

Town of Stony Point

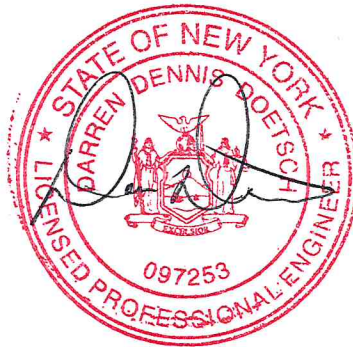
SEWAGE TREATMENT PLANT EVALUATION & EXPANSION REPORT

Town of Stony Point
Rockland County, NY
P&D #208503

PREPARED BY
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
 **Pitingaro & Doetsch**
Consulting Engineers

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EXECUTIVE SUMMARY

The Town of Stony Point (Town) has contracted with Pitingaro & Doetsch Consulting Engineers, P.C. (P&D) to analyze and evaluate the treatment processes for condition and wastewater treatment plant (WWTP) capacity to accommodate existing flows from future development, and future flows resulting from the termination of an Inter-Municipal Agreement. The Town currently operates the plant on North Street at a permitted average daily design flow of 1.0 million gallons per day (MGD) and the treated effluent is discharged into the Hudson River. The goal of this evaluation is to review each unit process, access condition and compliance with current regulation, and determine what upgrade or facility changes are required in order to treat the future flows.

The Town entered into an inter-municipal agreement with the Haverstraw Joint Regional Sewer Board (HJRSB) in 2005 to allow the diversion of up to an average daily flow (ADF) of 700,000 gallons of untreated sewage. The Town currently pays a 7.5% premium on the costs incurred by HJRSB for the treatment of the diverted sewage. The agreement is set to expire on July 5, 2025. The disconnection from HJRSB may only occur if the existing Stony Point WWTP has been evaluated and expanded to treat the diverted flow. The Stony Point WWTP's State Pollutant Discharge Elimination System (SPDES) Permit must be modified, and the plant must be able to accommodate the existing, diverted, and proposed future flows.

P&D collected information and data from the WWTP Operator and conducted site visits to the WWTP. Flow data received was compiled and analyzed to verify the flow capacity of the WWTP. The Town is currently planning for more development within the Sewer District, therefore, the WWTP must be upgraded to accommodate current flows, bypass to the HJRSB and future flows. The current permitted flow capacity based on their SPDES Permit is an average daily flow of 1,000,000 gallons per day (GPD) over a monthly period. An updated SPDES Permit will be required for the increased flow through the WWTP.

The Town WWTP treatment processes were evaluated for a new design flow of 1.8 million gallons per day (MGD) and a peak flow of 5.0 MGD to determine which components of the treatment process would need to be redesigned and upgraded. P&D collected information and data, including equipment nameplate data, tank sizing from the WWTP, existing drawings, monthly reports, operations information from Operators, via

site visits to the WWTP. The current flow data was compiled and analyzed to determine the new projected flow capacity of the WWTP based on a zoning analysis of development within the Sewer District.

The WWTP will be upgraded to accommodate all current and future flows. A design flow of 1.8 MGD would allow for the Town WWTP to handle all future flows as well as the diverted flow. Each of the treatment processes were evaluated at 1.8 MGD to determine the top priority upgrades to increase the design capacity to conform to NYSDEC design standards and the guidelines set by Ten States Standards. Any components not conforming to these standards would require modifications and upgrades to the process, structures, or mechanical components.

The WWTP will require upgrades to accommodate the 1.8 MGD proposed flow. It is recommended that a new headworks facility be constructed. The proposed headworks facility would include a raw sewage pump station, a mechanical bar screen, and a grit removal system. The cost to perform this upgrade is approximately \$2,800,000.

It is also recommended that two (2) new circular clarifiers be constructed to replace the existing inadequate clarifiers. This upgrade would also include the installation of a third RAS pump and a third aeration blower. The cost to perform this upgrade is approximately \$1,800,000.

The last recommendation is to replace the existing disinfection system with a UV disinfection system. The existing disinfection system is prone to non-compliances due to its complex operations and a new UV disinfection system would aid the facility in achieving disinfection requirements. The cost to perform this upgrade is approximately \$500,000.

The Town WWTP would have the capacity to treat 1.8 MGD and associated peak flows once all upgrades and modifications are complete. The budgetary cost for the upgrades is \$5,100,000. The upgraded conventional activated sludge treatment plant will have the capacity to treat the increase sewage flows from future development within the Town of Stony Point.

PROJECT BACKGROUND AND HISTORY

SITE INFORMATION

The Town of Stony Point is located in the Hudson Valley of New York State in Rockland County, which encompasses an area of 31.6 square miles, or 20,220 acres. The Town sits at the southernmost edge of the Hudson Highlands, on the west shore of the Hudson River. The Town is bordered to the south by the Town of Haverstraw. A topographic map showing the Town of Stony Point and the Town WWTP is attached as **Appendix A**. The WWTP and outfall are located to the east of Cedar Pond Brook in the southeast edge of the Town's border.

GEOLOGICAL CONDITIONS

The Town of Stony Point is situated between the Hudson River and the Ramapo Mountains. The topography of the Town mainly consists of steep slopes, rolling foothills, elevated plateaus, river plains and wetlands. The Town Sewer District is comprised mostly of the following soils: Alden silt loam, Charlton fine sandy loam ranging from 3% to 25% slopes, and Wethersfield gravelly silt loam ranging from 3% to 25% slopes. The soil types mentioned are classified as Hydraulic Group C/D, B, C, respectively. The WWTP and surrounding properties overlie Udorthents, wet substratum, which is described as a poorly drained soil that has been altered, Hydraulic Soil Group A, with slopes of 3% or less. The WWTP area and the adjacent coastal regions are at high risk of flooding as confirmed by FEMA; a flood map is included as **Appendix B**.

ENVIRONMENTAL RESOURCES

The Hudson River bounds the eastern side of the Town's Sewer District and receives tributary flow from Cedar Pond Brook and Minisceongo Creek just south of the Town's border. The Hudson River receives the treated effluent from the outfall located east of the Town WWTP. The Hudson River is classified as a SB waterbody by New York State Department of Environmental Conservation (NYSDEC).

The Town is subject to both coastal and riverine flooding hazards. The highest risk of floods within Stony Point are the coastal regions and the surrounding area around Cedar Pond Brook and Minisceongo Creek. The area that includes the WWTP is considered a high flood risk zone and susceptible to damage from severe storm events. The Town has already experienced a 260-year flood event which led to a storm surge from the

Hudson River, raising water levels to flood the Administration Building and came close to overtopping the aeration basin walls.

As specified by the NYSDEC, the threatened or endangered species inhabiting the Hudson River are the Atlantic and Shortnose Sturgeon. These species would be directly impacted by the release of untreated sewage into the environment, which would also negatively affect other aquatic fauna and flora that inhabit the Hudson River.

OWNERSHIP & SERVICE AREA

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The treatment plant was initially constructed in 1969 by the Town and is located on a 4.8 acre site and surrounded on the north and east by residential properties. The Town has an estimated population of 15,500 people and in the 2010 census Stony Point had a population of 15,095. Currently, the WWTP services the entire Town of Stony Point, therefore, future development and population growth should be considered for the proposed WWTP expansion. The population has increased by approximately 1.35% from 2010 to 2020. The population growth expected by 2030 would result in approximately 15,700 people.

The Town of Stony Point entered an inter-municipal agreement with the Haverstraw Joint Regional Sewerage Board on July 5, 2005. The agreement allows for the Town of Stony Point to divert an average daily flow of 0.7 MGD and a peak instantaneous flow of 2 MGD that is conveyed from the Cedar Pond Brook Pump Station to Haverstraw Sewage Treatment Plant. The contract is for a duration of 20 years and there is no provision in the current contract to cancel the agreement. The minimum annual service charge is \$15,000 for diverting sewage flows from the WWTP and for HJRSB to treat the diverted flow.

Additionally, the Town of Stony Point is currently in receipt of plans for future development within the Sewer District and the WWTP upgrades will need to account for these additional sewage flows. Three projects are planned to be constructed within the area; Kings Landing Development which will contain 100 2-bedroom residential units; Patriot Hills Golf Course Resort will contain mixed-use townhouses, conference center and commercial buildings; Eagle Bay Development will contain mixed-use commercial and townhouses. These projects have associated sewage flows of 22,000 GPD, 140,000 GPD, and 120,000 GPD, respectively. These flows will be included into the average daily design flow that the plant should expect to receive once these projects are complete.

EXISTING FACILITIES & PRESENT CONDITIONS

SITE

The WWTP property site is located on a 4.8 acre site and surrounded on the north and east by residential properties and on the west by the U.S. Gypsum Plant. The WWTP was constructed in 1969 as a conventional activated sludge system utilizing an aeration tank and settling tank to separate sludge from the treated wastewater. The plant was later upgraded in 1985 with the installation of a belt filter press and aerobic sludge holding tanks for sludge processing. The belt filter press replaced the two (2) sludge drying beds to process the sludge more efficiently. The Cedar Pond Brook Sewage Pump Station was also constructed during this time. The Cedar Pond Brook Pump Station allows for the diversion of sewage to the HJRSB WWTP when the Town's flows exceed the permitted influent flow.

SPDES PERMIT

The Town of Stony Point WWTP is governed by SPDES Permit (#NY0028851), issued and enforced by the NYSDEC. The Town operates one (1) wastewater treatment plant and maintains the associated sewage collection system. The Town WWTP currently operates at a permitted average daily design flow of 1.0 million gallons per day and an average BOD₅ loading of 1012 lbs. BOD₅/day (1.0 MGD * 121.4 mg/L * 8.34 lbs./gal). A copy of the NYSDEC State Pollutant Discharge Elimination System permit for the WWTP is attached as **Appendix C**, which was renewed on 4/1/2015 and expired on 3/31/2020. However, the plant continues to operate under the State Administrative Procedures Act (SAPA).

In 2020, the WWTP was upgraded with a new fine bubble aeration system, which included (2) new positive displacement blowers along with new fine bubble diffusers, stainless steel piping, elevated concrete slab, and pavilion. The aeration piping connects the blowers to a grid of fine bubble diffusers in each of the four (4) aeration basins. The new Kaeser positive displacement blowers are each capable of 2,404 standard cubic feet per minute (SCFM) and operates using a variable frequency drive (VFD) to allow for easier control and energy savings. The Kaeser blowers are connected to the aeration basins and aerobic sludge holding tanks using stainless steel piping to distribute the required air for treatment. The fine bubble diffuser system was provided by Xylem Water Solutions USA, Inc. – Sanitaire. The new system has proven to be more efficient at maintaining a dissolved oxygen (DO) concentration of 2.0 mg/L and adequate aeration for the sludge holding tanks for sludge processing.

The plant headworks was recently upgraded in 2020 with a new CleanFlo™ vertical spiral screen capable of 2.25 MGD. The RAS system was also recently upgraded by replacing the existing pumps with two (2) Flygt 3153 return activated sludge pumps. The vertical spiral screen installed in the main influent channel can handle up to 2.25 MGD and the RAS pumps are operated at a max flow rate of approximately 1000 GPM and alternated to allow equal wear on both pumps.

When necessary, flow is diverted through the Cedar Pond Brook Pump Station to the Haverstraw WWTP for treatment. The Town utilizes a diversion chamber to divert excess sewage flows to the Cedar Pond Brook Pump Station and the remainder of the flow is sent to a siphon chamber to flow via gravity to the Beach Road Pump Station to be pumped to the Stony Point WWTP. The pump stations and WWTP are equipped with flowmeters that are calibrated annually.

STONY POINT WASTEWATER TREATMENT PLANT OVERVIEW

The Stony Point WWTP receives sewage via a 24" PVC pipe which empties into a 2-foot wide concrete influent channel and bypass channel below the Administration Building. The plant headworks was recently upgraded in 2020 with a new CleanFlo™ vertical spiral screen capable of 2.25 MGD in the main channel and there is a manual bar screen in the bypass channel. The flow passes the vertical screen and empties into the raw sewage pump station wet well to be pumped in a 12" force main to the aerated grit chamber. The existing aerated grit chamber has been offline for almost 28 years, and flow continues to the distribution chamber

without grit removal via a 24" pipe from the offline grit chamber to the distribution chamber until it overtops the weirs. The distribution chamber flow is equally distributed to four 8" conduits to split the flow to the four aeration basins. The untreated sewage is held in the aeration basins for the required detention time to biologically treat the influent. The treated flow is then sent to the settling tanks to separate the solids and supernatant from the wastewater prior to seasonal chlorine disinfection.

Settled solids are collected in the settling tanks and moved into the screw conveyor to allow for sludge withdrawal by means of telescopic valving and piping within the RAS wet well. The sludge is then drawn into the 8" return activated sludge suction piping to the RAS pumps in the Administrative Building basement to be pumped to the distribution chamber. The distribution chamber is connected to the RAS force main and the WAS gravity piping that connects to the aerobic sludge holding tanks for sludge processing. The Operator can control the operable weir gate to control the flow that will be wasted to the holding tanks for sludge processing. A percentage of the RAS will be wasted to the sludge holding tanks for sludge stabilization via the 8" waste sludge piping located within the distribution chamber. The amount of RAS to be wasted is controlled by the Operator with an operable slide gate with "V" notched weir. The WAS is distributed to the three aerobic holding tanks to be stored with aeration so that the sludge may be further decomposed and prepared for dewatering utilizing a centrifuge.

The treated supernatant continues to move over the weirs within the settling tanks and is sent to the baffled chlorine contact tank for proper mixing and chlorine dosing. The chlorinated effluent is then discharged into the Hudson River via a 21" outfall. The WWTP site plan and process flow diagram are attached as **Appendix D**.

NOTICE(S) OF VIOLATION (NOV)

On September 17, 2020, the NYSDEC performed the annual compliance inspection of the Stony Point WWTP. The discharge monitoring reports for October 2019 through November 2020 were reviewed. The WWTP received a Notice of Violation due to the exceeded SPDES Permit effluent limitations; four (4) times for fecal coliform, three (3) times for total residual chlorine, and four (4) times for suspended solids. The total residual chlorine exceedances occurred between June 2020 and August 2020 and exceeded the

permitted effluent limits by 20%. The NYSDEC stated that the WWTP's status was modified to Significant Non-Compliance (SNC) as defined by the United States Environmental Protection Agency (USEPA).

During this inspection, an excessive number of floating solids were observed in the final clarifier and chlorine contact tank. The walkway over the sludge holding tank was observed to be severely corroded and broken presenting a hazard to WWTP personnel. In response to the NOV, the Town submitted a corrective action plan on November 16, 2020.

It should be noted that the inspection occurred during the construction of the WWTP aeration upgrades. The aeration upgrade was completed in October 2020 and the Operators have experienced significant improvements in operations during this time. It is expected that suspended solids exceedances will be greatly reduced, and excessive floating solids in the clarifiers and chlorine contact tank should also be reduced due to improvements made in the aeration basins.

The fecal coliform and total residual chlorine exceedances are a result of an outdated and awkward disinfection system. The facility has a long history of non-compliance for these parameters due to the faulty system. Compliance action for these parameters has been noted on the SPDES Permit as far back as 2009. The Town has been coping with the difficult disinfection system for a significant amount of time. The Town has submitted a corrective action plan to address the disinfection system.

The inspection also pointed out that the raw sewage pumps and pump station in the WWTP basement were corroded. Hydraulic overloads were also reported. It was noted that the Town is working with an Engineer to reduce flows due to inflow and infiltration.

INFLOW AND INFILTRATION STUDY

Over the years, the Town has experienced high flows due to inflow and infiltration (I&I). The Town contracted with Lanc & Tully Engineering and Surveying, P.C. to develop a plan to help reduce flows due to I/I. The NYSDEC approved the Sewer System Evaluation Schedule Five Year Action Plan. The Plan commenced in 2016 and was to be completed by the end of 2020.

The collection system was broken up into zones and problem areas were identified. The areas were investigated for I/I by performing manhole inspections, hydro-jetting, and CCTV inspections. Due to the site and complexity of the collection system and investigation tasks, the Plan will require additional time to be completed. Some of the areas requiring investigation will require bypass pumping due to high flows. Many additional manholes have been identified and sewer collection system mapping has been created and updated throughout the process.

Repairs have been made to a significant portion of the collection system during the study. Additional areas of concern have been identified for repairs and are listed in the most recent annual report. The manholes and sewer runs listed should be incorporated into a contract bid document so the repair work can be contracted out.

The Sewer System Evaluation Schedule Five Year Action Plan should continue to be implemented to help reduce flows due to excessive I/I. The Town should continue to systematically investigate the collection system as set forth in the annual reports. The Town should also continue to repair defects in manholes and the sewer piping identified in the investigations. The methodical approach should reduce excessive flows to the WWTP.

DEFINITION OF THE PROBLEM

The Town of Stony Point WWTP would require upgrades and repairs to existing treatment components to be capable of treating higher flows to account for future development and to permanently cease diversions to the HJRSB treatment plant. The goal of the evaluation is to determine the unsatisfactory unit processes that would require modifications before increasing the permitted capacity of the facility.

Due to the increasing pressure for development in the Stony Point area, the Town wishes to increase the amount of flow being treated at the WWTP and cease the diversion of flow to the HJRSB WWTP. Currently, the plant receives an average daily flow (ADF) of 0.731 MGD from 2017 to 2020 and the SPDES permit allows an ADF of 1.0 MGD. The WWTP diverts an ADF of 0.04 MGD with a max flow of 0.17 MGD from 2017 to 2020. The average influent BOD concentration was 121.4 mg/L during this time. Previous inspections of the WWTP have reported significant signs of I/I in the incoming influent. This is currently

being investigated and repaired by the Town. The WWTP has also received Notices of Violation regarding effluent limitations and the related treatment components responsible shall be evaluated and upgraded to conform to NYSDEC regulations and Ten States Standards for Wastewater Facilities.

The Town of Stony Point has several projects that will be developed within the Sewer District and the Town's WWTP will have to be expanded to treat existing, diverted, and future flows. The planned future projects consist of Kings Landing (Residential), Patriot Hills Golf Course Resort (Mixed-Use), Eagle Bay (Mixed-Use, PW), Patsy's Bay (Residential/PW), Minisceongo Yacht Club (Planned Waterfront District), and one undeveloped parcel on Holt Drive (Light Industrial). The associated sewage flows are as follows: 22,000 GPD, 140,000 GPD, 120,000 GPD, 120,000 GPD, 120,000 GPD, and 40,000 GPD, respectively. Once constructed, these projects would add a total flow of 562,000 GPD to the WWTP.

The WWTP is currently treating an average daily flow of 0.73 MGD and diverts an average flow of 0.04 MGD, the future flows and ceasing the diversion of flows to the Town of Haverstraw's WWTP would add approximately 0.6 MGD to flow already being treated at the Stony Point WWTP. It is proposed that the WWTP be designed for the existing average daily flow, proposed future flows, and the diverted flow which results in a minimum average daily design flow of 1.33 MGD (0.73 MGD + 0.562 MGD + 0.04 MGD). Adding the diverted and future flows to the existing permitted WWTP capacity (1.0 MGD + 0.562 MGD + 0.04 MGD) results in a required design capacity of 1.6 MGD.

To allow for growth and to increase WWTP capacity to the greatest extent with minimal costs, a design flow rate of 1.8 MGD was selected. A design capacity of 1.8 MGD and a respective BOD loading of 1,822 lbs. BOD₅/day (1.8 MGD x 121.4 mg/L x 8.34) is proposed since increasing the flow rate any further would impose greater costs related to modifications and would require additional tankage for the aeration basins, sludge holding tanks, and the newly added aeration system or a complete modification to the treatment process.

TREATMENT PROCESS EVALUATION

The Town WWTP will require upgrades to existing treatment components to be able to treat flows up to 1.8 MGD and conform to modern standards. The following treatment process evaluations were conducted

at 1.8 MGD, and with a peak factor of 2.78, results in a peak flow of 5.0 MGD (3,470 GPM). The peak factor of 2.78 was determined by Figure 1 in Ten States Standards and is based on the population of the Town of Stony Point. The following treatment process evaluation will demonstrate the modifications or equipment required to be able to process 1.8 MGD average daily flow and 5.0 MGD peak flow through the existing WWTP.

HEADWORKS

The raw sewage pump station is located within the basement of the Administration Building. The Administration Building houses the raw sewage pumps, piping, valving, and flow meter. The wet well is adjacent to the Building. The discharge from the raw sewage pump station is conveyed to the aerated grit chamber through a 12" force main. The raw sewage pump station and aerated grit chamber were evaluated at the proposed flows to determine required improvements or modifications.

The raw sewage enters the existing 2' wide by 3'-2" high concrete influent channel from the collection manhole outside of the Administration Building. This concrete influent channel was recently upgraded with a vertical spiral screen manufactured by WesTech. The model FSV5 spiral screen that was installed can process flows up to 2.25 MGD. The newly installed spiral screen would not be able to handle the peak flows associated with 1.8 MGD. The secondary influent channel could handle the excess but would require a manual bar screen upgrade. The influent channel was evaluated to determine the max capacity that may flow without overtopping the channel walls. The capacity was determined using Manning's equation for open channel flow. Using the channel dimensions above and slope of 0.001 ft/ft, the influent channel may carry a max flow of 10.8 MGD which is greater than the proposed permitted average daily design flow of 1.8 MGD and the associated peak flow of 5.0 MGD.

The flow passing the influent channel and vertical bar screen enters the raw sewage pump station in the basement of the Administration Building. The raw sewage pump station was evaluated to determine whether or not it can handle the proposed design average and peak flows. The existing raw sewage wet well has the dimensions 6' L x 21' W x 6' H with a maximum storage volume of 5,655 gallons. The main constraint for the pump station volume is the total operating height available. High flow rate pumps will require a 2' minimum submergence which leaves 4' of depth left to manage the incoming flows.

The existing raw sewage pumps are set up in a lead, lag, stand-by configuration. This means that when the wet well level gets to its first setting, the lead pump is activated. If the wet well level continues to increase and gets to its second setting, then the lag pump is activated. Both pumps operating in parallel convey the flow to the grit chamber. The third pump is a stand-by pump in case one of the other two pumps fail.

The existing raw sewage pumps were evaluated to determine if they can meet the requirements of the proposed flows. The existing horizontal pumps are each rated for 900 GPM @ 26 feet of total dynamic Head (TDH). According to Ten States Standards, the pumps are required to have a flow rate that is equivalent or larger than the proposed peak flows. When the existing lead and lag pumps are operating, the system is capable of approximately 1,800 GPM. The proposed peak flow is 3,470 GPM. New, higher flow rate raw sewage pumps will be required.

The existing raw sewage pumps convey the flow to the aerated grit chamber in a 12" ductile iron force main. Ten States Standards recommends the force main velocity to be between 2 ft/sec and 8 ft/sec. The force main velocity is 9.85 ft/sec at the proposed peak flow of 3,470 GPM. The force main should be replaced by a larger diameter pipe to conform with Ten States Standards.

The raw sewage pump station currently pumps to an aerated grit chamber to prevent grit from entering the treatment system. The aerated grit chamber has been offline and does not allow for proper settling and removal of grit. This will likely lead to a high volume of grit accumulation in the recently upgraded aeration basins. A new grit removal system should be installed at the facility to preserve recent and future upgrades.

The current headworks system is inadequate for the proposed average daily flow of 1.8 MGD and proposed peak flow of 3,470 GPM. The existing screening system, the wet well volume, the raw sewage pumps, and the 12" force main are not sufficient for the proposed flows.

It is recommended that the Town construct a new headworks facility on the northern side of the site where the wastewater enters the property. The facility would be located on the western side of the entrance driveway behind the existing aerated grit chamber. Construction of a new headworks facility would be less expensive

and less difficult than attempting to retrofit the existing headworks. The new headworks can be constructed while the existing system stays online so flow through the treatment plant can continue without the usage of costly bypass pumping.

The proposed headworks would consist of a channel with an automated screening device and a bypass channel with a manual bar screen. The flow would then proceed to a larger wet well. The raw sewage pumps would be located in a dry pit. The raw sewage pumps would utilize VFDs and wet well sensors to pace the flow through the treatment facility.

The flow would then be pumped to the proposed grit removal system. A cyclonic grit removal system, using centrifugal forces, would be the most effective type of system. The removed grit would be conveyed to a grit washer to remove the organics. The washed grit could then be disposed of with the collected debris from the mechanical bar screen.

A small building would be required to house the washer compactor for the bar screen, the grit washing system, and the electricals and controls for the pumps. Upon completion of the new headworks, the existing system could be abandoned.

DISTRIBUTION CHAMBER

The distribution chamber receives the flow from the offline aerated grit chamber via a 24" pipe, where it is allowed to accumulate before overtopping the existing 24" x 24" slide gates with "v" notched weirs. The distribution chamber would be able to accommodate 1.8 MGD and the associated peak flows. The existing distribution chamber utilizes four (4) symmetrically placed weirs to split the flow equally to the four (4) 8" pipes. Return activated sludge is pumped from the settling tank to the distribution chamber in an 8" force main to recycle to the aeration basins to sustain biological processes. The distribution chamber may require modifications if another aeration tank is required because flow would need to be distributed equally to allow for equal biological treatment within the aeration basins. However, if the recommended alternative is chosen, then the existing distribution chamber would not require modifications.

AERATION BASINS

The aeration basins were evaluated at a design flow rate of 1.8 MGD to determine if the treatment process could handle additional influent and higher BOD₅ loading. The existing aeration basin trains are 125' long, 13.56' high and 20' wide which equates to a volume of 33,650 ft³ (251,702 gal). There are four (4) existing aeration trains with a total volume of 134,600 ft³ (1,006,808 gal). At a flow rate of 1.8 MGD, the detention time is 13.4 hours.

The aeration basins were also checked against Ten States Standards for Wastewater Facilities 2014 Edition to determine if the processes can treat the increased biological loading. Ten States Standards states that the maximum permissible organic loading is 40 lbs. BOD₅/day/1000 ft³.

The WWTP Operators provided BOD₅ values from the 2017-2020 discharge monitoring reports. The average influent BOD₅ was 121.4 mg/L with a max BOD₅ of 222.5 mg/L. Checking the BOD₅ loading in lbs./day for the average BOD₅ is 1,822 lbs./day and the loading for the max BOD₅ is 3,340 lbs./day.

According to Wastewater Engineering: Treatment and Reuse by Metcalf and Eddy, a peaking factor of 1.5-2.0 should be applied to meet sustained organic loadings at peak conditions. Utilizing a peaking factor of 1.5, the new average BOD₅ loading is 2,733 lbs./day.

To check if the aeration basins can currently support the biological loading for treatment, Ten States Standards guidelines were used to determine the maximum permissible organic loading. The organic loading was found by dividing the BOD₅ load for the total volume of the aeration basins. Results for an average BOD₅ loading of 2,733 lbs./day and a max BOD₅ loading of 3,340 lbs./day is a BOD₅ loading of 20.3 lbs./day/1000 ft³ and 24.8 lbs./day/1000 ft³. The maximum permissible organic loading of 40 lbs. BOD₅/day/1000 ft³ for conventional aeration was not surpassed using average and max influent BOD₅ values. The organic loading would be 33.1 lbs./day/1,000 ft³ if one aeration basin is offline for maintenance or repairs.

The aeration basins have recently been upgraded with a new fine bubble aeration system and two (2) new blowers capable of supplying between 683-2,404 SCFM (standard cubic feet per minute) of air, to provide a residual dissolved oxygen concentration of 2.0 mg/l in the basins for optimal biological treatment.

According to Ten States Standards, normal air requirements for all activated sludge processes except extended aeration shall be 1,500 ft³/lb BOD₅. Using the previous BOD₅ loading of 2,733 lbs./day, an air requirement of 2,847 SCFM would be required to aerate the basins and treat the influent effectively. The existing 100 HP blowers are capable of 2,404 SCFM, so the basins would require an additional 443 SCFM. The WWTP would require a smaller blower to feed air to the sludge holding tanks and the aeration basin. The new blower must be capable of the additional 443 SCFM mentioned above and the required 517 SCFM for the holding tanks for a total of 960 SCFM to accommodate the loading at the proposed flow of 1.8 MGD. Aeration calculations can be found in **Appendix E**.

SETTLING TANKS

The existing settling tanks are constructed from reinforced concrete and internal dimensions measure 70' long, 15' wide, and a total side water depth of 8.32'. The WWTP settling tanks were evaluated at 1.8 MGD and checked against Ten States Standards to determine whether or not modifications to the existing two (2) tanks are required. Ten States Standards states that the minimum side water depth shall be 12' minimum for a secondary tank following the activated sludge process. The settling tanks do not meet the minimum height requirements and would have to be increased to satisfy the requirements of Ten States Standards.

The settling tank overflow rate was also checked against Ten States Standards to determine if the overflow rate is acceptable and does not exceed the 1,200 GPD/ft² standard. The overflow rate was calculated by taking the design flow rate (1.8 MGD) and dividing by the total surface area of the two (2) settling tanks (30' x 70') to obtain a design overflow rate of 857 GPD/ft². The overflow rate for a design flow rate of 1.8 MGD is well under the allowable design overflow rate stated by Ten States Standards.

The settling tank weir overflow rate was evaluated at 1.8 MGD with Ten States Standards. The Standards state that for treatment plants with capacities greater than 1 MGD, the weir overflow rate shall not exceed 30,000 GPD/ft. The weir overflow rate was calculated by taking the design flow rate (1.8 MGD) and dividing by the total length of the weir plates in the settling tanks (100 ft), resulting in a design weir overflow rate of 18,000 GPD/ft.

The settling tank peak solids loading rate was evaluated at 1.8 MGD to determine if the loading rate exceeds the 40 lbs./day/ft² maximum in Ten States Standards. Utilizing the equation: Solids Loading Rate= $8.34*(Q+Q_{RAS}) * (X/A)$; where Q= 1.8 MGD, $Q_{RAS}=1.8$ MGD max, X= 3153 mg/l MLSS, A= 2100 ft². The average MLSS was obtained from DMRs from 2017-2020 and Ten States Standards recommends the maximum RAS flow rates to be 100% the average daily design flow. The solids loading rate was found to be 45.1 lbs./day/ft² which exceeds the max loading rate of 40 lbs./day/ft². To reduce the solids loading rate to an acceptable value the settling tanks would require a larger surface area to obtain a solids loading rate below 40 lbs./day/ft².

Due to insufficient side water depth and high solids load rate, the settling tanks are inadequate for the proposed flows. If the tanks remain in use after increasing flows to 1.8 MGD, then the height of the walls would have to be increased to 12 ft to provide an adequate separation zone between the sludge blanket and overflow weirs. Increasing the height of the settling tanks does not address the larger surface area required to comply with the peak solids loading rate. The settling tanks would need extensive modifications or replacement with a circular clarifier to provide sufficient solids separation. The settling tanks could also be eliminated if an alternative treatment process were proposed.

RETURN ACTIVATED SLUDGE SYSTEM

The return activated sludge (RAS) wet well draws settled sludge from the bottom of the settling tank after the sludge is raked by chain driven flights. The amount of sludge drawn into the RAS wet well is controlled by a 6" telescopic valve with approximately 2'-6" of travel distance. If the settling tanks remain in operation and are modified with higher walls, the telescopic valve may require modifications to increase travel distance for more optimal control over settled sludge withdrawal into the RAS wet well. If new circular clarifiers are installed, additional RAS suction piping modifications will be necessary.

The RAS pumps are located within the basement of the Administration Building and the 8" RAS suction piping is connected to the bottom of the RAS wet well for withdrawal of settled sludge for re-circulation in the plant. To be capable of handling the new design flow of 1,250 GPM (1.8 MGD), the RAS pumps would have to be upgraded or an additional pump could be added to allow for parallel pumping when required.

The existing RAS pumps have recently been upgraded but utilizing only one may not be adequate to handle 100% of the new average daily design flow. Currently, there are two (2) new pumps being alternated to provide equal wear and redundancy. The two (2) pumps are capable of handling 1,250 GPM when pumping in parallel, but an additional RAS pump may be required for redundancy.

WASTE ACTIVATED SLUDGE SYSTEM

The WWTP waste activated sludge (WAS) piping is located within the plant's distribution chamber where the Operator can control the WAS flows with an operable 24" x 24" slide gate. The RAS is sent from the RAS pumps in the Administrative Building basement through an 8" force main to the distribution chamber. The RAS flow that is sent to the distribution chamber will be mixed with the influent while a percent of the flows (controlled by gate) will be wasted and sent through the 8" waste sludge piping to be distributed to the three (3) existing sludge holding tanks.

The existing system is adequate since the current discharge monitoring reports show a diminishing amount of wasting on a daily basis. The system is very efficient since it removes the need for pumping WAS to the sludge holding tanks by utilizing the RAS pumps, distribution chamber, and slide gates to control the amount of sludge to be wasted. There is one sludge pump that is utilized for drawing wasted sludge from the bottom of the aerobic holding tank and pumping it to the centrifuge to be dewatered.

AEROBIC SLUDGE HOLDING TANKS

The plant currently has three aerobic sludge holding tanks with equal dimensions (28' long, 15' wide, 13.67' high). The sludge holding tanks receive the WAS from the distribution chamber's 8" gravity piping and store it under constant aeration. The aeration system within the holding tanks was recently upgraded in the summer of 2020. The storage volume is required to be evaluated at 1.8 MGD. Each holding tank has a storage volume of 42,946 gallons for a total storage volume of 128,837 gallons.

According to the NYSDEC Design Standards for Intermediate Sized Wastewater Treatment Systems, a sludge holding tank with supernatant decant capability shall have 1,000 gallons capacity per 15,000 gallons of design flow. The required storage volume for 1.8 MGD is 120,000 gallons. Since the minimum required storage

volume is less than the existing sludge holding tank storage volume, there is no current need for additional tankage.

The aeration requirements were evaluated at 1.8 MGD and checked against Ten States Standards to determine the required volume of air needed. Ten States Standards states that a minimum air supply of 30 SCFM/1000 ft³ of tank volume must be provided with redundancy in case of blower failure. The holding tanks require a minimum flow of 517 SCFM. An additional blower will be required to meet the minimum air requirements for the sludge holding tanks and aeration basins.

CENTRIFUGE

The centrifuge utilized for sludge dewatering is manufactured by Andritz and is currently operated one to three times per week. The existing centrifuge replaced a belt filter press and has been in operation with success. The original belt filter press was installed in 1985 when the other treatment components were constructed.

The WWTP Operators control the amount of sludge withdrawn from the aerobic sludge holding tanks and sent to the centrifuge for dewatering. The sludge pump currently operates on a VFD at an operating flow rate of approximately 280 GPM to feed the Andritz centrifuge. The dewatered sludge is then stored in a container outside the dewatering room to await transport to a disposal facility.

With an increased design flow of 1.8 MGD, the Operators will have to utilize the sludge pump and centrifuge to dewater sludge on a more frequent basis. Currently, the WWTP Operators dewater one to three times per week depending on biological loading variations experienced at the plant. The centrifuge can be operated more frequently if necessary. There is sufficient capacity in the current dewatering system for the proposed 1.8 MGD flows.

DISINFECTION SYSTEM

The Town of Stony Point is required to disinfect their effluent seasonally, between May 1st and October 31st. The current disinfection system has been problematic and has resulted in multiple non-compliances with the Town's SPDES Permit. The SPDES Permit states that the 30 day geometric mean limit for fecal coliform is

200 No/100 ml and that the maximum total residual chlorine cannot be above 1 mg/L. The Town's disinfection system makes it difficult to comply with the SPDES Permit limits.

The current disinfection system consists of injecting chlorine gas into potable water. The chlorine infused water is then pumped to the wet well at the end of the settling tanks where it is fed into the plant effluent for disinfection. The mixture then goes through the chlorine contact tank where it flows around baffles to ensure proper mixing of the chlorine with the effluent. The flow then comes back into the settling tank wet well and into the 21" outfall pipe to the Hudson River.

This type of system, along with the limits in the SPDES Permit, make it very difficult to manage. The effluent must be dosed with enough chlorine to disinfect the flow but yet it can only have a maximum chlorine residual level of 1.0 mg/L. Maintaining this balance, along with the variations in flow, make it difficult to comply with the Permit. A new UV disinfection system is proposed to make the disinfection process less complicated and straight forward to operate.

UV disinfection utilizes ultraviolet lights to inactivate bacteria, viruses and pathogens. The installation of a UV disinfection system will eliminate the need for chlorine gas, carrier water and associated pumps. The UV disinfection system will be more straightforward to operate than the current system. The proposed system can be installed in the chlorine contact tank. The tank could be converted to have channels for an in-channel system, or an in-vessel system could be placed on grating in the tank. Converting to a UV disinfection system would greatly reduce the non-compliances at the facility, would eliminate the usage of expensive potable water as carrier water, would eliminate the usage of dangerous chlorine gas, and would help to streamline operations at the facility.

FINANCIAL STATUS

The Town of Stony Point primarily receives income from Sewer District #2 and Sewer District #3 for a total value of \$1,769,153 in 2019 and \$1,799,311 in 2020. The Town also receives minor revenues from sewer rents, permits and fees, interest, and insurance recoveries. The total gross revenue for the years 2019 and 2020 were \$1,806,096 and \$1,819,199, respectively.

The Town has incurred several expenses for equipment, sewage treatment and disposal, personnel, and employee health benefits. These costs total \$1,004,751 in 2019 and \$1,613,106 in 2020. In addition to these costs, the Town has numerous other expenses such as collection system expenses, personnel expenses, engineering expenses, and disposal contracts which totaled \$1,006,594 and \$379,408 in 2019 and 2020 respectively. The Town also paid \$177,451 for an interfund transfer in 2019.

In 2019, the gross revenue was \$1,806,096 with total expenditures of \$1,588,168. The surplus was \$217,927. In 2020, the gross revenue was \$1,819,199 with total expenditures of \$1,992,515. Also in 2020, the Town incurred a capital cost of \$173,316, primarily due to the cost of equipment and increased sewer treatment disposal costs.

ALTERNATIVES ANALYSIS

NO ACTION

By taking no action, the Town would continue to divert sewage flows and remain non-compliant with NYSDEC standards and regulations. Without significant upgrades the WWTP would continue to operate inefficiently and be subject to further Notices of Violation. The WWTP will continue to risk exceeding SPDES Permit effluent limitations and potentially be fined \$37,500 per day per violation.

The minimum annual service charge for diverting untreated sewage to the HJRSB plant for treatment is \$15,000 for the contract duration of 20 years. The contract agreement is set to expire July 5, 2025 and the Town will be responsible for the flows diverted. Once the inter-municipal agreement terminates, the WWTP would not be compliant with NYSDEC SPDES Permit permissible flow and effluent limits. The WWTP was recently upgraded with a new fine bubble aeration system that allows greater treatment efficiency of incoming influent when compared with the previous coarse bubble aeration system making the no action alternative inappropriate.

The NYSDEC has also sent Notices of Violation to the Town of Stony Point several times over the past two years. The NYSDEC has imposed fines for effluent limit exceedances for each applicable day. By taking no action, the WWTP and Town would continue to experience permit excursions, thus resulting in environmental pollutions and additional fines.

The Town of Stony Point would object to no action being taken due to the circumstances that have placed the WWTP under Significant Non-Compliance. The Town is currently in the process of reducing I/I that enters the WWTP and expressed understanding that the capacity of the plant would need to be increased to meet future development demands. Since the WWTP was constructed in 1985, there are components that are both beyond their useful life and do not meet current design standards.

UPGRADE THE EXISTING CONVENTIONAL ACTIVATED SLUDGE SYSTEM

By upgrading the existing WWTP system, the Town would be able to reduce operation and diversion costs by increasing the efficiency of treatment components. The improvements required, in order to increase WWTP capacity, would be to construct a new headworks facility, two (2) new circular clarifiers, and install a new UV disinfection system. Once these components are designed and upgraded to accommodate a design flow of 1.8 MGD and associated peak flows, the treatment plant would be capable of meeting NYSDEC and Ten States Standards to efficiently treat the raw sewage.

The WWTP should prioritize the UV disinfection system due to the dosing inefficiency of the current disinfection system. The addition of a UV disinfection system would relieve Operators from having to dose chlorine and reduce possible errors due to flow variations. Operator dosing error was noted in a Notice of Violation dated December 5, 2019. A new disinfection system would eliminate the usage of dangerous chlorine gas and expensive potable water. Utilizing a UV disinfection system, designed to meet the proposed flows, would be a priority upgrade to the WWTP.

The WWTP should also prioritize replacement of the existing raw sewage pump station and construct a new headworks facility in order to accommodate the proposed peak flows. It is proposed that a new headworks facility be constructed with more storage volume due to the existing raw sewage pump station having minimal operating volume. The new headworks facility would also utilize a mechanical bar screen to remove trash and debris and a grit removal system to preserve downstream assets. The existing raw sewage pump station would remain operational while the headworks facility is being constructed to save on costly bypass pumping.

The last upgrade required for the increased flows is the construction of two (2) circular clarifiers. The clarifiers could be located to the east and west of the existing settling tanks. Each clarifier would be 40 feet in diameter with a 12 foot side well depth, so the clarifier size would comply with the requirements of Ten States Standards including proper redundancy.

The project would require modifications to the RAS suction piping and existing scum system. Miscellaneous upgrades, such as the additional blower and additional RAS pump, could also be implemented during this time period.

These modifications will allow the WWTP to continue using the conventional activated sludge treatment process and satisfy current and future needs. The proposed upgrades allow the WWTP to be deemed in satisfactory condition to treat an average daily flow of 1.8 MGD and place the WWTP in a state of compliance with NYSDEC regulations. The Town of Stony Point would no longer need to rely on diversions to the HJRSB treatment plant and would be capable of treating existing and future sewage flows.

UPGRADE TO SEQUENCING BATCH REACTORS

A sequencing batch reactor (SBR) is a fill and draw activated sludge system to provide equalization, aeration, and clarification within the same basin. Air is diffused through the wastewater for a specified amount of time for decomposition to occur, and then aeration is paused while settling of decomposed solids is allowed to occur. After the settling of flocculated solids, the treated flow exits the tanks for disinfection and releases through the outfall to the Hudson River. This option would also require a new headworks facility and a new UV disinfection system.

Conversion of the WWTP treatment process from conventional activated sludge to a sequencing batch reactor plant would convert the four (4) aeration basin trains to four (4) batch reactors capable of biological treatment, and solids separation within the same tank. Modifying the existing aeration basins would consist of installing a new control system and equipment that would manage the filling, aeration, settling, decanting, and wasting within the modified basins. The existing system would require an equalization tank to hold incoming influent while the SBRs treat the detained influent for the entire cycle.

An additional aeration basin would be required for a SBR system. Ten States Standards states that the aeration tank organic loading should not exceed 15 lbs. BOD₅/day/1,000 ft³. The proposed flow (1.8 MGD) and proposed loading (2,733 lbs. BOD₅/day) yields an organic loading of 20.3 lbs. BOD₅/day/1,000 ft³. A fifth aeration base that is 125' long x 20' wide x 13.56' deep would be required.

The cycle of treatment within the basins will consist of filling, biological treatment, settling, decanting, and idling/wasting. During the fill phase, the basin would receive the untreated wastewater and allow the microbes in the activated sludge to create an environment for biochemical reactions to start the breakdown of influent organics. Once the filling of the basins is complete, the biological treatment is started with the introduction of aeration. No more influent is introduced into the reactor during treatment.

Due to no additional volume or organic loading being added to the basins, the rate of organic removal increases dramatically. After the biochemical reactions are complete, the aeration is stopped, and activated sludge is allowed to settle within the basin. The settled activated sludge produces a sludge blanket at the bottom of the tank, and sludge is separated from the top layer of water. Once the settling process is complete, the decanting phase starts with the use of a decanter to remove the clear supernatant. The existing basins would have to be equipped with a fixed-arm or floating decanter connected to the SBR control system.

In addition to the new basin, a new control system would be connected to the existing aeration controller and dissolved oxygen probes. Three (3) additional dissolved oxygen (DO) probes will be required for all five (5) basins for proper control. Waste activated sludge pumps and piping would be required to be connected to all five (5) basins for settled sludge removal for aerobic digestion and dewatering. The distribution chamber influent piping would require actuated valving to be connected to the SBR control system to prevent flow from entering the basins before biological treatment begins. Depending on the operation of the five (5) SBRs, it may be necessary that an additional blower would be needed as a redundant if both existing 100 hp blowers are needed in parallel. The effluent will then be disinfected using a new UV disinfection system to be discharged to the outfall.

The sequencing batch reactor system would be optimal if a fifth basin was not required. It would require significant modifications to the existing aeration basins, and an additional control system to control the phases

of treatment within the five (5) basins. The proposed headworks facility and UV disinfection system would still be required for this option. The existing settling tanks would not be required and could be used to expand the existing sludge holding volume or be utilized as an effluent equalization tank. Influent flow equalization would be recommended with enough storage volume to allow the SBRs to complete the treatment process, and to allow time for maintenance in case of mechanical/system failure.

SUMMARY AND COMPARISON OF ALTERNATIVES

The following table is a summary of all feasible alternatives, identifying major differences, pros and cons, non-monetary and life-cycle costs such as capital costs, maintenance, operations, and energy usage.

Table 1: Summary & Comparison of Alternatives

ALTERNATIVE	PROS	CONS	NON-MONETARY FACTORS
<u>OPTION 1</u> No Action	<ul style="list-style-type: none"> ▪ No up-front capital expenditure. 	<ul style="list-style-type: none"> ▪ Fines associated with continued non-compliance with SPDES Permit. ▪ Reliance on HJRSB for diversions resulting in continued payments. 	<ul style="list-style-type: none"> ▪ Inability to comply with SPDES Permit ▪ Risk contamination of Hudson River ▪ Town objection
<u>OPTION 2</u> Upgrade Existing Treatment Process	<ul style="list-style-type: none"> ▪ Minimal or no modifications to existing control system. ▪ Operators remain familiar with treatment process. ▪ Facility is in compliance. 	<ul style="list-style-type: none"> ▪ Capital expenditures for headworks, clarifiers, UV system. 	<ul style="list-style-type: none"> ▪ Ability to comply with SPDES Permit. ▪ Increased capacity for development within the Town. ▪ Compliant with Environmental Conservation Law.

<p><u>OPTION 3</u></p> <p>Upgrade to Sequencing Batch Reactors</p>	<ul style="list-style-type: none"> ▪ Utilize less tankage for treatment process ▪ No need for settling tank/clarifier. ▪ Facility is in compliance. 	<ul style="list-style-type: none"> ▪ Higher costs for modifications and system controls. ▪ Equalization tank highly recommended. ▪ Additional basin and additional aeration equipment required. ▪ Unfamiliar treatment process. 	<ul style="list-style-type: none"> ▪ Ability to comply with SPDES Permit. ▪ Increased capacity.
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RECOMMENDED ALTERNATIVE

Assuming that the NYSDEC’s review of the Town of Stony Point WWTP SPDES Permit, in accordance with the Environmental Benefit Permit Strategy (EBPS), does not result in major modifications of the Town’s SPDES Permit effluent limits, the recommended alternative is Option 2: Upgrade Existing Treatment Process.

Upgrading the existing conventional activated sludge treatment process is more cost-effective for expanding the treatment capability to 1.8 MGD and associated peak flows and it would require less modifications to the existing control system and treatment processes than Option 3: Upgrade to Sequencing Batch Reactors. Option 3 would require an additional basin, modifications to the existing aeration basins, an equalization tank before treatment, and modifications to the existing aeration control system to work in conjunction with the new SBR system. Option 3 is an entirely new treatment system, while Option 2 requires upgrades to the existing treatment system that the facility Operators are already familiar with.

Option 2 is to upgrade the existing treatment processes so the facility can accommodate average daily flows of 1.8 MGD and peak flows of 5.0 MGD. The recommendation is to perform the upgrades as three separate projects: construction of a headworks facility, construction of two (2) clarifiers, and construction of a UV disinfection system.

Due to the facility being in Significant Non-Compliance because of the disinfection system, it is recommended to install the UV system as the first project. This project should be performed as soon as possible to get the facility back in compliance with the NYSDEC. The budgetary cost estimate for the UV system project is \$500,000 and can be found in **Appendix F**.

The next highest priority would be to construct a new headworks facility. Currently, the raw sewage pump station has difficulty keeping pace with the flow when there are significant wet weather events. It is recommended the facility installs a grit removal system as part of the headworks to preserve the recently installed aeration system and other downstream processes. The budgetary cost estimate for the headworks facility is \$2,800,000 and can be found in **Appendix F**.

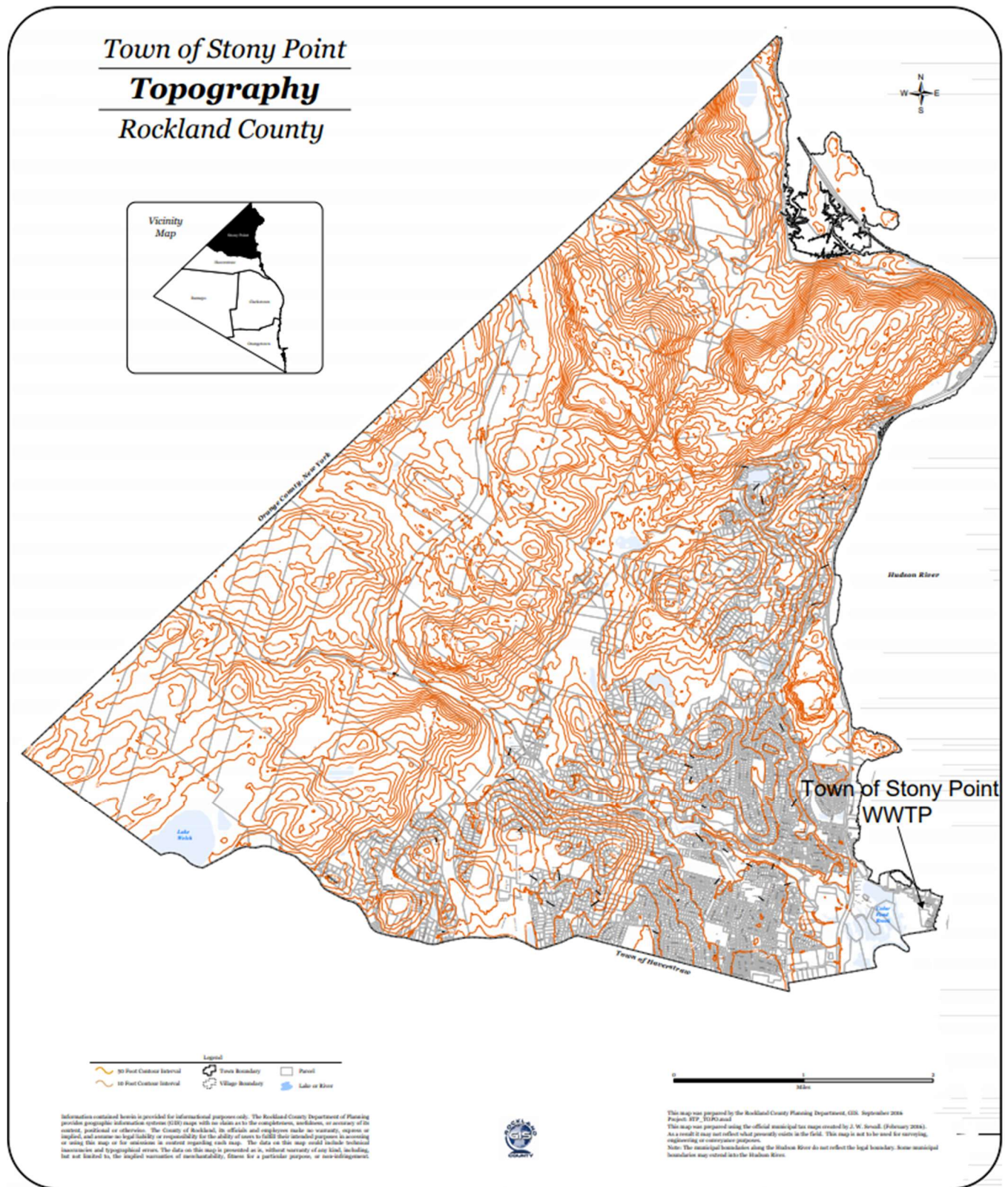
The final upgrade project is to construct the circular clarifiers. Other miscellaneous upgrades such as the blower for the holding tanks and additional RAS pump, could be performed as well. The budgetary cost estimate for the clarifier project is \$1,800,000 and can be found in **Appendix F**.

After the upgrades are complete, the facility can disconnect from HJRSB, will be in compliance, and should be re-rated for an average daily flow of 1.8 MGD. A proposed site plan showing the locations of the improvements can be found in **Appendix G**. A proposed schedule for the upgrades can be seen below.

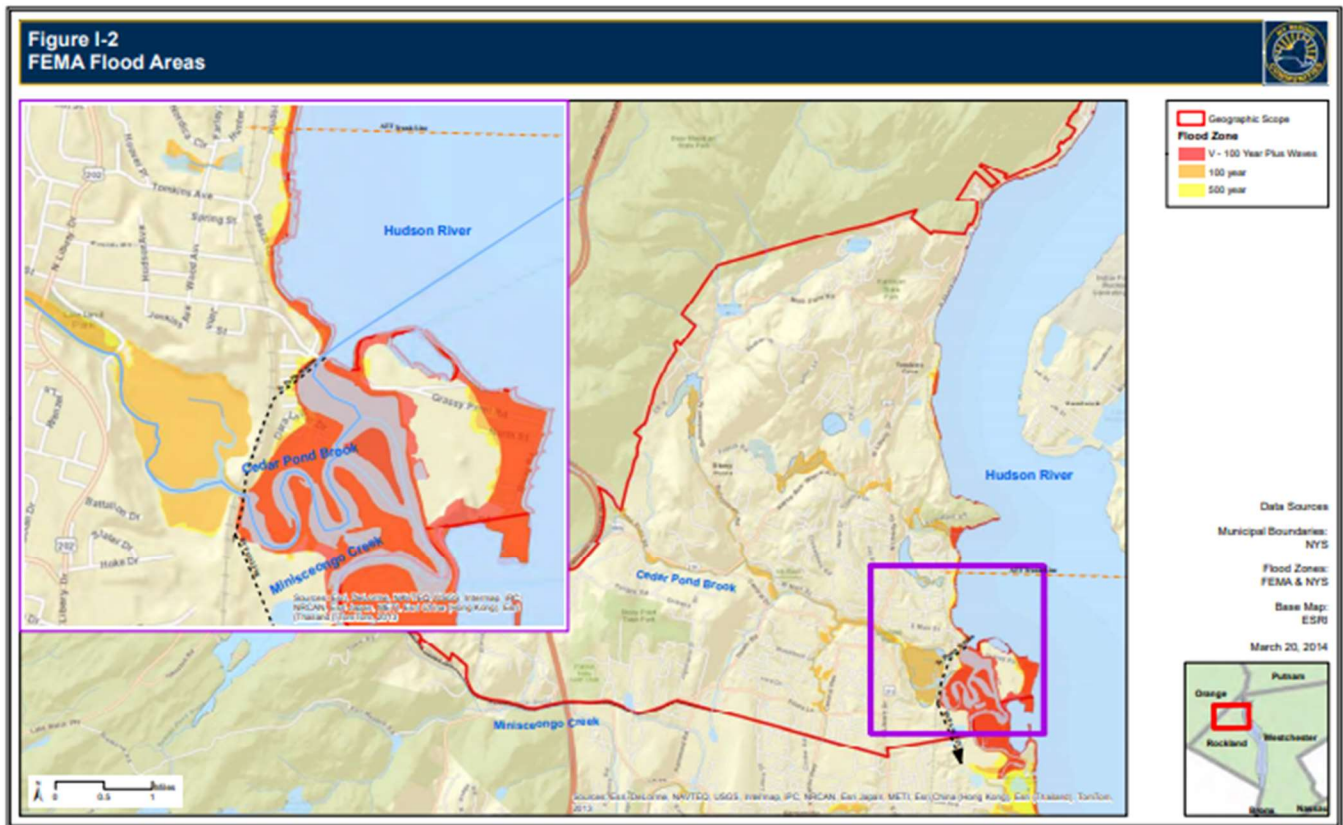
Town of Stony Point HJRSB Disconnect Implementation Schedule			
Task Number	Task	Start Date	Finish Date
1	Improvements to Aeration Basins	October 15, 2019	August 15, 2020
2	Update of NYSDEC SPDES Permit	March 16, 2020	January 31, 2021
3	Design of Improvements to Effluent Disinfection System	April 1, 2021	August 31, 2021
4	Construction of Improvements to Effluent Disinfection System	September 1, 2021	April 30, 2022
5	Design of Headworks Facility	November 1, 2021	April 30, 2022
6	Construction of Headworks Facility	June 1, 2022	May 31, 2023
7	Design of Improvements to Clarifiers, Blowers and RAS Pumps	January 1, 2023	June 30, 2023
8	Construction of Improvements to Clarifiers, Blowers and RAS Pumps	August 1, 2023	July 31, 2024

9	Operations and Maintenance Training and Manual Preparation	August 1, 2024	October 31, 2024
10	Compliance Report and Notification to NYSDEC and HJRSB of Termination of Bypass	January 15, 2025	January 15, 2025

APPENDIX A: TOWN OF STONY POINT MAP



APPENDIX B: TOWN OF STONY POINT FEMA FLOOD RISK MAP



APPENDIX C: SPDES PERMIT

New York State Department of Environmental Conservation
Division of Environmental Permits
NYSDEC HEADQUARTERS
625 BROADWAY
ALBANY, NY 12233
(518) 402-9167



SPDES PERMIT RENEWAL

8/13/2014

TOWN OF STONY POINT
74 E MAIN ST
STONY POINT NY 10980-1629

Permittee Name: TOWN OF STONY POINT
Facility Name: STONY POINT STP
Ind. Code: 4952 County: ROCKLAND
DEC ID: 3-3928-00026/00002 SPDES No.: NY0028851
Permit Effective Date: 4/1/2015
Permit Expiration Date: 3/31/2020

Dear Permittee,

The State Pollutant Elimination System (SPDES) permit renewal for the facility referenced above is approved with the new effective and expiration dates. This letter together with the previous valid permit for this facility effective on 04/01/2010 and any subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued permit(s).

As a reminder, SPDES permits are renewed at a central location in Albany in order to make the process more efficient. All other concerns with your permit, including applications for permit modification or transfer to a new owner, a name change, and other questions, should be directed to:

Regional Permit Administrator
NYSDEC REGION 3 HEADQUARTERS
21 SOUTH PUTT CORNERS RD
NEW PALTZ, NY 12561-1620
(845) 256-3185

If you have already filed an application for modification of your permit, it will be processed separately by that office.

If you have questions concerning this permit renewal, please contact LINDY SUE CZUBERNAT at (518) 402-9167.

Sincerely,

Stuart M. Fox
Deputy Chief Permit Administrator

CC:
RPA
BWC

RWE
File

BWP
EPA



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

12/16/08

Industrial Code: 4952
 Discharge Class (CL): 05
 Toxic Class (TX): N
 Major Drainage Basin: 13
 Sub Drainage Basin: 01
 Water Index Number: HR
 Compact Area: IEC

SPDES Number: NY- 0028851
 DEC Number: 3-3928-00026/00002
 Effective Date (EDP): 4/1/2005
 Expiration Date (ExDP): 4/1/2010
 Modification Dates: 3/25/2009

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et.seq.)(hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: **Town of Stony Point**
 Street: **74 East Main Street**
 City: **Stony Point**

Attention: **Supervisor and Town Board**

State: NY Zip Code: 10980

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: **Town of Stony Point Sewage Treatment Plant**
 Location (C,T,V): **Stony Point (T)**
 Facility Address: **North Street, Grassy Point**
 City: **Stony Point**

County: **Rockland**

State: NY Zip Code: 10980

NYTM -E: From Outfall No.: **001** at Latitude: **41 ° 13 ' 25 "** & Longitude: **73 ° 57 ' 35 "**
 into receiving waters known as: **Hudson River** Class: **SB**

and; (list other Outfalls, Receiving Waters & Water Classifications)

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1.2(a) and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: **Town of Stony Point**
 Street: **74 East Main Street**
 City: **Stony Point**

State: NY Zip Code: 10980

Responsible Official or Agent: **Philip Marino, Supervisor**

Phone: **(845) 786-2716**

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

CO BWP - Permit Coordinator
 Thomas Rudolph, RWE
 Margaret Duke, RPA
 EPA Region II - Michelle Josilo
 Rockland County Health Dept.
 Interstate Environmental Commission

Deputy Chief Permit Administrator: Stuart M. Fox	
Address: Division of Environmental Permits 625 Broadway Albany, NY 12233-1750	
Signature: <i>Stuart M. Fox</i>	Date: 3/10/09

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE		RECEIVING WATER	EFFECTIVE	EXPIRING	
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.		This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)	
PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE	
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/l, etc.			
PARA-METER	EFFLUENT LIMIT	PRACTICAL QUANTITATION LIMIT (PQL)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based limits, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the analytical method specified in the permit shall be used to monitor the amount of the pollutant in the outfall to this level, provided that the laboratory analyst has complied with the specified quality assurance/quality control procedures in the relevant method. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This PQL can be neither lowered nor raised without a modification of this permit.	Type I or Type II Action Levels are monitoring requirements, as defined below in Note 2, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, Temperature, concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Note 1: DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.

DAILY MAX.: The highest allowable daily discharge. **DAILY MIN.:** The lowest allowable daily discharge.

MONTHLY AVG: The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week.

30 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of : the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar week.

RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

Note 2: ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards. **TYPE I:** The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level. **TYPE II:** The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results that show the stated action level exceeded for four of six consecutive samples, or for two of six consecutive samples by 20 % or more, or for any one sample by 50 % or more.

PERMIT LIMITS, LEVELS AND MONITORING FOR EXISTING TREATMENT SYSTEM

OUTFALL No.	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	<input checked="" type="checkbox"/> All Year <input type="checkbox"/> Seasonal from _____ to _____	Hudson River	3/25/2009	4/1/2010

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location		
								Inf.	Eff.	
Flow	Monthly Average	1.0	mgd			Continuous	Recorder	X		
BOD ₅	Monthly Average	30	mg/l	250	lbs/d	1/week	24-hr comp.	X	X	(1)
BOD ₅	7 Day Average	45	mg/l	375	lbs/d	1/week	24-hr comp.		X	
BOD ₅	6 Consecutive Hour Average	50	mg/l						X	(4)
Solids, Suspended	Monthly Average	30	mg/l	250	lbs/d	1/week	24-hr comp.	X	X	(1)
Solids, Suspended	7 Day Average	45	mg/l	375	lbs/d	1/week	24-hr comp.		X	
Solids, Suspended	6 Consecutive Hour Average	50	mg/l						X	(4)
Solids, Settleable	Daily Max.	0.3	ml/l			2/day	Grab		X	
pH	Range	6.0-9.0	SU			2/day	Grab		X	
Temperature	Daily Maximum	Monitor	Deg F			2/day	Grab		X	
Nitrogen, Ammonia (as NH ₃)	Monthly Average	Monitor	mg/l			1/quarter	24-hr comp.		X	
Nitrogen, TKN as N	Monthly Average	Monitor	mg/l			1/quarter	24-hr comp.		X	
Nitrogen, Nitrite as N	Monthly Average	Monitor	mg/l			1/quarter	24-hr comp.		X	
Nitrogen, Nitrate as N	Monthly Average	Monitor	mg/l			1/quarter	24-hr comp.		X	
Effluent Disinfection required: <input type="checkbox"/> All Year <input checked="" type="checkbox"/> Seasonal from <u>May 1</u> to <u>Oct. 31</u>										
Chlorine, Total Residual	Daily Max.	1.0	mg/l			2/day	Grab		X	(2),(3)
Coliform, Fecal	30 Day Geometric Mean	200	No./100 ml			1/week	Grab		X	(2)
Coliform, Fecal	7 Day Geometric Mean	400	No./100 ml			1/week	Grab		X	(2)
Coliform, Fecal	6 Hour Geometric Mean	800	No./100 ml						X	(2),(4)
Coliform, Fecal	Individual Sample	2400	No./100 ml						X	(2),(4)

FOOTNOTES:

- (1) and effluent shall not exceed 15 % and 15 % of influent concentration values for BOD₅ & TSS respectively.
- (2) Monitoring of these parameters is only required during the period when disinfection is required.
- (3) An interim Total Residual Chlorine limit of 2.0 mg/l is in effect until the disinfection system is evaluated and upgraded, as necessary, to meet the final 1.0 mg/l limit in accordance with the Schedule of Compliance in this permit.
- (4) This is an Interstate Environmental Commission (IEC) requirement. The permittee is not required to perform this sampling but shall be required to meet the permit limit at all times. EPA, DEC or IEC may perform the sampling.

STORM WATER POLLUTANT PREVENTION PLAN FOR POTWs WITH STORMWATER OUTFALLS

1. **General** - The Department has determined that stormwater discharges from POTWs with design flows at or above 1 mgd shall be covered under the SPDES permit. If the permittee has already submitted a Notice of Intent to the Department for coverage under the General Storm Water permit, the permittee shall submit a Notice of Termination to the Department upon receipt of this final SPDES permit containing the requirement to develop a SWPPP.

The permittee is required to develop, maintain, and implement a Storm Water Pollutant Prevention Plan (SWPPP) to prevent releases of significant amounts of pollutants to the waters of the State through plant site runoff; spillage and leaks; sludge or waste disposal; and other stormwater discharges including, but not limited to, drainage from raw material storage.

The SWPPP shall be documented in narrative form and shall include the 13 minimum elements below and any necessary plot plans, drawings, or maps. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the SWPPP and may be incorporated by reference. A copy of the current SWPPP shall be submitted to the Department as required in item (2.) below and a copy must be maintained at the facility and shall be available to authorized Department representatives upon request.

2. **Compliance Deadlines** - The initial completed SWPPP shall be by 9/25/2009 to the Regional Water Engineer. The SWPPP shall be implemented within 6 months of submission, unless a different time frame is approved by the Department. The SWPPP shall be reviewed annually and shall be modified whenever: (a) changes at the facility materially increase the potential for releases of pollutants; (b) actual releases indicate the SWPPP is inadequate; or (c) a letter from the Department identifies inadequacies in the SWPPP. The permittee shall certify in writing, as an attachment to the December Discharge Monitoring Report (DMR), that the annual review has been completed. All SWPPP revisions (with the exception of minimum elements - see item (4.B.) below) must be submitted to the Regional Water Engineer within 30 days. Note that the permittee is not required to obtain Department approval of the SWPPP (or of any minimum elements) unless notified otherwise. Subsequent modifications to or renewal of this permit does not reset or revise these deadlines unless a new deadline is set explicitly by such permit modification or renewal.
3. **Facility Review** - The permittee shall review all facility components or systems (including but not limited to material storage areas; in-plant transfer, process, and material handling areas; loading and unloading operations; storm water, erosion, and sediment control measures; process emergency control systems; and sludge and waste disposal areas) where materials or pollutants are used, manufactured, stored or handled to evaluate the potential for the release of pollutants to the waters of the State. In performing such an evaluation, the permittee shall consider such factors as the probability of equipment failure or improper operation, cross-contamination of storm water by process materials, settlement of facility air emissions, the effects of natural phenomena such as freezing temperatures and precipitation, fires, and the facility's history of spills and leaks. The relative toxicity of the pollutant shall be considered in determining the significance of potential releases.

The review shall address all substances present at the facility that are identified in Tables 6-10 of SPDES application Form NY-2C (available at http://www.dec.ny.gov/docs/permits_ej_operations_pdf/form2C.pdf) as well as those that are required to be monitored by the SPDES permit.

4. **A. 13 Minimum elements** - Whenever the potential for a release of pollutants to State waters is determined to be present, the permittee shall identify Best Management Practices (BMPs) that have been established to prevent or minimize such potential releases. Where BMPs are inadequate or absent, appropriate BMPs shall be established. In selecting appropriate BMPs, the permittee shall consider good industry practices and, where appropriate, structural measures such as secondary containment and erosion/sediment control devices and practices. USEPA guidance for development of minimum elements of the SWPPP and BMPs is available in the September 1992 manual *Storm Water Management for Industrial Activities*, EPA 832-R-92-006 (available from NTIS, 703-487-4650, order # PB 92235969). At a minimum, the plan shall include the following elements:

- | | | |
|-------------------------------------|--|---------------------------------|
| 1. Pollution Prevention Team | 6. Security | 10. Spill Prevention & Response |
| 2. Reporting of BMP Incidents | 7. Preventive Maintenance | 11. Erosion & Sediment Control |
| 3. Risk Identification & Assessment | 8. Good Housekeeping | 12. Management of Runoff |
| 4. Employee Training | 9. Materials/Waste Handling,
Storage, & Compatibility | 13. Street Sweeping |
| 5. Inspections and Records | | |

Note that for some facilities, especially those with few employees, some of the above may not be applicable. It is acceptable in these cases to indicate "Not Applicable" for the portion(s) of the SWPPP that do not apply to your facility, along with an explanation, for instance if street sweeping did not apply because no streets exist at the facility.

B. Stormwater Pollution Prevention Plans (SWPPPs) Required for Discharges of Stormwater From Construction Activity to Surface Waters

- As part of the erosion and sediment control element, a SWPPP shall be developed prior to the initiation of any site disturbance of one acre or more of uncontaminated area. Uncontaminated area means soils or groundwater which are free of contamination by any toxic or non-conventional pollutants identified in Tables 6-10 of SPDES application Form NY-2C. Disturbance of any size contaminated area(s) and the resulting discharge of contaminated stormwater is not authorized by this permit unless the discharge is under State or Federal oversight as part of a remedial program or after review by the Regional Water Engineer; nor is such discharge authorized by any SPDES general permit for stormwater discharges. SWPPPs are not required for discharges of stormwater from construction activity to groundwaters.

The SWPPP shall conform to the *New York Standards and Specifications for Erosion and Sediment Control* and *New York State Stormwater Management Design Manual*, unless a variance has been obtained from the Regional Water Engineer, and to any local requirements. The permittee shall submit a copy of the SWPPP and any amendments thereto to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction activity at least 30 days prior to soil disturbance. The SWPPP shall also be submitted to the Regional Water Engineer if contamination, as defined above, is involved and the permittee must obtain a determination of any SPDES permit modifications and/or additional treatment which may be required prior to soil disturbance. Otherwise, the SWPPP shall be submitted to the Department only upon request. When a SWPPP is required, a properly completed *Notice of Intent (NOI)* form shall be submitted (available at <http://www.dec.ny.gov/chemical/43133.html>) prior to soil disturbance. Note that submission of a NOI is required for informational purposes; the permittee is not eligible for and will not obtain coverage under any SPDES general permit for stormwater discharges, nor are any additional permit fees incurred. SWPPPs must be developed and submitted for subsequent site disturbances in accordance with the above requirements. The permittee is responsible for ensuring that the provisions of each SWPPP is properly implemented.

MERCURY MINIMIZATION PROGRAM REQUIREMENTS

Mercury Minimization Program for Low Priority POTWs - The permittee shall inspect each tributary dental facility at least once every five years to verify compliance with the wastewater treatment and notification elements of 6NYCRR Part 374.4. Inspection and/or outreach to other industrial/commercial sectors which may contribute mercury is also recommended. All new or increased tributary discharges, including hauled wastes, which are from sources that are industrial in nature must be evaluated for mercury content and if levels exceed 500 ng/L then authorization must be obtained from the Department prior to acceptance. A file shall be maintained containing the notices submitted by dental offices and all other pertinent information. This file shall be available for review by DEC representatives and copies shall be provided upon request. Note that a permit modification may be necessary to include more stringent requirements for POTWs which do not maintain low mercury effluent levels.

INFLOW AND INFILTRATION MANAGEMENT PROGRAM

In accordance with New York State Codes, Rules, and Regulations at 6NYCRR Part 750-2.7(f) and 750-2.8(a)(1) & (2), the permittee has responsibility for the permittee-owned and operated sanitary sewer system and must:

- (i) properly manage, operate and maintain the collection system at all times; and
- (ii) take all reasonable steps to minimize or prevent overflows from the collection system by providing adequate capacity to convey base flows and peak flows for all parts of the collection system.

(1) **Management Program** - The permittee must develop a management program to comply with the above requirements. The program must:

- (i) **Goals:** Identify with specificity the major goals of the management program, consistent with the requirements identified above.
- (ii) **Organization:** Identify:
 - (A) administrative and maintenance positions responsible for implementing measures in the management program; and
 - (B) the chain of communication for reporting overflows from the sanitary sewer - from method of receipt of the information to the person responsible for reporting to the DEC.
- (iii) **Legal Authority and Budget:** Include legal authority, through sewer use ordinances, service agreements or other legally binding documents, to implement the management program. Also, the permittee's budget should include allowances for funding the management program.
- (iv) **Measures and Activities.** The management program must address appropriate measures and activities and identify the person or position in the permittee's organization responsible for each measure and activity.
- (v) **Collection System Map** - The permittee must develop and maintain an up-to-date map of the sanitary collection system.
- (vi) **Monitoring, Measurement and Program Modifications.** The permittee must monitor the implementation and, where appropriate, measure the effectiveness of the management program and update the program as appropriate based on monitoring or performance evaluations.

(2) **System Evaluation and Capacity Assurance Program:** The permittee must prepare and implement a plan for continuous sanitary sewer system evaluation and capacity assurance. The program will consist of a continuous cycle of evaluation of the sanitary sewer system and identification of measures to mitigate (1) excessive inflow and infiltration, and (2) structural and hydraulic deficiencies. The program may be phased so that sections of the sanitary sewer system are evaluated in subsequent years, though all sections must be evaluated at least once in a 5-year period. Mitigation measures must be prioritized and a schedule for implementation of those measures developed so that top priorities are addressed first. At a minimum the plan must include:

- (i) **Evaluation:** The permittee shall evaluate the permittee owned or operated collection system, including pumping capabilities. A detailed map of the storm water and sanitary sewer system must be developed as part of the evaluation and must include any cross connections between those sewer systems and any

illicit discharge points. The evaluation must: provide estimates of peak flows associated with wet weather conditions (including allowances for projected growth); provide estimates of the capacity of key system components; identify hydraulic or structural deficiencies, including components of the system with limiting capacity; and identify the sources of inflow and infiltration that contribute to peak flows. The permittee must evaluate whether the inflow and infiltration in the sanitary sewer system is considered "excessive". Excessive shall mean the volume of inflow and infiltration that causes sanitary sewer overflows or nontypical surcharges in manholes in the sewer system.

- (ii) **Development of Measures:** The permittee shall establish short and long term measures to mitigate each source of excessive inflow and infiltration by developing and evaluating a cost/benefit analysis of the projected reductions in volume of excessive inflow and infiltration from each measure. The permittee shall also establish short and long term measures to repair hydraulic or structural deficiencies by developing and evaluating a cost/benefit analysis of capability to convey peak flows from each measure. One of the measures that must be evaluated is regularly scheduled cleaning of the sanitary sewer system. The measures must be prioritized on one list, with measures that will mitigate dangers to human health having the top priority. The permittee must develop a training program so that personnel can adequately perform the sewer system evaluation.
- (iii) **Evaluation Report:** On January 1st of each year, the permittee must submit an evaluation report to DEC for review and approval that includes the alternatives analysis and identifies the chosen measures developed during the past year's evaluation of the sanitary sewer system. The report must be developed and signed by a professional engineer licensed in New York State. The report shall include a schedule to construct/implement the chosen measures. Upon approval by DEC, the schedule shall become part of, and enforceable under, the SPDES permit.
- (iv) **Progress:** The permittee must also include in the evaluation report above:
- A section containing information on the progress made on the approved program and schedule during the previous year;
 - A summary of the implementation of the training program;
 - Information on the effectiveness and performance of measures that have been previously implemented; and
 - A discussion of issues such as funding, legal authority and preventive maintenance and how these issues impact the program. If these issues are preventing implementation of the program, the report must describe the efforts made to develop appropriate responses to these issues so the program may move forward.

SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
	NA	The Permittee shall develop and submit a Stormwater Pollution Prevention Plan (SWPPP) to the Regional Water Engineer.	9/25/2009
	001	<p>Total Residual Chlorine - The Permittee shall evaluate and modify (if necessary) the disinfection system to achieve the Water Quality Based Effluent Limit of 1.0 mg/l for total residual chlorine in accordance with the following:</p> <p>a. At the conclusion of the 2009 seasonal disinfection season, the Permittee shall notify the department in writing whether or not modifications to the disinfection system are needed to comply with the Water Quality Based Effluent Limit of 1.0 mg/l for total residual chlorine.</p> <p>b. If modification of the disinfection system is not required, the Permittee must begin complying with the Water Quality Based Effluent Limit of 1.0 mg/l for total residual chlorine and a design level of 2.0 mg/l of dissolved oxygen at the start of the 2010 seasonal disinfection season.</p> <p>c. If modification to the disinfection system is required, the Permittee must meet the following schedule:</p> <p>1. The Permittee shall submit an approvable Engineering Report that identifies the upgrades necessary to achieve compliance with the water quality based effluent limitation of 1.0 mg/l for total residual chlorine and a design level of 2.0 mg/l of dissolved oxygen.</p> <p>2. The Permittee shall submit approvable final plans and specifications, as well as a schedule of construction, for the facilities described in the approved Engineering Report. The Permittee shall commence construction of the facilities described in the approved report, plans and specifications in accordance with the approved schedule of construction.</p> <p>3. The Permittee shall submit progress reports every 3 months detailing the work done in accordance with the approved engineering report and schedule of construction. The schedule of construction contained in the approved report shall, by this reference, be made part of the permit.</p> <p>4. The Permittee shall complete construction in accordance with the approved schedule, but no later than May 1, 2012.</p>	<p>10/31/2009</p> <p>5/1/2010</p> <p>3/25/2010</p> <p>DEC Approval of Engineering Report + 12 months</p> <p>DEC Approval of Schedule of Construction + 3 months</p>

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

- b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:
1. A short description of the non-compliance;
 2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
 3. A description of any factors which tend to explain or mitigate the non-compliance; and
 4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.
- c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

DISCHARGE NOTIFICATION REQUIREMENTS

- (a) Except as provided in (c) of these Discharge Notification Act requirements, the permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit. Such signs shall be installed within 90 days of the Effective Date of this Modification.
- (b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.
- (c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.
- (d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

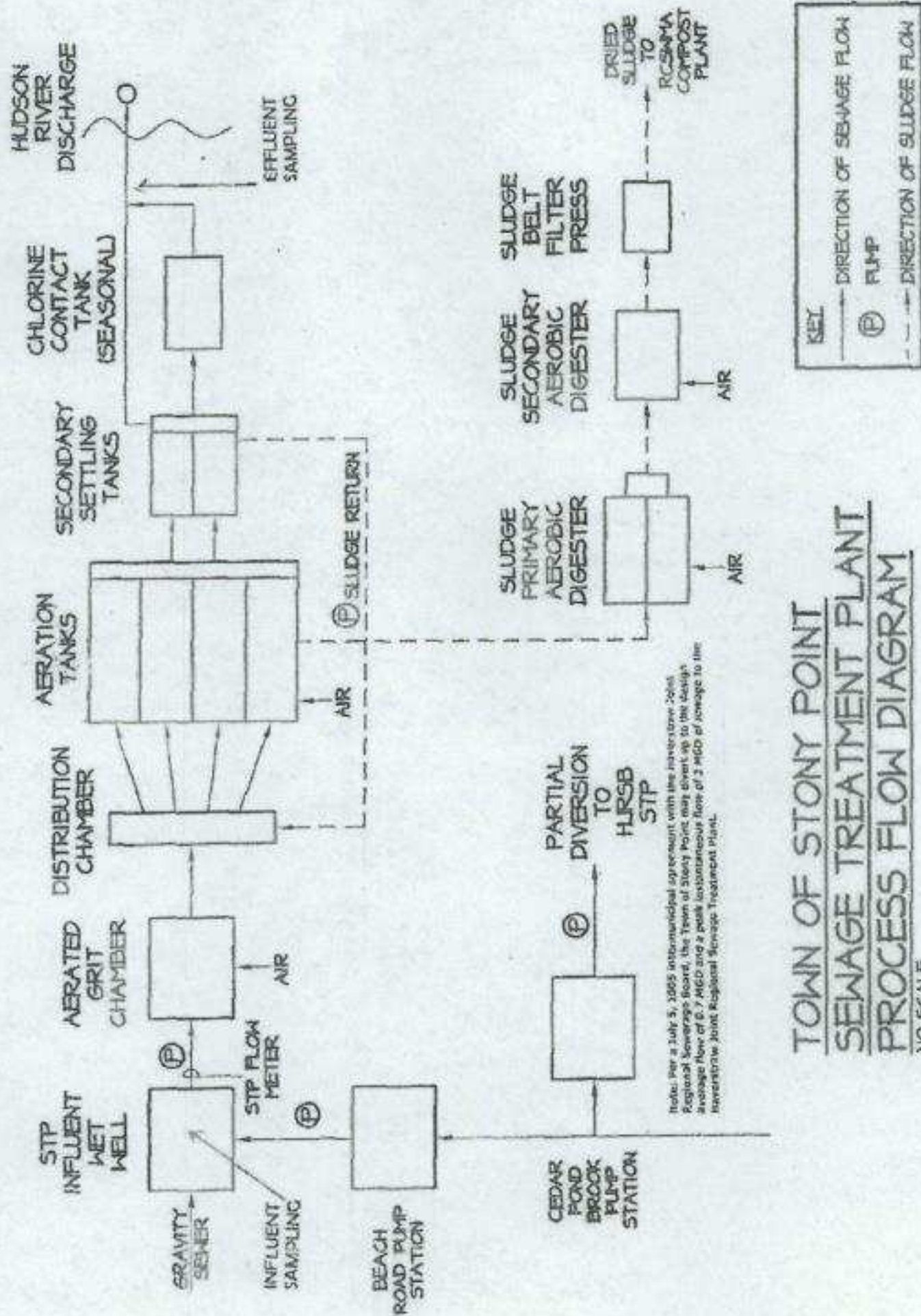
The signs shall have **minimum** dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

<p>N.Y.S. PERMITTED DISCHARGE POINT</p> <p>SPDES PERMIT No.: NY _____</p> <p>OUTFALL No. : _____</p> <p>For information about this permitted discharge contact:</p> <p>Permittee Name: _____</p> <p>Permittee Contact: _____</p> <p>Permittee Phone: () - ### - ####</p> <p>OR:</p> <p>NYSDEC Division of Water Regional Office Address :</p> <p>NYSDEC Division of Water Regional Phone: () - ### - ####</p>
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- (e) For each discharge required to have a sign in accordance with a), the permittee shall, concurrent with the installation of the sign, provide a repository of copies of the Discharge Monitoring Reports (DMRs), as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of five years.
- (f) The permittee shall periodically inspect the outfall identification signs in order to ensure that they are maintained, are still visible and contain information that is current and factually correct.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:



RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

- a) The permittee shall also refer to 6 NYCRR Part 750-1.2(a) and 750-2 for additional information concerning monitoring and reporting requirements and conditions.
- b) The monitoring information required by this permit shall be summarized, signed and retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent. **Also, monitoring information required by this permit shall be summarized and reported by submitting;**

(if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

(if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 and must summarize information for January to December of the previous year in a format acceptable to the Department.

(if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:

Regional Water Engineer and/or County Health Department or Environmental Control Agency specified below

Send the original (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Water Compliance Programs
625 Broadway
Albany, New York 12233-3506

Phone: (518) 402-8177

Send an additional copy of each DMR page to:

Send the first copy (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
100 Hillside Ave., Suite 1W
White Plains, New York 10603

Phone: (914) 428-2505

- c) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2.
- d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.
- f) Calculation for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.
- g) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.
- h) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller Empire State Plaza, Albany, New York 12201.

APPENDIX D: WWTP SITE PLAN AND SEWAGE FLOW DIAGRAM

APPENDIX E: CALCULATIONS

Town of Stony Point WWTP Unit Processes

Aeration Basins

Design, Q: 1.8

Aeration Basin Dimensions:

L	125	ft
W	20	ft
H	13.56	ft

8.34	lbs/gallon
1 ft ³ =	7.48 gallons

Q, ADF	1.8	mgd
	1250	gpm

Aeration Basin Fillet Dim:

H	2	ft
B	2	ft
L	125	ft

Aeration Basin Volume:	33,650	ft ³
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Total Volume (4 Trains):	134,600	ft ³
	1,006,808	gallons

Detention Time:	Volume/Flow Rate	
T =	805.4	minutes
T =	13.4	hrs

BOD Loading	mg/L	lbs/day
Average Influent BOD ₅	121.4	1822
Peak Average Influent BOD ₅	182.1	2733
Max Influent BOD ₅	222.5	3340
Min Influent BOD ₅	57.3	860

Maximum BOD₅ Loading [lb/day]	3,340	lb/day
BOD₅ Loading [lb/day/1000ft³]	24.8	lb/day/1000ft ³
BOD₅ Loading [lb/day/1000ft³ one basin offline]	33.1	lb/day/1000ft ³

Ten States Standards maximum permissible organic loading is **40 lb BOD₅/day/1000 cu ft** for conventional aeration.

Aeration basins with one basin offline for maintenance still below Ten States Standards maximum organic loading.

Air Flow Required [SCFM]	2,733	lbs/day
	4,099,514	ft ³ /day
	2,847	SCFM
	1,423	SCFM per Blower

1500 ft³ /lb BOD₅

Ten States Standards states that for Normal air requirements for all activated sludge processes except extended aeration (assuming equipment capable of transmitting to the mixed liquor the amount of oxygen required in Paragraph 92.331) shall be considered to be **1,500 cubic feet at standard conditions of pressure, temperature, and humidity per pound of BOD₅ aeration tank loading**

Aeration Basins Require 2 Blowers and 1 back up

Existing Blowers SCFM	2,404	SCFM	Max
	683	SCFM	Min

Additional Air Flow Required for Aeration Basins [SCFM]	443	SCFM
Additional Air Flow Required for Digesters [SCFM]	517	SCFM
Total Additional Air Flow Required [SCFM]	960	SCFM

Town of Stony Point WWTP Unit Processes

Settling Tanks

Design, Q: 1.8

$Q_{Design} =$	1.8	mgd
$Q_{Design} =$	1250	gpm
MLSS =	3150	mg/L

Secondary Settling Tanks Dimensions:	Length:	70	ft
	Width:	15	ft
	Height:	8.32	ft

Ten States Standards Minimum Side Water Depth, ft shall be 12ft minimum for secondary tank following an activated sludge process

Secondary Settling Tanks Volume:	8,736	ft ³
	65,345	gallons

Total Volume (2 Tanks):	17,472	ft ³
	130,691	gallons

Total Area:	2100	ft ²
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Detention Time, T_d	105	minutes
	1.74	hours

Ten States Standards States that final settling tanks shall not exceed a surface overflow rate of 1,200 gpd/ft². 857 is acceptable

Design Average Overflow Rate [gal/day/ft ²]	857	[gal/day/ft ²]
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Peak Solids Loading Rate [lb/day/ft ²]	3.2	[lb/day/ft ²]
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BOD ₅ Loading [lb/day]	3340	lb/day
Solids Loading [lb/day]	34	lb/day

Ten States Standards states that for WWTP with capacities greater than 1 MGD, the weir loadings shall not exceed 30,000 gal/day/ft

Design Weir Overflow Rate [gal/day/ft]	18000	[gal/day/ft]
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Length of Weir Plate	12.5	ft
Total per clarifier	50	ft
Two clarifiers	100	ft

Max Solids Loading Rate is $8.34 \times (Q + Q_{RAS}) \times (X/A)$ (X is the MLSS in mg/L and A is the Area)	45	[lb/day/ft ²]
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Ten States Standards States that Peak Solids Loading Rate shall not exceed 40 lb/day/ft². The Solids Loading Rate exceeds the standard

Return Activated Sludge Pump Design Flow, Q_{RAS}	188	GPM
	1250	GPM

Ten States Standards recommends a pumping rate 50% to 150% of the influent flow.(92.4 Return Sludge Rate)

RAS Pump Check

Design $Q_{avg} =$	1250 gpm
--------------------	----------

Minimum	15%	Q_{Min}	188	gpm
Maximum	100%	Q_{Max}	1250	gpm

Existing pump will not handle Design average flow at 100%. Additional pump required

Town of Stony Point WWTP Unit Processes

Sludge Holding Tanks

Design, Q: 1.8

$Q_{Design} =$	1.8	mgd
$Q_{Design} =$	1,250	gpm

Sludge Digester Tank Dimensions	Length:	28	ft
	Width:	15	ft
	Height:	13.67	ft

Sludge Digester Tank Volume	5,741	ft ³
	42,946	gal

7.48 gal/cu ft

Total Tank Volume [3 Tanks]	17,224	ft ³
	128,837	gal

Required Tank Volume	16,043	ft ³
	120,000	gal

NYSDEC Standards:
 Sludge Holding tank with supernatant capabilities: A minimum of 1,000 Gallon per 15,000 gallons of design flow is recommended. [P. F-24].
 128,837 gal > 120,000 gal Requirement met

Existing Blowers SCFM	2404	SCFM	Max
	683	SCFM	Min

Ten States Standards
 requires 30 SCFM/1000ft³ aeration requirement for holding tanks

Digester Aeration Requirements	30	SCFM/1000 ft ³
	517	SCFM

An additional 517 SCFM is required for the Holding Tanks

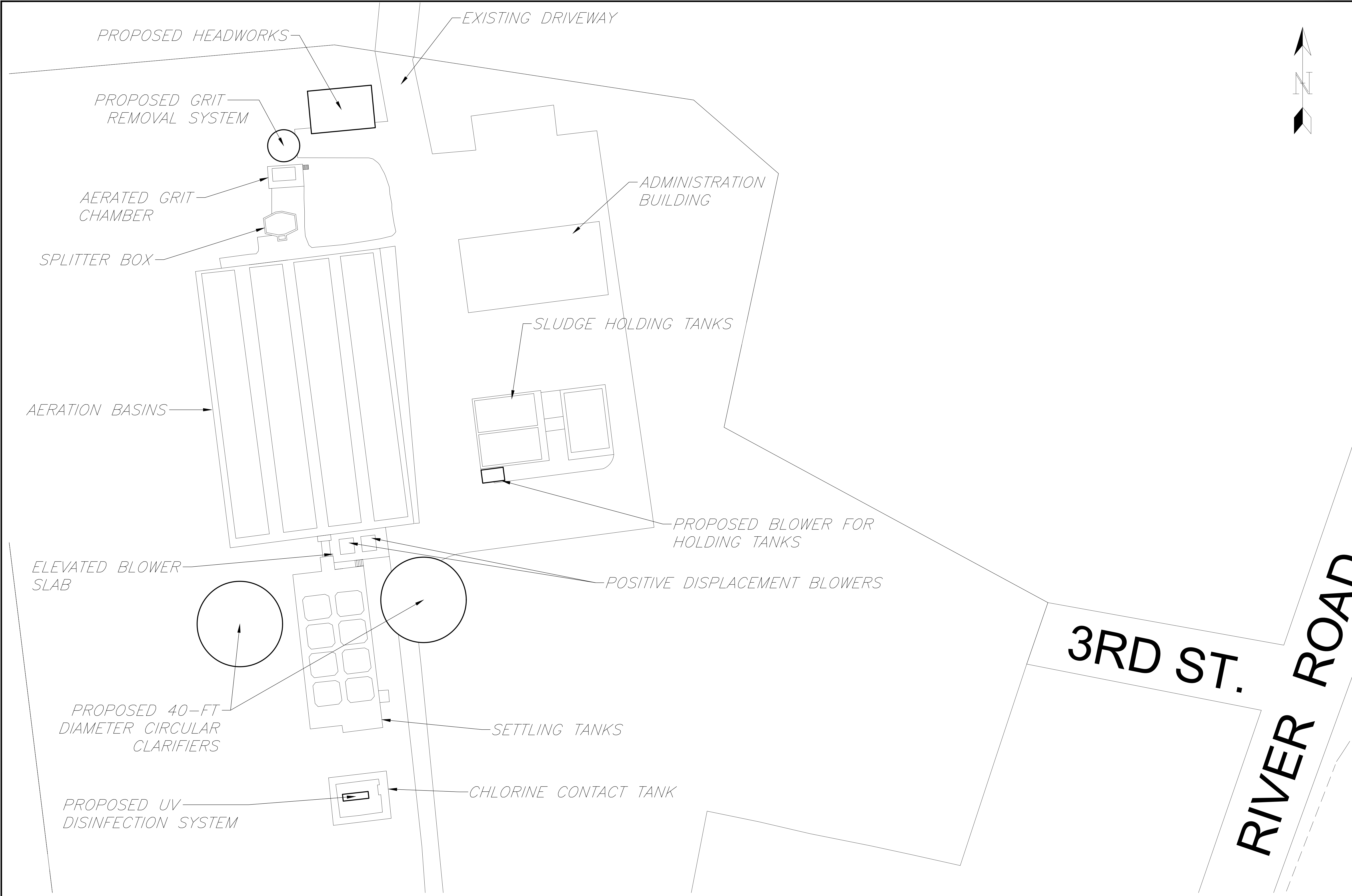
APPENDIX F: COST ESTIMATES

TOWN OF STONY POINT PROPOSED CLARIFIER UPGRADE							
Description	Quantity	Unit	Unit Price			Total	
			Material	Labor	Subtotal		
Positive Displacement Blowers: Model BB89C	1	EA	\$40,000.00	\$60,000.00	\$100,000.00		\$100,000.00
Blower Pavillion	1	EA	\$15,000.00	\$22,500.00	\$37,500.00		\$37,500.00
Elevated Blower Pad	1	EA	\$20,000.00	\$30,000.00	\$50,000.00		\$50,000.00
40-ft Diameter Circular Clarifier	2	EA	\$230,000.00	\$300,000.00	\$530,000.00		\$1,060,000.00
RAS Pump	1	LS	\$25,000.00	\$37,500.00	\$62,500.00		\$62,500.00
RAS Piping Modifications	1	LS	\$20,000.00	\$30,000.00	\$50,000.00		\$50,000.00
<i>Subtotal</i>							\$1,360,000
<i>Contingency 10%</i>							\$136,000
<i>Construction Subtotal</i>							\$1,496,000
<i>Engineering 10%</i>							\$149,600
<i>Construction Management 10%</i>							\$149,600
Opinion of Probable Construction Cost							\$1,795,200

TOWN OF STONY POINT PROPOSED HEADWORKS UPGRADES							
Description	Quantity	Unit	Unit Price			Total	
			Material	Labor	Subtotal		
Raw Sewage Pumps: Flygt	3	EA	\$50,000.00	\$75,000.00	\$125,000.00		\$375,000.00
Pipework and Valving	1	LS	\$45,000.00	\$30,000.00	\$75,000.00		\$75,000.00
Excavation/Earthwork	1	LS	\$100,000.00	\$150,000.00	\$250,000.00		\$250,000.00
Headworks Building	1	LS	\$60,000.00	\$90,000.00	\$150,000.00		\$150,000.00
Control System	1	LS	\$72,824.00	\$109,236.00	\$182,060.00		\$182,060.00
Mechanical Barscreen System	1	LS	\$187,000.00	\$280,500.00	\$467,500.00		\$467,500.00
Grit Removal System	1	LS	\$250,000.00	\$375,000.00	\$625,000.00		\$625,000.00
<i>Subtotal</i>							\$2,124,560
<i>Contingency</i>						10%	\$212,456
<i>Construction Subtotal</i>							\$2,337,016
<i>Engineering</i>						10%	\$233,702
<i>Construction Management</i>						10%	\$233,702
Opinion of Probable Construction Cost							\$2,804,419

TOWN OF STONY POINT PROPOSED DISINFECTION SYSTEM							
Description	Quantity	Unit	Unit Price			Total	
			Material	Labor	Subtotal		
UV Disinfection System Installation	1	EA	\$100,000.00	\$150,000.00	\$250,000.00		\$250,000.00
Chlorine Contact Tank Modifications	1	LS	\$35,000.00	\$52,500.00	\$87,500.00		\$87,500.00
Electrical	1	LS	\$20,000.00	\$30,000.00	\$50,000.00		\$50,000.00
<i>Subtotal</i>							\$387,500
<i>Contingency</i>						10%	\$38,750
<i>Construction Subtotal</i>							\$426,250
<i>Engineering</i>						10%	\$42,625
<i>Construction Management</i>						10%	\$42,625
Opinion of Probable Construction Cost							\$511,500

APPENDIX G: PROPOSED WWTP IMPROVEMENTS SITE PLAN



WWTP SITE PLAN
SCALE: 1" = 20'

		PITINGARO & DOETSCH CONSULTING ENGINEERS, P.C. 15 INDUSTRIAL DRIVE SUITE 2 MIDDLETOWN, NEW YORK 10941 PH: 845 703-8140 FAX: 845 703-8143 INFO@PANDDENGINERS.COM WWW.PANDDENGINERS.COM	
BY:		REVISION:	
DATE:		Each sheet is incomplete or invalid unless accompanied by all the sheets in the set.	
SHEET NO. 1 OF 1	DRAWING NAME: WWTP PROPOSED SITE PLAN	It is a violation of NYS Education Law Section 2209 for any person, unless they are acting under the direction of a duly licensed professional engineer, surveyor, or architect to affix their name, bearing the stamp or seal of a licensed professional in any way, if an item their stamp or seal and the signature, the date of their signature, and a specific description of the alteration.	DRAWN BY: ATT FOR APPROVAL: <input type="checkbox"/> FOR REVIEW & COMMENT <input type="checkbox"/> FOR BID & CONSTRUCTION <input type="checkbox"/> AS-BUILT <input type="checkbox"/>
SCALE: 1" = 20'	DATE: 2/16/2021	JOB NO.: 208503	CONTRACT NO. 208503
WWTP PROPOSED MODIFICATIONS SITE PLAN FOR TOWN OF STONY POINT WWTP EXPANSION			TOWN OF STONY POINT ROCKLAND COUNTY, NEW YORK
SHEET NO. 1			SHEET NO. 1