Village of Southampton

Town of Southampton Community Preservation Fund 2022
Old Town Pond Dredging

Attachments

Village of Southampton

23 MAIN STREET
SOUTHAMPTON, NEW YORK 11968-4899

Phone: (631) 283-0247
Fax: (631) 283-4990
Website: www.southamptonvillage.org

Resolution
2022-824
4/12/2022

Information: RESOLVED, that the Village of Southampton hereby authorizes the Mayor or his designee to execute any and all documents pertaining to the 2022 Town of Southampton Community Preservation Fund Water Quality Improvement Program application to support estimated project costs associated with the following projects:

1. **West Main Street Bioswales - $246,729**
2. **Gin Lane Phase 2 Stormwater Mitigation**
3. **Old Town Pond dredging design/implementation 4,161,597**
4. **Lake Agawam Algae Harvesting**
5. **Old Town Pond Watershed Bioswales - $741,197**
6. **Wickapogue Watershed Bioswales - $361,405**
7. **Phillips Pond Watershed Bioswales - $282,040**

Department:	Village Hall	**Sponsors:**	
Category:	Resolutions	**Functions:**	

Financial Impact

Body

Voting

Motioned: Jesse Warren
Seconded: Joseph McLoughlin
Y: Jesse Warren, Gina Arresta, Joseph McLoughlin, Robin Brown, Roy Stevenson
N: None
A: None
N/A:

Certified By:

Cathy M. Sweeney
Village Clerk
Incorporated Village of Southampton

Town of Southampton CPF Water Quality Improvement Project Plan

VILLAGE OF SOUTHAMPTON

Project Location
Old Town Pond

High Priority Area
Medium Priority Area
NYS DEC 303d Impaired Waterbodies (2014)
Protected/ Public Parcels

0 1,850 3,700 7,400 Feet

N
W E
S

2

Prepared By:The Town of Southampton Dept of Geographic Information Systems Date: 7/5/2016 - MAP ID: 2514


Photo Location 2
Old Town Rd
Photo Location 1
Old Town Rd
Old Town Rd
Duck Pond Ln
Photo Location 4
Photo Location 3
Old Town Rd
Wyandanch Ln
Wyandanch Ln

Photograph 1: View of the proposed CTW area facing southeast

Photograph 2: View of the proposed CTW area facing northwest

Photograph 3: View of Old Town Pond facing southeast.

Photograph 4: View of Old Town Pond facing northwest.

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

Old Town Pond, Village of Southampton

Name of Action or Project:

Old Town Pond Dredging

Project Location (describe, and attach a location map):

Old Town Pond, Southampton, New York

Brief Description of Proposed Action:

Old Town Pond was last dredged in the 1970's and based upon the results of our investigation, maintenance dredging is necessary to reduce nutrient resuspension, restore functionality to recharge stormwater and improve water quality of Old Town Pond. The proposed project consists of removal of organic-rich sediment from the bottom of Old Town Pond by means of conventional dredging techniques. The dredging depth will range from approximately 2 to 4 feet, depending upon the area of deposition. The estimated volume of sediment removal is 16,500 CY. Based upon the designed removal depths and volume, at a minimum 80 to 90% of nitrogen and phosphorus removal is anticipated which would be the equivalent of approximately 127,657 pounds (lbs) of nitrogen and 16,458 lbs of phosphorous. To minimize impacts on the local community the dredging is planned for completion over one winter season. The adjacent roadway and associated grassed median to the east and south of the pond and the parking area located south of the pond will be used for staging and management of the sediment prior to disposal for beneficial reuse.

Name of Applicant or Sponsor:	Telephone: 631-283-0247
Village of Southampton	E-Mail: ckagel-betts@southamptonvillage.org

Address:

23 Main Street

City/PO:	State:	Zip Code:
Southampton	New York	11968

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: NYSDEC & USACE - NYS Freshwater Wetlands Permit	☐	☑

3. a. Total acreage of the site of the proposed action? 8 acres
   b. Total acreage to be physically disturbed? 11 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 14 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:

☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☐ Commercial ☑ Residential (suburban)

☐ Forest ☐ Agriculture ☑ Aquatic ☐ Other(Specify):

☑ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑

	NO	YES
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?		
If Yes, identify: _____	☑	☐

	NO	YES
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation services available at or near the site of the proposed action?	☑	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☑	☐

	NO	YES
9. Does the proposed action meet or exceed the state energy code requirements?		
If the proposed action will exceed requirements, describe design features and technologies:		
Not applicable. Proposed action is not required to comply with energy code.	☐	☐

	NO	YES
10. Will the proposed action connect to an existing public/private water supply?		
If No, describe method for providing potable water: _____		
The Proposed action is within Old Town Pond, which is part of a public park.	☐	☑

	NO	YES
11. Will the proposed action connect to existing wastewater utilities?		
If No, describe method for providing wastewater treatment: _____		
Sediment removed from the pond will be dewatered and will be allowed to infiltrate back into Old Town Pond	☑	☐

	NO	YES
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☐	☑
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☑	☐

	NO	YES
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☐	☑
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☐	☑
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____		
Approximately 25,000 CY of sediment will be removed from the Pond. Approximately 600 SF of existing wetland along the southeast corner of the Pond will be impacted by the dredging activity for a material offloading pad.		

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☑ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional

☑ Wetland ☐ Urban ☑ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered? Least Tern and Piping Plover are listed species within the site vicinity, however the project area does not provide habitat that supports the life history needs of these species	☐	☑
16. Is the project site located in the 100-year flood plan?	NO	YES
	☐	☑
17. Will the proposed action create storm water discharge, either from point or non-point sources?	NO	YES
	☑	☐
If Yes,		
a. Will storm water discharges flow to adjacent properties?	☑	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☑	☐
If Yes, briefly describe:		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)?	NO	YES
If Yes, explain the purpose and size of the impoundment:	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility?	NO	YES
If Yes, describe:	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste?	NO	YES
If Yes, describe:	☑	☐

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor/name: Jesse M Warren Date: 4.14.2022

Signature: Jesse Title: Mayor

PRINT FORM

CONTACT INFORMATION

Phone: (631) 232-2600

Email: cmcguckin@rouxinc.com

Location: Islandia, NY

DOWNLOAD vCARD

EXPERTISE

Feasibility Studies

Remedial Options Analysis

Cost Evaluations

Design and Construction of Soil and Groundwater Remediation Systems

Remedial Action Plans for Brownfields Cleanup Sites

Design of Natural Media and Engineered Wetlands Systems for Treatment of Wastewater and Stormwater

EDUCATION

M.B.A., Management - Adelphi University

B.C.E., Civil Engineering - University of Delaware

PROFESSIONAL PROFILE

← BACK

Charles J. McGuckin, P.E.

Vice President Principal Engineer

Mr. McGuckin is a Vice President and Principal Engineer at Roux and has been with Roux since 1994. Mr. McGuckin is a registered Professional Engineer with over 30 years experience in environmental engineering and consulting. He holds a B.S. in Civil Engineering from the University of Delaware and an MBA from Adelphi University. Mr. McGuckin's areas of expertise include evaluation of remedial options, design and construction of soil and groundwater remediation systems, Brownfields cleanup plans to support redevelopment, and stormwater management studies. His experience includes manufacturing, chemical, petroleum, transportation and energy industry sites, as well as public parks and recreational facilities. His projects have involved design of groundwater extraction and treatment systems, NAPL recovery systems, landfill caps and site cover systems, barrier walls, in situ solidification of sludges, in situ treatment for groundwater, vapor mitigation systems, dredging of open water bodies, and shoreline stabilization.

REPRESENTATIVE PROJECTS

Decommissioning and decontamination of a pharmaceutical facility covering multiple city blocks in New York City. The former laboratory complex was decontaminated for reuse as small business space. Multiple other large buildings were demolished. Responsibilities included preparation of interior abatement plans to address lead and PCBs in building materials and review of Interim Remedial Measure (IRM) work plans for lead, benzene, and mercury-contaminated soil excavation and disposal. Groundwater remediation design included air sparge/soil vapor extraction, in situ oxidation and a reactive barrier wall using colloidal carbon and ZVI to address BTEX, PCE and daughter products.

Preparation of feasibility studies and remedial action work plans for multiple operable units of a large railyard located in Queens, New York under the NYSDEC Inactive Hazardous Waste Program. For the former engine house and maintenance area unit, pre-design studies included product plume thickness data collection and modeling, ex situ biopiles treatment, in situ enhanced bioremediation, and in situ chemical oxidation. The final design consisted of decontamination and removal of structures, excavation of

Evaluation of remedial alternatives and design/construction support for multiple areas of concern at a petroleum storage and pipeline transfer facility in New England. Projects included excavation of soil hot spots, closure of large oil-water separators, a slurry wall containment barrier, a groundwater extraction and treatment system to prevent off-site migration of petroleum compounds, in situ stabilization of tar materials, stormwater system evaluations, and compliance plan preparation.

Engineering certification of all remediation activities related to the seven-city-block Barclay's Arena and Atlantic Yards redevelopment in Brooklyn, New York. This multi-billion dollar redevelopment includes the Arena, which will be focal point of a the largest redevelopment project in Brooklyn, consisting of an urban complex of housing, commercial and retail space, as well as several acres of landscaped public open space. The existing properties being redeveloped are residential, commercial, and industrial properties, including a large rail yard. Engineering certification included multiple RAWPs under the NYSDEC Spills Program, UST removals, soil excavation, in situ groundwater treatment, and remedy oversight services. The project also includes ACM and lead paint abatement, building demolition, soil pre-waste classification and coordination with the receiving facilities, and oversight of the removal of 1,000,000 cubic yards of soil (~550,000 yards removed to date), representing one of the largest excavation and soil removal projects performed in New York City.

Design, construction management, and O&M of a 60,000-gpd constructed wetlands treatment system for a former manufacturing facility in Virginia. The 16-acre treatment system was designed within an existing phragmites wetland to remove zinc and iron from landfill leachate prior to discharge to an adjacent creek. The treatment system consisted of alkalinity-producing cells, oxic ponds, compost and limestone berms, anaerobic cells, and aerobic cells. The design included a 400-foot reinforced earthen dike together with hydraulic control structures and piping to maintain cell water levels and flow rates. The system also includes a pump station and force main for both effluent discharge and irrigation purposes. Joint wetlands and local permit approvals were obtained for the project.

REPRESENTATIVE EXPERT RETENTIONS/APPEARANCES

Expert settlement support services provided to a county municipality in New York. The case involved an EPA Order for underground storage tank (UST) compliance for over 50 county-operated facilities with over 125 USTs. The project involved the field inventory of the USTs at each facility and

Detailed cost estimates were prepared for multiple scenarios for upgrading USTs, including tightness testing, manway repairs, leak detection and overfill protection monitoring systems, UST removal and replacement, and new piping. The upgrade evaluation and negotiations included incorporation of Supplemental Environmental Projects (SEPs) in accordance with EPA requirements. SEPs included centralized monitoring systems for leak detection and inventory control.

Independent expert engineering review of change orders for the New York MTA Office of the Inspector General associated with electric utility substations reconstruction damaged during the 2012 Superstorm Sandy. The cost review focused on contracting procedures, waste classification of impacted structures and soils, and proper waste management and disposal. Findings were compiled in a report to determine if costs were legitimate and justifiable and providing recommendations for improved specifications for bidding and of management waste handling contracts.

Expert report and expert witness for a former valve manufacturing facility remediation project in New York. The report was prepared on behalf of counsel for a contractor who performed remedial construction work for this State Superfund site. The actions were against the holder of the construction contract, a state agency. The remedial action included building demolition, remediation of soils impacted by chlorinated VOCs, removal of DNAPL source areas, treatment of excavated soils using low temperature thermal desorption, and consolidation and capping of metals-impacted soils. The expert project work involved a detailed review of the RI/FS, remedial action plans, and construction progress documentation to formulate opinions regarding the contract documents' industry acceptable accuracy.

Independent expert environmental consulting services for a large landfill O&M contract under review by the New York City Department of Investigation. The work entailed reviewing the scope of routine vs. non-routine work performed over a one-year period for compliance with contract requirements. The O&M Work included routine cover maintenance, groundwater and gas monitoring, landfill gas extraction, major system repairs, and waste handling. Memos of findings were prepared assessing acceptability of work, compliance with permit regulations, and providing recommendations for improvements.

209 Shafter Street, Islandia NY 11749

Phone: 1-800-322-7689

CONTACT US

PRIVACY POLICY

Long Beach, CA

Oak Brook, IL

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Houston, TX

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Woburn, MA

Somerset, NJ

Arlington, VA

Roux is an environmental consulting practice that operates worldwide through separate legal entities including Roux Associates, Inc.; Roux Environmental Engineering and Geology, D.P.C.; and Remedial Engineering, P.C.

Engineering Study Sediment Dredging for Old Town Pond

Old Town Pond
Southampton, New York

April 14, 2022

Project Owner:

Village of Southampton
23 Main Street
Southampton, New York 11968

Prepared by:

Roux Environmental Engineering and Geology, D.P.C.
209 Shafter Street
Islandia, New York 11749

3656.0001Y108/CV

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1. Executive Summary

Old Town Pond is a freshwater pond approximately 8 acres in size, located just north of the South Shore Estuary of Long Island, in the Village of Southampton, Suffolk County, New York.

Old Town Pond is included on the 2016 NYS Section 303(d) List of Impaired/TMDL waters, with frequent occurrences of blue-green algae blooms and has been included in several management plans and studies over the past decade. Previous studies completed by Stony Brook University, among others, have identified excess nitrogen, and to a lesser extent, phosphorus, as the primary cause of the algal blooms in Southampton.[1]

Nitrogen comes from a combination of stormwater runoff and groundwater recharge. Stormwater runoff flows directly to Old Town Pond, and a portion of stormwater infiltrates into groundwater, which also enters Old Town Pond through groundwater recharge. Groundwater upgradient of Old Town Pond is also impacted by nitrogen from sanitary wastewater. Residences and businesses upgradient of Old Town Pond are unsewered; wastewater goes into septic tanks or cesspools, and then into groundwater.

Roux Environmental Engineering and Geology, D.P.C. (Roux) has been evaluating multiple options to improve water quality at Old Town Pond. Excessive nutrients responsible for triggering algal blooms enter the water column of Old Town Pond through groundwater recharge from upgradient groundwater sources, stormwater runoff from properties surrounding Old Town Pond, and sediment resuspension. Ponds such as Old Town Pond serve as sinks for nutrients, such as nitrogen and phosphorus. Over time, nitrogen and phosphorus accumulates in sediment, and can be subsequently resuspended into the water column through upward flow of pore water through sediment, diffusion by concentration gradient, and/or through bioturbation or other turbulence.

At the request of the Village of Southampton, Roux completed an investigation to characterize the sediment in Old Town Pond and determine if dredging sediment will reduce nutrient inputs to Old Town Pond (Figure 1). Old Town Pond was last dredged in the 1970's and based upon the results of our investigation, maintenance dredging is necessary to reduce nutrient resuspension, restore functionality to recharge stormwater and improve water quality of Old Town Pond.

The proposed project consists of dredging the accumulated sediments from Old Town Pond. The dredging depth will range from approximately 2 to 4 feet, depending upon the area of deposition. The estimated volume of sediment 16,500 CY. To minimize impacts on the local community the dredging is planned for completion over one winter season. Costs to complete the project are estimated to be $4,161,587 and the project is estimated to take approximately 4 months to complete the construction.

Based upon the designed removal depths and volume, at a minimum 80 to 90% of nitrogen and phosphorus removal is anticipated, which would be the equivalent of approximately 127,657 pounds (lbs) of nitrogen and 16,458 lbs of phosphorous. The sediment removal will reduce total nitrogen levels in Old Town Pond, reduce the likelihood of algal blooms, and reduce the toxicity of blue green algae.

[1] Gobler, Christopher J., February 2017. Quantifying Nitrogen Loading to From Southampton Village to Surrounding Water Bodies and Their Mitigation by Creating a Sewer District. Page 4.

2. Project Objectives

The main objective of this project is to restore water quality in Old Town Pond by removing nutrient rich accumulated sediment thereby reduce the likelihood and prevalence of algal blooms caused by excess nutrient loading (primarily nitrogen and phosphorous). The goal will be accomplished by means of dredging sediment out of the Pond.

Dredging and removing the nutrient-rich sediment will provide many benefits such as:

- Removal of nutrient source (nitrogen and phosphorous) used by bacteria and algae;
- Increasing pond capacity and functionality by removal of accumulated sediment;
- Improving pond water quality will have a direct impact on the improvement of water quality discharged at the beach;
- Decrease resuspension of sediment containing nitrogen and phosphorous;
- Increase pond depth and available habitat;
- Lower average water temperature will decrease frequency and severity of algal blooms; and
- Provide maintenance to allow for future sedimentation.

The proposed Dredging Scope will remove approximately 16,500 cubic yards (CY) of sediment from Old Town Pond. Based upon the designed removal depths and volume, at a minimum 80 to 90% of nitrogen and phosphorus removal is anticipated, which would be the equivalent of approximately 127,657 pounds (lbs) of nitrogen and 16,458 lbs of phosphorous.

3. Existing Conditions

Overall, sediment thickness increases towards the center of the pond. The proposed dredging limit encompasses areas within Old Town Pond where sediment thicknesses exceeds twelve inches. Current Site conditions are depicted in Figure 1. Sampling locations are shown on Figure 2, sediment thickness, and water depth are depicted in Figure 3 and Figure 4. Representative photographs of the project area are presented in Attachment 1.

3.1 Land Use & Underground Utilities

The proposed project location surrounding land use is primarily residential, with farmland and the Stony Brook Southampton Hospital located among the residential properties to the north, and the ocean beach to the south. Old Town Pond is adjacent to the South Shore Estuary Reserve (SSER), which encompasses the tidal waters and associated watersheds between the Nassau-Queens County line and eastern boundary of Shinnecock Bay. Old Town Pond is hydraulically connected to the Atlantic Ocean by a culvert with a manually operated valve that's drains to the beach immediately adjacent to the Atlantic Ocean. The valve is only opened for short durations when the pond level is very high to prevent potential flooding conditions.

Overhead utilities are present along Old Town Road, however this area will not be impacted by the proposed project. A utility mark out was completed most recently in March 2022, there are no subsurface utilities located within the project area except the culvert mentioned above.

3.2 Depth to Bedrock

Bedrock was not encountered during soil boring activities that took place in January 2021. Borings were advanced to a maximum depth of 20 feet below land surface. Estimated depth to bedrock is approximately 1,500 feet below land surface based on USGS Geohydrologic Appraisal of Water Resources of the South Fork, Long Island, New York.

3.3 Soil Classification

According to the soil classification map downloaded from the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS), the general soil type surrounding Old Town Pond is Haven loam and Bridgehampton silt loam. Haven loam consists of loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits. The soil profile is listed as 19 inches of loam, another 9 inches of gravelly loam, underlain by stratified gravelly sand. Bridgehampton silt loam consists of Silty glaciolacustrine or eolian deposits underlain by contrasting glacial drift, derived mainly from gneiss, granite, and schist with some sandstone, conglomerate, and shale. The soil profile is listed as 56 inches of silt loam, underlain by stratified gravelly sand.

Soil borings collected by Roux in the area north of Old Town Pond were classified as silty sand in the upper 2 feet, underlain by 6 inches of silty clay, underlain by sand with some gravel.

3.4 Other Considerations

Other project considerations include the general area topography, freshwater and tidal wetlands, the nearest receiving waterbody, stormwater flow path direction, the mapped 100-year floodplain and the data

associated with previous soil boring and water quality sampling locations. These features are shown on the Figure 1 Existing Conditions.

Freshwater wetlands were observed within the proposed project area. Wetlands typically appeared to be low quality, with a monoculture of the invasive species *Phragmites australis*. A wetland delineation was performed by Nelson, Pope and Voorhis in 2021 and is currently being verified during their 2022 survey. Permitting would be required to be complete the proposed dredging work and for staging within a freshwater wetland adjacent area. On September 29, 2021, a pre-application meeting with the NYSDEC was completed and the NYSDEC was in general concurrence with the proposed project. The permit application is currently being prepared and will be submitted Spring 2022.

NYSDEC Environmental Resources Mapper depicts the proposed project area in the vicinity of animals listed as threatened or endangered more specifically the least tern and the piping plover. The proposed project area does not support the habitat requirements for either of these species. A request will be submitted to the NYS Natural Heritage Program to review our project site and confirm there are no other species of concern that we need to evaluate.

The proposed project site is within the 100 year flood plain. Potential impacts to project construction and long term flooding considerations must be taken into consideration during design.

A stormwater bioswale project is planned to be completed in the area directly adjacent to Old Town Pond. Bioswales will be installed directly north of the pond, northeast of the pond, and south of the pond. Coordination with the bioswale project locations and project team are currently underway as part of the dredging project design.

3.5 Previous Site Investigations

Suffolk County and Stony Brook University have investigated the sources of nitrogen loading to local waterbodies, including Old Town Pond. At the request of the Village of Southampton, Roux installed groundwater monitoring wells to evaluate nitrogen in groundwater. Additionally, Roux has conducted two sediment sampling events where samples were analyzed for chemical and nutrient concentrations, and sediment depth thicknesses were collected along five transect lines.

3.5.1 Suffolk County and Stony Brook University Studies

The Suffolk County Sub-watersheds Wastewater Plan (2014) and the Long Island South Shore Estuary Reserves Eastern Bays Project: Nitrogen Loading, Sources and Management Options Final Report by Stony Brook University (2016) have identified groundwater as a major source of nitrogen loading. The Stony Brook study specifically mentions groundwater being responsible for 90% of the nitrogen transport load in the SSER sub-watersheds while the nitrogen loading attributed to stream and stormwater runoff was small. Nitrogen loading contributes to the eutrophication and blue-green algae blooms observed in Old Town Pond and other waterbodies throughout the adjacent SSER. The recent report by Stony Brook (2017), Quantifying Nitrogen Loading from Southampton Village to Surrounding Water Bodies and their Mitigation by Creating a Sewer District, describes the modeling that was completed to determine the total nitrogen loading into Old Town Pond as 4,048 kg per year, with the three largest contributors being:

- Wastewater from unsewered areas comprising 62% (2,498 kg/year);

- Fertilizer from residential lawns, agriculture and parks & golf courses comprising 15% (620 kg/year); and
- Benthic flux comprising 10% (387 kg/year).

3.5.2 Roux Soil and Groundwater Characterization

Following up on the Stony Brook Study, a limited groundwater investigation was designed to further evaluate impacts immediately upgradient of Old Town Pond. On January 9 and 10, 2021, Roux installed six groundwater monitoring wells at three locations (two monitoring wells per location) in the area north of Old Town Pond to confirm nitrogen impacted groundwater was flowing into Old Town Pond and what form of nitrogen was present. At each location, two nested wells were installed to capture the 5-ft interval just below the water table interface and 15-ft below the water table interface to determine if the majority of the loading into the pond is from shallow or deeper groundwater. The relative measuring point elevation for each monitoring well was surveyed by Roux.

Roux collected water level measurements and water quality samples at each of the six wells, along with two surface water samples from Old Town Pond. The location of the wells and surface water quality samples is shown in Figure 1. The groundwater monitoring well water quality results are described in detail in the Feasibility Study prepared by Roux dated February 11, 2021.

Based on the groundwater sampling results, nitrogen loading from groundwater upgradient of Old Town Pond is at significant concentrations to negatively impact Old Town Pond. Preliminary observations from the report regarding nitrogen concentrations are summarized below:

- Nitrogen concentrations are highest in the shallow wells, indicating that shallow groundwater should be targeted for treatment.
- The highest concentration of organic nitrogen and ammonia was found at TW-1S, which is located directly upgradient of the small pond, just north of Old Town Pond. While organic nitrogen does not directly cause algal blooms, organic nitrogen can degrade to form ammonia, which is known to cause algal blooms. TW-1S is likely hydraulically connected to and influenced by the water quality in the small pond.
- The highest concentration of nitrite/nitrate was found at TW-2S, located further north of TW-1S. TW-2S contained relatively low concentrations of ammonia, indicating that the most likely source of the nitrite/nitrate is fertilizer rather than septic/cesspool wastewater (which would most likely be in the form of organic nitrogen or ammonia). The area immediately upgradient of this well has a long history of farm use.
- Water quality at TW-3S and TW-3D showed elevated concentrations of nitrate, but the concentrations were much less than those observed at TW-2S.
- Surface water quality data showed total nitrogen at 0.868 mg/L in the pond immediately upgradient of Old Town Pond, predominantly in the form of organic nitrogen, and total nitrogen at 1.4 mg/L in Old Town Pond, with detectable nitrogen only in the ammonia form.

Under a separate project, a treatment system is proposed to address the nitrogen loading from groundwater consisting of an enhanced horizontal subsurface flow constructed treatment wetland (CTW) system to treat nitrogen prior to entering Old Town Pond.

3.5.3 Roux Old Town Pond Evaluation

The CTW would address the nitrogen impacted groundwater prior to entering Old Town Pond but would not remove the nutrients (nitrogen and phosphorous) present in sediment. The only effective way to address nutrient rich sediment is through removal. Both of these projects would improve the overall water quality in Old Town Pond.

Roux completed a multi-phased evaluation of Old Town Pond. Phase I was designed and implemented to characterize the sediment environmental parameters and to determine if dredging sediment will reduce the nutrient inputs to the Pond. Phase II included the measurement of sediment and water depths to determine the volume of sediment present, this data was used to inform the design for the dredging extent. Phase III included the collection of supplemental data to refine the dredging design plans. The location of the sampling locations, along with the sediment and water depth transect lines are shown on Figures 2 through 4.

3.5.3.1 Sediment Characterization

On July 23, 2021, Roux collected two sediment samples and one underlying sand sample from two boring locations across the Pond to analyze for grain size, percentage of organic matter, nutrient parameters, and waste characterization parameters. Supplemental sampling was completed on March 22, 2022, to further characterize the pond sediments through the collection of four additional sediment samples and two additional underlying sand samples.

Grain Size and Organic Matter Content

The percentage of organic matter present in sediment is typically used as a general indicator for the presence of organic contaminants and is used in sediment calculations to determine the level of contamination toxicity. In general, the NYSDEC does not require chemical analysis for samples which contain less than 10% of particles passing the number 200 sieve (sand) and less than 0.5% total organic carbon (TOC). The grain size analysis revealed approximately 40 to 50% of the sediment material is comprised of silts and clay (<200 sieve size) and 50 to 60% of the material is comprised of sand. The underlying sand sample was comprised of approximately 90 percent sand. The TOC results for both sediment and sand were all above 0.5%. Further chemical analysis was completed to support the design to determine if contaminants are present in the pond sediment and sand.

Nutrients

Nutrients in sediment and sand were analyzed to determine the concentrations in both media and to determine if nutrients were higher in sediment than in the underlaying sand. A summary of the results is presented in Table 2.

Table 1. Summary of Nutrient Results

Constituent (mg/L)	TA-SD Sediment	TA-SN Sand	TB-SD Sediment	TC-SD Sediment	TC-SD Sediment	TE-SD Sediment
Collection Date	7/23/2021	7/23/2021	3/22/2022	7/23/2021	3/22/2022	3/22/2022
Nitrate as N, Dissolved	4.98	2.04	Not Detected	4.05	Not Detected	Not Detected

Constituent (mg/L)	TA-SD Sediment	TA-SN Sand	TB-SD Sediment	TC-SD Sediment	TC-SD Sediment	TE-SD Sediment
Nitrate Nitrite as N, Dissolved	8.03	3.15	Not Detected	6.84	Not Detected	Not Detected
Total Kjeldahl Nitrogen	3,050	510	887	3,050	585	1,680
Ammonia	8.7	Not Detected	19.4	28.8	Not Detected	8.1
Nitrogen, Organic (TKN-Ammonia)	3,041.3	510	867.60	3,021.2	585	1,671.9
Nitrogen, Total	**3,060**	**513**	**887**	**3,060**	**585**	**1680**
Phosphorus as P (mg/kg)	416	110	620	373	774	1,860
Phosphorus as PO_4 (mg/kg)	1,270	337	1900	1,140	2,370	5,700

An explanation of nitrogen and phosphorous results follows:

- Total Nitrogen and phosphorous concentrations are generally up to 6 to 15 times higher in sediment than in sand.
- Organic nitrogen is high in almost all sediment samples. While organic nitrogen does not directly cause algal blooms, organic nitrogen can mineralize to form ammonia, which is known to cause algal blooms.
- All forms of nitrogen were higher in sediment than in sand, indicating that sediment may act as a source of nutrients to surface water in Old Town Pond through sediment resuspension, potentially contributing to harmful algal blooms.

Furthermore, based on the January 2021 groundwater sampling completed during a prior study by Roux, nitrogen loading from groundwater upgradient of Old Town Pond is at significant concentrations (total nitrogen concentrations ranged up to 9.15 mg/L and total phosphorus concentrations ranged up to 2.6 mg/L) to negatively impact Old Town Pond. Excess nitrogen (nitrate and ammonia) and phosphorus loads fuel the growth of algal blooms, which increase chlorophyll concentrations, reduce clarity, and contribute to hypoxia (or low dissolved oxygen levels).

Waste Characterization

The waste characterization results were compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Residential Soil Cleanup Objectives (SCOs) and the NYSDEC Part 375 Protection of Groundwater SCOs (PWSCOs) assuming the material would be managed as General Fill for beneficial reuse as per the Part 360 regulations. A summary of the results are presented in Table 1 below and are described as follows.

Table 2. Summary of Sediment Waste Characterization Results

Analyte	TA-WC	TC-WC	TB-SD	TC-SD	TC-SN	TD-SD	TE-SD	TE-SN
Collection Date	7/23/2021	7/23/2021	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022
Volatile Organic Compounds (VOCs)	No Detection	No Exceedance	Exceedance of PoG for Acetone	Exceedance of PoG for Acetone	No Exceedance	Exceedance of PoG for Acetone	Exceedance of PoG for Acetone	No Exceedance
Semi-Volatile Organic Compounds (SVOCs)	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance
Metals	No Exceedance	No Exceedance	No Exceedance	Exceedance of PoG for Arsenic	No Exceedance	Exceedance of PoG for Arsenic	Exceedance of PoG for Arsenic	No Exceedance
Polychlorinated biphenyls (PCBs)	No Detection	No Detection	No Detection	No Detection	No Detection	No Detection	No Detection	No Detection
Pesticides/ Herbicides	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Detection	No Exceedance	No Exceedance	No Detection
Per- and Polyfluoroalkyl Substances (PFOS/PFOA)	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance	No Exceedance

The waste characterization analyses revealed that there were no exceedances of the Residential SCOs or the PWSCOs in SVOCs, PCBs, and Pesticides/Herbicides. There were no exceedances of the guidance values for Perfluorooctanesulfonic acid (PFOS) or Perfluorooctanoic acid (PFOA).

Concentrations of VOCs exceeded the PWSCOs (0.05 mg/kg) for Acetone in four sediment samples ranging from 0.09 mg/kg (TC-SD) to 0.27 mg/kg (TE-SD). Acetone is commonly used during laboratory decontamination procedures and is frequently identified as a laboratory-introduced contaminant. Based on the lack of VOC detections in the soil samples, it is believed that these detections of acetone are due to laboratory cross-contamination.

Concentrations of Metals exceeded the PWSCOs (16 mg/kg) for Arsenic in three sediment samples ranging from 20 mg/kg (TS-SD) to 54.2 mg/kg (TE-SD).

3.5.3.2 Sediment and Water Depths

On July 8, 2021, Roux completed a sediment and water depth survey and on March 22, 2022 supplemental data collection was completed. A total of five transect lines were established traversing the width of Old Town Pond, generally in an east to west direction. Soft sediment depths were collected along 5 transect lines using a rigid folding fiberglass ruler to determine the endpoint of the soft sediment. Water depths and sediment depths were recorded at each location using and mapped in GIS.

Sediment depth varied from less than 12-inches (less than 1-foot) within the southeastern extent of the pond to over 50-inches (greater than 4-feet) within the southwestern extent of the pond. Water depths generally ranged from 2 to 5 feet, with the average water depth of approximately 2.5 feet. Sediment depth and water depth contours are provided as Figure 3 and Figure 4.

Based upon the sediment depth measurements collected, the volume of sediment estimated for removal is 16,500 CY.

4. Project Description

The proposed project consists of removal of organic-rich sediment from the bottom of Old Town Pond. The concentrations of nitrogen and phosphorus observed in sediment indicate that sediment removal will reduce the amount of nutrient loading to Old Town Pond.

Dredging a waterbody is an accepted NYS Water Quality Improvement Plan (WQIP) mechanism for reduction of nutrient loading and to break the nutrient cycling leading to excessive algae growth and low water quality. Dredging is also identified in the Southampton Town CPF WQIP as a recommended approach for improving water quality through removing sediments with accumulated nutrients through dredging. In general, 80 to 90% nitrogen and phosphorus removal is typically achieved and the useful life of the project is estimated as 25 years.

4.1 Alternatives Considered

Water quality improvement can be achieved through multiple types of green and grey infrastructure projects. Other alternatives considered included:

- Floating Wetlands
  - Advantages: Root zone provides habitat for fish and microorganisms; little O&M is required and the plants do not need to be removed in the winter.
  - Disadvantages: Nitrogen and phosphorous removal is low with estimated ranges between 8 to 15% for nitrogen removal and 0.5 to 1% for phosphorous removal.
- Aeration
  - Advantages: Increases oxygen concentrations and enhances fish habitat.
  - Disadvantages: Can cause resuspension of sediments making nutrients more available to phytoplankton and aquatic plants, increasing their rate of growth and can increase water temperatures through the water column due to the mixing of warm water downward.
- Shallow groundwater treatment north of Old Town Pond with other nitrogen removal technologies (MMBR, batch reactors).
  - Advantages: Treats groundwater directly upgradient of Old Town Pond (takes advantage of natural treatment processes in aquifer upgradient of the pond).
  - Disadvantages: Costs; energy demands; aesthetics; limited treatment levels.

These technologies were eliminated from the selection process due to limited nitrogen and phosphorous removal performance and the potential for creating other water quality issues in Old Town Pond.

The CTW system is planned for design in 2022 and will address the nitrogen loading into Old Town Pond from groundwater through the installation of an enhanced horizontal subsurface flow system. The CTW would not remove the nutrients (nitrogen and phosphorous) present in sediment. The only effective way to address nutrient rich sediment is through removal. The bioswale project will be installed by Nelson, Pope and Voohis in 2022 to address nutrient loading associated with stormwater. These projects all complement each other and would provide a three-prong approach to overall water quality improvement in Old Town Pond.

4.2 Dredging Design Overview

Dredging is the removal of sediments and debris from the bottom of water bodies. Dredging is a conventional treatment technology that is widely used to remove the internal loading of nutrients due to natural sedimentation.

Sediment removal can be efficiently achieved either through hydraulic dredging or mechanical dredging (clamshell/backhoe dredging). Hydraulic dredges work by sucking a slurry of sediment and water from the waterbody floor and pumping it to an offshore location through a pipeline. Mechanical dredging works by using buckets to scoop out bottom sediment and physically transfer it to a staging area. Both methods are common and acceptable practices by the NYSDEC and will ultimately be determined by the contractor selected to complete the work.

4.2.1 Sediment Processing

The existing parking lot and edge of pond bank located at the south end of Old Town Road will be utilized as a sediment dewatering processing area. Sediment dewatering is the removal of liquids from a sludge slurry. During mechanical dredging, initial dewatering will be performed by staging dredged sediments along the pond edge and allowing water to gravity drain back into the pond. For hydraulic dredging an initial step would likely consist of screening larger gravel particles from fine particles. There are two main forms of sediment dewatering that can be utilized at Old Town Pond: filter press and geotube containers. Filter press dewatering is achieved by using recessed-chamber filter plates to separate the liquids from the solids. Water is drained from the filter press back to the pond. Filter cake is collected as a result of the filter press, ready for transport and disposal. Geotube containers are constructed of high-strength, permeable textile fabric designed for containment and dewatering of high moisture content sludge and sediment. Sediment is pumped into the containers along with polymers to make the solids bind together and separate from water. The water drains from the container back to the pond while the solids remain in the container. Once processed, the solidified sediment can be disposed of as appropriate. The sediment dewatering approach(s) will be determined based upon the contractor selected to complete the work, schedule and space limitations and the wetland permit conditions.

4.3 Dredging Treatment Volume and Anticipated Performance

The proposed dredging project is anticipated to remove approximately 16,500 CY of nutrient rich sediment. Based upon the designed removal depths and volume, at a minimum 80 to 90% of nitrogen and phosphorus removal is anticipated and approximately 127,657 pounds (lbs) of nitrogen and 16,458 lbs of phosphorous would be removed.

5. Proposed Project Schedule

Key project duration times are estimated below. The project timeline is dependent on the schedule to be followed by CPF to make awards and execute a contract. The following timeline assumes that the CPF grant contract will be executed by August 1, 2022, and may be adjusted due to the time required by NYSDEC to provide a permit, weather conditions, and COVID pandemic impacts. Please note the project design and permitting work is currently in progress through funding from the Village of Southampton.

Table 3. Project Schedule

Task	Responsibility	Duration	Anticipated Completed Date
Final Engineering Design	Consultant	ongoing	4/29/2022
Permitting and Regulatory Approvals	Consultant	4 months	5/2/2022 to 8/26/2022
Construction Bid Document Preparation	Consultant	1 month	8/29/2022 to 9/30/2022
Construction Bid Complete	Consultant & Village of Southampton	3 weeks	10/3/2022 to 10/21/2022
Mobilization	Consultant & Contractor	1 week	11/21/2022 to 12/2/2022
Construction	Consultant & Contractor	21 weeks	12/5/2022 to 4/28/2023
Demobilization	Consultant & Contractor	1 week	5/1/2023 to 5/5/2023

6. Anticipated Regulatory Approval and Permits

The dredging will require several regulatory approvals and permits, including:

- NYSDEC Freshwater Wetlands Permit and 401 Water Quality Certification
- NYSDEC State Environmental Quality Review – Environmental Assessment Form (SEQR – EAF)
- Village of Southampton Board SEQR Approval

The Consultant will be responsible for filling out the permits listed above, and any other permits deemed necessary to complete the SOW. The consultant will communicate with the permitting agencies as necessary to obtain required permit approvals.

7. Project Cost Estimate

The total project construction cost is estimated to be $4,161,587. A breakdown of the costs is provided below. The costs include total costs for engineering, equipment, and construction, as well as force accounts and contingency. Please note the project design and permitting work is currently in progress through funding from the Village of Southampton.

Table 4. Project Cost Estimate

Task No.	Task Description	Estimated Costs
1	Construction Bidding to Select Contractor	$ 8,000
2	Mobilization	$ 275,380
3	Construction Dredging	$ 1,385,561
4	Engineering Management & Oversight	$ 195,000
5	Sediment Processing & Handling	$ 1,028,280
6	Transport and Disposal	$ 1,034,500
7	Site Restoration	$ 43,808
8	Demobilization	$ 191,068
	Total Cost	**$ 4,161,597**

Detailed descriptions of each of these tasks is described below.

7.1 Construction Bidding to Select Contractor

The final design drawings and specifications will be compiled into a bid package, approved by the Village of Southampton. With the approval of the Village of Southampton, the Consultant will solicit contractor bids to complete the construction. The Consultant will review the bids with the Village of Southampton, and the Village of Southampton will award the contract to the most suitable contractor.

7.2 Construction

The Construction Tasks included line items 2 through 9. The dredging construction work will take approximately six months to complete. This assumes an 8-hour workday, approximately 5 to 6 trucks per hour and 30 trucks per day. One lane of Old Town Lane, the Parking Lot, and the Park will used during the construction work for parking, trailers, and material/equipment staging. Trucks will be allowed to que along the southern end of Wyandanch Lane. The dredging costs will be contingent upon the final design; however, to facilitate decision-making, an estimated dredging construction cost was developed based on similar projects, best engineering estimates, and the conceptual design volume calculations. The disposal costs assume that of the 16,500 CY of material dredged, 60% of the material can be utilized for beneficial re-use

locally, and the remaining 40% will be disposed of at an approved facility. Costs include materials, equipment, installation and maintenance of sediment and erosion controls, dredging, sediment dewatering management, transportation and disposal, labor, staging area restoration, engineering management and oversight and demobilization. The basis of the design for the construction cost development is described in Section 4.2.

- **Mobilization** will include the installation of erosion controls, temporary facilities, staging areas, water treatment processes and traffic control measurement.
- **Construction Dredging** will include the removal of sediments per the design plan limits and depths. Sediment will be placed or conveyed to a temporary laydown area for dewatering and processing. Surveying will be completed by the contractor to confirm the sediment design objectives have been achieved. Erosion controls installation and management will be included as part of this task.
- **Engineering Management and Oversight** will include project management oversight, and engineering controls inspections.
- **Sediment Processing and Handling** will include sediment processing and loading for off-site disposal.
- **Transport & Disposal** will include the removal and transport of sediment/amended sediment on haul trucks to the approved disposal or reuse location. The disposal facility will need to be approved by the NYSDEC prior to sediment removal.
- **Site Restoration** will include topsoil, seed and mulching of disturbed areas along the shoreline and restoration of pavement in asphalt capped staging areas.
- **Demobilization** will include the cleanup and removal of launch pad, temporary structures, and staging and processing areas.

TABLES

(All Tables are Embedded in the Text)

FIGURES

1. Existing Conditions
2. Sampling Locations
3. Sediment Depths
4. Water Depths
5. Site Plan

TW-3S/TW-3D
TW-2S/TW-2D
TW-1S/TW-1D
TA-WC/TA-SD
TA-SN
TB-SD
TE-SN/TE-SD
TC-SN/TC-SD
TC-WC/TC-SD
OLD TOWN POND
TD-SD
ATLANTIC OCEAN

N

LEGEND

- USGS ELEVATION CONTOUR (NAVD88)
- SEDIMENT SAMPLE LOCATION
- TEMPORARY NESTED WELL LOCATION
- SITE BOUNDARY
- ESTUARINE AND MARINE DEEPWATER
- ESTUARINE AND MARINE WETLAND
- FRESHWATER POND
- FEMA 1% ANNUAL CHANCE FLOOD HAZARD
- FEMA 0.2% ANNUAL CHANCE FLOOD HAZARD
- STORMWATER FLOW DIRECTION

NOTE

USGS - UNITED STATES GEOLOGICAL SURVEY

300 0 300'

Title:

EXISTING CONDITIONS

OLD TOWN POND
VILLAGE OF SOUTHAMPTON

Prepared for:

VILLAGE OF SOUTHAMPTON

ROUX

Compiled by: K.S.	Date: 04/14/22	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	1
Project Mgr: K.S.	Project: 3656.0001Y003	
File: 3656.0001Y108.1.mxd	34	

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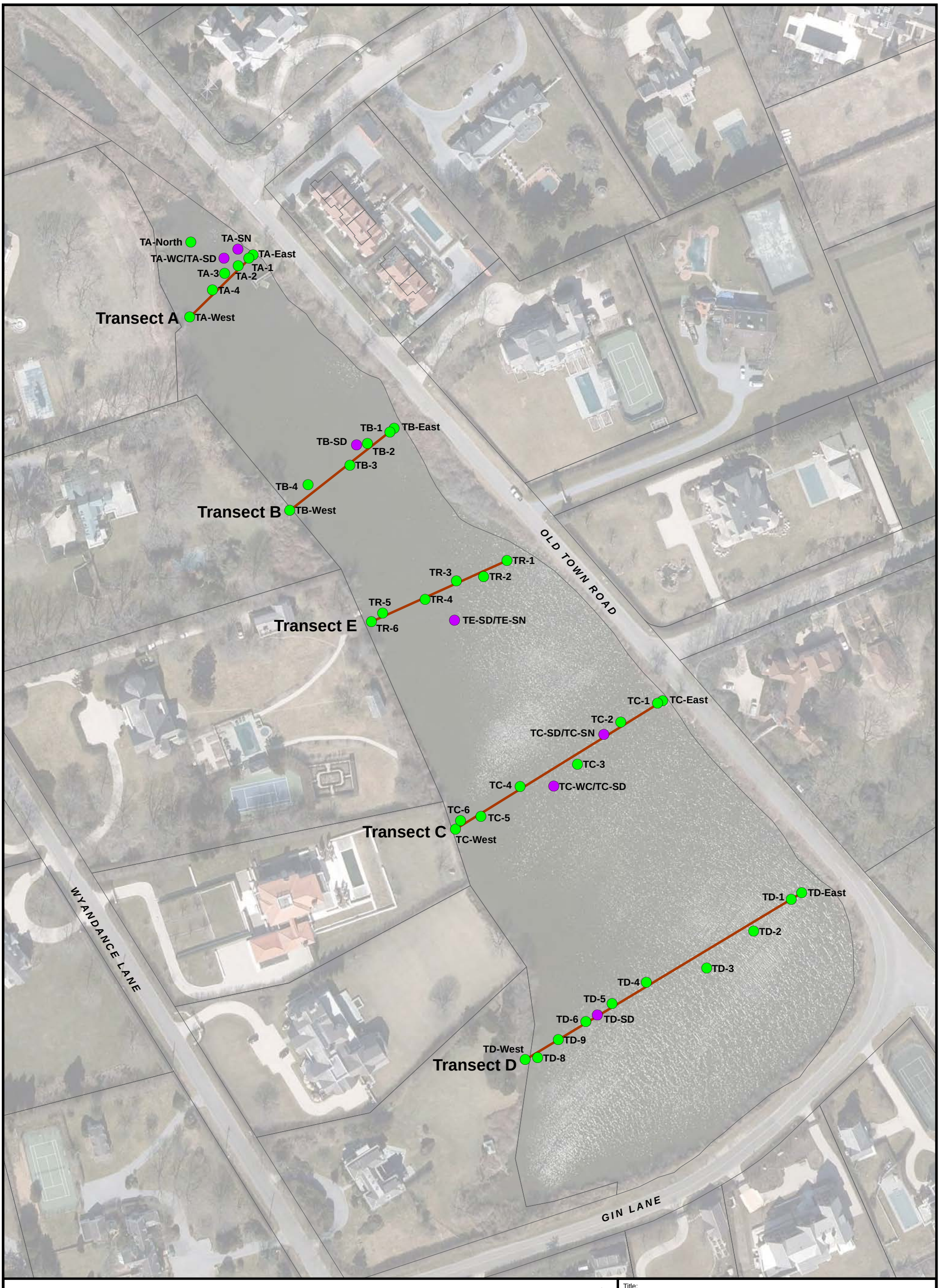

LEGEND

- SEDIMENT DEPTH MEASURING POINT
- SEDIMENT SAMPLING POINT
- TRANSECT
- LOT BOUNDARIES

N

125 0 125'

Title:

SEDIMENT DEPTH LOCATIONS

OLD TOWN POND
VILLAGE OF SOUTHAMPTON

Prepared for:

VILLAGE OF SOUTHAMPTON

ROUX

Compiled by: J.M.	Date: 04/14/22
Prepared by: M.S.R.	Scale: AS SHOWN
Project Mgr: K.S.	Project: 3656.0001Y003
File: 3656.0001Y108.2.mxd	35

FIGURE 2

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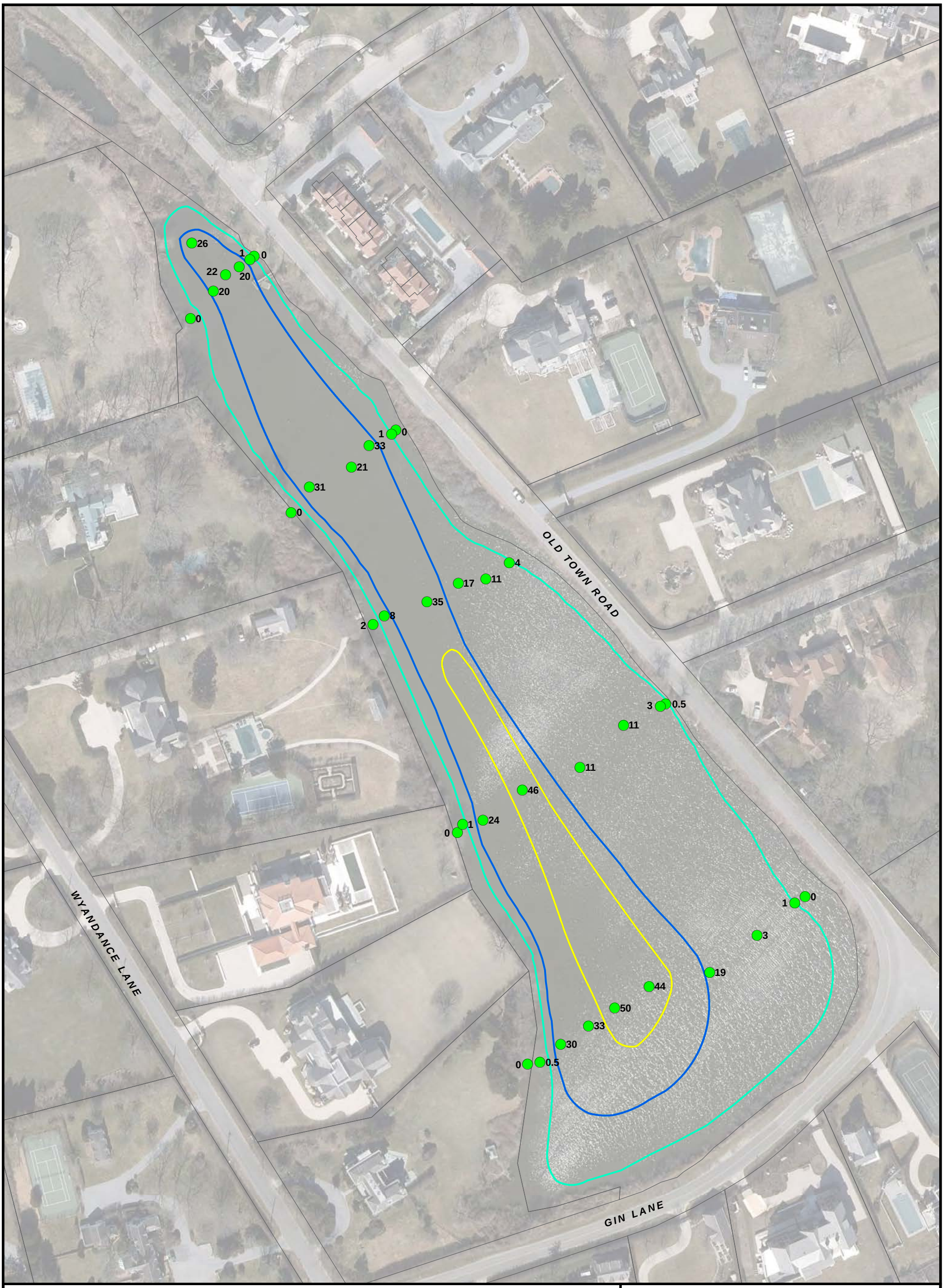

LEGEND

- SEDIMENT DEPTH MEASURING POINT
- SEDIMENT DEPTH CONTOUR - 1 INCH
- SEDIMENT DEPTH CONTOUR - 20 INCHES
- SEDIMENT DEPTH CONTOUR - 40 INCHES
- LOT BOUNDARIES

NOTE

1. SEDIMENT DEPTHS WERE MEASURED IN INCHES BY ROUX ON JULY 8, 2021 AND MARCH 24, 2022

N

125 0 125'

Title:

SEDIMENT DEPTH CONTOURS

OLD TOWN POND
VILLAGE OF SOUTHAMPTON

Prepared for:

VILLAGE OF SOUTHAMPTON

ROUX

Compiled by: J.M.	Date: 04/06/22	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	3
Project Mgr: K.S.	Project: 3656.0001Y003	
File: 3656.0001Y108.3.mxd	36	

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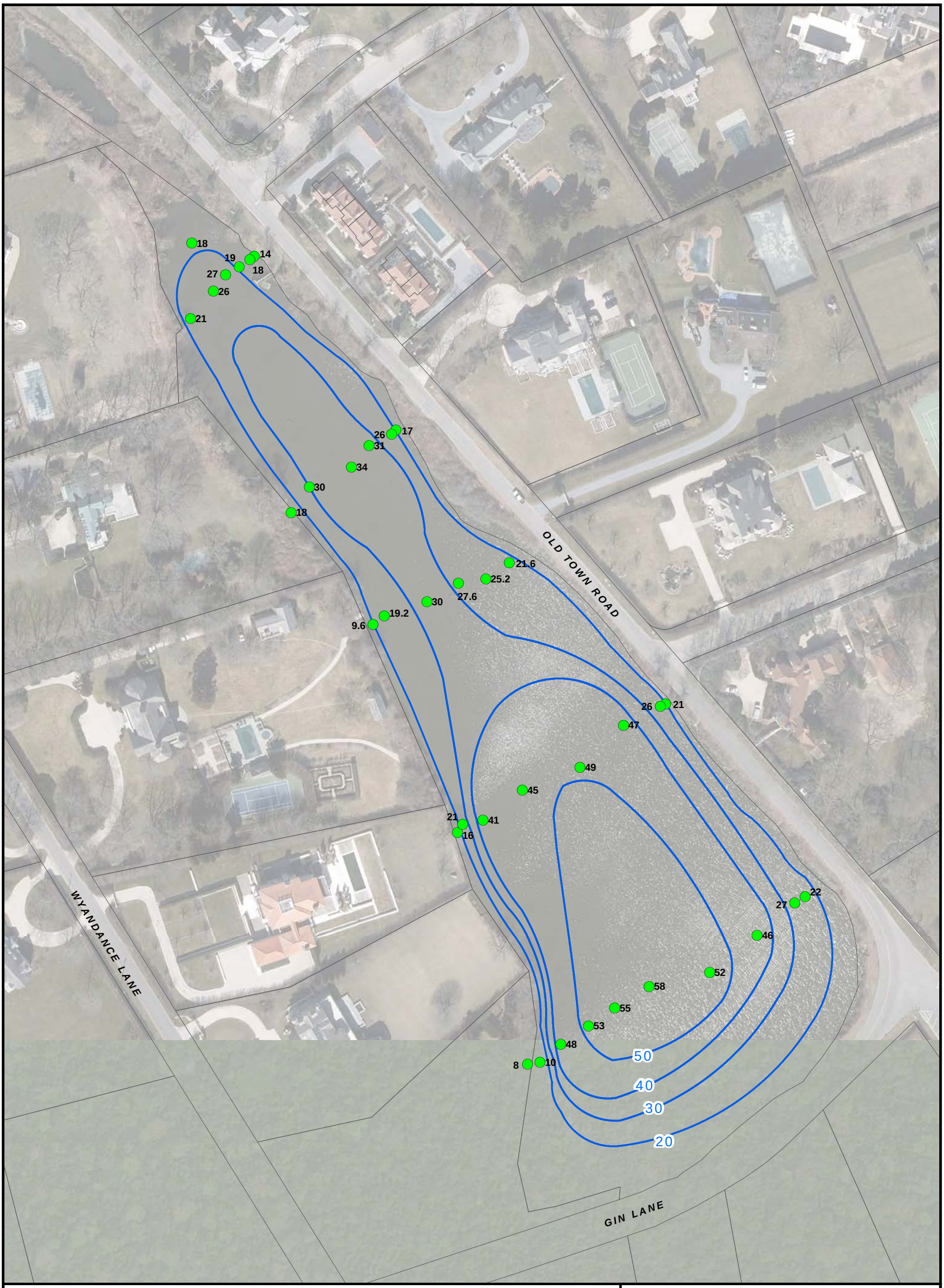

LEGEND

- WATER DEPTH MEASURING POINT
- APPROXIMATE WATER DEPTH CONTOUR (INCHES)
- LOT BOUNDARIES

NOTE

1. WATER DEPTHS WERE MEASURED IN INCHES BY ROUX ON JULY 8, 2021 AND MARCH 24, 2022

N

125 0 125'

Title:

WATER DEPTH CONTOURS

OLD TOWN POND
VILLAGE OF SOUTHAMPTON

Prepared for:

VILLAGE OF SOUTHAMPTON

ROUX

Compiled by: J.M.	Date: 04/06/22	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	4
Project Mgr: K.S.	Project: 3656.0001Y003	
File: 3656.0001Y108.4.mxd	37	

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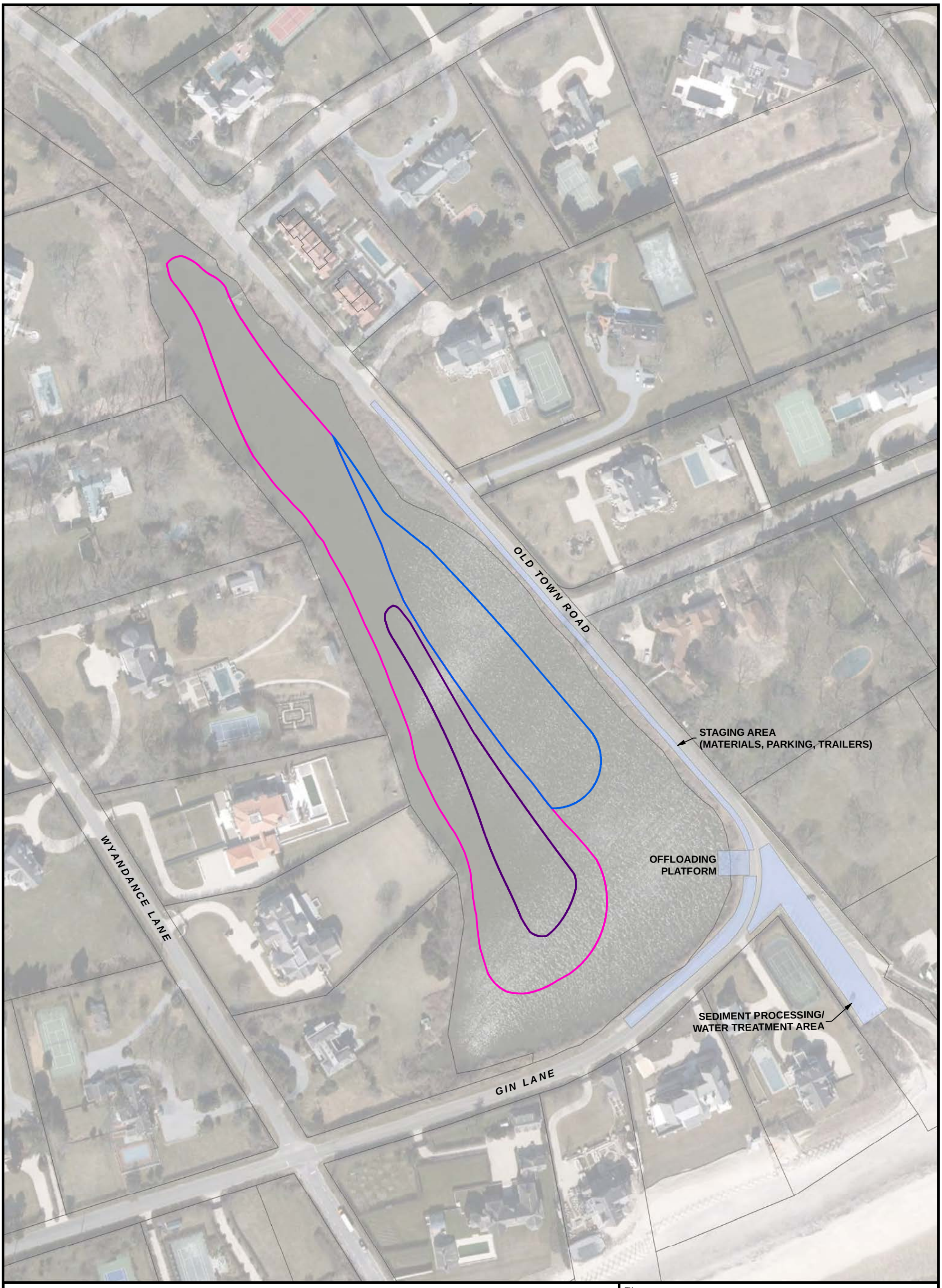

LEGEND

- APPROXIMATE DREDGING DEPTH 1 FOOT
- APPROXIMATE DREDGING DEPTH 2 FEET
- APPROXIMATE DREDGING DEPTH 4 FEET
- LOT BOUNDARIES

N

150 0 150'

Title:

SITE PLAN

OLD TOWN POND
VILLAGE OF SOUTHAMPTON

Prepared for:

VILLAGE OF SOUTHAMPTON

ROUX

Compiled by: J.M.	Date: 04/06/22	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	5
Project Mgr: K.S.	Project: 3656.0001Y003	
File: 3656.0001Y108.5.mxd	38	

ATTACHMENTS

1. Site Photographs
2. Sediment and Sand Analytical Results

ATTACHMENT 1

Site Photographs


Photograph 1
Photograph 2
Photograph 3
Old Town Rd
Atlas Construction
Murray Ln
Old Town Rd
Old Town Pond
Wyandanch Ln
Wyandanch Ln
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Photograph 1: View of Old Town Pond facing southeast.

Photograph 2: View of Old Town Pond facing northwest.

Photograph 3: View of Old Town Pond facing north.

ATTACHMENT 2

Sediment and Sand Analytical Results

Notes Utilized Throughout Tables	
Soil Tables	
J -	Estimated value
U -	Indicates that the compound was analyzed for but not detected
B -	The analyte was found in an associated blank as well as in the sample
T -	Indicates that a quality control parameter has exceeded laboratory limits
ft bls -	Feet below land surface
NA -	Compound was not analyzed for by laboratory
µg/kg -	Micrograms per kilogram
mg/kg -	Milligrams per kilogram
mm/sec -	Millimeters per second
Deg. F -	Degrees Fahrenheit
mL/100g -	Milliliters per 100 grams
DEG C -	Degrees Celsius
NYSDEC -	New York State Department of Environmental Conservation
SCO -	Soil Cleanup Objectives
--	No SCO available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Residential SCO	
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Protection of Groundwater SCO	
Per- and Polyfluoroalkyl Substances	
Bold data indicates that parameter exceeded the NYSDEC Residential Guidance Values	
Shaded data indicates that parameter exceeded the NYSDEC Protection of Groundwater Guidance Values	
Undetected results reflect Minimum Detection Limits	
TCLP Tables	
mg/L -	Milligrams per liter
USEPA -	United States Environmental Protection Agency
TCLP -	Toxicity Characteristic Leaching Procedure
USEPA Regulatory Levels - United States Environmental Protection	
	Agency Limits for RCRA Characteristic Waste for Toxicity
RCRA -	Resource Conservation and Recovery Act
Bold -	Parameter was detected above USEPA Regulatory Levels

Table 1. Summary of Volatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
1,1,1-Trichloroethane (TCA)	100	0.68	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,1,2,2-Tetrachloroethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,1,2-Trichloroethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,1-Dichloroethane	19	0.27	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,1-Dichloroethene	100	0.33	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,2,3-Trichlorobenzene	--	--	MG/KG	0.0013 UT	0.0033 U	0.0035 U	0.001 U	0.0047 UT
1,2,4-Trichlorobenzene	--	--	MG/KG	0.0013 UT	0.0033 U	0.0035 U	0.001 U	0.0047 UT
1,2-Dibromo-3-Chloropropane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,2-Dibromoethane (Ethylene Dibromide)	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,2-Dichlorobenzene	100	1.1	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,2-Dichloroethane	2.3	0.02	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,2-Dichloropropane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,3-Dichlorobenzene	17	2.4	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
1,4-Dichlorobenzene	9.8	1.8	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
2-Hexanone	--	--	MG/KG	0.0066 U	0.017 U	0.017 U	0.0051 U	0.024 U
Acetone	100	0.05	MG/KG	0.0079 U	0.18	0.09	0.024	0.042
Benzene	2.9	0.06	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Bromochloromethane	--	--	MG/KG	0.0013 UT	0.0033 U	0.0035 U	0.001 U	0.0047 UT
Bromodichloromethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Bromoform	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Bromomethane	--	--	MG/KG	0.0026 U	0.0066 U	0.0069 U	0.002 U	0.0094 U
Carbon Disulfide	--	--	MG/KG	0.0013 U	0.02	0.0024 J	0.00053 J	0.0014 J
Carbon Tetrachloride	1.4	0.76	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Chlorobenzene	100	1.1	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Chloroethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Chloroform	10	0.37	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Chloromethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Cis-1,2-Dichloroethylene	59	0.25	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Cis-1,3-Dichloropropene	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Cyclohexane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Dibromochloromethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Dichlorodifluoromethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Ethylbenzene	30	1	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U

Table 1. Summary of Volatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
Isopropylbenzene (Cumene)	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
m,p-Xylene	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Methyl Acetate	--	--	MG/KG	0.0066 U	0.017 U	0.017 U	0.0051 U	0.024 U
Methyl Ethyl Ketone (2-Butanone)	100	0.12	MG/KG	0.0066 UT	0.048	0.027	0.0053	0.024 UT
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	--	--	MG/KG	0.0066 U	0.017 U	0.017 U	0.0051 U	0.024 U
Methylcyclohexane	--	--	MG/KG	0.0013 U	0.0033 UT	0.0035 UT	0.001 U	0.0047 U
Methylene Chloride	51	0.05	MG/KG	0.0026 U	0.0066 U	0.0069 U	0.002 U	0.0094 U
O-Xylene (1,2-Dimethylbenzene)	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Styrene	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Tert-Butyl Methyl Ether	62	0.93	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Tetrachloroethylene (PCE)	5.5	1.3	MG/KG	0.0013 UT	0.0033 U	0.0035 U	0.001 U	0.0047 UT
Toluene	100	0.7	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Trans-1,2-Dichloroethene	100	0.19	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Trans-1,3-Dichloropropene	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Trichloroethylene (TCE)	10	0.47	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Trichlorofluoromethane	--	--	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U
Vinyl Chloride	0.21	0.02	MG/KG	0.0013 U	0.0033 U	0.0035 U	0.001 U	0.0047 U

Table 1. Summary of Volatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units	Sample Designation: TD-SD Sample Date: 03/22/2022	TE-SD 03/22/2022	TE-SN 03/22/2022
1,1,1-Trichloroethane (TCA)	100	0.68	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,1,2,2-Tetrachloroethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,1,2-Trichloroethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,1-Dichloroethane	19	0.27	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,1-Dichloroethene	100	0.33	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2,3-Trichlorobenzene	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2,4-Trichlorobenzene	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2-Dibromo-3-Chloropropane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2-Dibromoethane (Ethylene Dibromide)	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2-Dichlorobenzene	100	1.1	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2-Dichloroethane	2.3	0.02	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,2-Dichloropropane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,3-Dichlorobenzene	17	2.4	MG/KG	0.0029 U	0.0059 U	0.0012 U
1,4-Dichlorobenzene	9.8	1.8	MG/KG	0.0029 U	0.0059 U	0.0012 U
2-Hexanone	--	--	MG/KG	0.014 U	0.03 U	0.006 U
Acetone	100	0.05	MG/KG	0.16	0.27	0.039
Benzene	2.9	0.06	MG/KG	0.0029 U	0.0059 U	0.0012 U
Bromochloromethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Bromodichloromethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Bromoform	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Bromomethane	--	--	MG/KG	0.0057 U	0.012 U	0.0024 U
Carbon Disulfide	--	--	MG/KG	0.013	0.01	0.0013
Carbon Tetrachloride	1.4	0.76	MG/KG	0.0029 U	0.0059 U	0.0012 U
Chlorobenzene	100	1.1	MG/KG	0.0029 U	0.0059 U	0.0012 U
Chloroethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Chloroform	10	0.37	MG/KG	0.0029 U	0.0059 U	0.0012 U
Chloromethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Cis-1,2-Dichloroethylene	59	0.25	MG/KG	0.0029 U	0.0059 U	0.0012 U
Cis-1,3-Dichloropropene	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Cyclohexane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Dibromochloromethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Dichlorodifluoromethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Ethylbenzene	30	1	MG/KG	0.0029 U	0.0059 U	0.0012 U

Table 1. Summary of Volatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TD-SD	TE-SD	TE-SN
			Sample Date:	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units			
Isopropylbenzene (Cumene)	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
m,p-Xylene	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Methyl Acetate	--	--	MG/KG	0.014 U	0.03 U	0.006 U
Methyl Ethyl Ketone (2-Butanone)	100	0.12	MG/KG	0.038	0.071	0.01
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	--	--	MG/KG	0.014 U	0.03 U	0.006 U
Methylcyclohexane	--	--	MG/KG	0.0029 UT	0.0059 U	0.0012 U
Methylene Chloride	51	0.05	MG/KG	0.0057 U	0.012 U	0.0024 U
O-Xylene (1,2-Dimethylbenzene)	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Styrene	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Tert-Butyl Methyl Ether	62	0.93	MG/KG	0.0029 U	0.0059 U	0.0012 U
Tetrachloroethylene (PCE)	5.5	1.3	MG/KG	0.0029 U	0.0059 U	0.0012 U
Toluene	100	0.7	MG/KG	0.0029 U	0.0059 U	0.0012 U
Trans-1,2-Dichloroethene	100	0.19	MG/KG	0.0029 U	0.0059 U	0.0012 U
Trans-1,3-Dichloropropene	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Trichloroethylene (TCE)	10	0.47	MG/KG	0.0029 U	0.0059 U	0.0012 U
Trichlorofluoromethane	--	--	MG/KG	0.0029 U	0.0059 U	0.0012 U
Vinyl Chloride	0.21	0.02	MG/KG	0.0029 U	0.0059 U	0.0012 U

Table 2. Summary of Semivolatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
1,2,4,5-Tetrachlorobenzene	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
1,4-Dioxane (P-Dioxane)	9.8	0.1	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
2,3,4,6-Tetrachlorophenol	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2,4,5-Trichlorophenol	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2,4,6-Trichlorophenol	--	--	MG/KG	0.21 U	0.26 U	0.28 U	0.15 U	0.28 U
2,4-Dichlorophenol	--	--	MG/KG	0.21 U	0.26 U	0.28 U	0.15 U	0.28 U
2,4-Dimethylphenol	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2,4-Dinitrophenol	--	--	MG/KG	0.43 U	0.52 J	0.57 U	0.31 U	0.57 U
2,4-Dinitrotoluene	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U
2,6-Dinitrotoluene	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U
2-Chloronaphthalene	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2-Chlorophenol	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2-Methylnaphthalene	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2-Methylphenol (O-Cresol)	100	0.33	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2-Nitroaniline	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
2-Nitrophenol	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
3,3'-Dichlorobenzidine	--	--	MG/KG	0.21 U	0.26 U	0.28 U	0.15 U	0.28 U
3-Nitroaniline	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4,6-Dinitro-2-Methylphenol	--	--	MG/KG	0.43 U	0.3 J	0.57 U	0.31 U	0.57 U
4-Bromophenyl Phenyl Ether	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4-Chloro-3-Methylphenol	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4-Chloroaniline	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4-Chlorophenyl Phenyl Ether	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4-Methylphenol (P-Cresol)	34	0.33	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4-Nitroaniline	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
4-Nitrophenol	--	--	MG/KG	1.1 U	1.3 U	1.4 U	0.77 U	1.4 U
Acenaphthene	100	98	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Acenaphthylene	100	107	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Acetophenone	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Anthracene	100	1000	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Atrazine	--	--	MG/KG	0.21 U	0.26 U	0.28 U	0.15 U	0.28 U
Benzaldehyde	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Benzo(A)Anthracene	1	1	MG/KG	0.043 J	0.065 U	0.07 U	0.038 U	0.07 U
Benzo(A)Pyrene	1	22	MG/KG	0.041 J	0.065 U	0.07 U	0.038 U	0.07 U

Table 2. Summary of Semivolatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
Benzo(B)Fluoranthene	1	1.7	MG/KG	0.061	0.065 U	0.07 U	0.011 J	0.07 U
Benzo(G,H,I)Perylene	100	1000	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Benzo(K)Fluoranthene	1	1.7	MG/KG	0.024 J	0.065 U	0.07 U	0.038 U	0.07 U
Benzyl Butyl Phthalate	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Biphenyl (Diphenyl)	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Bis(2-Chloroethoxy) Methane	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	--	--	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
Bis(2-Chloroisopropyl) Ether	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Bis(2-Ethylhexyl) Phthalate	--	--	MG/KG	0.033 J	0.65 U	0.7 U	0.38 U	0.7 U
Caprolactam	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Carbazole	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Chrysene	1	1	MG/KG	0.047 J	0.65 U	0.7 U	0.38 U	0.029 J
Dibenz(A,H)Anthracene	0.33	1000	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
Dibenzofuran	14	210	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Diethyl Phthalate	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Dimethyl Phthalate	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Di-N-Butyl Phthalate	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Di-N-Octylphthalate	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Fluoranthene	100	1000	MG/KG	0.082 J	0.65 U	0.7 U	0.38 U	0.057 J
Fluorene	100	386	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Hexachlorobenzene	0.33	3.2	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
Hexachlorobutadiene	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U
Hexachlorocyclopentadiene	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Hexachloroethane	--	--	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
Indeno(1,2,3-C,D)Pyrene	0.5	8.2	MG/KG	0.037 J	0.065 U	0.07 U	0.038 U	0.07 U
Isophorone	--	--	MG/KG	0.21 U	0.26 U	0.28 U	0.15 U	0.28 U
Naphthalene	100	12	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Nitrobenzene	--	--	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
N-Nitrosodi-N-Propylamine	--	--	MG/KG	0.053 U	0.065 U	0.07 U	0.038 U	0.07 U
N-Nitrosodiphenylamine	--	--	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Pentachlorophenol	2.4	0.8	MG/KG	0.43 U	0.53 U	0.57 U	0.31 U	0.57 U
Phenanthrene	100	1000	MG/KG	0.026 J	0.65 U	0.7 U	0.38 U	0.029 J
Phenol	100	0.33	MG/KG	0.53 U	0.65 U	0.7 U	0.38 U	0.7 U
Pyrene	100	1000	MG/KG	0.062 J	0.65 U	0.7 U	0.38 U	0.037 J

Table 2. Summary of Semivolatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TD-SD	TE-SD	TE-SN
			Sample Date:	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units			
1,2,4,5-Tetrachlorobenzene	--	--	MG/KG	0.63 U	1.2 U	0.4 U
1,4-Dioxane (P-Dioxane)	9.8	0.1	MG/KG	0.063 U	0.12 U	0.04 U
2,3,4,6-Tetrachlorophenol	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2,4,5-Trichlorophenol	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2,4,6-Trichlorophenol	--	--	MG/KG	0.25 U	0.5 U	0.16 U
2,4-Dichlorophenol	--	--	MG/KG	0.25 U	0.5 U	0.16 U
2,4-Dimethylphenol	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2,4-Dinitrophenol	--	--	MG/KG	0.51 U	1 U	0.32 U
2,4-Dinitrotoluene	--	--	MG/KG	0.13 U	0.25 U	0.081 U
2,6-Dinitrotoluene	--	--	MG/KG	0.13 U	0.25 U	0.081 U
2-Chloronaphthalene	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2-Chlorophenol	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2-Methylnaphthalene	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2-Methylphenol (O-Cresol)	100	0.33	MG/KG	0.63 U	1.2 U	0.4 U
2-Nitroaniline	--	--	MG/KG	0.63 U	1.2 U	0.4 U
2-Nitrophenol	--	--	MG/KG	0.63 U	1.2 U	0.4 U
3,3'-Dichlorobenzidine	--	--	MG/KG	0.25 U	0.5 U	0.16 U
3-Nitroaniline	--	--	MG/KG	0.63 U	1.2 U	0.4 U
4,6-Dinitro-2-Methylphenol	--	--	MG/KG	0.51 U	1 U	0.32 U
4-Bromophenyl Phenyl Ether	--	--	MG/KG	0.63 U	1.2 U	0.4 U
4-Chloro-3-Methylphenol	--	--	MG/KG	0.63 U	1.2 U	0.4 U
4-Chloroaniline	--	--	MG/KG	0.63 U	1.2 U	0.4 U
4-Chlorophenyl Phenyl Ether	--	--	MG/KG	0.63 U	1.2 U	0.4 U
4-Methylphenol (P-Cresol)	34	0.33	MG/KG	0.63 U	1.2 U	0.4 U
4-Nitroaniline	--	--	MG/KG	0.63 U	1.2 U	0.4 U
4-Nitrophenol	--	--	MG/KG	1.3 U	2.5 U	0.81 U
Acenaphthene	100	98	MG/KG	0.63 U	1.2 U	0.4 U
Acenaphthylene	100	107	MG/KG	0.63 U	1.2 U	0.4 U
Acetophenone	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Anthracene	100	1000	MG/KG	0.63 U	1.2 U	0.4 U
Atrazine	--	--	MG/KG	0.25 U	0.5 U	0.16 U
Benzaldehyde	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Benzo(A)Anthracene	1	1	MG/KG	0.063 U	0.12 U	0.04 U
Benzo(A)Pyrene	1	22	MG/KG	0.063 U	0.12 U	0.04 U

Table 2. Summary of Semivolatile Organic Compounds in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TD-SD	TE-SD	TE-SN
			Sample Date:	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units			
Benzo(B)Fluoranthene	1	1.7	MG/KG	0.063 U	0.12 U	0.04 U
Benzo(G,H,I)Perylene	100	1000	MG/KG	0.63 U	1.2 U	0.4 U
Benzo(K)Fluoranthene	1	1.7	MG/KG	0.063 U	0.12 U	0.04 U
Benzyl Butyl Phthalate	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Biphenyl (Diphenyl)	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Bis(2-Chloroethoxy) Methane	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	--	--	MG/KG	0.063 U	0.12 U	0.04 U
Bis(2-Chloroisopropyl) Ether	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Bis(2-Ethylhexyl) Phthalate	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Caprolactam	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Carbazole	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Chrysene	1	1	MG/KG	0.63 U	1.2 U	0.4 U
Dibenz(A,H)Anthracene	0.33	1000	MG/KG	0.063 U	0.12 U	0.04 U
Dibenzofuran	14	210	MG/KG	0.63 U	1.2 U	0.4 U
Diethyl Phthalate	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Dimethyl Phthalate	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Di-N-Butyl Phthalate	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Di-N-Octylphthalate	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Fluoranthene	100	1000	MG/KG	0.63 U	1.2 U	0.4 U
Fluorene	100	386	MG/KG	0.63 U	1.2 U	0.4 U
Hexachlorobenzene	0.33	3.2	MG/KG	0.063 U	0.12 U	0.04 U
Hexachlorobutadiene	--	--	MG/KG	0.13 U	0.25 U	0.081 U
Hexachlorocyclopentadiene	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Hexachloroethane	--	--	MG/KG	0.063 U	0.12 U	0.04 U
Indeno(1,2,3-C,D)Pyrene	0.5	8.2	MG/KG	0.063 U	0.12 U	0.04 U
Isophorone	--	--	MG/KG	0.25 U	0.5 U	0.16 U
Naphthalene	100	12	MG/KG	0.63 U	1.2 U	0.4 U
Nitrobenzene	--	--	MG/KG	0.063 U	0.12 U	0.04 U
N-Nitrosodi-N-Propylamine	--	--	MG/KG	0.063 U	0.12 U	0.04 U
N-Nitrosodiphenylamine	--	--	MG/KG	0.63 U	1.2 U	0.4 U
Pentachlorophenol	2.4	0.8	MG/KG	0.51 U	1 U	0.32 U
Phenanthrene	100	1000	MG/KG	0.021 J	1.2 U	0.4 U
Phenol	100	0.33	MG/KG	0.63 U	1.2 U	0.4 U
Pyrene	100	1000	MG/KG	0.018 J	1.2 U	0.4 U

Table 3. Summary of Metals in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC	TD-SD	TE-SD
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units							
Aluminum	--	--	MG/KG	4350	4490	10800	1880	5800	13900	20000
Antimony	--	--	MG/KG	1.5 U	1.8 U	2 U	1.1 U	2 U	1.9 U	3.5 U
Arsenic	**16**	16	MG/KG	14.1	6.4	**23**	1.2	14.7	**20**	**54.2**
Barium	350	820	MG/KG	13.2	8.8	24.8	3.4	15	28.6	53
Beryllium	14	47	MG/KG	0.14 J	0.19 J	0.33 J	0.13 J	0.17 J	0.4 J	0.62 J
Cadmium	2.5	7.5	MG/KG	0.28 J	1.8 U	2 U	1.1 U	0.25 J	0.3 J	0.55 J
Calcium	--	--	MG/KG	767	1150	1110	174	967	1150	2370
Chromium, Hexavalent	22	19	MG/KG	3.2 U	4 U	4.3 U	2.3 U	4.3 U	3.9 U	7.6 U
Chromium, Total	36	--	MG/KG	6.2	5.2	11.8	2.7	7.7	14.2	23.2
Cobalt	--	--	MG/KG	2.6 J	1.2 J	2.8 J	0.43 J	2.3 J	3.1 J	6 J
Copper	270	1720	MG/KG	47.9	18.6	25.7	0.9 J	42.4	41	150
Cyanide	27	40	MG/KG	0.35 U	0.46 U	0.4 U	0.22 U	0.51 U	0.46 U	0.71 U
Iron	--	--	MG/KG	4990	3950	10500	2040	6430	13600	19400
Lead	400	450	MG/KG	34.9	11.3	36.1	1.6	31	57.4	97.2
Magnesium	--	--	MG/KG	572	817	1380	344	949	1610	2620
Manganese	2000	2000	MG/KG	54.4	37.4	146	23.5	117	88.4	377
Mercury	0.81	0.73	MG/KG	0.052	0.034 U	0.13	0.019 U	0.037	0.092	0.3
Nickel	140	130	MG/KG	3.3	2.9 J	6.8	1.3 J	4.1	7.7	13.7
Potassium	--	--	MG/KG	186	231	552	130	311	609	946
Selenium	36	4	MG/KG	0.3 J	0.4 J	0.76 J	1.4 U	0.45 J	1.1 J	1.1 J
Silver	36	8.3	MG/KG	1.5 U	1.8 U	2 U	1.1 U	2 U	1.9 U	3.5 U
Sodium	--	--	MG/KG	545	113 J	247	62.8 J	278	247	425
Thallium	--	--	MG/KG	0.17 J	0.1 J	0.1 J	0.44 U	0.13 J	0.14 J	0.26 J
Vanadium	--	--	MG/KG	11.4	9.2	21.6	3.7	13	25.9	39.2
Zinc	2200	2480	MG/KG	64.7	21	64.1	3.4 J	59.5	98.9	146

Table 3. Summary of Metals in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TE-SN
			Sample Date:	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units	
Aluminum	--	--	MG/KG	3760
Antimony	--	--	MG/KG	1.1 U
Arsenic	**16**	16	MG/KG	2.3
Barium	350	820	MG/KG	5
Beryllium	14	47	MG/KG	0.15 J
Cadmium	2.5	7.5	MG/KG	1.1 U
Calcium	--	--	MG/KG	394
Chromium, Hexavalent	22	19	MG/KG	2.4 U
Chromium, Total	36	--	MG/KG	4.6
Cobalt	--	--	MG/KG	1 J
Copper	270	1720	MG/KG	2.2 J
Cyanide	27	40	MG/KG	0.27 U
Iron	--	--	MG/KG	3570
Lead	400	450	MG/KG	3.2
Magnesium	--	--	MG/KG	605
Manganese	2000	2000	MG/KG	35.8
Mercury	0.81	0.73	MG/KG	0.019 U
Nickel	140	130	MG/KG	2.6
Potassium	--	--	MG/KG	224
Selenium	36	4	MG/KG	0.16 J
Silver	36	8.3	MG/KG	1.1 U
Sodium	--	--	MG/KG	80.9 J
Thallium	--	--	MG/KG	0.46 U
Vanadium	--	--	MG/KG	8.5
Zinc	2200	2480	MG/KG	6.8 J

Table 4. Summary of Polychlorinated Biphenyls in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC	TD-SD
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units						
PCB-1016 (Aroclor 1016)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1221 (Aroclor 1221)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1232 (Aroclor 1232)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1242 (Aroclor 1242)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1248 (Aroclor 1248)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1254 (Aroclor 1254)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1260 (Aroclor 1260)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1262 (Aroclor 1262)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
PCB-1268 (Aroclor 1268)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U
Polychlorinated Biphenyl (PCBs)	1	3.2	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U	0.13 U

Table 4. Summary of Polychlorinated Biphenyls in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TE-SD	TE-SN
			Sample Date:	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units		
PCB-1016 (Aroclor 1016)	--	--	MG/KG	0.25 U	0.081 U
PCB-1221 (Aroclor 1221)	--	--	MG/KG	0.25 U	0.081 U
PCB-1232 (Aroclor 1232)	--	--	MG/KG	0.25 U	0.081 U
PCB-1242 (Aroclor 1242)	--	--	MG/KG	0.25 U	0.081 U
PCB-1248 (Aroclor 1248)	--	--	MG/KG	0.25 U	0.081 U
PCB-1254 (Aroclor 1254)	--	--	MG/KG	0.25 U	0.081 U
PCB-1260 (Aroclor 1260)	--	--	MG/KG	0.25 U	0.081 U
PCB-1262 (Aroclor 1262)	--	--	MG/KG	0.25 U	0.081 U
PCB-1268 (Aroclor 1268)	--	--	MG/KG	0.25 U	0.081 U
Polychlorinated Biphenyl (PCBs)	1	3.2	MG/KG	0.25 U	0.081 U

Table 5. Summary of Pesticides and Herbicides in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
Aldrin	0.019	0.19	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.097	0.02	MG/KG	0.0032 U	0.004 U	0.0043 U	0.0023 U	0.0043 U
Alpha Endosulfan	4.8	102	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.072	0.09	MG/KG	0.0032 U	0.004 U	0.0043 U	0.0023 U	0.0043 U
Beta Endosulfan	4.8	102	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Chlordane (Technical)	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U
Delta BHC (Delta Hexachlorocyclohexane)	100	0.25	MG/KG	0.0032 U	0.004 U	0.0043 U	0.0023 U	0.0043 U
Dieldrin	0.039	0.1	MG/KG	0.0032 U	0.004 U	0.0043 U	0.0023 U	0.0043 U
Endosulfan Sulfate	4.8	1000	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Endrin	2.2	0.06	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Endrin Aldehyde	--	--	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Endrin Ketone	--	--	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Gamma Bhc (Lindane)	0.28	0.1	MG/KG	0.0032 U	0.004 U	0.0043 U	0.0023 U	0.0043 U
Heptachlor	0.42	0.38	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Heptachlor Epoxide	--	--	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
Methoxychlor	--	--	MG/KG	0.011 U	0.013 U	0.014 U	0.0077 U	0.014 U
P,P'-DDD	2.6	14	MG/KG	0.11	0.0068 J	0.0065 J	0.0077 U	0.095
P,P'-DDE	1.8	17	MG/KG	0.073	0.028	0.03	0.0077 U	0.069
P,P'-DDT	1.7	136	MG/KG	0.0039 J	0.013 U	0.0039 J	0.0077 U	0.018
Toxaphene	--	--	MG/KG	0.11 U	0.13 U	0.14 U	0.077 U	0.14 U

Table 5. Summary of Pesticides and Herbicides in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TD-SD	TE-SD	TE-SN
			Sample Date:	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units			
Aldrin	0.019	0.19	MG/KG	0.013 U	0.025 U	0.0081 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.097	0.02	MG/KG	0.0038 U	0.0076 U	0.0024 U
Alpha Endosulfan	4.8	102	MG/KG	0.013 U	0.025 U	0.0081 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.072	0.09	MG/KG	0.0038 U	0.0076 U	0.0024 U
Beta Endosulfan	4.8	102	MG/KG	0.013 U	0.025 U	0.0081 U
Chlordane (Technical)	--	--	MG/KG	0.13 U	0.25 U	0.081 U
Delta BHC (Delta Hexachlorocyclohexane)	100	0.25	MG/KG	0.0038 U	0.0076 U	0.0024 U
Dieldrin	0.039	0.1	MG/KG	0.0038 U	0.0076 U	0.0024 U
Endosulfan Sulfate	4.8	1000	MG/KG	0.013 U	0.025 U	0.0081 U
Endrin	2.2	0.06	MG/KG	0.013 U	0.025 U	0.0081 U
Endrin Aldehyde	--	--	MG/KG	0.013 U	0.025 U	0.0081 U
Endrin Ketone	--	--	MG/KG	0.013 U	0.025 U	0.0081 U
Gamma Bhc (Lindane)	0.28	0.1	MG/KG	0.0038 U	0.0076 U	0.0024 U
Heptachlor	0.42	0.38	MG/KG	0.013 U	0.025 U	0.0081 U
Heptachlor Epoxide	--	--	MG/KG	0.013 U	0.025 U	0.0081 U
Methoxychlor	--	--	MG/KG	0.013 U	0.025 U	0.0081 U
P,P'-DDD	2.6	14	MG/KG	0.013 U	0.038	0.0081 U
P,P'-DDE	1.8	17	MG/KG	0.0038 J	0.2	0.0081 U
P,P'-DDT	1.7	136	MG/KG	0.013 U	0.025 U	0.0081 U
Toxaphene	--	--	MG/KG	0.13 U	0.25 U	0.081 U

Table 6. Summary of Petroleum Hydrocarbons in Sediment, Old Town Pond, Southampton, New York

				Sample Designation:	T-A-WC	TB-SD	TC-SD
				Sample Date:	07/23/2021	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units				
Epa Total Extractable Petroleum Hydrocarbons Range 9 To 40	--	--	MG/KG		210	62	80

Table 6. Summary of Petroleum Hydrocarbons in Sediment, Old Town Pond, Southampton, New York

				Sample Designation:	TC-SN	T-C-WC	TD-SD
				Sample Date:	03/22/2022	07/23/2021	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units				
Epa Total Extractable Petroleum Hydrocarbons Range 9 To 40	--	--	MG/KG		16 U	290	66

Table 6. Summary of Petroleum Hydrocarbons in Sediment, Old Town Pond, Southampton, New York

				Sample Designation:	TE-SD	TE-SN
				Sample Date:	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units			
Epa Total Extractable Petroleum Hydrocarbons Range 9 To 40	--	--	MG/KG		250	17 U

Table 7. Summary of Per- and Polyfluoroalkyl Substances in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-WC	TB-SD	TC-SD	TC-SN
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Residential Guidance Values	NYSDEC Protection of Groundwater Guidance Values	Units				
2-(N-methyl perfluorooctanesulfonamido) acetic acid	--	--	UG/KG	0.45 U	0.052 U	0.057 U	0.054 U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	--	UG/KG	0.45 U	0.067 J	0.084 J	0.038 U
Perfluorobutanesulfonic acid (PFBS)	--	--	UG/KG	0.89 U	0.61 U	0.67 U	0.63 U
Perfluorobutanoic Acid	--	--	UG/KG	1.78 U	0.04 U	0.045 U	0.042 U
Perfluorodecane Sulfonic Acid	--	--	UG/KG	0.81 J	0.091 J	0.1 J	0.037 U
Perfluorodecanoic acid (PFDA)	--	--	UG/KG	0.45 U	0.04 U	0.045 U	0.042 U
Perfluorododecanoic acid (PFDoA)	--	--	UG/KG	0.45 U	0.039 U	0.043 U	0.04 U
Perfluoroheptane Sulfonate (PFHPS)	--	--	UG/KG	0.45 U	0.034 U	0.037 U	0.035 U
Perfluoroheptanoic acid (PFHpA)	--	--	UG/KG	0.45 U	0.04 U	0.045 U	0.042 U
Perfluorohexanesulfonic acid (PFHxS)	--	--	UG/KG	0.45 U	0.032 U	0.035 U	0.033 U
Perfluorohexanoic acid (PFHxA)	--	--	UG/KG	0.45 U	0.032 U	0.035 U	0.033 U
Perfluorononanoic acid (PFNA)	--	--	UG/KG	0.45 U	0.039 U	0.052 J	0.04 U
Perfluorooctane Sulfonamide (FOSA)	--	--	UG/KG	0.45 U	0.035 U	0.039 U	0.037 U
Perfluorooctanesulfonic acid (PFOS)	8.8	3.7	UG/KG	0.98 J	0.33 J	0.52	0.21 J
Perfluorooctanoic acid (PFOA)	6.6	1.1	UG/KG	0.45 U	0.038 J	0.053 J	0.038 U
Perfluoropentanoic Acid (PFPeA)	--	--	UG/KG	0.45 U	0.04 U	0.045 U	0.042 U
Perfluorotetradecanoic acid (PFTA)	--	--	UG/KG	0.45 U	0.04 U	0.045 U	0.042 U
Perfluorotridecanoic Acid (PFTriA)	--	--	UG/KG	0.45 U	0.035 U	0.039 U	0.037 U
Perfluoroundecanoic Acid (PFUnA)	--	--	UG/KG	0.45 U	0.094 U	0.1 U	0.098 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	--	--	UG/KG	1.34 U	0.028 U	0.032 U	0.03 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	--	--	UG/KG	1.34 U	0.082 U	0.091 U	0.086 U

Table 7. Summary of Per- and Polyfluoroalkyl Substances in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-C-WC	TD-SD	TE-SD	TE-SN
			Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Residential Guidance Values	NYSDEC Protection of Groundwater Guidance Values	Units				
2-(N-methyl perfluorooctanesulfonamido) acetic acid	--	--	UG/KG	0.48 U	0.11 U	0.12 J	0.04 U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	--	UG/KG	0.48 U	0.22 J	0.5 J	0.028 U
Perfluorobutanesulfonic acid (PFBS)	--	--	UG/KG	0.97 U	1.27 U	0.96 U	0.47 U
Perfluorobutanoic Acid	--	--	UG/KG	1.94 U	0.084 U	0.064 U	0.031 U
Perfluorodecane Sulfonic Acid	--	--	UG/KG	0.48 U	0.43 J	0.62	0.027 U
Perfluorodecanoic acid (PFDA)	--	--	UG/KG	0.48 U	0.11 J	0.14 J	0.031 U
Perfluorododecanoic acid (PFDoA)	--	--	UG/KG	0.48 U	0.081 U	0.13 J	0.03 U
Perfluoroheptane Sulfonate (PFHPS)	--	--	UG/KG	0.48 U	0.07 U	0.053 U	0.026 U
Perfluoroheptanoic acid (PFHpA)	--	--	UG/KG	0.48 U	0.084 U	0.064 U	0.031 U
Perfluorohexanesulfonic acid (PFHxS)	--	--	UG/KG	0.48 U	0.09 J	0.094 J	0.024 U
Perfluorohexanoic acid (PFHxA)	--	--	UG/KG	0.48 U	0.067 U	0.052 J	0.024 U
Perfluorononanoic acid (PFNA)	--	--	UG/KG	0.48 U	0.12 J	0.16 J	0.03 U
Perfluorooctane Sulfonamide (FOSA)	--	--	UG/KG	0.48 U	0.074 U	0.081 J	0.027 U
Perfluorooctanesulfonic acid (PFOS)	8.8	3.7	UG/KG	0.85 J	0.8	1.21	0.064 J
Perfluorooctanoic acid (PFOA)	6.6	1.1	UG/KG	0.48 U	0.1 J	0.14 J	0.028 U
Perfluoropentanoic Acid (PFPeA)	--	--	UG/KG	0.48 U	0.084 U	0.064 U	0.031 U
Perfluorotetradecanoic acid (PFTA)	--	--	UG/KG	0.48 U	0.084 U	0.075 J	0.031 U
Perfluorotridecanoic Acid (PFTriA)	--	--	UG/KG	0.48 U	0.076 J	0.13 J	0.027 U
Perfluoroundecanoic Acid (PFUnA)	--	--	UG/KG	0.48 U	0.2 U	0.2 J	0.072 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	--	--	UG/KG	1.45 U	0.06 U	0.045 U	0.022 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	--	--	UG/KG	1.45 U	0.17 U	0.13 U	0.063 U

Table 8. Summary of General Chemistry in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	T-A-SD	T-A-SN	T-A-WC	TB-SD	TC-SD	T-C-SD
			Sample Date:	07/23/2021	07/23/2021	07/23/2021	03/22/2022	03/22/2022	07/23/2021
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units						
Burn Rate	--	--	MM/SEC	NA	NA	2.2 U	2.2 U	2.2 U	NA
Corrosivity	--	--	PH UNITS	NA	NA	6.2	6.5	6.8	NA
Free Liquids	--	--	ML/100G	NA	NA	0.5 U	0.5 U	0.5 U	NA
Nitrogen, Ammonia (As N)	--	--	MG/KG	8.7	2 U	NA	19.4	2 U	28.8
Nitrogen, Kjeldahl, Total	--	--	MG/KG	3050 B	510 B	NA	887	585	3050 B
Nitrogen, Nitrate (As N)	--	--	MG/KG	4.98 J	2.04 J	NA	3.18 U	3.42 U	4.05 J
Nitrogen, Nitrate-Nitrite	--	--	MG/KG	8.03	3.15	NA	3.18 U	3.42 U	6.84
Nitrogen, Nitrite	--	--	MG/KG	3.04 J	1.12 J	NA	3.18 U	3.42 U	2.79 J
pH	--	--	PH UNITS	NA	NA	6.2	6.5	6.8	NA
Phosphorus	--	--	MG/KG	416	110	NA	620	774	373
Phosphorus, Total Orthophosphate (As PO4)	--	--	MG/KG	1270	337	NA	1900	2370	1140
Reactive Cyanide	--	--	MG/KG	NA	NA	25 U	25 U	25 U	NA
Sulfide Reactive	--	--	MG/KG	NA	NA	98.3	20 U	20 U	NA
Temperature for sample or purge water	--	--	DEG C	NA	NA	22	20.7	20.8	NA
Total Nitrogen, All Forms, Calculated	--	--	MG/KG	3060	513	NA	887	585	3060
Total Organic Carbon (2)	--	--	MG/KG	63600	14600	NA	NA	NA	40000

Table 8. Summary of General Chemistry in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TC-SN	T-C-WC	TD-SD	TE-SD	TE-SN
			Sample Date:	03/22/2022	07/23/2021	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
Burn Rate	--	--	MM/SEC	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Corrosivity	--	--	PH UNITS	7.6	7.1	6.4	6.7	6.5
Free Liquids	--	--	ML/100G	0.5 U	2.5	0.5 U	0.5 U	0.5 U
Nitrogen, Ammonia (As N)	--	--	MG/KG	NA	NA	NA	8.1	NA
Nitrogen, Kjeldahl, Total	--	--	MG/KG	NA	NA	NA	1680	NA
Nitrogen, Nitrate (As N)	--	--	MG/KG	NA	NA	NA	6.08 U	NA
Nitrogen, Nitrate-Nitrite	--	--	MG/KG	NA	NA	NA	6.08 U	NA
Nitrogen, Nitrite	--	--	MG/KG	NA	NA	NA	6.08 U	NA
pH	--	--	PH UNITS	7.6	7.1	6.4	6.7	6.5
Phosphorus	--	--	MG/KG	NA	NA	NA	1860	NA
Phosphorus, Total Orthophosphate (As PO4)	--	--	MG/KG	NA	NA	NA	5700	NA
Reactive Cyanide	--	--	MG/KG	25 U	25 U	25 U	25 U	25 U
Sulfide Reactive	--	--	MG/KG	20 U	90.7	20 U	20 U	20 U
Temperature for sample or purge water	--	--	DEG C	20.7	22.1	20.9	20.8	21
Total Nitrogen, All Forms, Calculated	--	--	MG/KG	NA	NA	NA	1680	NA
Total Organic Carbon (2)	--	--	MG/KG	NA	NA	NA	NA	NA

Table 9. Summary of Sieve Analysis in Sediment, Old Town Pond, Southampton, New York

				Sample Designation:	T-A-SD	T-A-SN	TB-SD	TC-SD
				Sample Date:	07/23/2021	07/23/2021	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
Hydrometer, Reading 1, Percent Passing	--	--	% PASSED		19.7	2.7	40.2	27
Hydrometer, Reading 2, Percent Passing	--	--	% PASSED		19.7	2.3	34.8	20
Hydrometer, Reading 3, Percent Passing	--	--	% PASSED		15.9	2.3	30.7	15.9
Hydrometer, Reading 4, Percent Passing	--	--	% PASSED		12.1	1.9	22.5	11.5
Hydrometer, Reading 5, Percent Passing	--	--	% PASSED		8.3	1.4	16.8	8.8
Hydrometer, Reading 6, Percent Passing	--	--	% PASSED		4.4	1	11.4	6
Hydrometer, Reading 7, Percent Passing	--	--	% PASSED		0.6	0.5	5.9	3.2
Percent Passing Sieve-U.S. Std. 0.375-inch (9.5 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 0.75-inch (19 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 1.5-inch (37.5 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 1-inch (25 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 2-inch (50 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 3-inch (75 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. No. 10 (2mm)	--	--	% PASSED		82.1	85.6	99.6	99.8
Percent Passing Sieve-U.S. Std. No. 100 (0.15mm)	--	--	% PASSED		61.2	12.1	92	76.6
Percent Passing Sieve-U.S. Std. No. 20 (0.85mm)	--	--	% PASSED		76.1	73.5	98.9	94.7
Percent Passing Sieve-U.S. Std. No. 200 (0.075mm)	--	--	% PASSED		58	11.1	90.1	68.2
Percent Passing Sieve-U.S. Std. No. 4 (4.75mm)	--	--	% PASSED		100	93.3	100	100
Percent Passing Sieve-U.S. Std. No. 40 (0.425mm)	--	--	% PASSED		70.6	38	97	87.5
Percent Passing Sieve-U.S. Std. No. 60 (0.25mm)	--	--	% PASSED		66	16.3	94.5	81.9
Percent Passing Sieve-U.S. Std. No. 80 (0.18mm)	--	--	% PASSED		63	13	93.4	79.5
Sand	--	--	%		42	82.2	9.9	31.8
Coarse Sand	--	--	%		17.9	7.7	0.4	0.2
Medium Sand	--	--	%		11.5	47.6	2.6	12.3
Fine Sand	--	--	%		12.6	26.9	6.9	19.3
Gravel	--	--	%		0 U	6.7	0 U	0 U
Silt	--	--	%		49.8	9.7	73.3	59.5
Clay	--	--	%		8.3	1.4	16.8	8.8

Table 9. Summary of Sieve Analysis in Sediment, Old Town Pond, Southampton, New York

				Sample Designation:	T-C-SD	TC-SN	TD-SD	TE-SD
				Sample Date:	07/23/2021	03/22/2022	03/22/2022	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units					
Hydrometer, Reading 1, Percent Passing	--	--	% PASSED		30.2	13.9	50.3	28.1
Hydrometer, Reading 2, Percent Passing	--	--	% PASSED		27.6	10.7	25.6	25.4
Hydrometer, Reading 3, Percent Passing	--	--	% PASSED		22.4	7.9	20.3	21.2
Hydrometer, Reading 4, Percent Passing	--	--	% PASSED		19.8	6.8	18.2	16.9
Hydrometer, Reading 5, Percent Passing	--	--	% PASSED		14.6	5.6	12.9	11.4
Hydrometer, Reading 6, Percent Passing	--	--	% PASSED		9.4	4	7.7	7.3
Hydrometer, Reading 7, Percent Passing	--	--	% PASSED		6.8	2.9	4.1	4.6
Percent Passing Sieve-U.S. Std. 0.375-inch (9.5 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 0.75-inch (19 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 1.5-inch (37.5 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 1-inch (25 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 2-inch (50 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. 3-inch (75 mm)	--	--	% PASSED		100	100	100	100
Percent Passing Sieve-U.S. Std. No. 10 (2mm)	--	--	% PASSED		95.4	99	96	99.8
Percent Passing Sieve-U.S. Std. No. 100 (0.15mm)	--	--	% PASSED		51.4	34.2	78.4	76.1
Percent Passing Sieve-U.S. Std. No. 20 (0.85mm)	--	--	% PASSED		88.4	93.3	91.9	94.3
Percent Passing Sieve-U.S. Std. No. 200 (0.075mm)	--	--	% PASSED		50.1	28.2	76.4	72.8
Percent Passing Sieve-U.S. Std. No. 4 (4.75mm)	--	--	% PASSED		97.1	99.9	96.2	100
Percent Passing Sieve-U.S. Std. No. 40 (0.425mm)	--	--	% PASSED		70	67	88.2	86.3
Percent Passing Sieve-U.S. Std. No. 60 (0.25mm)	--	--	% PASSED		55.2	43.1	81.9	80.2
Percent Passing Sieve-U.S. Std. No. 80 (0.18mm)	--	--	% PASSED		52.4	39	79.9	78.3
Sand	--	--	%		47	71.7	19.8	27.2
Coarse Sand	--	--	%		1.7	0.9	0.2	0.2
Medium Sand	--	--	%		25.4	32	7.8	13.5
Fine Sand	--	--	%		19.9	38.8	11.8	13.5
Gravel	--	--	%		2.9	0.1	3.8	0 U
Silt	--	--	%		35.5	22.6	63.5	61.4
Clay	--	--	%		14.6	5.6	12.9	11.4

Table 9. Summary of Sieve Analysis in Sediment, Old Town Pond, Southampton, New York

			Sample Designation:	TE-SN
			Sample Date:	03/22/2022
Parameter	NYSDEC Part 375 Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Units	
Hydrometer, Reading 1, Percent Passing	--	--	% PASSED	16.1
Hydrometer, Reading 2, Percent Passing	--	--	% PASSED	12.2
Hydrometer, Reading 3, Percent Passing	--	--	% PASSED	8.8
Hydrometer, Reading 4, Percent Passing	--	--	% PASSED	6.8
Hydrometer, Reading 5, Percent Passing	--	--	% PASSED	5.5
Hydrometer, Reading 6, Percent Passing	--	--	% PASSED	4.2
Hydrometer, Reading 7, Percent Passing	--	--	% PASSED	2.9
Percent Passing Sieve-U.S. Std. 0.375-inch (9.5 mm)	--	--	% PASSED	100
Percent Passing Sieve-U.S. Std. 0.75-inch (19 mm)	--	--	% PASSED	100
Percent Passing Sieve-U.S. Std. 1.5-inch (37.5 mm)	--	--	% PASSED	100
Percent Passing Sieve-U.S. Std. 1-inch (25 mm)	--	--	% PASSED	100
Percent Passing Sieve-U.S. Std. 2-inch (50 mm)	--	--	% PASSED	100
Percent Passing Sieve-U.S. Std. 3-inch (75 mm)	--	--	% PASSED	100
Percent Passing Sieve-U.S. Std. No. 10 (2mm)	--	--	% PASSED	96.7
Percent Passing Sieve-U.S. Std. No. 100 (0.15mm)	--	--	% PASSED	41.3
Percent Passing Sieve-U.S. Std. No. 20 (0.85mm)	--	--	% PASSED	91
Percent Passing Sieve-U.S. Std. No. 200 (0.075mm)	--	--	% PASSED	35.5
Percent Passing Sieve-U.S. Std. No. 4 (4.75mm)	--	--	% PASSED	98.4
Percent Passing Sieve-U.S. Std. No. 40 (0.425mm)	--	--	% PASSED	68.6
Percent Passing Sieve-U.S. Std. No. 60 (0.25mm)	--	--	% PASSED	48.9
Percent Passing Sieve-U.S. Std. No. 80 (0.18mm)	--	--	% PASSED	43.8
Sand	--	--	%	62.9
Coarse Sand	--	--	%	1.7
Medium Sand	--	--	%	28.1
Fine Sand	--	--	%	33.1
Gravel	--	--	%	1.6
Silt	--	--	%	30
Clay	--	--	%	5.5

Table 10. Summary of TCLP Metals in Sediment, Old Town Pond, Southampton, New York

Sample Designation:			T-A-WC	TB-SD	TC-SD	TC-SN	T-C-WC	TD-SD	TE-SD	TE-SN
Sample Date:			07/23/2021	03/22/2022	03/22/2022	03/22/2022	07/23/2021	03/22/2022	03/22/2022	03/22/2022
Parameter	USEPA Regulatory Levels (mg/L)	Units								
Arsenic	5	MG/L	0.0599	0.185	0.173	0.0161 J	0.0468	0.278	0.406	0.0347
Barium	100	MG/L	0.135 B	0.127	0.147	0.0487	0.127 B	0.115	0.173	0.059
Cadmium	1	MG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Chromium, Total	5	MG/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Lead	5	MG/L	0.0179	0.0308	0.0329	0.012 U	0.0418	0.0444	0.0629	0.0092 J
Mercury	0.2	MG/L	0.0002 U	0.00012 J	0.00012 J	0.0001 J	0.0002 U	0.0015	0.0002 U	0.0016
Selenium	1	MG/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Silver	5	MG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U