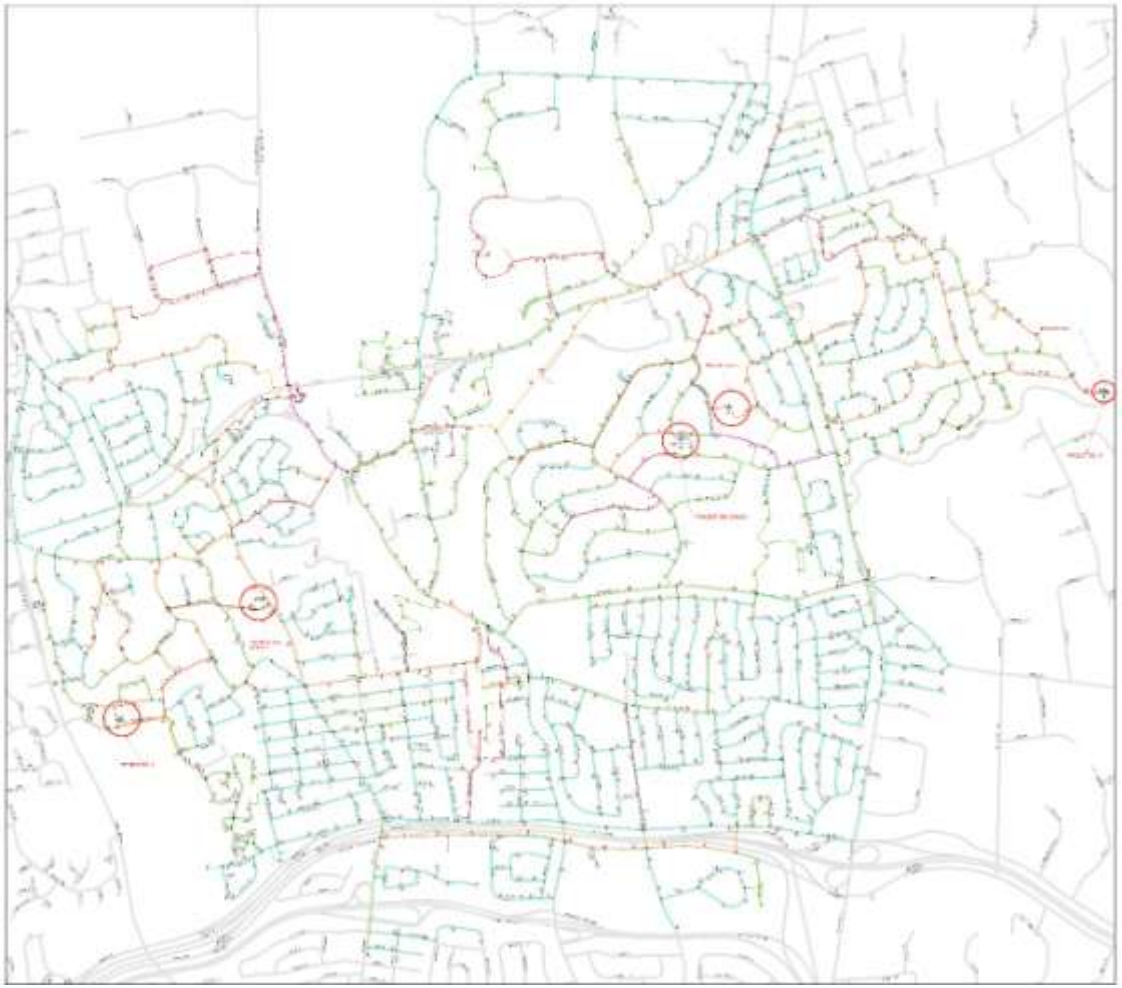

ROSLYN WATER DISTRICT
100 YEARS OF SERVICE 1910 - 2010
ROSLYN WATER DISTRICT
SERVING THE COMMUNITY FAITHFULLY SINCE 1910
www.roslynwater.org

Introduction

Overview of Roslyn Water District

- Roslyn Water District was created in 1910 as a special improvement District of the Town of North Hempstead
- Roslyn Water District serves these villages in their entirety:
  - ✓ Roslyn
  - ✓ East Hills
  - ✓ Roslyn Estates
- Roslyn Water District also serves portions of :
  - ✓ The Incorporated Villages of North Hills, Flower Hill and Roslyn Harbor
  - ✓ The Town of North Hempstead including Albertson and Glenwood

Roslyn District Map



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Source of Roslyn Water

- Water is supplied from 8 deep wells, each on a separate well site
- Roslyn Water District includes 3 storage tanks, 3 booster pumping stations and approximately 93 miles of water mains

Roslyn Well Supply Facilities

Water District Well No.	NYSDEC No.	Plant Location	Year Drilled	Authorized Capacity (GPM)
1	N-1870	West Shore Road	1911	1,100
	N-1871		1911	
	N-1872		1911	
	N-1873		1911	
	N-1874		1925	
	N-1875		1925	
	N-1876		1930	
	N-1877		1930	
2	N-2400	Locust Lane	1948	1,000
3	N-4265	Glen Cove Road	1954	1,200
4	N-4623	Diana's Trail	1955	1,200
5	N-5852	Sycamore Drive	1956	1,200
6	N-7104	Partridge Drive	1962	1,200
7	N-7873	End of Tara Drive	1966	1,200
8	N-8010	Mineola Avenue	1967	1,200

Roslyn Storage Tank Capacities

Tank No.	Water District Plant No.	Authorized Design Capacity (MG)	Style	Range	Ground Elevation	Overflow Elevation*	Last Rehabilitation
1 (Diana's Trail)	4	1.0	Standpipe	65'	278'	343'	2002
2 (Birch Drive & Cypress Drive)	Separate Site	3.0	Ground Storage Tank	40'	303'	343'	1997
3 (Tara Drive)	7	2.0	Standpipe	72'	271'	343'	1996
	Total Storage	**6.0**					

LEGEND:
MG – Million Gallons
* - Above Mean Sea Level (MSL)

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Water System Demands

Peak Day- Well capacity with largest well out of service

Peak Hour- System capacity (well capacity + draw from tank) with largest facility out of service

Water System Demands

The District requires system capacity from Well No. 4 to meet peak hour demands

Average Winter Day	68,750 gal/hr	1.65 MGD
Average Day (Annual)	155,400 gal/hr	3.73 MGD
Average Summer Day	291,700 gal/hr	7.00 MGD
Historical Maximum Daily Usage	387,000 gal/hr	9.29 MGD
Historical Peak Usage (Early Morning)	908,300 gal/hr	21.8 MGD

Timeline

January 2013 –
Authorize Master Plan

February 2013 –
Well No. 1 taken offline

August 2013 –
NCDH sends letter informing of low level detection of Freon-22

October 2013 –
Master Plan approved

October 2013 -
Engineering Report Authorized for VOC treatment at Well No. 4

November 2013 -
Well No.4 voluntarily removed from service

Timeline Cont'd

November 2013 –

Declare Emergency Resolution 2013 – 17 Revise capital plan

November 2013 –

Authorized Emergency Wellhead Treatment Design at Well No. 4

December 2013 –

Notified Glenwood Water District of termination of contract effective June 1, 2014

Proposed Improvement Projects

Proposed Improvement Projects

Projects included in Bond

	PROJECT		ESTIMATED COST
1.	Rehabilitation of Tara Drive Standpipe	$	1,300,000
2.	New Well and Pump Station	$	5,700,000
3.	Wellhead Treatment of Plant No. 4	$	3,950,000
4.	Acquisition of Future Site	$	1,900,000
5.	Rehabilitation of Birch Drive Ground Storage Tank	$	600,000
6.	Rehabilitation of Birch Drive Booster Station	$	1,420,000
7.	Booster Pump at Plant No. 5	$	525,000
8.	Emergency Generator at Plant No. 8	$	385,000
9.	Electrical Upgrade at Plant No. 7	$	490,000
10.	Wellhead Treatment of Plant No. 8	$	3,375,000
11.	Distribution System Improvements	$	1,250,000
		TOTAL $	**20,895,000**
Capital Reserve Fund Projects			
12.	Wellhead Treatment of Plant No. 1	$	800,000
13.	Tara Drive Transmission Main	$	900,000
		TOTAL $	**1,700,000**
	Total for Bond and Capital Reserve Improvement Projects	**$**	**22,595,000**

Rehabilitation of Tara Drive Standpipe

Tank was last rehabilitated in 1996. The tank is due for a new interior and exterior coating system.

New Well and Pump Station

Acquisition of land and a new well and pump station to provide peak hour demands and additional capacity to system

Wellhead Treatment of Plant No. 4

Well is currently out of service. New air stripping wellhead treatment system proposed to bring well back into service.

Acquisition of Future Site

Future well site to provide additional capacity as well as provide replacement capacity for existing wells

Rehabilitation of Birch Drive Ground Storage Tank and Booster Station

- Interior tank repairs and exterior coating system
- Rehabilitation of existing booster pumps and electrical service. Booster pumps and electrical service are original construction built in 1962.

Booster Pump at Plant No. 5

Provide backup for Birch Drive high zone

Emergency Generator and Wellhead Treatment at Plant No. 8

- Provide emergency power for the well and proposed new wellhead treatment system
- Preemptive wellhead air stripping treatment system

Electrical Upgrade at Plant No. 7

Replacement of existing electrical service and motor controls. Electrical service is original construction built in 1965

Distribution System Improvements

New water main installations required to improve distribution system and hydraulically connect new wells

Wellhead Treatment of Plant No. 1

New wellhead granular activated carbon treatment system. Well is currently out of service.

Tara Drive Transmission Main

Connection of Tara Drive well and standpipe to the low zone. Project will allow Birch Drive tank to be removed from service for rehabilitation.

Financial Impact

After Full Drawdown of Bond, Cost to Average Residence Valued at $658,000

Annual Tax Increase	$153.65
Monthly Tax Increase	$12.81

Diana's Trail

Existing Pump Station

Existing Booster Station

Existing 1.0 MG Standpipe

Detected Contaminants at Diana's Trail

Table of Detected Contaminants				
Contaminant	Maximum Level Detected in 2013	Unit Measurement	Regulatory Limit (MCL, TT or AL)	Likely Source of Contamination
1,1,1-Trichloroethane	1.1	µg/L	MCL = 5	Discharge from metal degreasing sites and other factories.
1,1-Dichloroethane	1.7	µg/L	MCL = 5	Released into the environment as fugitive emissions and in wastewater during production and use as a chemical intermediate solvent; used in vinyl chloride manufacturing; chlorinated solvent intermediate; coupling agent in anti-knock gasoline; degreasing agent.
Dimethyl tetrachloroterephthalate	4.6	µg/L	MCL = 50	Released to the environment through its use and application as an agricultural herbicide used on a wide range of vegetable crops.
Dichlorodifluoromethane	1.2	µg/L	MCL = 5	Used as a refrigerant.
1,1-Dichloroethene	0.6	µg/L	MCL = 5	Industrial chemical factories
Chlorodifluoromethane	4.3	µg/L	MCL = 5	Used as a refrigerant

Alternatives

- New well site
- Deepen screen zone
- Use of interconnections
- Treatment (BAT – Best Available technologies for VOC removal)
  - Granular Activated Carbon (GAC)
  - Packed Tower Aeration (Air stripping)

New Well Site

- District is already looking for 2 new wells to increase capacity to meet design demands
- District authorized well site search. The District needs to control a 200 ft. radius around any new well.
- Sites are limited – 2 sites have been targeted
- Cost = $5.7 million including land acquisition
- Water quality, water quantity, system hydraulics

New Well Site

Acquisition of Land

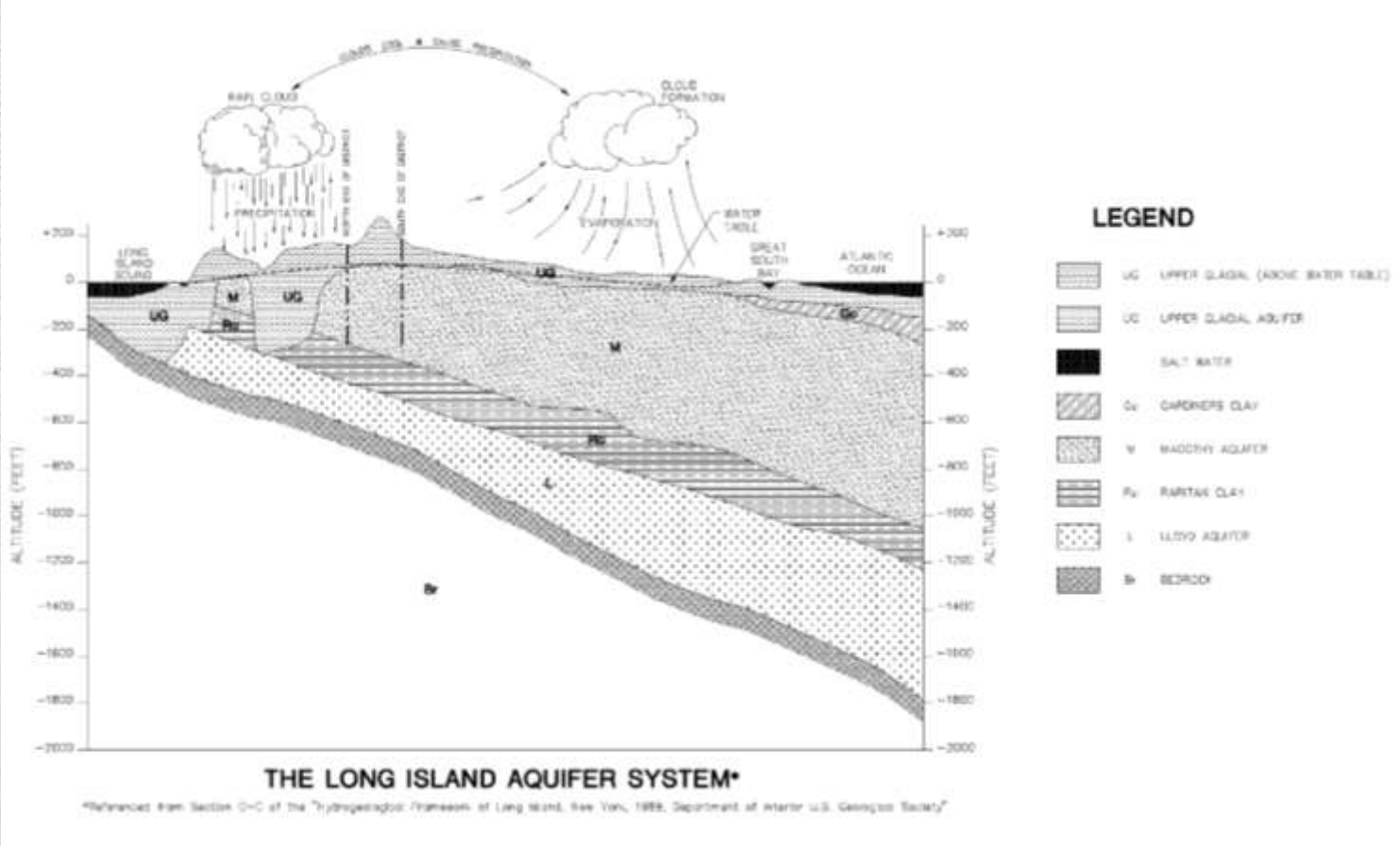
- Locate property and agree to terms with Owner
- Construct well, evaluate water quality and quantity (3 months)
- Acquire land (if site is parkland, expect 1-1$\frac{1}{2}$ years for approval after agreeing to terms)

Design, Construction and Regulatory Review

- Engineering Report and NYSDEC approval of Well (9 months)
- Well Design, Health Department approval of plans (4 months)
- Well construction, pump station design, Health Department approvals (6 months)
- Pump station construction (9 months)

Approximate time after agreeing to terms for land: 3 years, 6 months to 4 years

Long Island Aquifer System



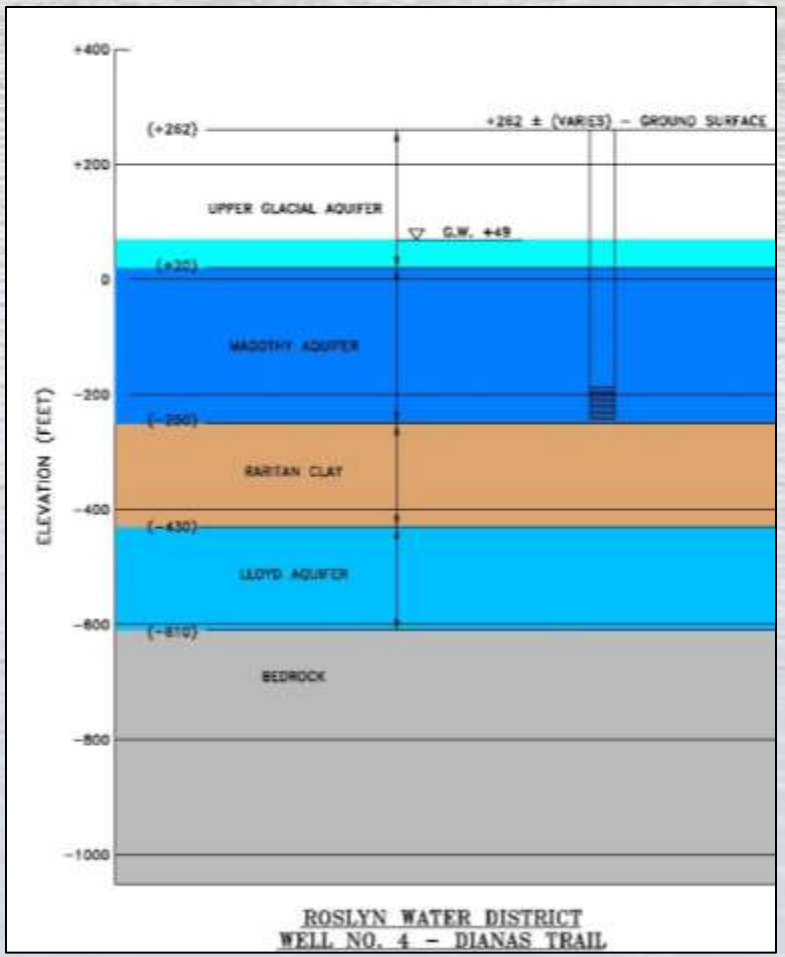
THE LONG ISLAND AQUIFER SYSTEM*

*Referenced from Section C-C of the "Hydrogeological Framework of Long Island, New York, 1999, Department of Interior U.S. Geological Society"

Deepen Well

- Lower screen zone
- NYSDEC and Nassau County Health Department do not like and do not accept this strategy
- Diana's Trail is near the bottom of the Magothy aquifer and cannot be deepened
- Lloyd aquifer is off-limits and NYSDEC will not allow a deepening into the Lloyd aquifer

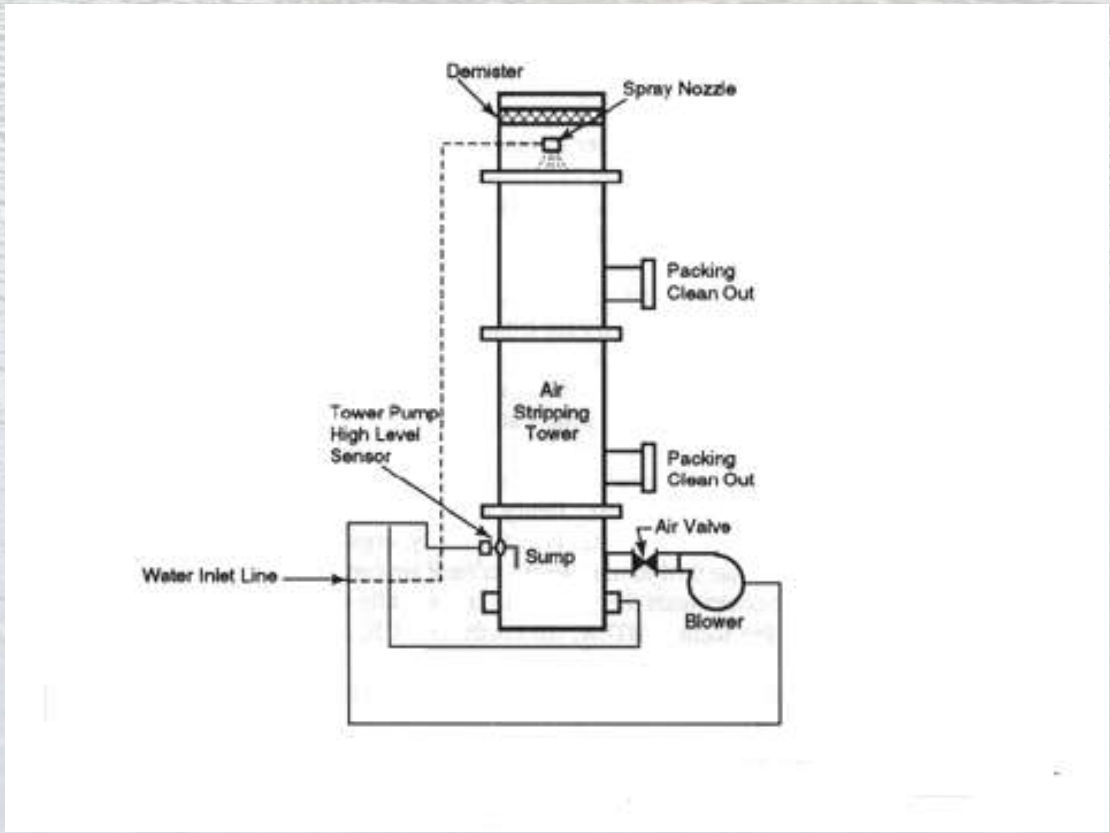
Hydro-geologic cross section at Diana's Trail



Treatment

- GAC Treatment
  - Freon-22 will exhaust the carbon in 4 days
  - $60,000 - $70,000 per change out
  - Unworkable (well down at least 2 weeks per change out)
  - Operational Cost - $5,500,000 per year
- Air Stripping
  - 22 ft. of packing height
  - 28± ft. tower
  - $45,000 increase in operational costs

Air Stripping Process



Treatment at Another Site

- Over 90% of all treatment systems are on the same site as the well
- Additional costs include the following:
  - Water Main: $150 to $400 per foot depending on type and use of road
  - Electrical Service
  - Gas Service
  - SCADA system infrastructure
  - Controls and Communication
  - Depending on site, at least $1M for a site 500 ft. away

Interconnections

There are interconnections with 5 other suppliers

- Interconnections are for emergency use only
- Health Department frowns upon their continued use for long periods of time
- All Districts have the same peak times, so interconnections cannot be counted on as a viable alternative

Air Emissions

- Based on air emissions data and parameters supplied and enforced by the USEPA, NYSDOH and NYSDEC, the air emissions of the proposed air stripping tower at Roslyn's Plant No. 4 pose no known health risks to Roslyn residents. Air emissions are determined using of a NYSDEC program DAR-1.

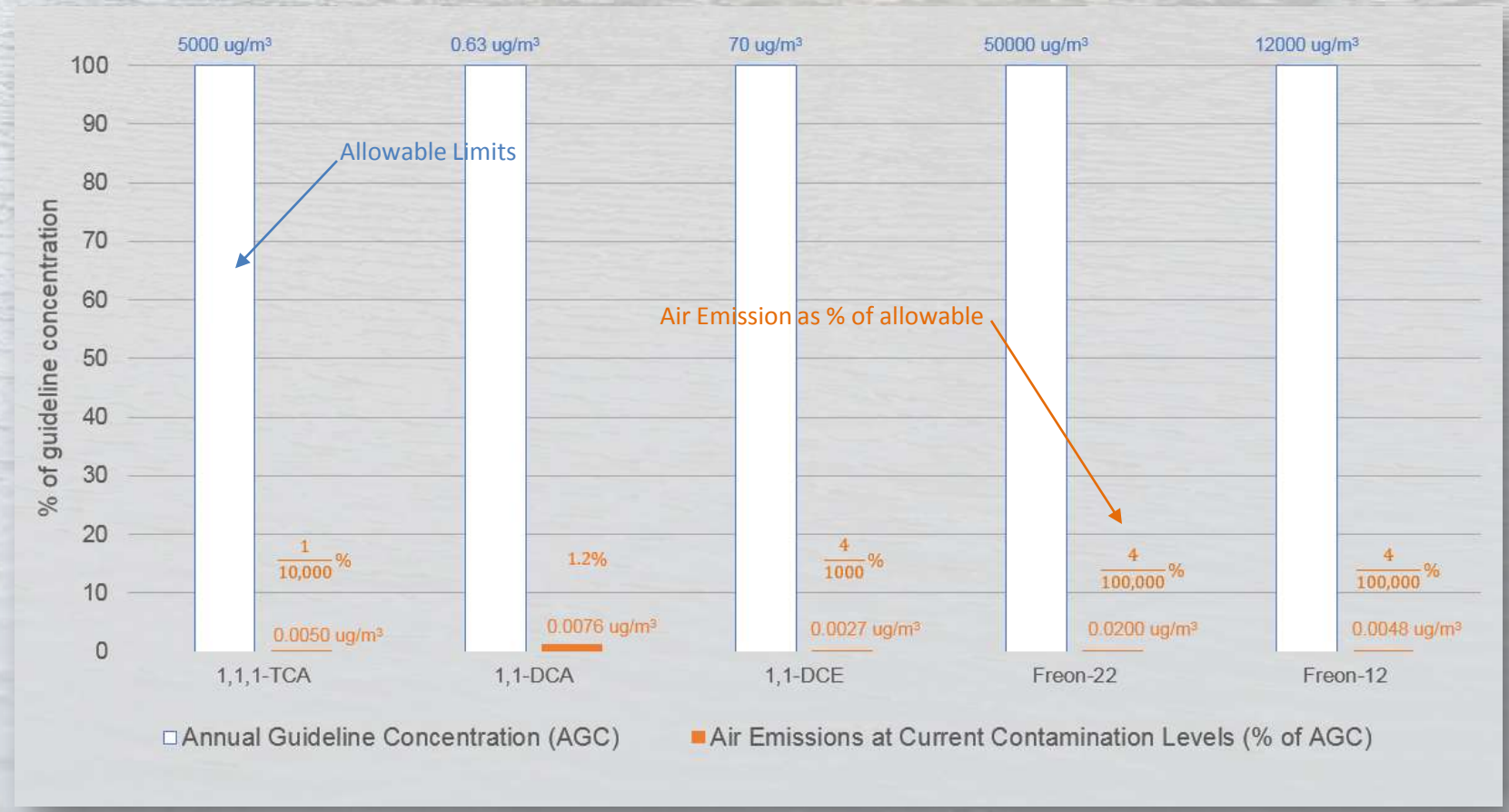
Well No. 4 Water Contaminant Levels

Contaminant	Current Influent (ppb)	Design Influent (ppb)
1,1,1-Trichloroethane	1.1	11.0
1,1-Dichloroethane	1.7	17.0
1,1-Dichloroethene	0.6	6.0
Dichlorodifluoromethane	1.2	12.0
Chlorodifluoromethane	4.3	43.0

Well No. 4 Air Contaminant Levels

		Point or Area Source Actual Annual % of AGC	
Contaminant Name	Annual-average-based Guideline Concentration (ug/m3)	Design	Actual
1,1,1-Trichloroethane	5000	0.0010	0.0001
1.1-Dichloroethane	0.63	12.0837	1.2084
1,1-Dichloroethene	70	0.0384	0.0038
Chlorodifluoromethane	50000	0.0004	0.0000
Dichlorodifluoromethane	12000	0.0004	0.0000
	Totals	**12.1239**	**1.2124**

Comparing Annual Guideline Concentrations to Air Emissions - Current



Air Emissions Monitoring

- If the air stripping tower is constructed, Roslyn Water District will monitor air emissions monthly at start-up and at regular intervals thereafter

Facility Construction

- Since the window for construction by the 2014 peak pumping season has passed, the facility has been reevaluated and will be designed as a complete structure with the tower and housing built at the same time.
- The tower will not operate outside at any time. This will eliminate the noise concerns of exterior operation.

Facility Construction Continued

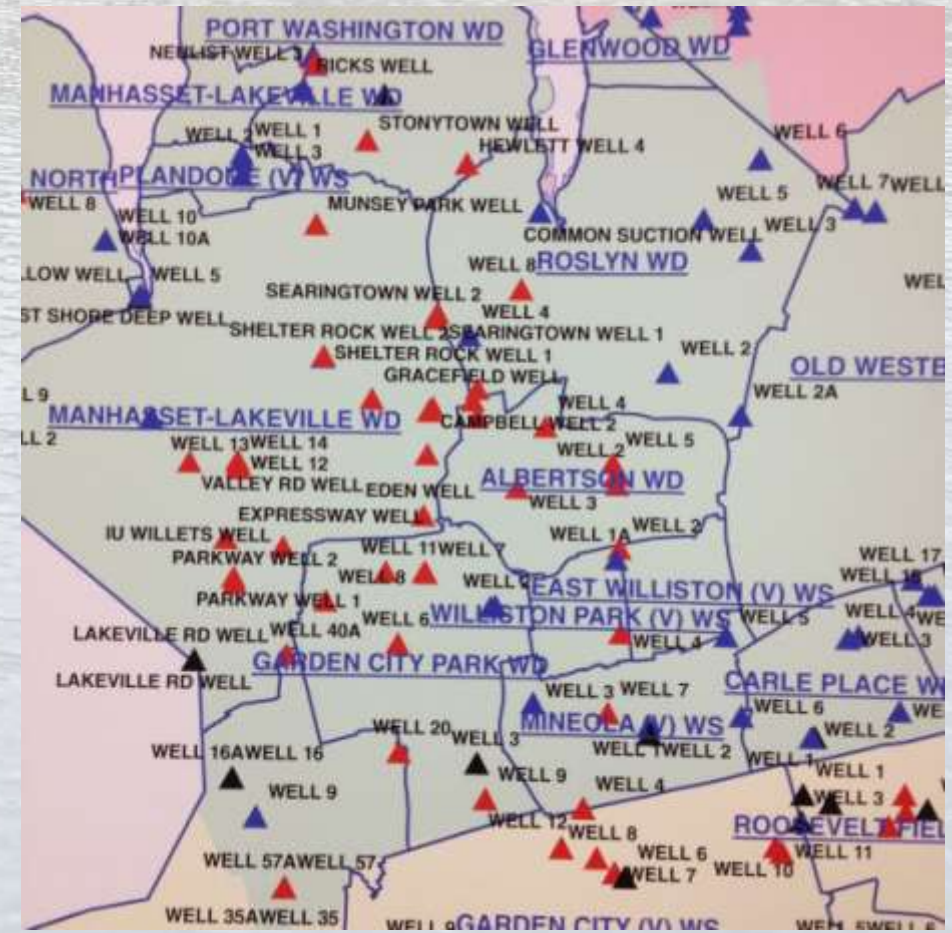
- In addition, with more time for construction, a full clearwell can be constructed beneath the tower, thus eliminating the sump and reducing the height of the tower.
- The facility will be less than 30 feet high.

Plant No. 4 Concept Elevation - South

Noise Mitigation

- Noise from the blower will be mitigated by an intake silencer. The building will be constructed with sound attenuation features to keep the noise below the village level of 60 decibels at the property line.

VOC Treatment Facilities in Nassau County



Air strippers in Long Island

- Approximately 30 % of all wells in Nassau County are treated for VOCs
- There are approximately 70 air strippers in Nassau County serving 100 wells

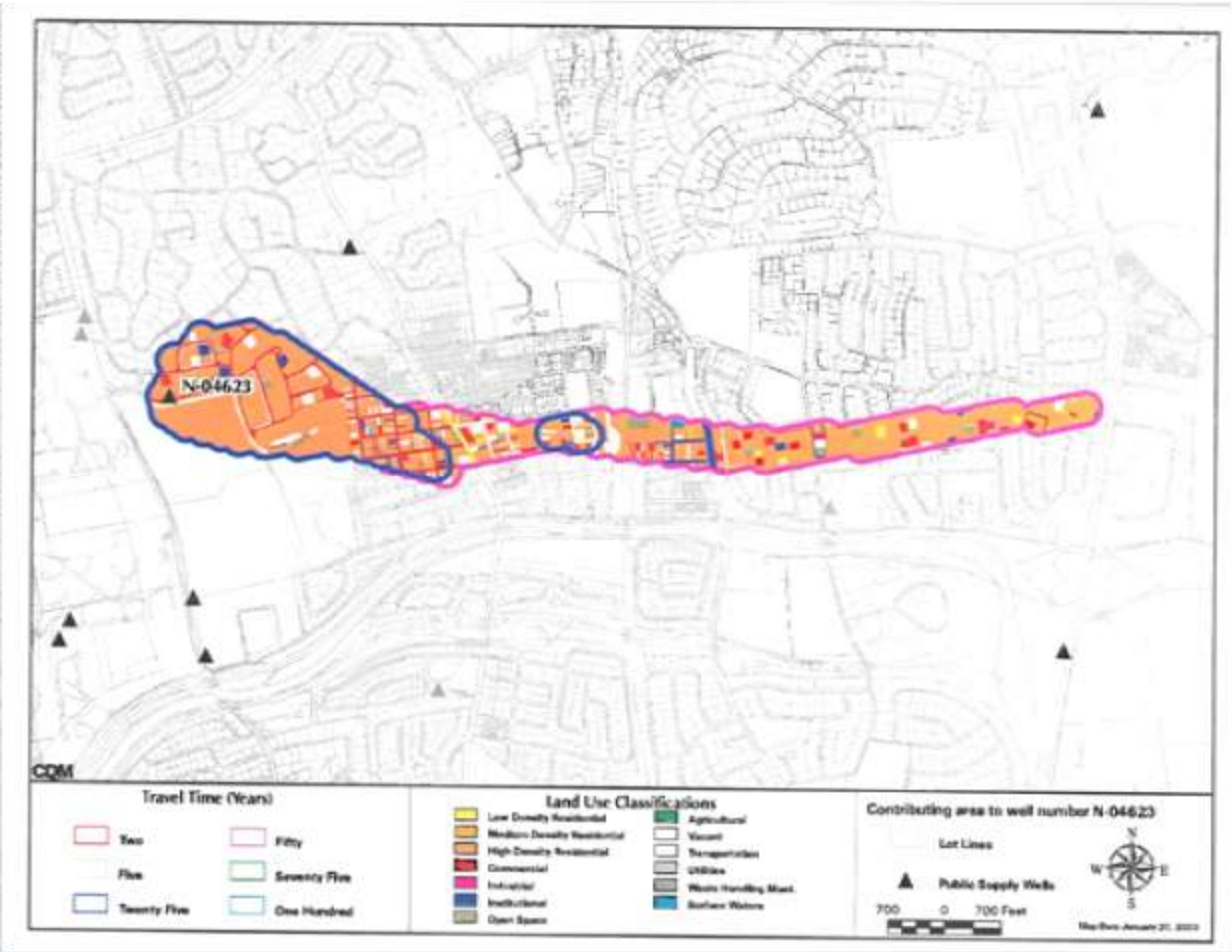
Contamination of Ground Water

- In excess of 85% of treatment facilities do not know the source of ground water contamination

<u>Source Determination</u>

- Notified NYSDEC and Nassau County Health Department
- SWAP (Source Water Assessment Program)
- Toxics targeting (Environmental search)

Source Water Assessment



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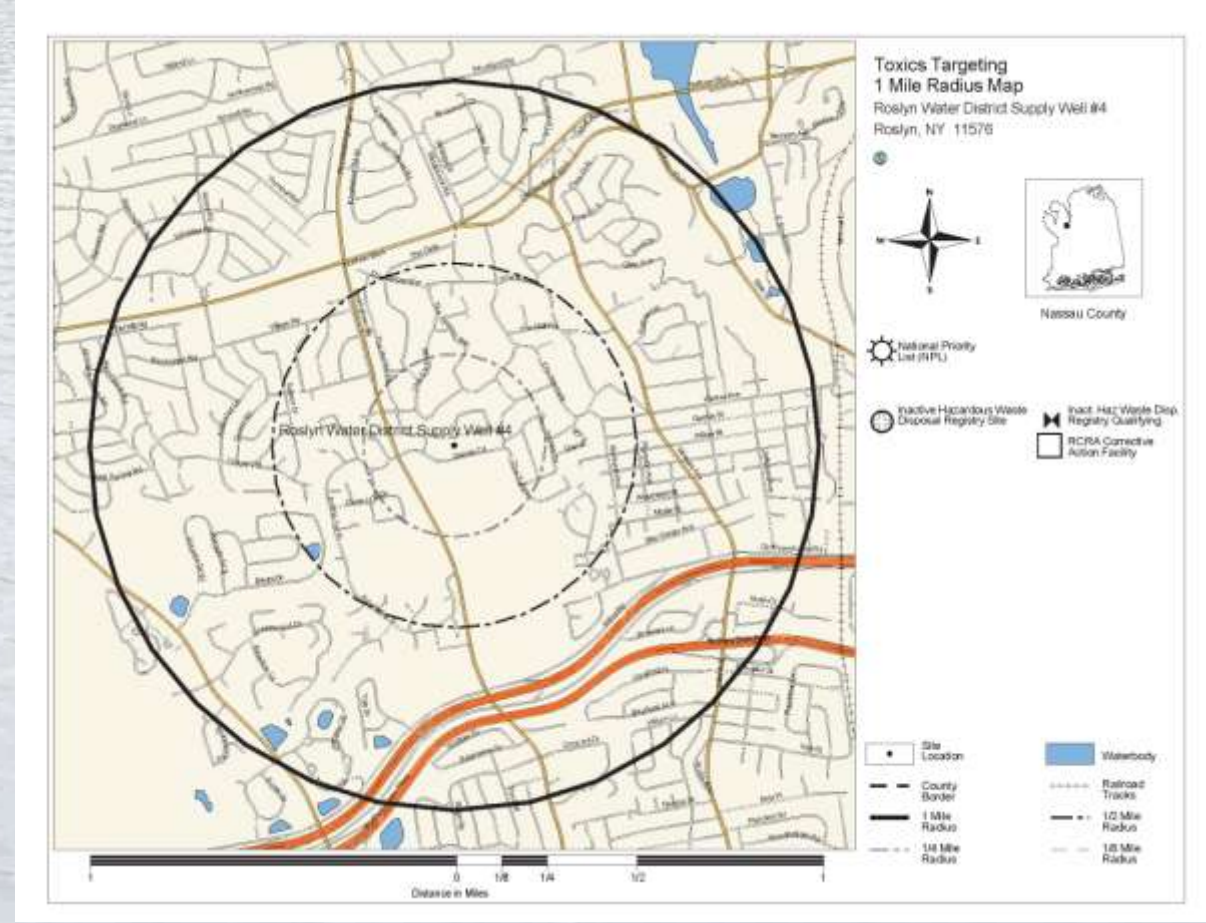
Environmental Search



Source

- Contact your Senators and Assemblymen
- Design protocol as per NCDH for non-source determined contamination
- Designed at 10x the current levels
- No history of wells in area higher than 43 ppb of Chlorodifluoromethane
- Design report approved by NCDH

Some Examples of Air Strippers

Town of North Hempstead

Aerial view

Treatment for 2 wells

Town of Oyster Bay

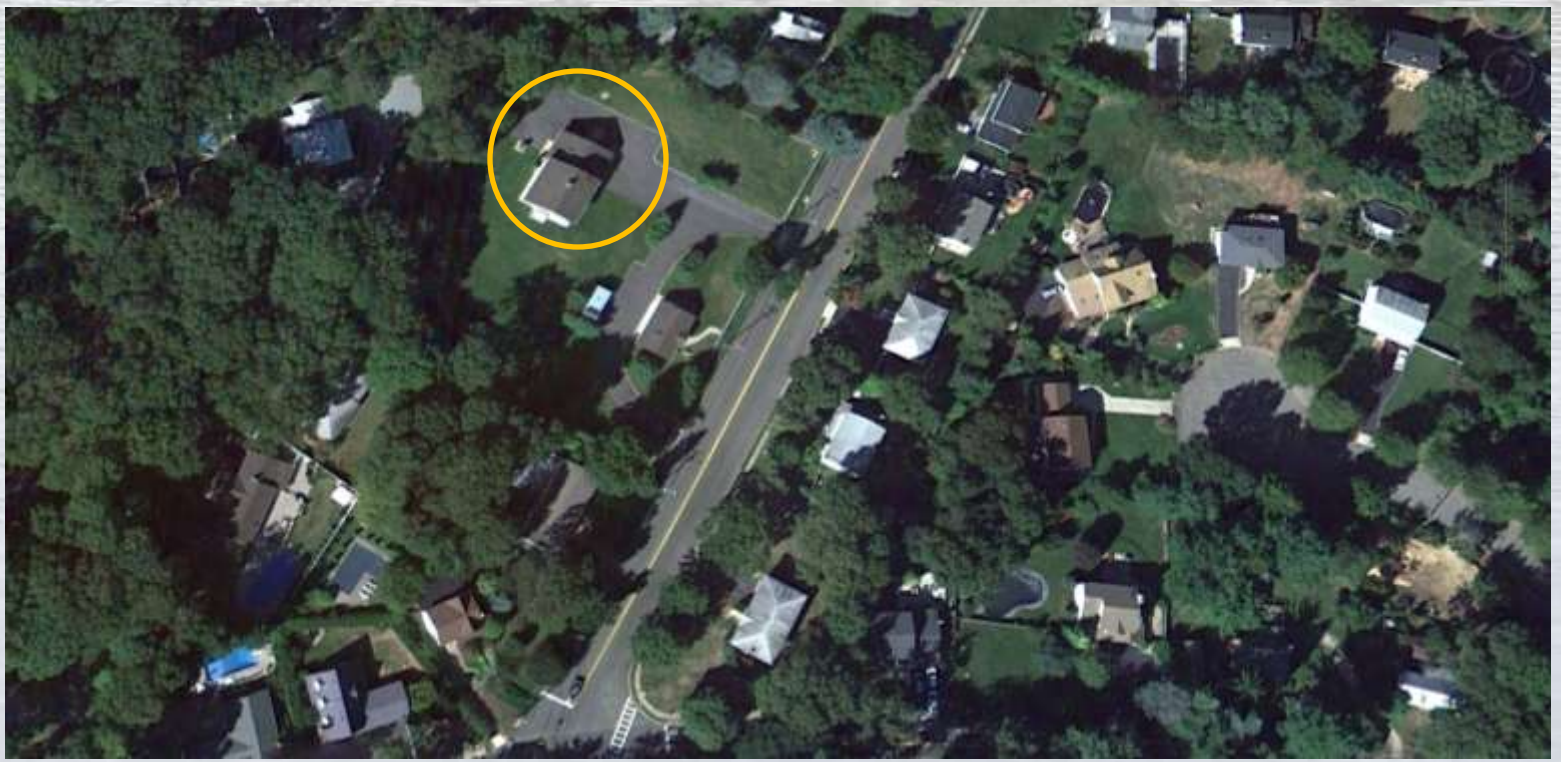
Treatment for 2 wells

Aerial view

Town of Huntington

Treatment for 2 wells

Aerial view



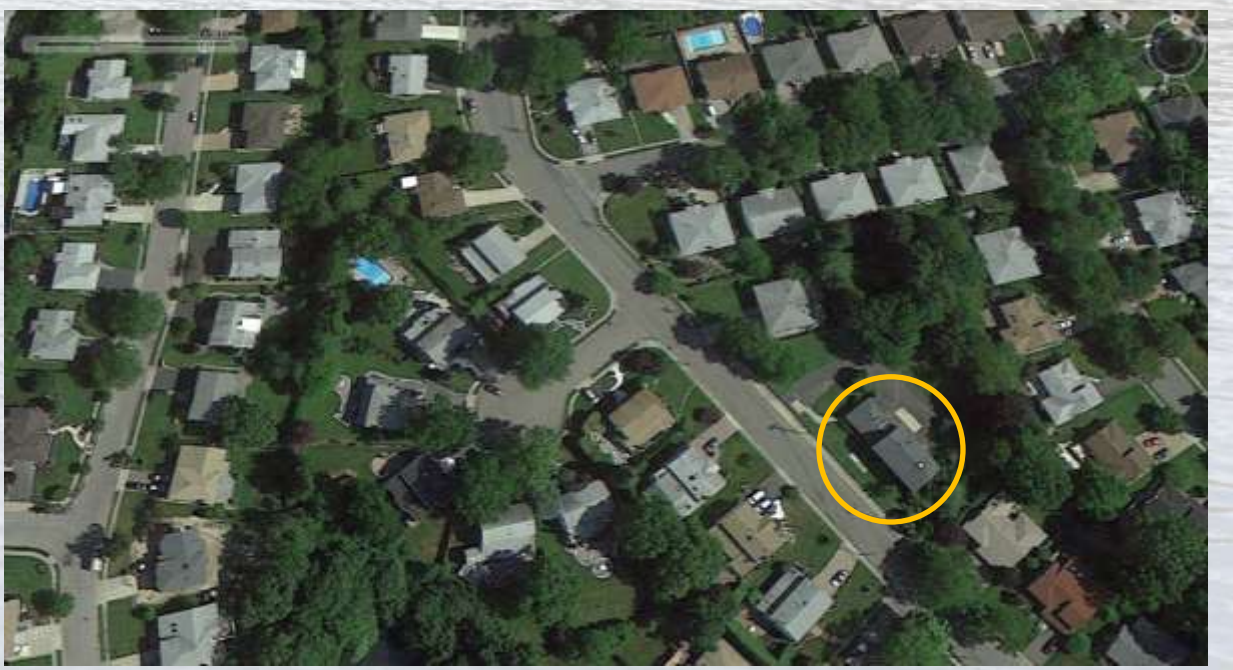
Town of Oyster Bay

Treatment for 2 wells

Aerial view

Town of North Hempstead

Aerial view



Treatment for 1 well

Town of Oyster Bay

Treatment for 3 wells

Town of Oyster Bay

Town of North Hempstead

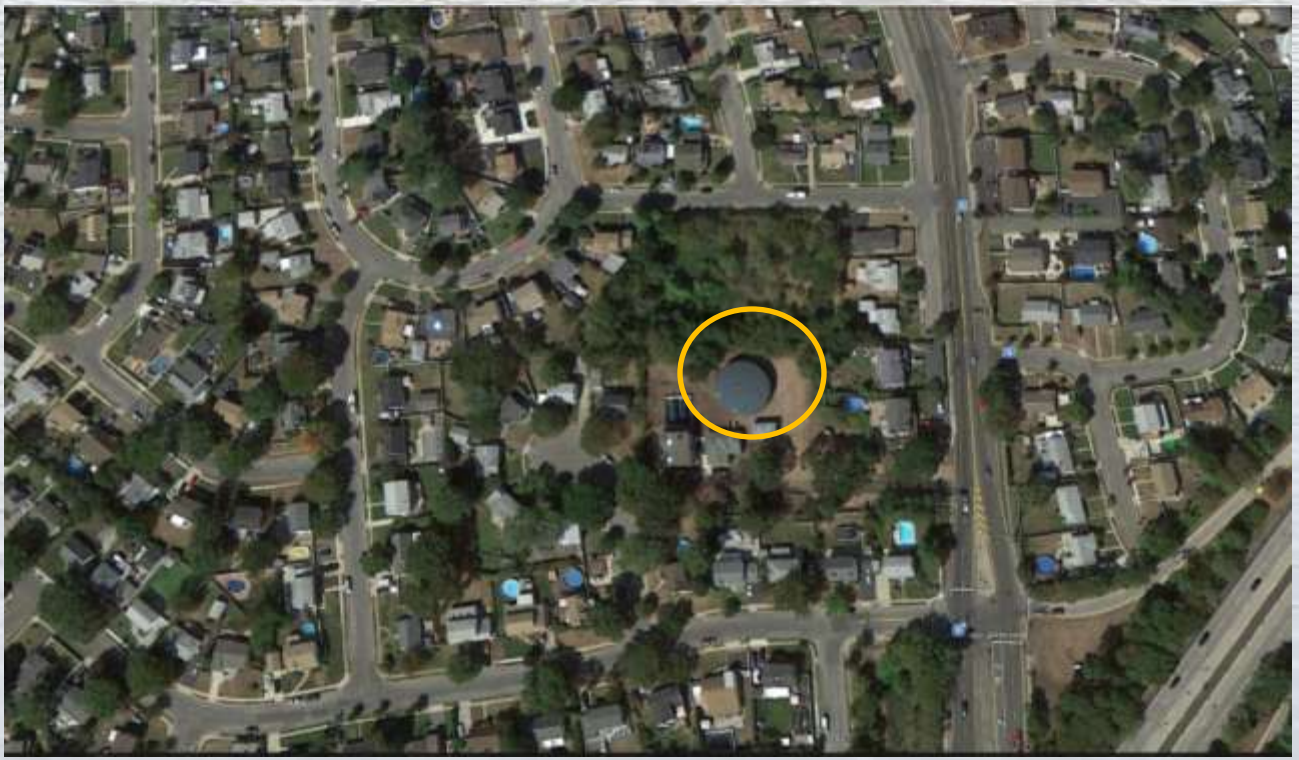
Treatment for 1 well

Aerial view

Town of Oyster Bay

Treatment for 1 well

Aerial view



Town of Oyster Bay

Treatment for 2 wells

Aerial view

Town of Huntington

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Aerial view

Town of Oyster Bay

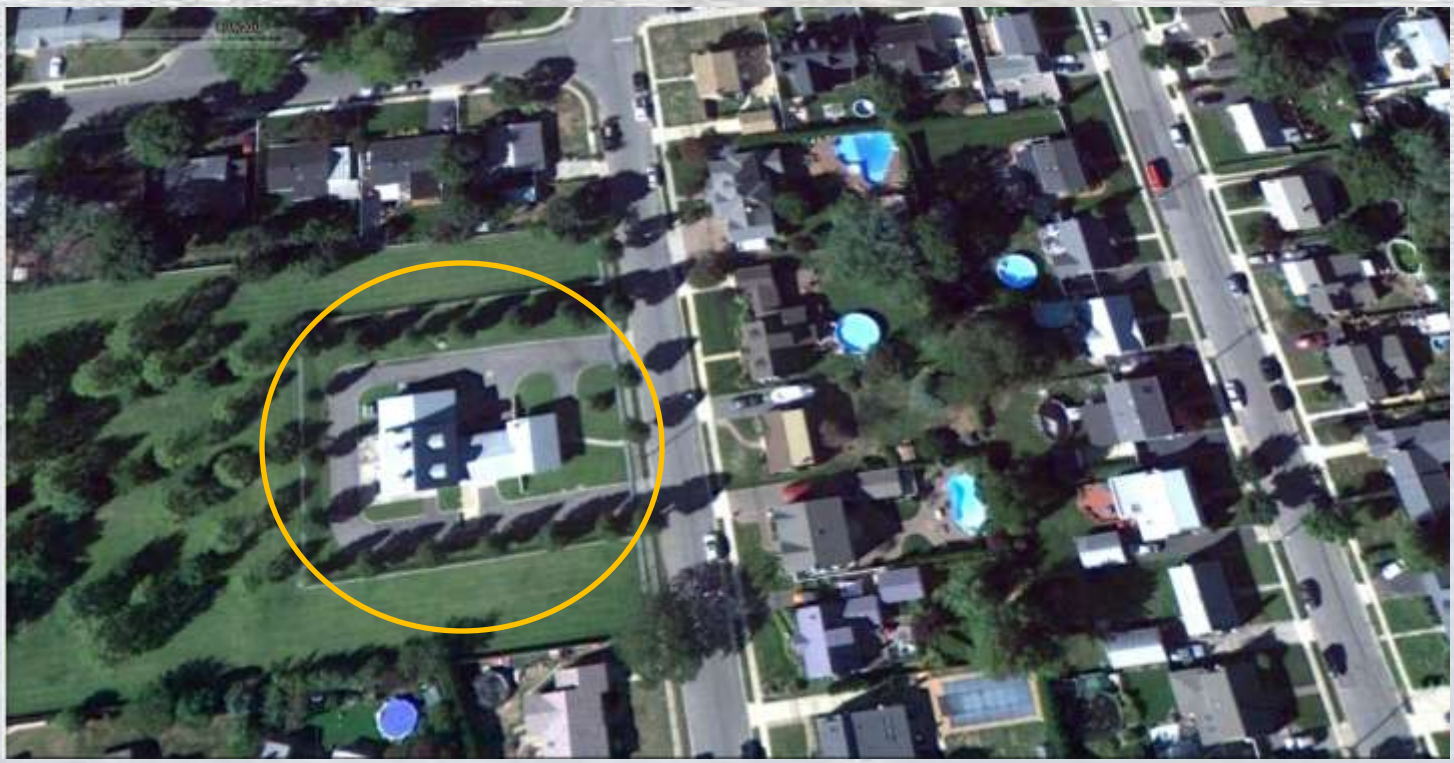
Treatment for 2 wells

Aerial view

Town of Oyster Bay

Treatment for 1 well

Aerial view



Town of North Hempstead

Aerial view

Treatment for 1 well

Town of Oyster Bay

Treatment for 2 wells

Aerial view

Town of North Hempstead

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Aerial view

Treatment for 1 well

Town of Oyster Bay – Aerial view

Treatment of 2 wells

Town of North Hempstead – Aerial view

Treatment for 2 wells

Town of North Hempstead – Aerial view

Treatment for 1 well

Existing Pump Station No. 4

Plant No. 4 Concept Elevation - South

Also in attendance:

New York State Department of Environmental Conservation

Ajay Shah, P.E., Regional Engineer

Merlange Genece, Regional Air Pollution Control Engineer

Nassau County Health Department

Joseph DeFranco, Director of Bureau of Environmental Protection

What happens now?

Thank you!