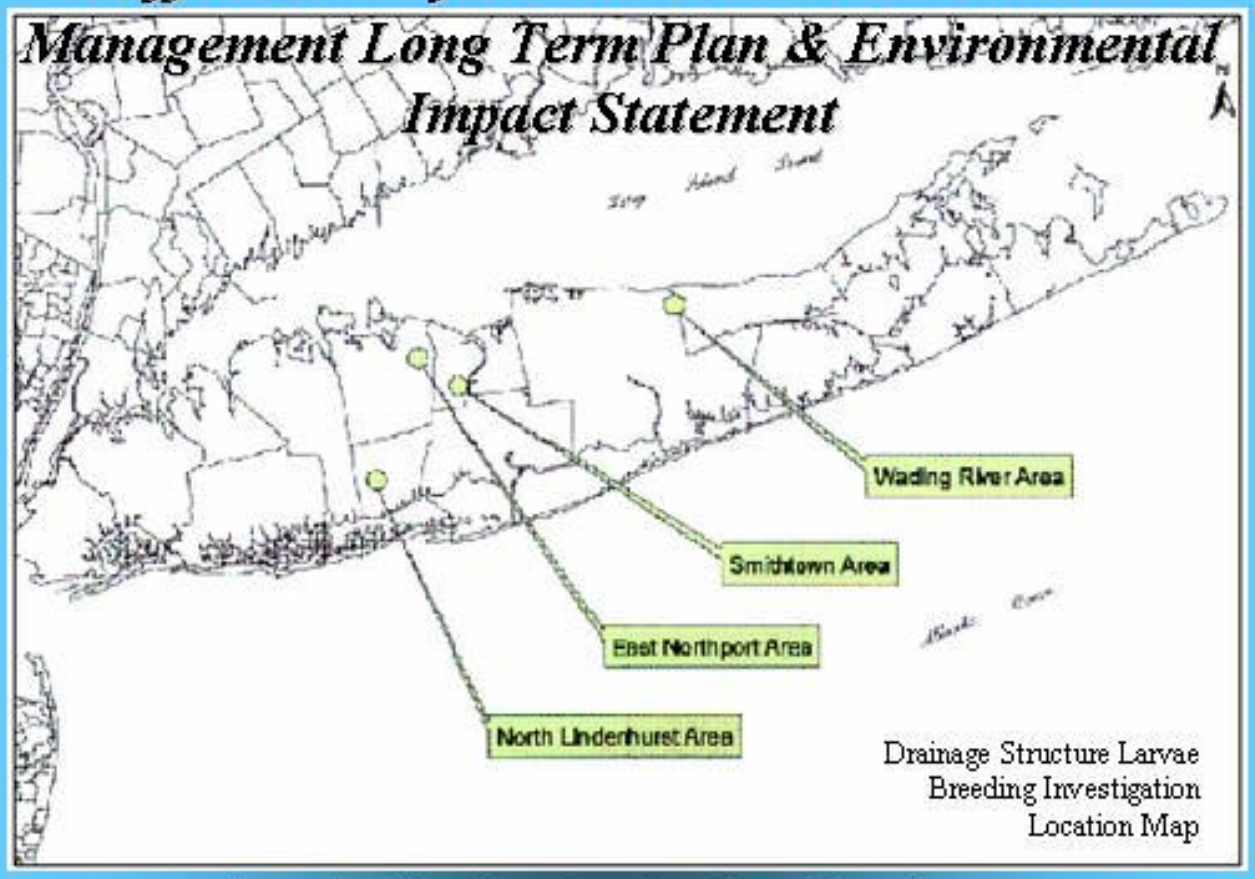
Suffolk County Vector Control & Wetlands Management Long Term Plan & Environmental Impact Statement



Drainage Structure Larvae
Breeding Investigation
Location Map

Task 12: Early Action Projects
Survey of Catch Basins for Mosquitoes with Disease Potential

Prepared for:

Suffolk County Department of Public Works
Suffolk County Department of Health Services
Suffolk County, New York

Prepared by:

CASHIN ASSOCIATES, P.C.
1200 Veterans Memorial Highway, Hauppauge, NY

CAMERON ENGINEERING & ASSOCIATES, LLP
3 Aerial Way, Suite 100, Syosset, NY

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SUFFOLK COUNTY VECTOR CONTROL AND WETLANDS MANAGEMENT LONG - TERM PLAN AND ENVIRONMENTAL IMPACT STATEMENT

PROJECT SPONSOR

Steve Levy
Suffolk County Executive

Department of Public Works
Charles J. Bartha, P.E.
Commissioner
Richard LaValle, P.E.
Chief Deputy Commissioner
Leslie A. Mitchel
Deputy Commissioner

Department of Health Services
Brian L. Harper, M.D., M.P.H.
Commissioner
Vito Minei, P.E.
Director, Division of Environmental Quality

PROJECT MANAGEMENT

Project Manager: Walter Dawydiak, P.E., J.D.
Chief Engineer, Division of Environmental Quality, Suffolk County Department of Health Services

Suffolk County Department of Public Works, Division of Vector Control
Dominick V. Ninivaggi
Superintendent
Tom Iwanejko
Entomologist
Mary E. Dempsey
Biologist

Suffolk County Department of Health Services, Office of Ecology
Martin Trent
Acting Chief
Kim Shaw
Bureau Supervisor
Robert M. Waters
Bureau Supervisor
Laura Bavaro
Senior Environmental Analyst
Erin Duffy
Environmental Analyst
Phil DeBlasi
Environmental Analyst
Jeanine Schlosser
Principal Clerk

SUFFOLK COUNTY LONG TERM PLAN CONSULTANT TEAM

Cashin Associates, P.C.	**Hauppauge, NY**
Subconsultants	
Cameron Engineering, L.L.P.	Syosset, NY
Integral Consulting	Annapolis, MD
Bowne Management Systems, Inc.	Mineola, NY
Kamazima Lwiza, PhD	Stony Brook University, Stony Brook, NY
Ducks Unlimited	Stony Brook, NY
Steven Goodbred, PhD & Laboratory	Stony Brook University, Stony Brook, NY
RTP Environmental	Westbury, NY
Sinnreich, Safar & Kosakoff	Central Islip, NY
Bruce Brownawell, PhD & Laboratory	Stony Brook University, Stony Brook, NY
Anne McElroy, PhD & Laboratory	Stony Brook University, Stony Brook, NY
Andrew Spielman, PhD	Harvard School of Public Health, Boston, MA
Richard Pollack, PhD	Harvard School of Public Health, Boston, MA
Wayne Crans, PhD	Rutgers University, New Brunswick, NJ
Susan Teitelbaum, PhD	Mount Sinai School of Medicine, NY
Zawicki Vector Management Consultants	Freehold, NJ
Michael Bottini, Turtle Researcher	East Hampton, NY
Robert Turner, PhD & Laboratory	Southampton College, NY
Christopher Gobler, PhD & Laboratory	Southampton College, NY
Jerome Goddard, PhD	Mississippi Department of Health, Jackson, MS
Sergio Sanudo, PhD & Laboratory	Stony Brook University, Stony Brook, NY
Suffolk County Department of Health Services, Division of Environmental Quality	Hauppauge, NY

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LIST OF ACRONYMS AND ABBREVIATIONS

CA	Cashin Associates, PC
SCDPW	Suffolk County Department of Public Works
SCVC	Suffolk County Vector Control

1. INTENT

The work plan for the Suffolk County Vector Control and Wetlands Management Long Term Plan called for the development of local demonstration projects of various kinds. Mosquitoes, especially *Culex pipiens* (the house mosquito), are known to breed in places where stagnant water collects. *Cx. Pipiens* are thought to be the primary vector for West Nile Virus. Therefore, elimination of such breeding habitats, or treatment of them when elimination is not possible, would reduce disease risks where their habitats were found. In order to eliminate or treat these habitats, however, they must be located.

Suffolk County Vector Control (SCVC) has recognized, as have other mosquito control agencies around the nation, that stormwater devices can serve as breeding locations for *Culex spp*. This is because they are often designed to retain and detain stormwater to reduce potential pollutant impacts. Stormwater devices not designed to retain water are often not effectively maintained, and may unintentionally hold water long enough to allow breeding. Often these structures are not designed with mosquito propagation control in mind, and so even if properly maintained, may robustly produce mosquitoes. SCVC, therefore, treats catch basins in areas of the County with high groundwater tables, with the assumption that such devices may drain more slowly than those far above the water table. Altosid time-release briquetes are most commonly used. Recharge basins also are treated in response to biting complaints. *Gambusia* may be stocked in basins that do not generally dry out; Altosid briquets are used in basins that are irregularly flooded.

Cashin Associates, PC (CA) determined it would be prudent to investigate the potential of catch basins outside of the areas usually treated by SCVC to breed mosquitoes, and to see if it might be possible to predict the kinds of areas more likely to support any such breeding. Sampling was undertaken in August and early September, 2004, to survey such devices. Cameron Engineering, LLP, a subcontractor to CA, will investigate recharge basin breeding potentials in the summer of 2005.

2. STUDY AREAS

Four residential areas were selected for evaluation. These sites were North Lindenhurst, East Northport, Smithtown, and Wading River.

A neighborhood in North Lindenhurst was selected because it is an older, dense development with small lots. An area in East Northport was chosen because there were known mosquito biting complaints, including those of CA employees who lived in the area, although no natural wetlands are present in the surrounding area. East Northport has also been an area of concern for SCVC regarding potential West Nile outbreaks. The Pines in Smithtown is an area of large residential lots with extensive landscaping. It is assumed that the well-maintained landscaping typical of the area requires use of sprinkler systems, adding runoff to the surrounding basins, thus creating the potential for additional mosquito breeding opportunities. A Wading River area was selected because it is a fairly new development, with large lots with extensive landscaping, and a recently installed stormwater control system.

3. METHODOLOGY

Each site was inspected for the presence of catch basins and leaching basins. Samples were to be collected during a dry period (last rainfall more than five days previously) and approximately two to three days following a significant rainfall. At each station, the cover was removed and the type of structure was identified as either a "leaching basin" or "catch basin." Leaching basins are designed to drain through the bottom of the structure, and are common on Long Island due to the extremely pervious soils. Catch basins are designed to collect stormwater and eventually convey the water to another structure where it will drain into the subsurface (either a recharge basin or a leaching basin). The nearest house address was recorded to identify the sample location.

If the structure was holding water, a mosquito dipper was lowered into the basin gently, as to not cause any potential larvae to scatter. A full dipper was collected and analyzed for the presence of larvae. The basin was resampled if no larva was detected. If larvae were present, the sample was placed in a labeled sample jar (with adequate head space) and was stored on ice for preservation.

The depth of water in all sampled structures was measured and recorded subsequent to collecting the sample. All samples were delivered to SCVC for larval identification analysis.

4. RESULTS

Thirty-three structures were sampled in East Northport and North Lindenhurst following a rain event. Samples were not collected at either site during dry weather due to end of the breeding season. Eight samples in East Northport contained larvae, ranging from one larva per sample to over 100 larvae per sample. *Cx. pipiens* were reported in all of the samples, and *Cx. restuans* were reported in two samples. Nine samples collected in North Lindenhurst contained *Cx. pipiens*, ranging from seven larvae to over 100 larvae per sample.

Sixteen structures were sampled in Smithtown during a dry period, and four were sampled following a rain event. The samples following the rain event were limited to four specific structures located in a low lying area that collects runoff from several adjacent roads. *Cx. pipiens* were detected in three dry weather samples, ranging from one larva per sample to more than 30 larvae per sample. Four *Cx. pipiens* larvae were detected in the only structure that was holding water after the rain event.

Forty-one structures were sampled in Wading River during a dry period and following a rain event. The amount of structures sampled was higher due to the large number of dry structures encountered. No larvae were detected in any structure during either sampling period.

Leaching basins tended not to hold water; not surprisingly, they also, therefore, tended not to breed mosquitoes. However, in Smithtown, the only structures that had breeding under dry conditions were leaching basins that retained water.

Catch basins were more likely to retain water, and so were more likely to support breeding. This was not the case in Wading River, however, as the recent installation of the structures allowed them to drain well under both dry and wet conditions.

5. CONCLUSIONS

Some areas of the County where SCVC does not routinely monitor catch basins, and then treat those that may serve as breeding sites, have the potential to serve as breeding locations for potential disease vectors. For example, approximately one-quarter of the structures sampled in East Northport and North Lindenhurst were found to breed *Culex spp*. mosquitoes. Vector control for the house mostquito has long focused on the removal of potential breeding sites in the vicinity of residences, due to the short flight range of these pests. However, it seems that some kinds of stormwater control structures may serve as significant breeding loci for a mosquito that now has disease transmission importance.

This initial study was unable to determine whether the structures actually lead to more disease-bearing mosquitoes in a particular neighborhood; however, areas with older, less well-maintained catch basins may deserve greater monitoring by SCVC. In addition, as Phase II stormwater control improvements are made to decrease the pollutant potential of stormwater run-off, SCVC should be involved in the selection of technologies, as it is clear that these basins can support substantial numbers of mosquitoes under certain conditions.

6. RECOMMENDATIONS

1) SCVC catch basin monitoring should be expanded. The focus should be on areas where maintenance may have been deferred, where catch basins were preferentially installed, and in areas where the systems are older.

2) Suffolk County Department of Public Works (SCDPW) and Town and village counterparts need to confer with SCVC to inform the selection of Phase II stormwater technologies.

3) In support of Recommendation #2, CA strongly suggests that this report be mailed to all Town and village Public Works directors, and circulated throughout the highway design section of SCDPW. In addition, as it is CA's observation that elected officials have shown interest and involvement in the selection of Phase II stormwater technologies, CA also recommends sending this report to Town and village boards throughout the County.

Appendix 1

Data Tables

Table 1
North Lindenhurst Drainage Structure Larvae Breeding Investigation

TOWN:	N. Lindenhurst	**WEATHER:**	Sunny
DATE:	9/304	**DATE OF LAST RAIN:**	8/30/2004

NUMBER	ADDRESS	STRUCTURE (CATCH BASIN/ LEACHING BASIN)	APPROXIMATE DEPTH OF WATER	LARVAE FOUND (Y/N)	SPECIES	# OF LARVAE	STAGE	PUPAE	SAMPLE NO.
1	49 Berry	LB			-	-	-	-	
2	60 Berry	LB	2"	N	-	-	-	-	
3	61 Berry	CB			-	-	-	-	
4	89 Berry	LB			-	-	-	-	
5	102 Berry	LB			-	-	-	-	
6	110 Bolton (corner of Copiague)	CB	5' (silted)	Y	Culex pipens	>100	1-4	0	1
7	112 Bolton (corner of Copiague)	CB	42" (to silt)	Y	Culex pipens	>50	1-4	0	2
8	Corner of Copiague/Paine	CB	6" (to silt)	Y	Culex pipens	>15	1,2,3	0	3
9	119 Copiague	LB			-	-	-	-	
10	Corner of Copiague/June St.	CB			-	-	-	-	
11	120 June St. (on Copiague)	CB	9"	Y	ND	ND	ND	ND	4
12	121 Copiague	CB	9"	Y	Culex pipens	>20	1-3	0	5
13	SE Corner of Copiague/Gladys	CB	18"	Y	Culex pipens	7	2-4	0	6
14	127 Irene (corner of Copiague)	CB	12"	Y	Culex pipens	>20	1-2	0	7
15	130 Irene (corner of Copiague)	CB	12"	Y	Culex pipens	>20	1-4	0	8
16	1299 Jackson Ave.	LB			-	-	-	-	
17	1288 Jackson Ave.	LB			-	-	-	-	
18	5 Sherbrooke Rd. (on Copiague)	CB			-	-	-	-	
19	SE Corner of Sherbrooke/Copiague	CB	2"	Y	ND	ND	ND	ND	9
20	North corner of Copiague/Heathcote	CB	>1"	N	-	-	-	-	
21	SW Coner of Copiague/51st St.	CB	too deep to measure	N	-	-	-	-	
22	Copiague (across from 51st St.)	CB			-	-	-	-	
23	510 50th St.	CB			-	-	-	-	
24	501 Copiague	CB			-	-	-	-	
25	442 48th St.	LB			-	-	-	-	
26	840 Jackson Ave.	LB			-	-	-	-	
27	Corner of Jackson/51st St.	LB			-	-	-	-	
28	NE Corner of Jackson/Heathcote	LB			-	-	-	-	
29	SE Corner of Jackson/Sherbrooke	LB			-	-	-	-	
30	1204 Jackson Ave.	LB			-	-	-	-	
31	1287 Jackson Ave.	CB			-	-	-	-	
32	11 Marie	CB			-	-	-	-	
33	110 Irene	CB	1.5'	Y	Culex pipens	1	3	0	10

Table 2
East Northport Drainage Structure Larvae Breeding Investigation

TOWN:	East Northport	**WEATHER:**	Partly sunny
DATE:	9/7/2004	**DATE OF LAST RAIN:**	8/30/2004

Number	ADDRESS	STRUCTURE (CATCH BASIN / LEACHING BASIN)	APPROXIMATE DEPTH OF WATER	LARVAE FOUND (Y/N)	SPECIES	# OF LARVAE	STAGE	PUPAE	SAMPLE NO.
1	SE Corner of 6th Ave and 6th Street	LB	Dry	N	-	-	-	-	-
2	NW Corner of 6th Ave and 6th Street	LB	Dry	N	-	-	-	-	-
3	525 5th Street	LB	Dry	N	-	-	-	-	-
4	549 5th Street	LB	Dry	N	-	-	-	-	-
5	525 4th Street	LB	Dry	N	-	-	-	-	-
6	508 3rd Street	CB	Dry	N	-	-	-	-	-
7	509 3rd Street	CB	Dry	N	-	-	-	-	-
8	Corner 7th Ave/3rd Street	CB	Dry	N	-	-	-	-	-
9	601 1st Street	CB	Dry	N	-	-	-	-	-
10	12 Sunrise Court	CB	> 10 ft	Y	Culex pipiens & Culex restuans	>100	1-4	0	1
11	12 Sunrise Court (across the street)	CB	> 10 ft	Y	Culex pipiens & Culex restuans	>50	1-4	1	2
12	Corner West Point/Sparkill	LB	Dry	N	-	-	-	-	-
13	7 Nyack Drive	CB	Dry	N	-	-	-	-	-
14	41 Kenilworth Drive (on Teaneck)	CB	Dry	N	-	-	-	-	-
15	11 Kenilworth Drive	CB	Dry	N	-	-	-	-	-
16	12 Kenilworth Drive	CB	Dry	N	-	-	-	-	-
17	51 Teaneck	CB	1.5 ft	N	-	-	-	-	-
18	6 Gildare	CB	Dry	N	-	-	-	-	-
19	5 Gildare	CB	Dry	N	-	-	-	-	-
20	10 Perth Path (Corner of Oakledge)	CB	> 10 ft	Y	Culex pipiens	>20	1,3,4	0	3
21	36 Oakledge	CB	Dry	N	-	-	-	-	-
22	20 Udell	CB	Dry	N	-	-	-	-	-
23	15 Udell	CB	> 5 ft	Y	Culex pipiens	7	1,2,3	0	4
24	33 Talcott Drive	CB	> 5 ft	Y	Culex pipiens	>40	1-4	5	5
25	34 Talcott Drive	CB	> 5 ft	Y	Culex pipiens	>20	2-4	0	6
26	1 Hanley Place	CB	Dry	N	-	-	-	-	-
27	1 Talcott Drive	CB	2 inches	Y	Culex pipiens	>20	1,2	0	7
28	2 Talcott Drive	CB	Dry	N	-	-	-	-	-
29	SE Corner of Jackson/Sherbrooke	LB			-	-	-	-	
30	1204 Jackson Avenue	LB			-	-	-	-	
31	1287 Jackson Avenue	CB			-	-	-	-	
32	11 Marie	CB			-	-	-	-	
33	110 Irene	CB	1.5'	Y	Culex pipens	1	3	0	10

Table 3
Smithtown Drainage Structure Larvae Breeding Investigation

TOWN:	Smithtown	**WEATHER:**	Sunny							
DATE:	8/30/2004	**DATE OF LAST RAIN:**	>2 weeks							
NUMBER	**ADDRESS**	**STRUCTURE (CATCH BASIN / LEACHING BASIN)**	**APPROXIMATE DEPTH OF WATER**	**LARVAE FOUND (Y/N)**	**Species**	**# of Larvae**	**Stage**	**Pupae**	**SAMPLE NO.**	
1	23 Grandview	LB	5'	Y	Culex pipiens	1	3	1	#1	
2	22 Grandview	LB	5'	N	-	-	-	-	-	
3	22 Grandview	LB	Dry	N	-	-	-	-	-	
4	26 Grandview	CB	Dry	N	-	-	-	-	-	
5	31 Grandview	CB	Dry	N	-	-	-	-	-	
6	33 Grandview	LB	Dry	N	-	-	-	-	-	
7	32 Grandview	LB	4'	N	-	-	-	-	-	
8	45 Grandview	CB	Dry	N	-	-	-	-	-	
9	46 Grandview	CB	5'	N	-	-	-	-	-	
10	90 Ledgewood (corner of Grandview)	LB	>10'	N					-	
11	56 Grandview	LB	Dry	Y	Culex pipiens	1	1	0	#2	
12	79 Grandview (across the street)	CB	Dry	N	-	-	-	-	-	
13	79 Grandview	CB	Dry	N	-	-	-	-	-	
14	79 Grandview	CB	Dry	N	-	-	-	-	-	
15	74 Grandview	LB	5'	N	-	-	-	-	-	
16	73 Grandview	LB	2'	Y	Culex pipiens	>30	2,3,4	0	#3	
TOWN:	Smithtown	**WEATHER:**	Sunny							
DATE:	9/7/2004	**DATE OF LAST RAIN:**	8/30/2004							
17	61 Lone Oak Path (on Ledgewood)	CB	1'	Y	Culex pipiens	4	3,4	0	#11	
18	17 Holly	CB	Dry	N	-	-	-	-	-	
19	18 Holly	CB	Dry	N	-	-	-	-	-	
20	27 McArthur (corner of Ledgewood)	CB	Dry	N	-	-	-	-	-	

Table 4
Wading River Drainage Structure Larvae Breeding Investigation

TOWN:	Wading River	**WEATHER:**	Overcast						
DATE:	8/30/2004	**DATE OF LAST RAIN:**	> 2 weeks						
NUMBER	**ADDRESS**	**STRUCTURE (CATCH BASIN /LEACHING BASIN)**	**APPROXIMATE DEPTH OF WATER**	**LARVAE FOUND (Y/N)**	**SPECIES**	**# OF LARVAE**	**STAGE**	**PUPAE**	**SAMPLE NO.**
1	18 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
2	18 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
3	11 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
4	11 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
5	12 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
6	12 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
7	1 Elms Lane (corner of Deerfield)	CB	Dry	N	-	-	-	-	-
8	1 Elms Lane	CB	Dry	N	-	-	-	-	-
9	18 Deerfield Drive	CB	Dry	N	-	-	-	-	-
10	18 Deerfield Drive (across the street)	CB	Dry	N	-	-	-	-	-
11	7 Elms Lane	LB	Dry	N	-	-	-	-	-
12	21 Hermitage Street	CB	Dry	N	-	-	-	-	-
13	18 Hermitage Street	CB	Dry	N	-	-	-	-	-
14	3 Hermitage Street	CB	Dry	N	-	-	-	-	-
15	5 Deerfield Drive	CB	Dry	N	-	-	-	-	-
16	1 Lyme Street (corner of Deerfield)	CB	Dry	N	-	-	-	-	-
17	9 Deerfield Drive	CB	Dry	N	-	-	-	-	-
18	7 Chip Lane	CB	Dry	N	-	-	-	-	-
19	6 Chip Lane	CB	Dry	N	-	-	-	-	-
20	3 Hemlock	CB	Dry	N	-	-	-	-	-
21	4 Hemlock	CB	Dry	N	-	-	-	-	-
22	14 Amber Drive	CB	Dry	N	-	-	-	-	-
23	14 Amber Drive	CB	Dry	N	-	-	-	-	-
24	15 Amber Drive	CB	2"	N	-	-	-	-	-
25	15 Amber Drive	CB	Dry	N	-	-	-	-	-
26	4 Caroline Drive	CB	Dry	N	-	-	-	-	-
27	4 Caroline Drive (across the street)	CB	Dry	N	-	-	-	-	-
28	20 E. Amber Drive	CB	2"	N	-	-	-	-	-
29	21 E. Amber Drive	CB	Dry	N	-	-	-	-	-
30	15 Maria Court	CB	Dry	N	-	-	-	-	-
31	15 Maria Court	CB	Dry	N	-	-	-	-	-
32	30 E. Amber Drive	CB	Dry	N	-	-	-	-	-
33	30 E. Amber Drive	CB	Dry	N	-	-	-	-	-
34	31 E. Amber Drive	CB	Dry	N	-	-	-	-	-
35	31 E. Amber Drive	CB	Dry	N	-	-	-	-	-
36	6 Betsy	CB	Dry	N	-	-	-	-	-
37	6 Betsy	CB	Dry	N	-	-	-	-	-
38	3 Betsy	CB	Dry	N	-	-	-	-	-
39	3 Betsy	CB	Dry	N	-	-	-	-	-
40	12 Betsy	CB	6"	N	-	-	-	-	-
41	12 Betsy	CB	Dry	N	-	-	-	-	-

Table 4 - (continued)

TOWN:	Wading River	WEATHER:	Partly sunny
DATE:	9/7/2004	DATE OF LAST RAIN:	8/30/2004

NUMBER	ADDRESS	STRUCTURE (CATCH BASIN/ LEACHING BASIN)	APPROXIMATE DEPTH OF WATER	LARVAE FOUND (Y/N)	SPECIES	# OF LARVAE	STAGE	PUPAE	SAMPLE NO.
1	18 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
2	18 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
3	11 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
4	11 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
5	12 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
6	12 Shelter Harbor Court	CB	Dry	N	-	-	-	-	-
7	1 Elms Lane (corner of Deerfield)	CB	Dry	N	-	-	-	-	-
8	1 Elms Lane	CB	Dry	N	-	-	-	-	-
9	18 Deerfield Drive	CB	2"	N	-	-	-	-	-
10	18 Deerfield Drive (across the street)	CB	Dry	N	-	-	-	-	-
11	7 Elms Lane	LB	Dry	N	-	-	-	-	-
12	21 Hermitage Street	CB	Dry	N	-	-	-	-	-
13	18 Hermitage Street	CB	Dry	N	-	-	-	-	-
14	3 Hermitage Street	CB	Dry	N	-	-	-	-	-
15	5 Deerfield Drive	CB	Dry	N	-	-	-	-	-
16	1 Lyme Street (corner of Deerfield)	CB	Dry	N	-	-	-	-	-
17	9 Deerfield Drive	CB	Dry	N	-	-	-	-	-
18	7 Chip Lane	CB	Dry	N	-	-	-	-	-
19	6 Chip Lane	CB	Dry	N	-	-	-	-	-
20	3 Hemlock	CB	Dry	N	-	-	-	-	-
21	4 Hemlock	CB	Dry	N	-	-	-	-	-
22	14 Amber Drive	CB	Dry	N	-	-	-	-	-
23	14 Amber Drive	CB	Dry	N	-	-	-	-	-
24	15 Amber Drive	CB	Dry	N	-	-	-	-	-
25	15 Amber Drive	CB	Dry	N	-	-	-	-	-
26	4 Caroline Drive	CB	Dry	N	-	-	-	-	-
27	4 Caroline Drive (across the street)	CB	Dry	N	-	-	-	-	-
28	20 E. Amber Drive	CB	>1"	N	-	-	-	-	-
29	21 E. Amber Drive	CB	Dry	N	-	-	-	-	-
30	15 Maria Court	CB	4"	N	-	-	-	-	-
31	15 Maria Court	CB	>1"	N	-	-	-	-	-
32	30 E. Amber Drive	CB	Dry	N	-	-	-	-	-
33	30 E. Amber Drive	CB	Dry	N	-	-	-	-	-
34	31 E. Amber Drive	CB	>1"	N	-	-	-	-	-
35	31 E. Amber Drive	CB	Dry	N	-	-	-	-	-
36	6 Betsy	CB	Dry	N	-	-	-	-	-
37	6 Betsy	CB	Dry	N	-	-	-	-	-
38	3 Betsy	CB	Dry	N	-	-	-	-	-
39	3 Betsy	CB	Dry	N	-	-	-	-	-
40	12 Betsy	CB	6"	N	-	-	-	-	-
41	12 Betsy	CB	Dry	N	-	-	-	-	-

Appendix 2

Location Maps

Drainage Structure Larvae Breeding Investigation
North Lindenhurst Area

Map 1

Drainage Structure Larvae Breeding Investigation
East Northport Area

Map 2

Drainage Structure Larvae Breeding Investigation
Smithtown Area

Map 3

Drainage Structure Larvae Breeding Investigation
Wading River Area

Map 4