Image Ln	0	
8-11	45	27 Squier Dr	1	3rd
8-11	4	Appledore Ave or Runnymede Dr	1	1st 2nd 3rd 4th pupae
8-15	4	Appledore Ave or Runnymede Dr	< 1	2nd 3rd 4th
8-15	2	Runnymede Dr	0	
8-15	6	Old Locke Rd	1	2nd
8-15	7	Ocean Blvd	0	
8-15	5	Ocean Blvd	0	
8-15	9	Ocean Blvd	0	
8-15	103	right of 51 Chapel Rd	0	
8-15	132	51 Chapel Rd	0	
8-15	110	10A & 12A Chapel Rd	0	
8-15	62	front of 14 Chapel Rd	0	
8-15	52	89 Post Rd	0	
8-15	8	Old Locke Rd	< 1	2nd
8-15	49	Town Common, intersection of Atlantic Ave & Post I watering trough	6	3rd 4th

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location		Avg/ Dip	Lifestage
8-15	117	No. Hampton Elem School, Atlantic Ave	small cattail marsh and stream backwater	2	1st
8-15	41	left of 41 Chapel Rd	swamp & pools	1	1st
8-15	69	Viano Island, Ocean Blvd	lawn depression	5	1st 2nd
8-15	11	Dancer's Image Ln	Dancer's Image (Left) Salt Marsh	0	
8-21	124	No. Hampton Elem School, Atlantic Ave	woodland pools	10	2nd 3rd 4th pupae
8-21	129	behind 11 Pond Path	woodland pools	dry	
8-21	128	right of 16 Pond Path	woodland pools	dry	
8-21	78	behind & left of 25 Cotton Farm Rd	woodland pools	dry	
8-21	17	21 Cotton Farm Ln	swamp	dry	
8-21	15	30 Maple Rd	woodland pools	dry	
8-21	131	between 10 and 16 Old Locke Rd	woodland pools	dry	
8-21	116	behind 2 Beau Monde Dr	swamp	dry	
8-21	60	behind 21 Cotton Farm Ln	ornamental pond	0	
8-21	39	behind 11-15 Pond Path	swamp	0	
8-21	24	12 Bradley Ln	swamp	0	
8-21	65	behind & left of 30 Bradley Ln	cattail marsh & pond	1	2nd
8-21	57	behind 63 Mill Rd	red maple & shrub swamp	0	
8-21	115	behind 63 Mill Rd	pools & depressions	0	
8-21	23	4 Pond Path	woodland pools & root holes	0	
8-21	134	No. Hampton Elem School, Atlantic Ave	woodland depression	0	
8-21	135	No. Hampton Elem School, Atlantic Ave	stream with cattails	1	3rd
8-21	56	behind 63 Mill Rd	cattail marsh & ditches	0	
8-21	117	No. Hampton Elem School, Atlantic Ave	small cattail marsh and stream backwater	0	
8-21	124	No. Hampton Elem School, Atlantic Ave	woodland pools	0	
8-21	126	No. Hampton Elem School, Atlantic Ave	sluggish stream w/ cattails	0	
8-21	59	between 24 & 26 Bradley Ln	swamp	2	1st 3rd
8-21	31	behind 2 Beau Monde Dr	wet meadow	5	2nd 3rd 4th

Town of North Hampton

Larval Site Survey

2014

Date	Site	Location		Avg/ Dip	Lifestage
8-28	67	across from 30 Birch Rd	woodland pools	dry	
8-28	82	intersection of Birch Rd & Evergreen Dr	drainage ditch	dry	
8-28	72	behind 14 Winnicut Rd	flooded lawn & stream	dry	
8-28	50	intersection of Winnicut Rd & Buckskin Ln	large pools	dry	
8-28	99	end of Buckskin Ln	drainage swale w/ cattails	dry	
8-28	102	Woodland Rd, at Rye town line	red maple swamp	dry	
8-28	87	right of 115 Woodland Rd	roadside ditch & pools	dry	
8-28	42	left of 115 Woodland Rd	roadside ditches	dry	
8-28	51	78 Post Rd	pools along path left of pond	dry	
8-28	94	across from 76 Post Rd	cattail marsh	dry	
8-28	34	left of 13 Rockrimmon Rd	woodland pools	dry	
8-28	33	left of 11 Rockrimmon Rd	root holes	dry	
8-28	100	left of 8 Ship Rock Rd	large drainage pools	0	
8-28	133	across from 8 Ship Rock Rd	woodland pools	0	
8-28	53	95 Post Rd	wet meadow	0	
8-28	144	behind 58 & 60 Walnut Ave	cattail swamp & tire pile at 58	1	3rd
8-28	113	behind 11 Winterberry Way	swamp	0	
8-28	19	14 Ship Rock Rd	woodland pools	0	
8-28	68	Knowles Field, 8 Birch Rd	woodland pools & swamp	0	
8-28	80	behind 23 New Rd	pond	0	
8-28	139	intersection of Cherry Rd and Evergreen Drive	small shrub swamp w/ depression	0	
8-28	91	between 56 & 58 South Rd	cattail swamp & ditch	0	
8-28	90	left of 96 South Rd	2 small ponds	0	
8-28	95	between 103 & 105 Walnut Ave	cattail marsh	1	3rd 4th
8-28	18	80 Woodland Rd	swamp w/ woodland pools	2	3rd 4th pupae
9-09	15	30 Maple Rd	woodland pools	dry	
9-09	40	across from Sagamore Golf Center, 22 North Rd	ditch w/ cattails	dry	

Town of North Hampton

Catch Basin Treatment

2014

Street Name	# Catch Basins	Street Name	# Catch Basins
12 Elm Development	3	Route 1 - Auto Zone	2
Alden Ave	5	Route 1 - Citizen's Bank	3
Appledore Ave	1	Route 1 - Crotty's Professional	5
Aspen Way	4	Route 1 - Danielle Lucas Business Park	5
Atlantic Ave	24	Route 1 - Drake Hill	3
Birch Rd	2	Route 1 - Dunkin Donuts	2
Boultiers Ave	2	Route 1 - Eastern Boats	1
Bradley Ln	5	Route 1 - Fern Crossing	5
Buckskin Rd	34	Route 1 - Ford Hyundai	6
Chapel Rd	5	Route 1 - Golden Garden	1
Deer Run Rd	1	Route 1 - Home Depot	30
Evergreen Dr	1	Route 1 - Jiffy Lube	5
Garret Dr	9	Route 1 - Lafayette Plaza	4
Goldenrod Way	1	Route 1 - Li Yeun	3
Goss Rd	15	Route 1 - Max BMW	1
Granite Dr	7	Route 1 - Mitsubishi	2
Greystone Way	4	Route 1 - North Hampton Animal Hospital	2
Highlander Dr	5	Route 1 - North Hampton Self Storage	2
Hillside Dr	2	Route 1 - Northeast Motors	2
Hobbs Rd	3	Route 1 - Optima Ban k	5
Holly Circle	8	Route 1 - Precision Fitness	9
Juniper Rd	2	Route 1 - Preferred Movers	1
Kimberly Dr	3	Route 1 - Prime Acura	1
Lafayette Rd	11	Route 1 - Ray's Seafood	2
Lafayette Rd - Irving Gas	8	Route 1 - Rite Aid	7
Lafayette Rd - North Hampton Village	2	Route 1 - Seacoast Village Mall	21
Lafayette Terrace	2	Route 1 - Self Storage	15
Limestone Way	1	Route 1 - Sgamore Golf	1
Meadow Fox Rd	2	Route 1 - Staples	7
Mill Rd	6	Route 1 - Subaru	2
New Rd	6	Route 1 - Sunbelt Rentals	3
North Rd	2	Route 1 - Taylor Lift	4
Pine Rd	1	Route 1 - Taylor Sales	2
Pond Path	6	Route 1 - Times Square	5
Post Rd	5	Route 1 - Tudor Apartments	1
River Rd	1	Route 1 - Victory Park	4
Route 1 - 180 Restaurant	1	Route 1 - Wayne's Auto	5
Route 1 - Al's Seafood	1	Route 1 North	8

Town of North Hampton

Catch Basin Treatment

2014

Street Name	# Catch Basins	Street Name	# Catch Basins
Route 1 South	14	Squier Dr	3
Route 111 - North Hampton Elementary	11	Stevens Rd	3
Route 111 - Town Hall	1	Sylvan Rd	3
Runnymede Dr	2	Walnut Ave	1
Sanpiper Path	1	Willow Ave	3
Seabreeze Dr	1	Winterberry Ln	3
Shepherds Ln	2	Woodknoll Dr	7
Shiprock Rd	17	Woodland Rd	1
South Rd	3		

Date	# Catch Basins
6-24	185
6-25	272
6-26	7
Total	464

Town of North Hampton

Catch Basin Treatment

2014

Street Name	# Catch Basins	Street Name	# Catch Basins
Alden Ave	1	New Rd	2
Appledore Ave	1	North Rd	1
Apricot Way	0	North Rd - Sagamore Golf Center	0
Aspen Way	4	Oak Dr	0
Atlantic Ave - Elementary School	13	Park Circle	5
Birch Rd	0	Pine Rd	1
Boutilier Ln	7	Plum Ave	0
Bradley Ln	5	Pond Path Rd	6
Buckskin Rd	33	Post Rd	8
Cedar Rd	0	Red Fox Rd	0
Chapel Rd	7	River Rd	1
Chestnut Dr	0	Rockrimmon Rd	0
Deer Run Rd	1	Route 1	0
Elm Rd	1	Route 1 - Ha'Penny Motel	0
Evergreen Drive	1	Route 1 - Mobil	1
Exeter Rd	1	Route 1 - Atlantic Auto Body	0
Fern Rd	0	Route 1 - Auto Zone	5
Garret Drive	12	Route 1 - Betty's Kitchen	0
Glendale Rd	0	Route 1 - BMW	3
Goldenrod Way	2	Route 1 - Bookers Auto	0
Goss Rd	12	Route 1 - Crottys	4
Granite Dr	6	Route 1 - Danielle Lucas Business Park	6
Graystone Way	2	Route 1 - Drake Hill	3
Hawthorne Dr	0	Route 1 - Dunkin Donuts	3
Highlander Lane	4	Route 1 - F.A. Gray Construction	0
Hillside Rd	2	Route 1 - Fern Crossing	6
Juniper Lane	2	Route 1 - First Impression	0
Kimberly Drive	3	Route 1 - Golden Garden	1
Lafayette Rd	24	Route 1 - Gracie's Auto	0
Lafayette Rd - Citizen's Bank	2	Route 1 - Hometown Oil	0
Lafayette Rd - Irving Station	6	Route 1 - Hubbingtons	1
Lafayette Rd - North Hampton Village	2	Route 1 - Hyundai	7
Lafayette Rd - Route 1 Crossings	27	Route 1 - Imprints Day School	0
Lafayette Terrace	4	Route 1 - Ipswich Bay Yacht	1
Limestone Way	2	Route 1 - Jiffy Lube	5
Maple Rd	1	Route 1 - Keegan Auto	1
Meadow Fox Rd	2	Route 1 - Lafayette Plaza	4
Mill Rd	5	Route 1 - Li Yuen	3

APPENDIX D: MAPS

Site List

Town Maps

List of Wells

NHB/DRED Letter

Town of North Hampton

Site List

Site	Location	Habitat
1	Atlantic Ave	- Atlantic Salt Marsh
1 AU	Atlantic Ave	- Atlantic Audubon Salt Marsh
2	Runnymede Dr	- Runnymede Salt Marsh
3	Appledore Ave	- Appledore Salt Marsh
4	Appledore Ave or Runnymede Dr	- Garland Brook Salt Marsh
5	Ocean Blvd	- Viano Island Salt Marsh
5 AU	Ocean Blvd	- Audubon Island Salt Marsh
6	Old Locke Rd	- Rye Line Salt Marsh
7	Ocean Blvd	- Ocean Boulevard North Salt Marsh
8	Old Locke Rd	- Old Locke Road Salt Marsh
9	Ocean Blvd	- Ocean Boulevard South Salt Marsh
10	Dancer's Image Ln	- Dancer's Image (Right) Salt Marsh
10 AU	Dancer's Image Ln	- Audubon Dancer's (Right) Salt Marsh
11	Dancer's Image Ln	- Dancer's Image (Left) Salt Marsh
12	between 8 & 10 Squier Dr	- woodland pools
13	15-19 Squier Dr	- woodland pools
14	19 River Rd	- swamp & woodland pools
15	30 Maple Rd	- woodland pools
16	3-7 Cotton Farm Ln	- woodland pools
17	21 Cotton Farm Ln	- swamp
18	80 Woodland Rd	- swamp w/ woodland pools
19	14 Ship Rock Rd	- woodland pools
20	10 Rockrimmon Rd	- woodland pools
21	21 Woodland Rd	- stream backwater & pools
22	22 Woodland Rd	- swamp
23	4 Pond Path	- woodland pools & root holes
24	12 Bradley Ln	- swamp
25	across from 65 North Road	- swamp
26	left of 19 Goss Rd	- woodland depression
27	21 Goss Rd	- swamp
28	28 Goss Rd	- swamp w/ woodland pools
29	left of 104 North Rd	- woodland pool
30	2-8 Boutilier Rd	- woodland pools
31	behind 2 Beau Monde Dr	- wet meadow
32	220 Atlantic Ave	- cattail marsh
33	left of 11 Rockrimmon Rd	- root holes
34	left of 13 Rockrimmon Rd	- woodland pools
35	10 Olde Locke Rd	- stream w/ pools
36	229 Atlantic Ave	- DPW swamp
37	37 Atlantic Ave	- swamp

Town of North Hampton

Site List

Site	Location	Habitat
38	between 34 & 38 Chapel Rd	- swales
39	behind 11-15 Pond Path	- swamp
40	across from Sagamore Golf Center, 22 North Rd	- ditch w/ cattails
41	left of 41 Chapel Rd	- swamp & pools
42	left of 115 Woodland Rd	- roadside ditches
43	left of 51 Chapel Rd	- woodland pools
44	end of Appledore Ave	- brackish woodland pools
45	27 Squier Dr	- retention pond
46	188 Mill Rd	- ditch & swamp w/ pond
47	behind & left of 11 Goss Rd	- woodland pool
48	between 10A & 12 Chapel Rd	- ditch
49	Town Common, intersection of Atlantic Ave & Post Rd	- watering trough
50	intersection of Winnicut Rd & Buckskin Ln	- large pools
51	78 Post Rd	- pools along path left of pond
52	89 Post Rd	- hockey rink
53	95 Post Rd	- wet meadow
54	intersection of Post Rd & Lovering Rd, left side	- stream backwater
55	intersection of Post Rd & Lovering Rd, right side	- pond
56	behind 63 Mill Rd	- cattail marsh & ditches
57	behind 63 Mill Rd	- red maple & shrub swamp
58	87 Atlantic Ave	- flooded field
59	between 24 & 26 Bradley Ln	- swamp
60	behind 21 Cotton Farm Ln	- ornamental pond
61	behind 13 Boutilier Dr	- small pond & stream
62	front of 14 Chapel Rd	- woodland depression
63	front of 16 Squier Dr	- woodland pool
64	right of 27 Squier Dr	- swamp
65	behind & left of 30 Bradley Ln	- cattail marsh & pond
66	180 Lafayette Rd	- drainage easement
67	across from 30 Birch Rd	- woodland pools
68	Knowles Field, 8 Birch Rd	- woodland pools & swamp
69	Viano Island, Ocean Blvd	- lawn depression
70	left of 7 Appledore Ave, trail to salt marsh	- woodland pool
71	behind 92 Atlantic Ave	- stream
72	behind 14 Winnicut Rd	- flooded lawn & stream
73	180 Lafayette Rd	- retention pond
74	behind 13-15 Runnymede Dr	- river backwater
75	behind 4 Dancer's Image Ln to salt marsh	- furrows
76	behind 4 Dancer's Image Ln to salt marsh	- tire tracks
77	1 Park Circle	- pond

Town of North Hampton

Site List

Site	Location	Habitat
78	behind & left of 25 Cotton Farm Rd	- woodland pools
79	behind 8 Dancer's Image Ln	- Little River backwater
80	behind 23 New Rd	- pond
81	229 Atlantic Ave	- swamp
82	intersection of Birch Rd & Evergreen Dr	- drainage ditch
83	behind 9 Runnymede Dr	- pond
84	right of 50 Mill Rd	- roadside pools
85	intersection of Mill Rd & Atlantic Ave	- woodland swamp
86	across from 44 Woodland Rd	- flooded field
87	right of 115 Woodland Rd	- roadside ditch & pools
88	front and left of 2 Beau Monde Dr	- retention pond
89	behind 15 Granite Dr	- red maple swamp
90	left of 96 South Rd	- 2 small ponds
91	between 56 & 58 South Rd	- cattail swamp & ditch
92	behind Knowles Ground Maint, 16A Woodknoll Dr	- ditch
93	left of 75 Post Rd	- woodland pools
94	across from 76 Post Rd	- cattail marsh
95	between 103 & 105 Walnut Ave	- cattail marsh
96	right of Walnut Ave to I-95 N	- cattail marsh
97	across from 5 Goss Rd	- fire pond & swamp
98	behind & to right of 31 Maple Rd	- drainage ditch & cattail marsh
99	end of Buckskin Ln	- drainage swale w/ cattails
100	left of 8 Ship Rock Rd	- large drainage pools
101	left of 34 Woodland Rd	- shrub swamp
102	Woodland Rd, at Rye town line	- red maple swamp
103	right of 51 Chapel Rd	- roadside ditch & pools
104	right of 8 Squier Dr	- cattail pond
105	Shel-Al Campground, 115 Rte 1	- stream & drainage area
106	169 Mill Rd	- woodland pools & swamp
107	behind 143 Post Rd	- swamp around edge of pond
108	behind 219 Post Rd	- pond w/ cattails
109	behind 8-31 Squier Dr	- large cattail marsh
110	10A & 12A Chapel Rd	- ditch & swamp
111	behind 15 Granite Rd to RR tracks	- ditch
112	behind 31 Hickory Ave	- woodland pools
113	behind 11 Winterberry Way	- swamp
114	behind 9 Squier Dr to Mill Rd	- woodland pools & stream
115	behind 63 Mill Rd	- pools & depressions
116	behind 2 Beau Monde Dr	- swamp
117	No. Hampton Elem School, Atlantic Ave	- small cattail marsh and stream backwater

Town of North Hampton

Site List

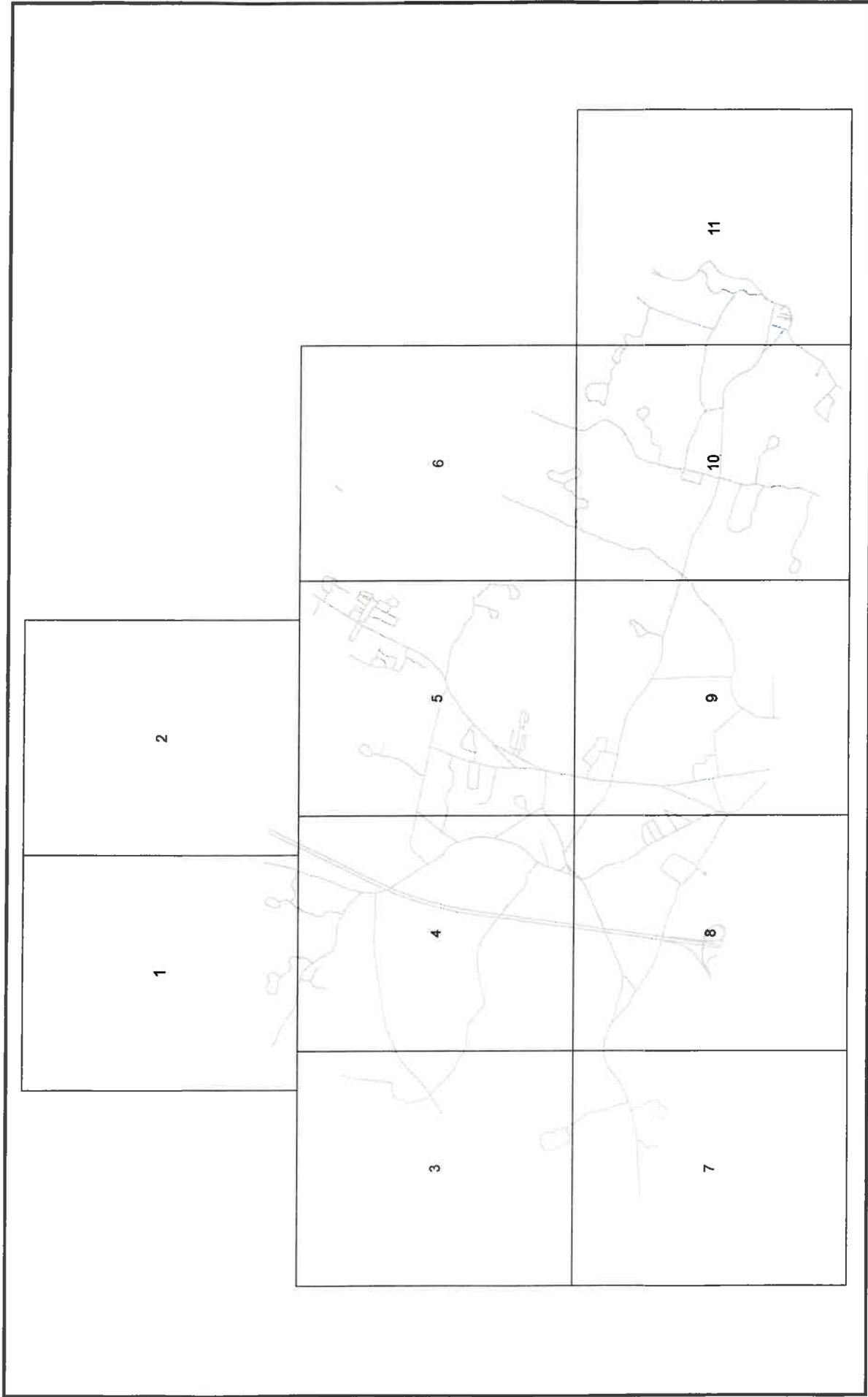
Site	Location	Habitat
118	121 Lafayette Rd	- retention pond w/ cattails
119	101 North Rd	- pond
120	right of 48 Ocean Blvd	- flooded lawn
121	right of 187 Atlantic Ave	- woodland pool
122	left of 29 Hickory Ave to Summer Cir	- small swamp w/ sluggish stream
123	15 Highlander Rd	- woodland pools and stream backwater
124	No. Hampton Elem School, Atlantic Ave	- woodland pools
125	behind 2 Park Circle	- woodland pools
126	No. Hampton Elem School, Atlantic Ave	- sluggish stream w/ cattails
127	behind 144 Lafayette Rd, along North Rd	- ditch & Little River backwater
128	right of 16 Pond Path	- woodland pools
129	behind 11 Pond Path	- woodland pools
130	between 16 & 17 Squier Dr	- retention pond
131	between 10 and 16 Old Locke Rd	- woodland pools
132	51 Chapel Rd	- shrub swamp
133	across from 8 Ship Rock Rd	- woodland pools
134	No. Hampton Elem School, Atlantic Ave	- woodland depression
135	No. Hampton Elem School, Atlantic Ave	- stream with cattails
136	Hobbs Field, Atlantic Ave	- ditch
137	right of Hobbs Field, Rc Model Club Atlantic Ave	- wet meadow
138	Hobbs Field, RC Model Club Atlantic Ave	- sluggish brook w/ cattails
139	intersection of Cherry Rd and Evergreen Drive	- small shrub swamp w/ depression
140	across from 12 Highlander Dr	- swamp
141	beind 31 Squier Dr to left and directly behind house	- cattail swamp
142	right & behind 5 Boutilier Ln	- Sluugish stream & pools
143	right of driveway 71 Mill Rd	- large swamp with shrubs & woodland pools
144	behind 58 & 60 Walnut Ave	- cattail field & tire pile at 38
145	behind 18 Cherry Rd	- Woodland Pools

ADULTICIDE SITE LIST

- A 1 North Hampton School
Atlantic Avenue
- A 2 Knowles Field
Birch Road
- A 3 Dearborn Park
Exeter Road
- A 4 Town Common
Rte 151 & Rte 111

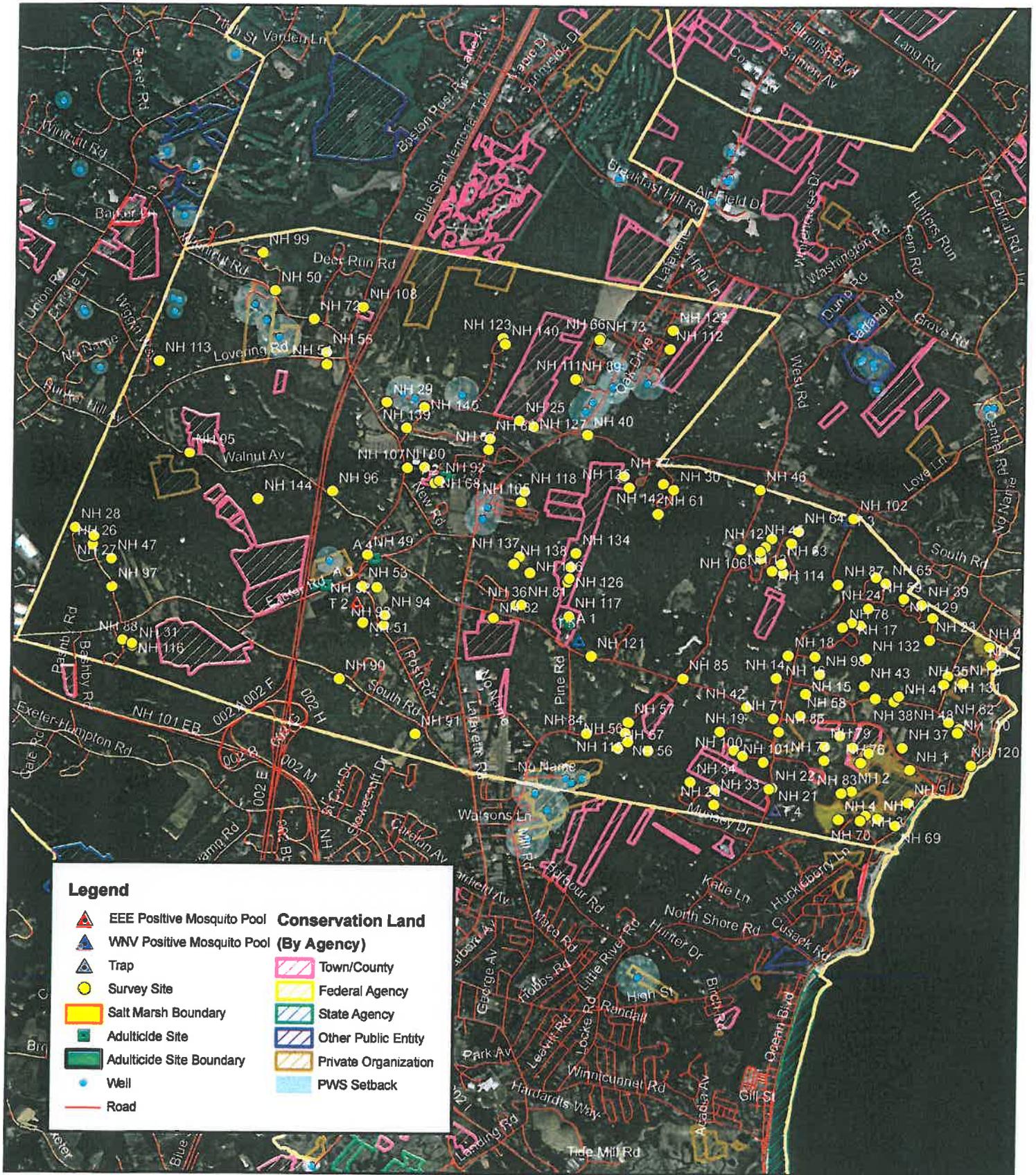
TRAP LOCATIONS

- T 1 Knowles Field - Birch Rd 
- T 2 90 Post Road 
- T 3 143 Woodland Road 
- T 4 11 Woodland Road 
- T 5 North Hampton School (suspended trap)

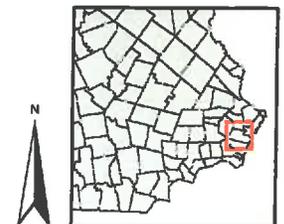


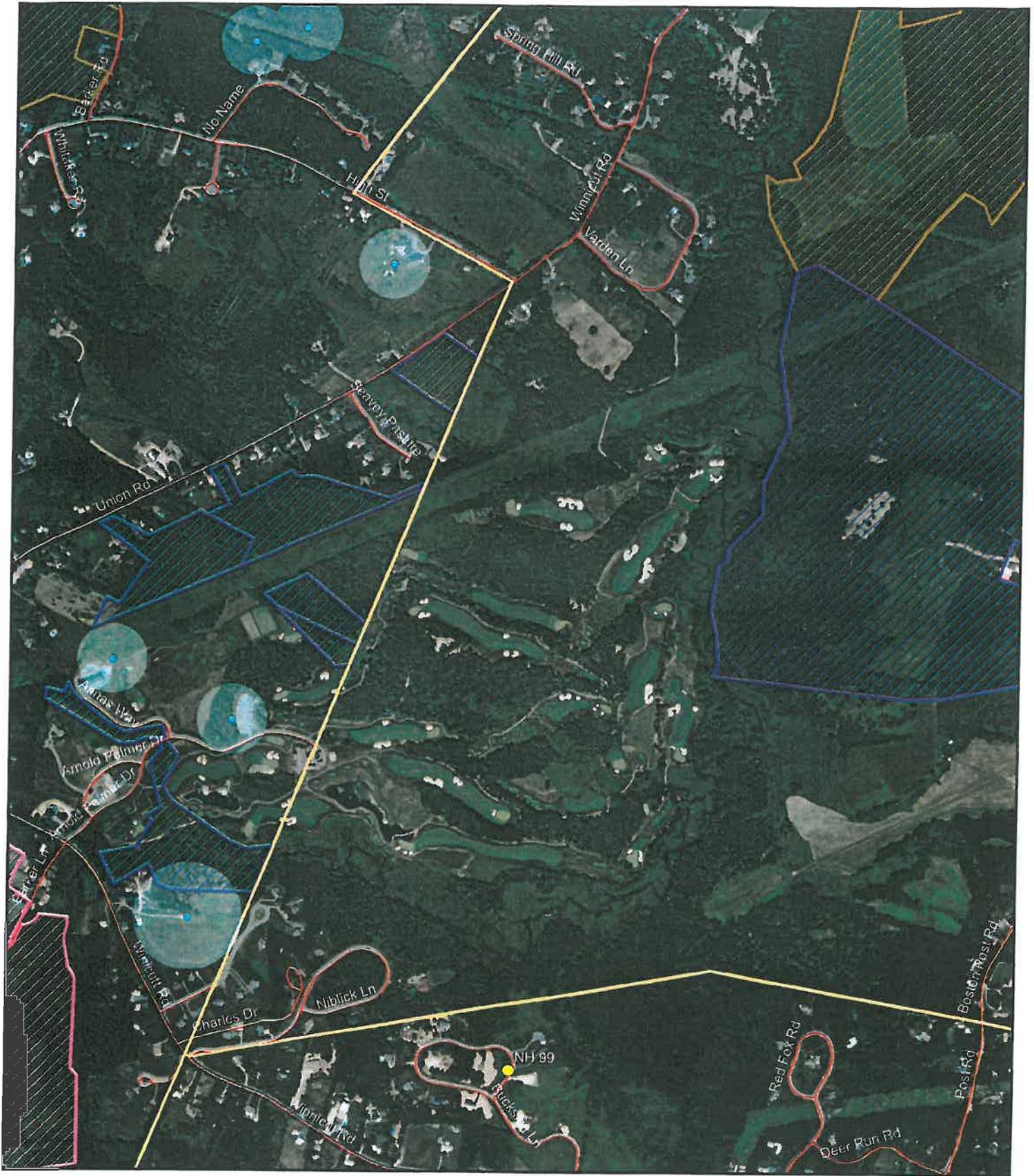
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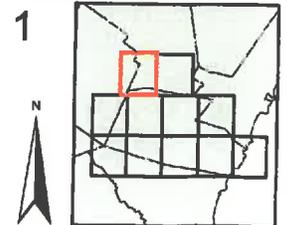


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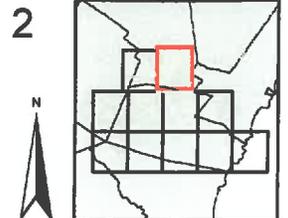


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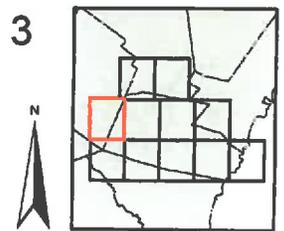


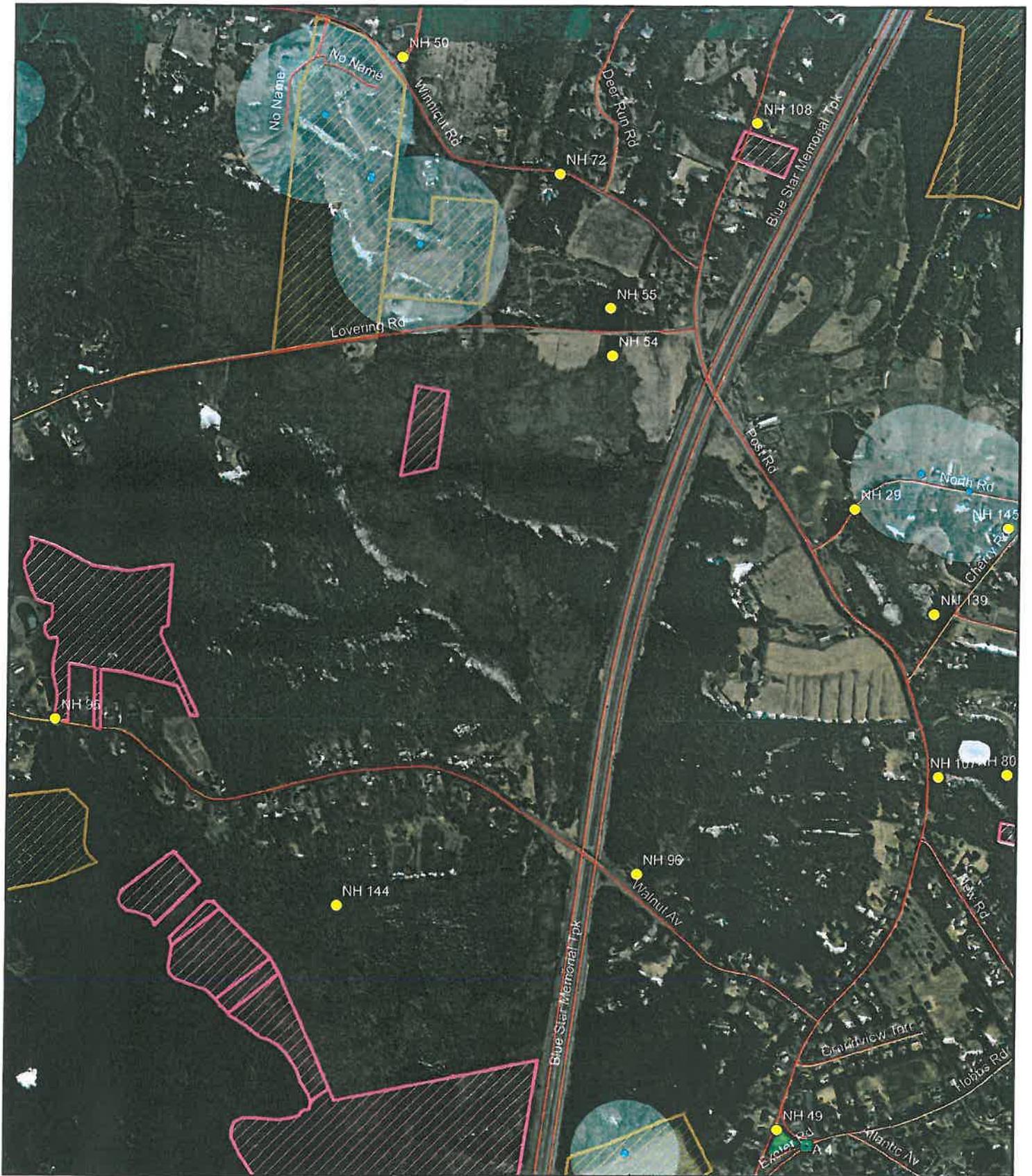
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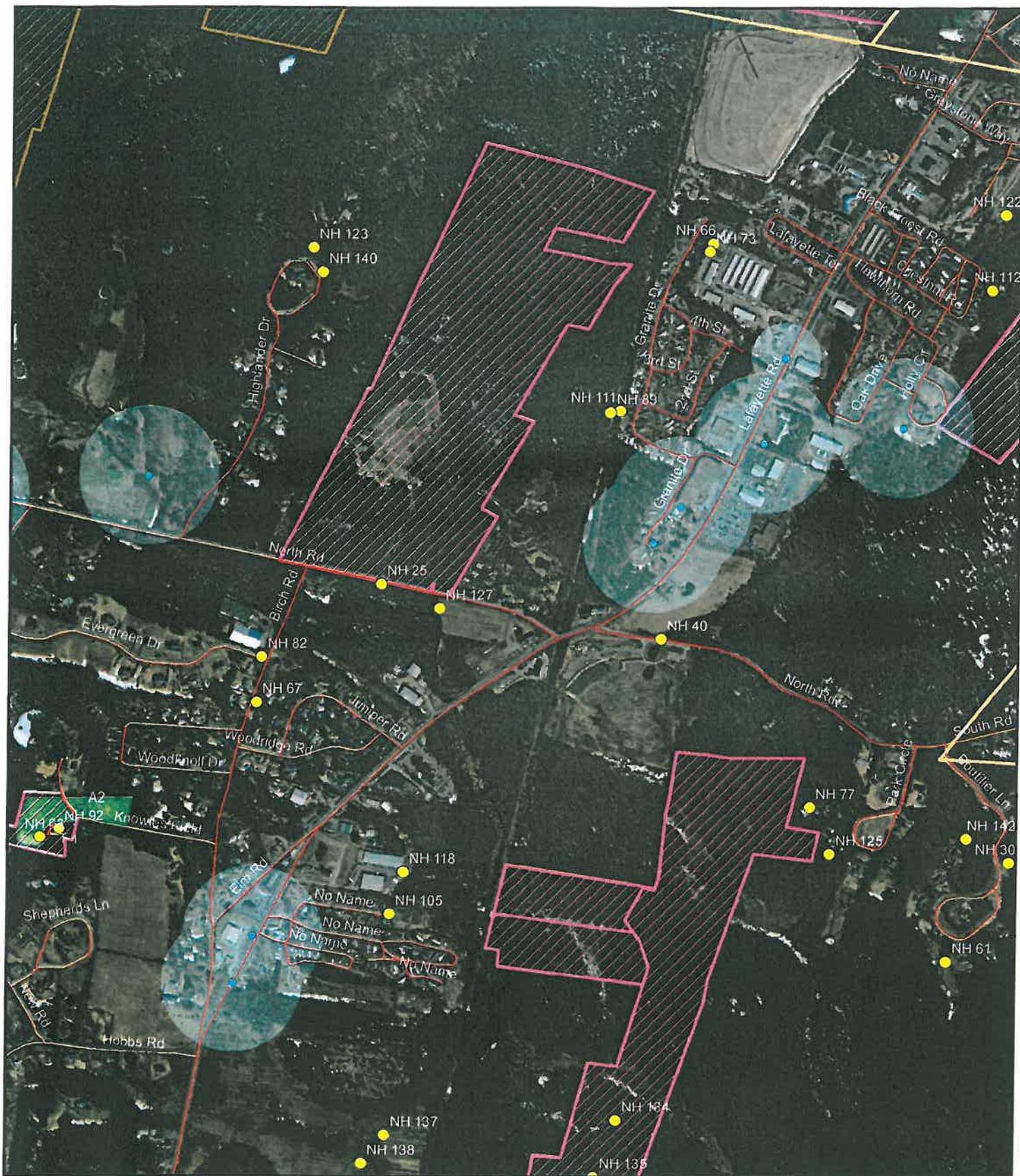
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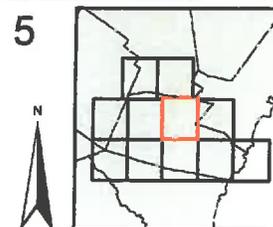


TOWN OF NORTH HAMPTON



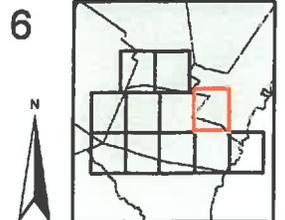


TOWN OF NORTH HAMPTON



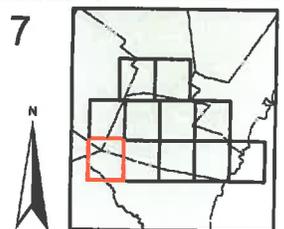


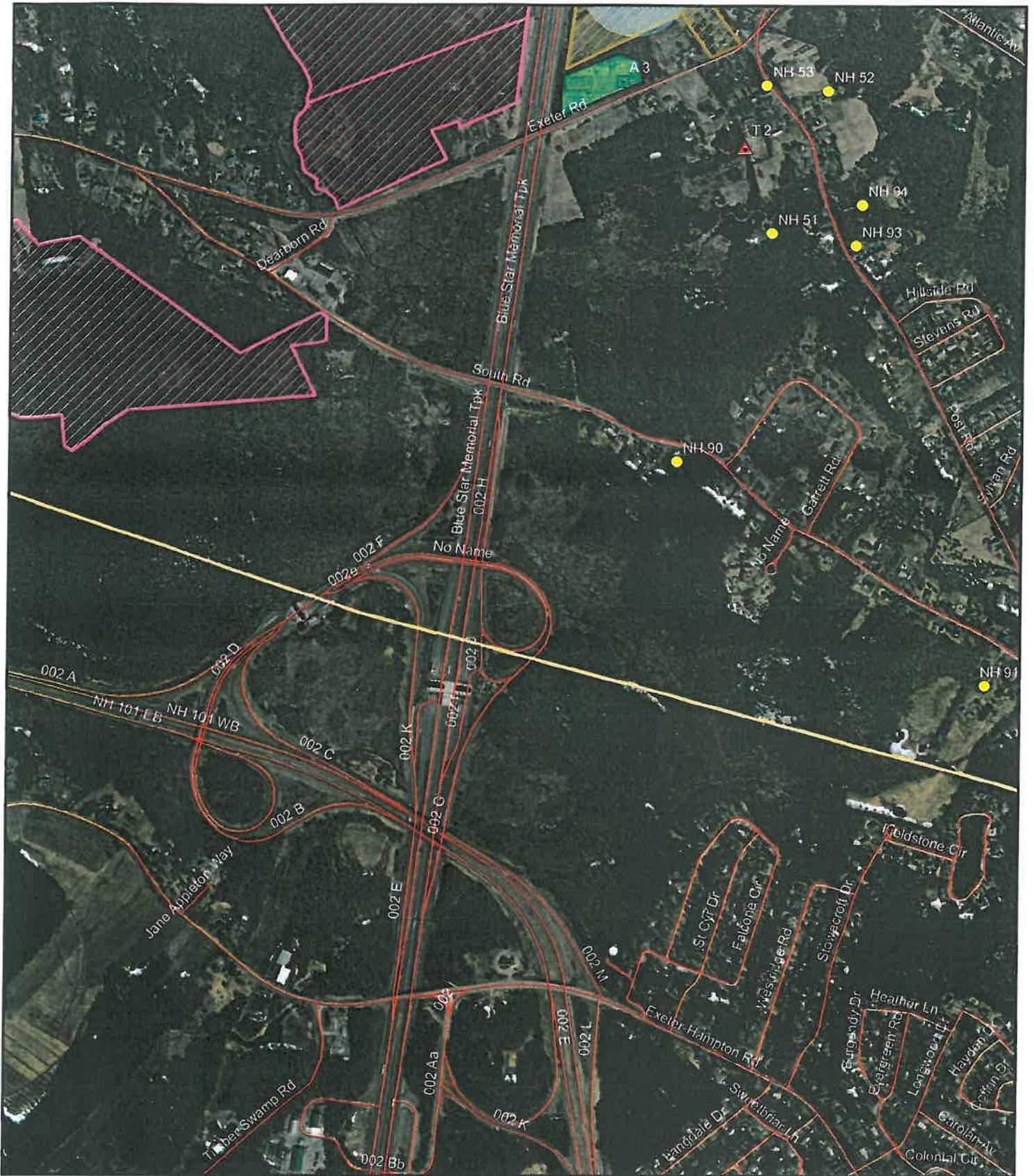
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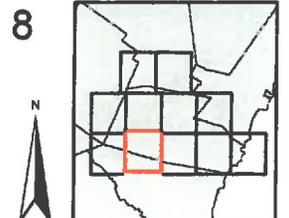


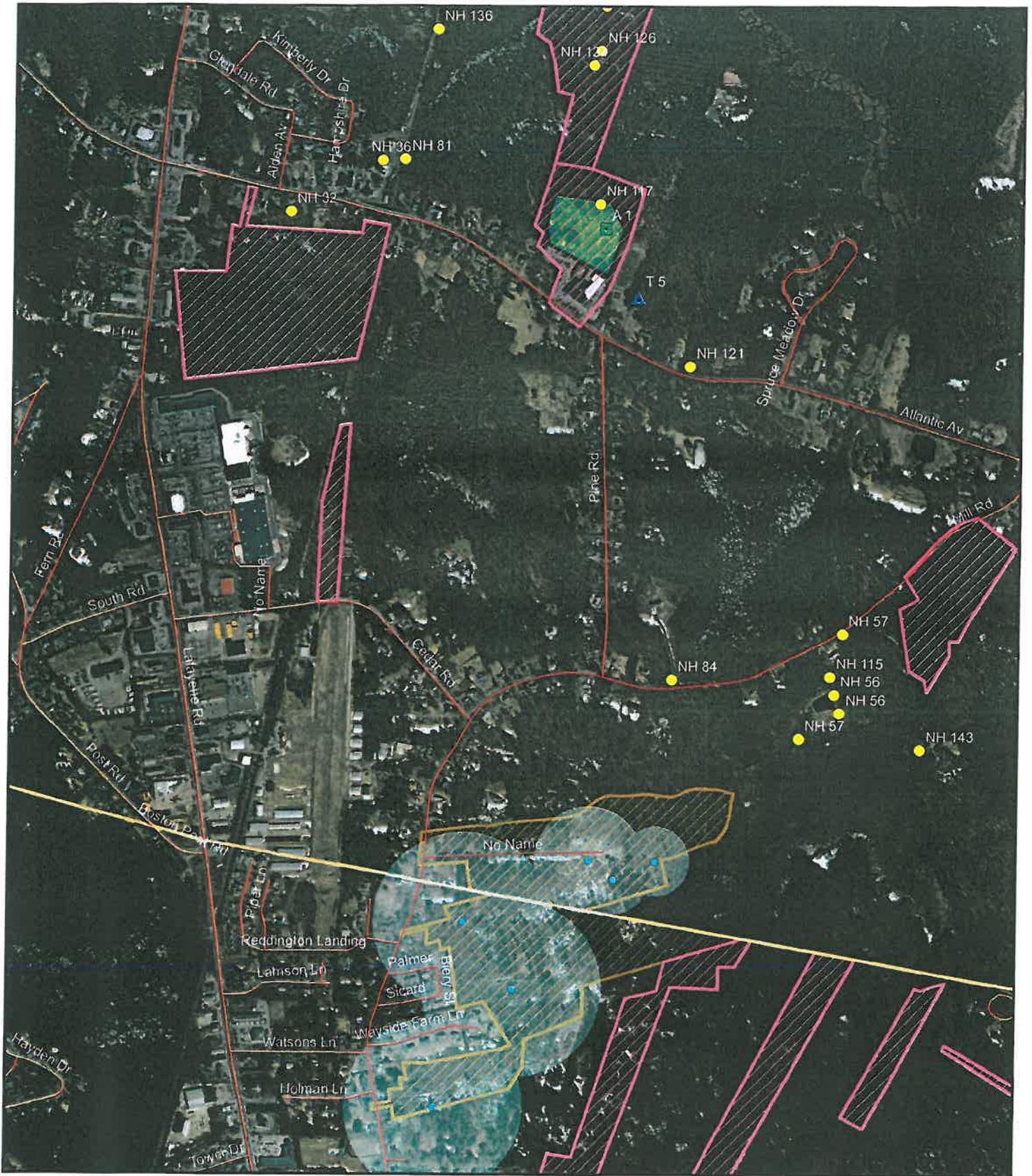
TOWN OF NORTH HAMPTON



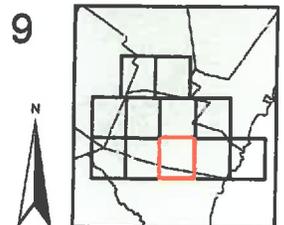


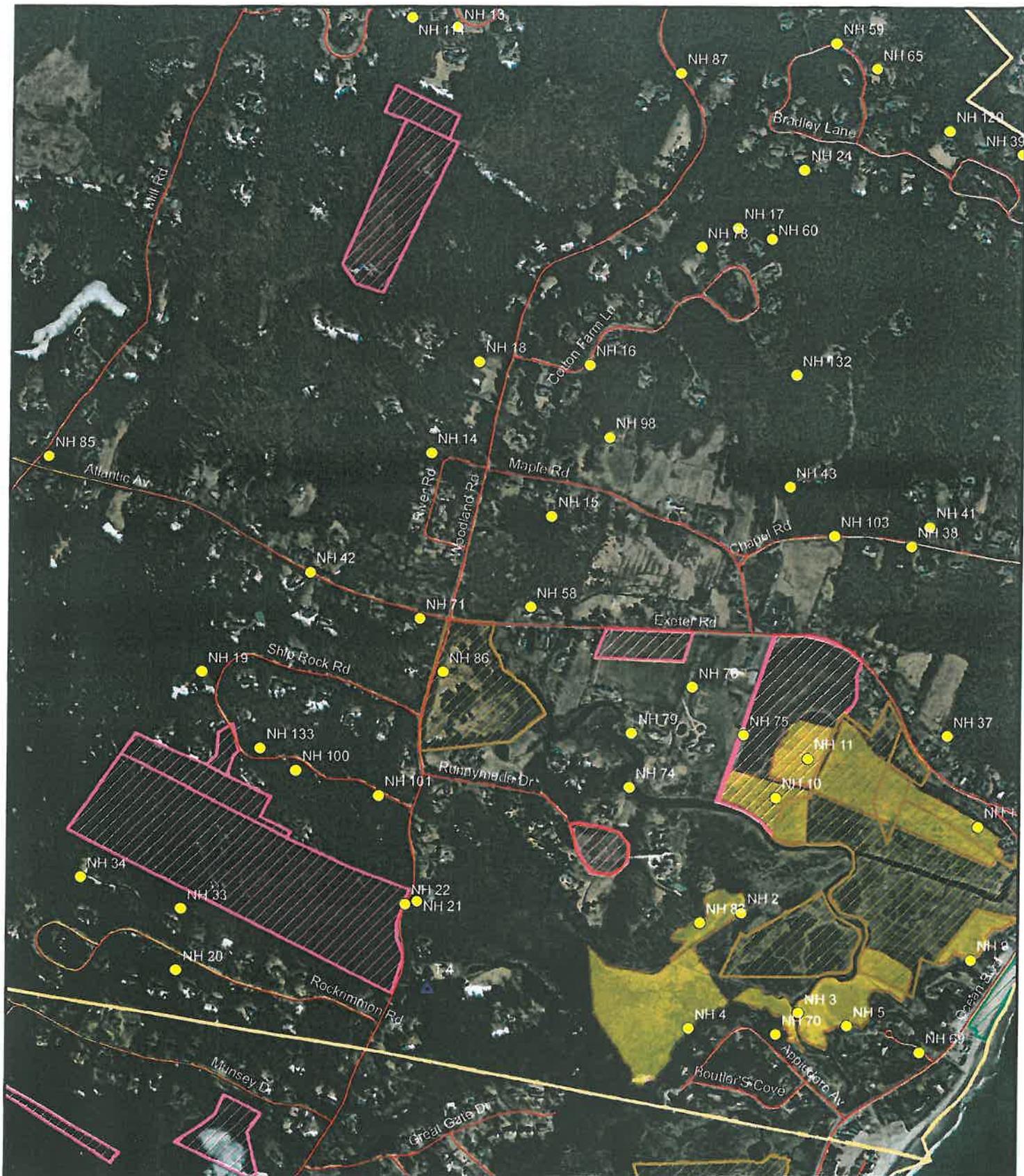
TOWN OF NORTH HAMPTON



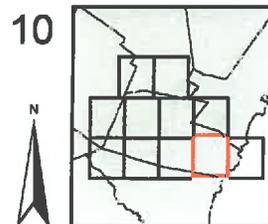


TOWN OF NORTH HAMPTON



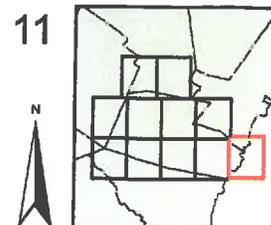


TOWN OF NORTH HAMPTON





TOWN OF NORTH HAMPTON



TOWN OF NORTH HAMPTON

LIST OF PUBLIC WATER SUPPLIES

MASTER ID	PWS ID	SYSTEM NAME	ADDRESS	TOWN	SYSTEM ACTIVE	SOURCE ACTIVE	SYSTEM TYPE	SOURCE TYPE	WELL TYPE	RECORD SOURCE/WATER TYPE	POPULATION SERVED
0	1778080-001	BETTYS KITCHEN		NORTH HAMPTON	I	A	N	G		SG	1
0	1773010-001	GRANITE POST GREEN		NORTH HAMPTON	I	I	C	G	BRW	SG	0
0	1773030-003	NORTH HAMPTON MOBILE HOME PARK		NORTH HAMPTON	I	A	C	G	BRW	SG	0
4474	1778030-001	PINE HAVEN MOTEL	ROUTE 1	NORTH HAMPTON	I	I	N	G		SG	25
0	1777040-001	SAGAMORE GOLF CLUB/DWELLBUB 79	101 NORTH RD	NORTH HAMPTON	I	I	N	G	BRW	SG	150
0	1777050-001	SAGAMORE GOLF CLUB/DWELLOFF 97	101 NORTH ROAD	NORTH HAMPTON	I	A	N	G	DUG	SG	150
49997	1777020-001	SAGAMORE/HAMPTON GOLF CLUB	101 NORTH RD	NORTH HAMPTON	A	A	N	G	BRW	SG	150
53556	1773020-001	SHEL AL MOBILE ESTATES	115 LAFAYETTE RD	NORTH HAMPTON	A	A	C	G	BRW	SG	177
53556	1773020-002	SHEL AL MOBILE ESTATES	115 LAFAYETTE RD	NORTH HAMPTON	A	I	C	G	BRW	SG	177
0	1776010-001	TILTON EQUIPMENT COMPANY		NORTH HAMPTON	I	A	P	G		SG	0

To: Sarah MacGregor
 Dragon Mosquito Control, Inc.
 PO Box 46
 Stratham, NH 03885

From: Sara Cairns, NH Natural Heritage Bureau

Date: 23 January 2015

In order to aid in the review of Mosquito Special Permits, the Natural Heritage Bureau and NH Fish and Game are providing a digital screening layer to the two companies licensed to control mosquitos in New Hampshire.

The screening layer is specific to a subset of 13 sensitive wildlife species (listed below) that could be impacted by mosquito control pesticides. It does not include all endangered and threatened wildlife species. No threatened or endangered plant species or exemplary natural communities are included. It is important to note that the screening layer does NOT include areas sensitive to the application of herbicides.

For all towns that contain sensitive wildlife areas, as indicated in the provided screening layer, applicants must contact NH Fish and Game for a review of potential impacts.

NH Towns with Wildlife Sensitive to Mosquito Control Activities

Alton	Eaton	Loudon	Plainfield
Amherst	Epping	Low & Burbanks	Raymond
Andover	Epsom	Madbury	Salisbury
Auburn	Farmington	Madison	Sargents Purchase
Barnstead	Freedom	Manchester	South Hampton
Barrington	Fremont	Middleton	Strafford
Beans Grant	Goffstown	Milton	Surry
Boscawen	Haverhill	Moultonborough	Swanzy
Brookline	Hinsdale	New Boston	Tamworth
Canterbury	Hollis	New Hampton	Thompson &
Chandlers Purchase	Hooksett	Newmarket	Meserve
Charlestown	Hopkinton	Newport	Walpole
Chichester	Hudson	Northumberland	Weare
Claremont	Keene	Northwood	Webster
Concord	Kingston	Nottingham	Windham
Cornish	Lancaster	Orford	
Croydon	Lebanon	Pelham	
Dalton	Lee	Pembroke	
Dover	Litchfield	Piermont	
Durham	Londonderry	Pittsfield	

List of Wildlife Species Sensitive to Mosquito Control Activities

Amphibians

Marbled Salamander

Fish

American Brook Lamprey

Bridle Shiner

Freshwater Mussels

Dwarf Wedge Mussel

Brook Floater

Insects

Cobblestone Tiger Beetle

Persius Dusky Wing

Frosted Elfin Butterfly

Karner Blue Butterfly

Pine Pinion Moth

Ringed Bog Haunter

White Mountain Butterfly

White Mountain Fritillary

APPENDIX E: NOTIFICATIONS

List of Beekeepers
Sample Letter to Beekeepers
Sample Public Notice



Town of North Hampton

List of Beekeepers

2015



- Kathy Grant
66 Lovering Road
North Hampton, NH 03862

DRAGON MOSQUITO CONTROL, INC.
P.O. BOX 46, STRATHAM, NH 03885
603-734-4144

Dear Beekeeper,

This season, the Town of North Hampton has hired Dragon Mosquito Control, Inc. to conduct a mosquito control program. State Special Permit conditions require apiary owners be notified of pending spray operations via certified mail. Mosquito control crews will be checking swamps, salt marshes, woodland pools, ditches, catch basins and other shallow, stagnant water for mosquito activity. Mosquito larvae begin hatching from eggs in April and May. When significant numbers of larvae are found in these stagnant areas, treatment will be conducted. The bacteria, *Bacillus thuringiensis israelensis* (Bti for short) will be used to control mosquito larvae. This phase of our control program does not impact bees.

Once mosquitoes have reached the adult stage, adulticiding is the next line of defense. Town wide spraying is not planned. If Eastern Equine Encephalitis or West Nile Virus becomes a public health threat, then limited spot spraying may be conducted at the North Hampton Elementary School, Knowles Field, Dearborn Park, and the Town Common. It is not possible to predict if emergency spraying will be necessary. The spray schedule is based upon mosquito surveillance data, disease test results and weather conditions. Further communication will be given if emergency spraying is going to take place.

Pyrethroids will be used for adulticide applications. These products are broad spectrum insecticides therefore we take measures to avoid apiaries. Spraying is done at night when mosquitoes are active and wind currents are down.

If you have moved your colony to a different address, have colonies in multiple locations, or no longer have bees, please contact the office at 734-4144 or email Info@DragonMosquito.com so the files can be updated. Check out our web site: www.dragonmosquito.com where you can request a larval survey, sign up for email alerts or follow us on Twitter. Feel free to contact us with any questions or concerns.

Dragon Mosquito Control, Inc.
603-734-4144
Info@DragonMosquito.com

PUBLIC NOTICE

TOWN OF NORTH HAMPTON

Mosquito Control

The Mosquito Control program begins the week of April 2, 2014 in the Town of North Hampton. Crews from Dragon Mosquito Control will be checking swamps, salt marshes, woodland pools, ditches, storm drains and other shallow, stagnant water for mosquito larvae. When mosquitoes are found, the following insecticides may be used:

AquaBac 200G (Bacillus thuringiensis israelensis)	Altosid (methoprene)
VectoBac (Bacillus thuringiensis israelensis)	CocoBear Mosquito Larvicide Oil (mineral oil)
Natular (spinosad)	BVA 2 MLO (highly refined petroleum distillate)

If Eastern Equine Encephalitis or West Nile Virus is found in or near North Hampton, then emergency spraying may be conducted using one or more of the following products:

Anvil (sumithrin)	Cross Check Plus (bifenthrin)
Zenivex (etofenprox)	Mavrik Perimeter (tau-fluvalinate)
Permanone (permethrin)	Duet (sumithrin & prallethrin)

Emergency spray treatments may be conducted at the following locations:

Elementary School
Town Common
Dearborn Park
Knowles Field

It is impossible to predict if emergency spraying will be necessary. The spray schedule is based upon mosquito surveillance data, disease test results and weather data. Further communication will be given if emergency spraying is going to take place.

Residents who do not want their wetlands treated may use our No-Spray Registry online at www.DragonMosquito.com/No-Spray-Registry or write to Dragon Mosquito Control, P.O. Box 46, Stratham, NH 03885. Be sure to include your name, physical address, phone number, and a description of your property with boundaries. Residents who would like to have their stagnant water checked for mosquitoes may call 734-4144 or email Info@DragonMosquito.com. There is no charge for this service. Contact us for more information on spray dates, location, materials used, precautions or other concerns.

