Request for the Protection of the Hydrologic System within the Hamlet of Wainscott

From the Environmental Sub-Committee of the Wainscott Citizens' Advisory Committee

January 31, 2017

Harry L. Dodson
Dodson & Flinker
40 Main Street, Suite 101
Florence, Massachusetts 01062

sent via eMail only

Dear Mr. Dodson,

The Environmental Sub-Committee (ESC) of the Wainscott Citizens' Advisory Committee (WCAC) request that the Wainscott Hamlet Study include greater protection for the hydrologic system within the Hamlet of Wainscott. The hydrologic system comprises the interrelationship between groundwater (aquifers), surfacewater (ponds, tributaries, beaches and lakes) and watersheds (catchment areas).

The Central Business District (CBD) within Wainscott (including the industrial area), has a direct impact upon the hydrologic system. If Wainscott is to continue to have uncontaminated fresh water, the CBD's impact upon the hydrologic system has to be taken into consideration in the Wainscott Hamlet Study.

As you are aware, within the Hamlet of Wainscott is the single largest watershed catchment area that remains largely free from dense urban development. This catchment area filters water directly into the aquifers beneath that serve as the main reservoirs of fresh drinking water for the Town of East Hampton. Not only do these catchment areas offer natural protection for our fresh water, but they also feed the unique ecosystems and wildlife refuges of Georgica Pond, Wainscott Pond, and the beaches along the Atlantic Ocean. This is Wainscott's micro-hydrologic system.

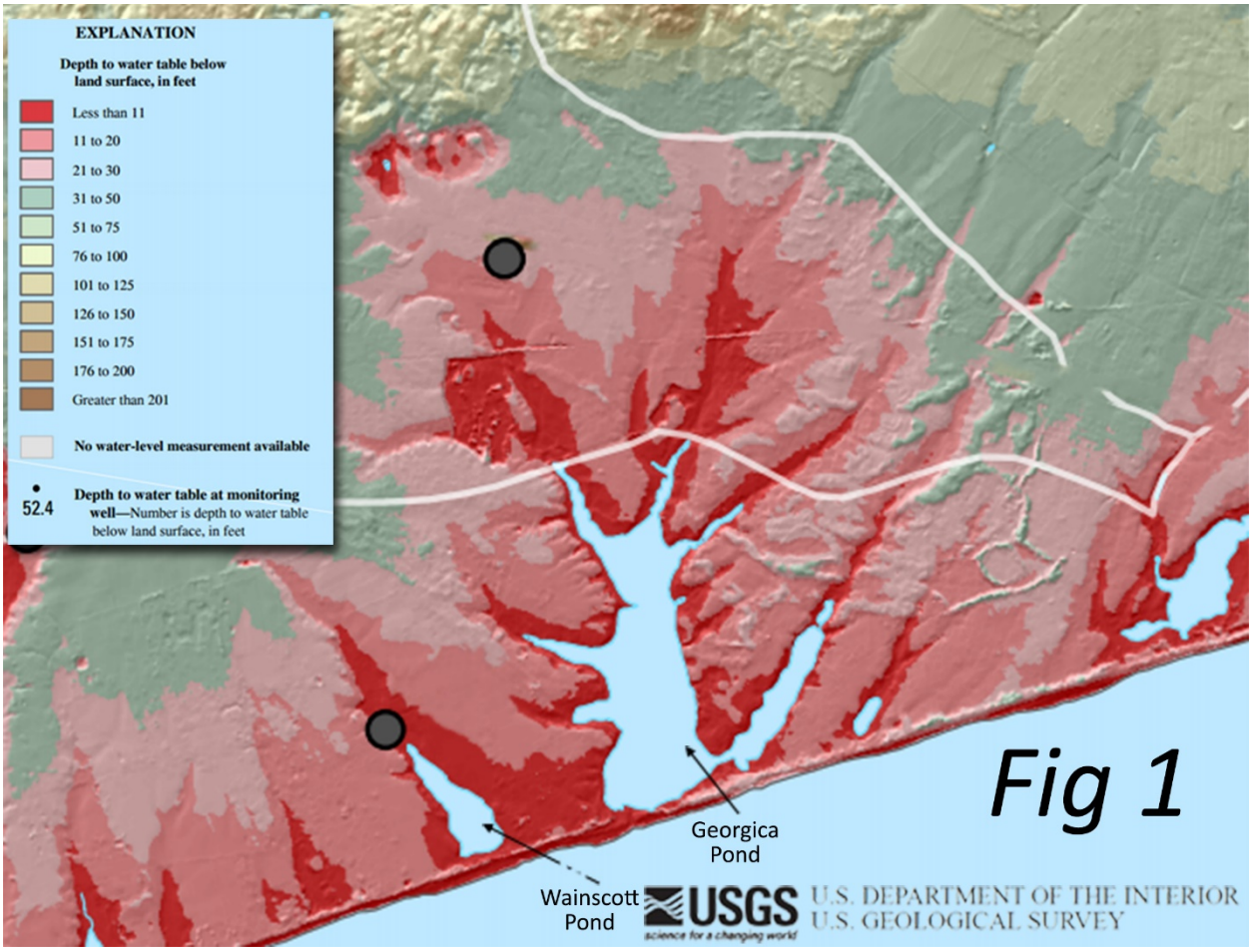
The catchment areas, aquifers, ponds and beaches are inextricably linked by a hydrologic system that needs to be treated as a singular whole system. By treating in isolation only one subset of the hydrologic system, we ignore potential issues upstream at the source and also potential ramifications downstream. For example, by treating nitrate contamination in private drinking water wells by installing reverse osmosis systems, home owners will eliminate excessive nitrate contamination from their drinking water, but the underlying groundwater contamination from excessive nitrogen loading at the source will continue to feed the problem, thereby requiring home replacement of reverse osmosis filters *ad infinitum*. Home reverse osmosis systems would be a temporary solution that would serve to mask the underlying problem. Without addressing the whole hydrologic system, whatever solution we implement would be at best temporary.

Despite admirable efforts to protect Wainscott's hydrologic system with designations such as the East Hampton Town Water Recharge Overlay and the Harbor Protection Overlay, a significant part of Wainscott remains unprotected and its environment is suffering as a direct consequence.

New Designated Area of Protection

The US Department of the Interior in US Geological Survey Circular 1139 (published 1999) identifies "*shallow aquifers that are directly connected to surface water*", such as Wainscott Pond and Georgica Pond, as containing "*much of the ground-water contamination in the United States*". This circular continues: "*In general, shallow ground water is more susceptible to contamination from human sources and activities because of its close proximity to the land surface."*

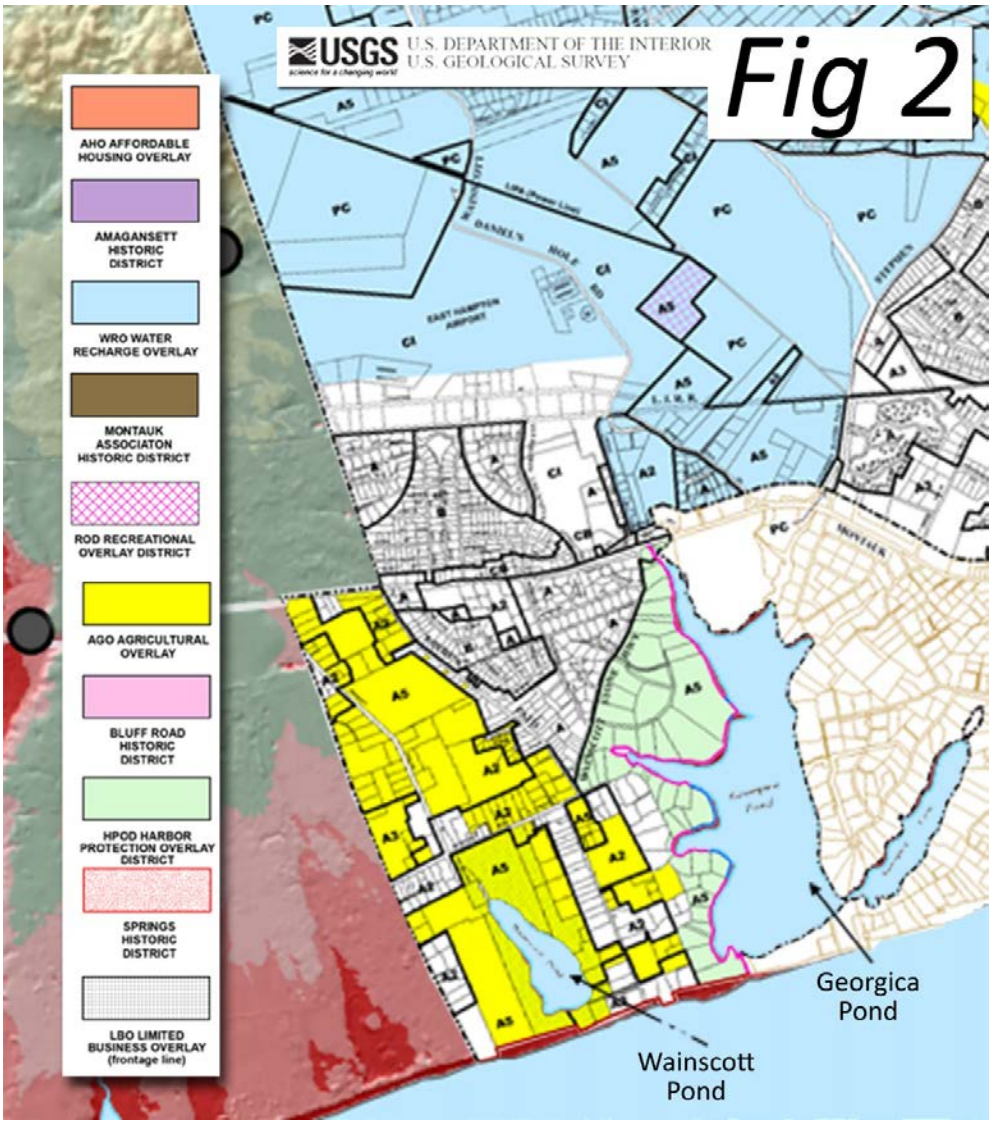
Despite the susceptibility of Wainscott's shallow aquifers which are directly connected within the hydrologic system to both Wainscott Pond and Georgica Pond, the only area within Wainscott that offers some degree of protection is the deeper groundwater aquifer beneath the East Hampton Water Recharge Overlay. The more susceptible shallow aquifer immediately to the north and adjacent to Wainscott and Georgica Ponds is marked in red on the US Geological Survey (see Fig 1).



The Town of East Hampton Zoning Map for Wainscott (see Fig 2), shows the Water Recharge Overlay stopping about the southern boundary of East Hampton Airport (the blue shaded area in Fig 2 below). Notably, the Water Recharge Overlay excludes the industrial area incongruously located in the centre of Wainscott (and also excludes Wainscott's entire CBD along Montauk Highway).

It could be argued convincingly that where the aquifer is most susceptible is exactly where East Hampton Town has historically permitted industrial activities which are of the greatest threat to the fresh water aquifer.

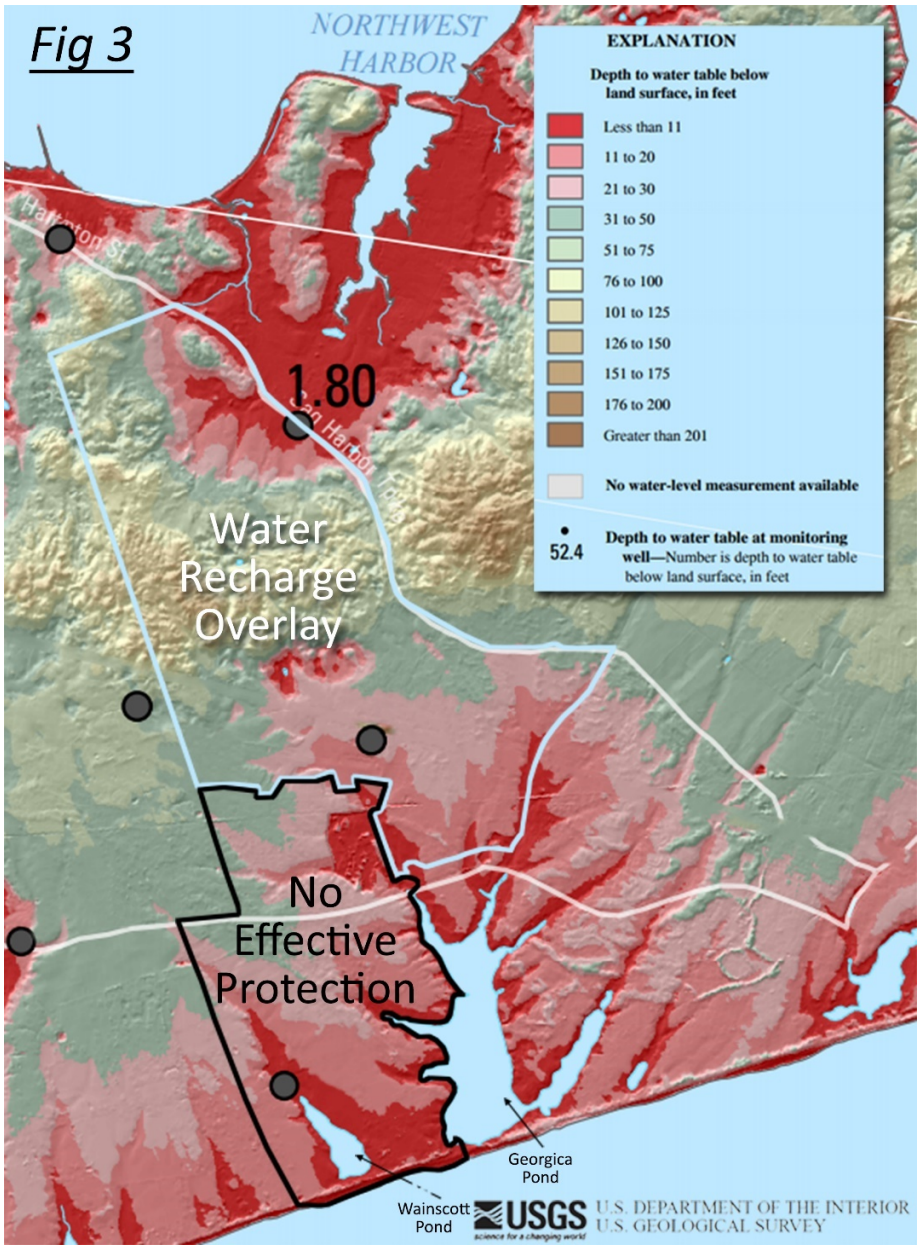
The two other designated areas, namely the Agricultural Overlay (shaded in yellow in Fig 2 below) and the Harbor Protection Overlay (shaded in green in Fig 2 below), offer the micro-hydrologic system immediately about Wainscott and Georgica Ponds limited protection from human activities on the land surface where it tapers off to meet the surface water.



Within Wainscott there is no effective protection afforded the more susceptible shallow aquifer immediately to the north and adjacent to Wainscott and Georgica Ponds (please see Fig 3).

The consequences of not protecting our water are far reaching. The hydrologic system is our sole source of fresh drinking water and its delicate ebb and flow support not only aquatic life, but birds, otters, and other pond dwellers. Our water is our greatest source of pleasure, enjoyment, recreation and hence property values.

We already can see consequences of the misuse of land and subsequent contamination of groundwater with excessive nutrients. A few years ago we could fish or go crabbing in Georgica Pond, but due to nitrogen contamination and subsequent cyanobacteria and related toxins, fishing and crabbing are now too dangerous.



Excessive Nitrogen & Phosphorous

Only a few years ago, local baymen, Wainscott families, and visitors could harvest blue crabs, trap eels, and catch white bait and white perch directly from Georgica Pond – but our ponds are now closed to fishing and crabbing due to dangers posed by microcystin (a gastrointestinal toxin) and anatoxin (an acute neurotoxin). Both toxins are synthesised by cyanobacteria.

At the request of the WCAC in April 2016, the Trustees of the Town of East Hampton voted to approve sampling Wainscott Pond weekly (beginning May, 2016) for analysis by Professor Christopher J. Gobler, Ph.D. of the School of Marine and Atmospheric Sciences at Stony Brook University. The results (below and overleaf) are cause for concern.

The table below lists the cyanobacteria and toxins that were detected in Georgica and Wainscott Ponds last summer[1].

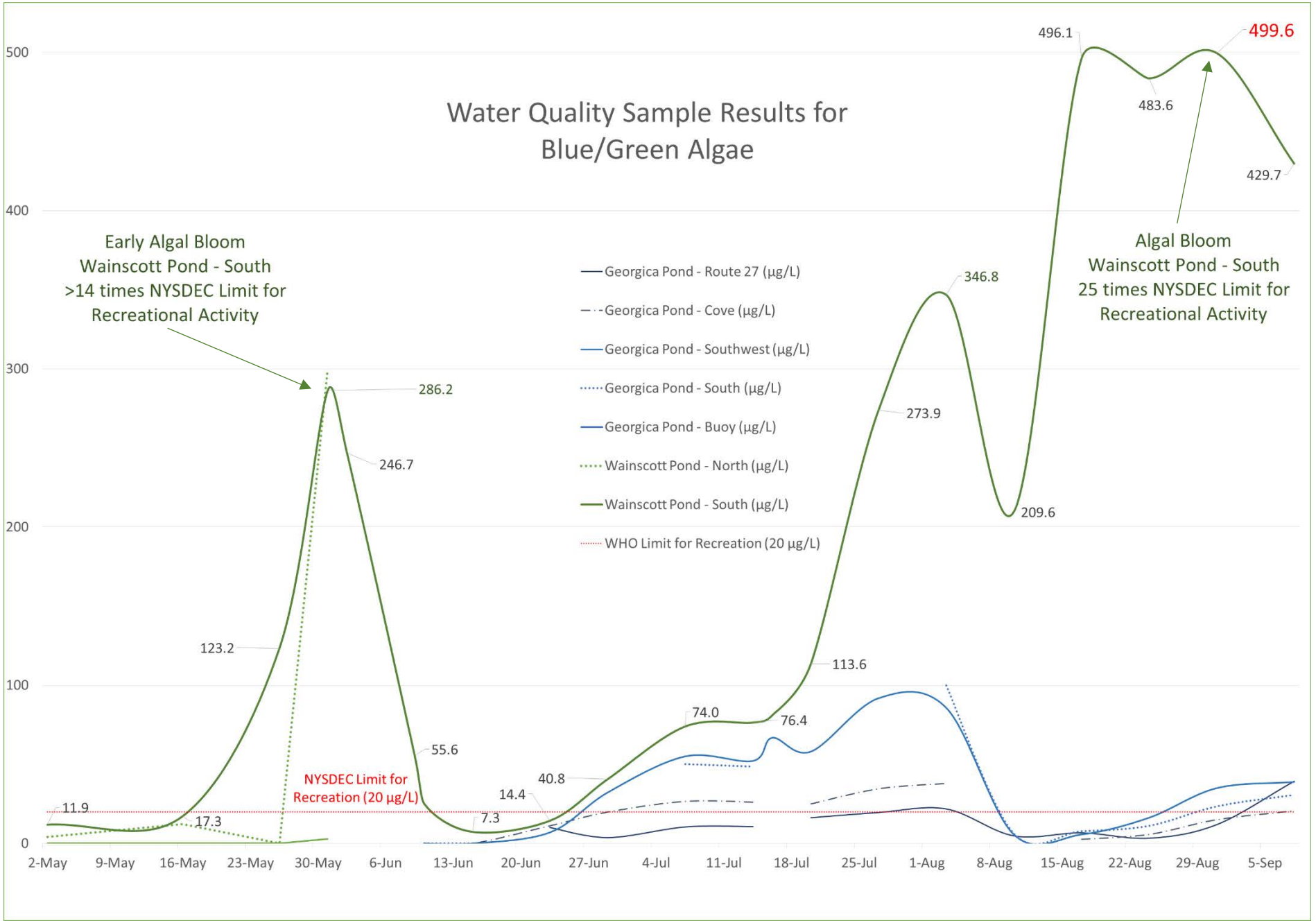
Cyanobacteria Genus	Toxin Synthesis Class	Dates Detected in Wainscott Pond	Dates Detected in Georgica Pond
Anabaena spiroides	Neurotoxins, Hepatotoxins & Dermatotoxins	May 31 / June 2 & 9 / July 20 & 27 / August 3, 10, 17, 24 & 31 / September 8	July 7 & 14 / August 3 & 9
Aphanocapsa	Hepatotoxins & Dermatotoxins	June 29	
Aphanizomenon	A cyanobacteria known to produce Cylindrospermopsin (hepatotoxin & nephrotoxic), Anatoxin-a (acutely neurotoxic), Saxitoxin (potently neurotoxic) and BMAA (neurotoxin)		June 29 / July 7, 14, 16, 20 & 27 / August 3 & 9
Planktothrix			August 3 & 9
Microcystis viridis	Hepatotoxins	July 14 & 20 / August 10, 17, 24 & 31 / September 8	

Hepatotoxins: disrupt proteins that keep the liver functioning.
Neurotoxins: cause rapid paralysis of skeletal and respiratory muscles.
Dermatotoxins: produce rashes and other skin reactions.
Nephrotoxins: poisonous effect of the kidney.

The graph (overleaf) highlights the dangerous situation with regard to Wainscott Pond, which had an average concentration of cyanobacteria last summer[2] of 186 µg/L, with a high of 499.6 µg/L. The high was recorded on August 31, 2016 and was twenty-five times the NYSDEC limit of 20 µg/L.

Due to the tremendous work done by The Friends of Georgica Pond Foundation, Inc., Georgica Pond had a significantly lower average concentration of cyanobacteria during last summer[2] than did Wainscott Pond, although the average concentration of cyanobacteria in Georgica Pond was still too high at 30 µg/L with a high of 99.8 µg/L. The high was recorded on August 3, 2016 and was five times the NYSDEC limit.

[1] From May 2, 2016 to September 8, 2016
[2] From May 2, 2016 to September 8, 2016


Water Quality Sample Results for Blue/Green Algae
Early Algal Bloom
Wainscott Pond - South
>14 times NYSDEC Limit for Recreational Activity
Algal Bloom
Wainscott Pond - South
25 times NYSDEC Limit for Recreational Activity
Georgica Pond - Route 27 (µg/L)
Georgica Pond - Cove (µg/L)
Georgica Pond - Southwest (µg/L)
Georgica Pond - South (µg/L)
Georgica Pond - Buoy (µg/L)
Wainscott Pond - North (µg/L)
Wainscott Pond - South (µg/L)
WHO Limit for Recreation (20 µg/L)
NYSDEC Limit for Recreation (20 µg/L)
499.6
496.1
483.6
429.7
346.8
286.2
273.9
246.7
209.6
123.2
113.6
74.0
76.4
55.6
40.8
14.4
11.9
17.3
7.3
500
400
300
200
100
0
2-May
9-May
16-May
23-May
30-May
6-Jun
13-Jun
20-Jun
27-Jun
4-Jul
11-Jul
18-Jul
25-Jul
1-Aug
8-Aug
15-Aug
22-Aug
29-Aug
5-Sep

Cyanobacteria have also been detected in groundwater in the vicinity of Wainscott Pond. Thirteen samples taken between July 14 and 18, 2016, from a private well used for drinking-water that borders Wainscott Pond, all showed evidence of cyanobacteria with an average cyanobacteria concentration of 0.45 µg/L and a recorded high of 0.65 µg/L (on July 16, 2016). Although these levels are all below generally excepted Maximum Contamination Levels (MCL's), it should be noted that it is the first time we have detected cyanobacteria in fresh water drawn from the shallow aquifer.

Human fatalities due to cyanotoxin poisoning are very rare. The last known case occurred in Brazil (1988) following the flooding of the newly constructed Itaparica Dam in Bahia State. Some 2000 cases of gastroenteritis were reported resulting in 88 deaths[3]. In 2016, a blue-green algae bloom in Utah Lake[4] resulted in more than 100 individuals exposed to the bloom. experiencing vomiting, diarrhoea, fever, skin and eye irritation, and rashes.

We are pleased to say that we know of no one on the South Fork of Long Island who has been hospitalised due to cyanotoxin poisoning, but the threat of illness still remains a real possibility. Recent examples of animal deaths/illnesses resulting from cyanotoxin poisoning (caused by excessive nitrogen and phosphorous) occurred in –

- 2016, August – A dog drinking from Mecox Bay, Southampton, sickened.
- 2015, May 30 – Low oxygen levels caused a massive fish kill in Riverhead.
- 2015, May 13 – A toxic red tide caused by the algae *Alexandrium* which killed hundreds of diamondback terrapins that ate mussels containing *Alexandrium* and its 'saxitoxin' along Flanders Bay beaches.
- 2015 – Canine cyanotoxin poisoning, which sickened two dog that drank from Fort Pond.
- 2012 – Canine cyanotoxin poisoning, which killed a dog that drank from Georgica Pond.

Other Contaminants

Excessive nitrogen and phosphorous is the most immediate contamination problem we are facing, but there are other contaminants that should not be ignored. Wainscott still has residues of chemical contaminants in its groundwater which include: aldicarb (Temik), Chlordane, Alachlor, Dinoseb, dichloropropene, etc. which are results of past incidences of neglect. It would not do Wainscott any good to repeat past mistakes with new contaminants. New contaminants include, but are not limited to: hexavalent chromium, diethylene dioxane (1,4 dioxane), herbicides, insecticides, and unnecessary and excessive use of fertilizers (which contains phosphorous).

Please see request for the protection of the hydrologic system within Wainscott overleaf …

[3] Teixera et al., 1993

[4] http://deq.utah.gov/Divisions/dwq/health-advisory/harmful-algal-blooms/bloom-2016/utah-lake-jordan-river

Request

With the aim of protecting the hydrologic system within Wainscott, we request that –

1. A new area designated for the protection of Wainscott's groundwater, surfacewater and watershed be created to include the area marked "No Effective Protection" (see Fig 3 above) –

    - Eastern Boundary: From the Atlantic Ocean along the western shoreline of Georgica Pond to where it meets to Montauk Highway, and from there northward along Hedges Lane to Industrial Road (including lots immediately north of Industrial Road);
    - Northern Boundary: From Daniel's Hole Road along Industrial Road (including lots immediately north of Industrial Road) to Town Line Road;
    - Western Boundary: From Industrial Road along Town Line Road to the Atlantic Ocean; and,
    - Southern Boundary: From Town Line Road along the Atlantic Ocean (mean high-water mark) to where Georgica Pond meets the Atlantic Ocean.

    This new area designated for the protection of water includes the –

    - Entire business district of Wainscott along Montauk Highway
    - Industrial area within Wainscott which hosts operations which currently release contaminants into the water aquifer
    - Residential neighbourhoods
    - Farmland

    It is recognised that such an area of protection requires input, co-operation and agreement with existing property owners, especially those property owners who derive their livelihood from farming and depend upon farming activities. No new area of water protection can, nor should, be proposed without agreement among local residents and farmers.

2. The residential neighbourhoods around both Georgica Pond and Wainscott Pond be designated areas of critical priority with the regard to the installation of nitrogen-reducing cesspool systems;

3. Regulations/guidelines on excessive use of herbicides, insecticides and fertilizers be developed to minimize further contamination of the groundwater, surfacewater and watershed within Wainscott, including within the newly designated area of water protection (referred to in paragraph 1 above);

4. Monitoring of excessive withdraws of groundwater from the hydrologic system with an enquiry as to whether penalties or restrictions are necessary to discourage excessive withdrawals; and,

5. Funding be sought for a study to provide critical information regarding data gaps that –

   - Support the long-term LI NAP, including detailed documentation on the impact of excessive nitrogen loading and excessive use of phosphates about Wainscott Pond and Georgica Pond;
   - Include detailed analysis of groundwater flows and the hydrologic systems that feed into both Wainscott Pond and Georgica Pond;
   - Document the ecosystems of both Georgica Pond and Wainscott Pond, including the flora and fauna (breeding life-cycles). Please note that Wainscott Pond is a wildlife refuge and that Georgica Pond is used for fishing and crabbing.
   - Any funding should be directed towards to an independent scientific organisation commissioned to undertake the study with preference given to a locally-based body of University students/scientists.

We submit this request to the consulting firm of Dodson & Flinker, that is conducting the Wainscott Hamlet Study on behalf of the Town of East Hampton, documenting our findings, requesting assistance and to raise awareness of the issue of hydrologic contamination in Wainscott, and to establish a path forward that includes a comprehensive public health and environmental response.

We ask Dodson & Flinker to review and to investigate the continuing problems plaguing our hydrologic system, and to develop priorities for local agencies to respond and to address our concerns regarding contaminated water.

Respectfully submitted,

Si Kinsella
On behalf of the Environmental Sub-Committee
of the Wainscott Citizen's Association

c/c: Larry Cantwell, Town Supervisor
Peter Van Scoyoc, Deputy Supervisor
Kathee Burke-Gonzalez, Council Person
Sylvia Overby, Council Person
Fred Overton, Council Person
via eMail

Wainscott Citizens' Advisory Committee (WCAC)
via eMail to individual members

Environmental Sub-Committee (of the WCAC)
via eMail to individual members

Trustee Rick Drew
Trustees of the Freeholders and Commonalty of the Town of East Hampton
via eMail

Executive Director Sara Davison
Friends of Georgica Pond Foundation, Inc.
via eMail

Professor Christopher J. Gobler, Ph.D.
School of Marine & Atmospheric Sciences
Stony Brook University
via eMail

Director Nancy Kelley
The Nature Conservancy
Long Island Chapter
via eMail

Senator Kemp Hannon
Chair, Senate Health Committee
The Senate, State of New York
State Capitol, Room 420
Albany, NY 12247

Commissioner Basil Seggos
Department of Environmental Conservation
625 Broadway
Albany, NY 12233-1010

Senator Tom O'Mara
Chair, Senate Environmental Conservation Committee
Legislative Office Building, Room 307
Albany, NY 12247

Associate Editor Joanne Pilgrim
The East Hampton Star
via eMail