

J.R. Holzmacher P.E., LLC

3555 Veterans Memorial Highway, Suite A, Ronkonkoma, New York 11779-7636

Tel: (631) 234-2220 Fax: (631) 234-2221 e-mail: info@holzmacher.com

July 10, 2022

Kristine L. Wheeler, P.E., Director
Bureau of Water Supply Protection
NYS Department of Health
Empire State Plaza
Corning Tower
Albany, NY 12237

Re: Inc. Village of Hempstead - Progress Report
for 1,4 Dioxane MCL Deferral – Q2 2022
and Extension Request
Public Water System ID# 2902827

Dear Director Wheeler:

We are the consulting engineer to the Village of Hempstead Water Department and we write on its behalf. This summary report of activities is submitted in compliance with the requirements listed in your letter dated January 8, 2021, which granted a deferral for enforcement of the 1,4 Dioxane Maximum Contaminant Level (MCL). Continuation of the Deferral was based on the Village meeting the conditions listed in your letter.

Condition 1

Condition 1 required that public notification be made within 30 days of your letter. The Village had the notice published in the Hempstead Beacon on January 22, 2021. The receipt and confirmation of publication was attached for your records with the 2021 Q1 report.

Condition 2

Condition 2 required preparation of this quarterly progress report and submission to NYSDOH by the 10th day of the month following each calendar quarter. This report is therefore due by July 10, 2022 for the second quarter in 2022.

Activities during the second quarter of 2022 included progress with the ozone-hydrogen peroxide AOP treatment system by APT Water. A proposal for Bench scale testing for each of the wells at Clinton Street was executed, although shipping and analysis of samples has been delayed by difficulties in getting sufficient glassware and shipping coolers from laboratories. Bench testing for two wells has been completed although only the results for well 1RR have been received. These initial results are favorable with no detectable 1,4 Dioxane after even the lowest dose of ozone, and with negligible residual hydrogen peroxide in the treated water. This sample was collected after the existing air-stripping tower and supports keeping the ASTs in the future treatment train. Samples were also collected and shipped from Well 4 which has high iron

content and was collected prior to the AST and may therefore be close to a worst case scenario from an AOP treatment perspective. These results will be submitted to NCDOH in a full report once the bench test sample results for all seven wells are available.

A proposal for rental of a pilot unit from APT is being finalized. None of the existing pilot units are immediately available but a new pilot unit is now under construction and the Village is negotiating to get first access once it is completed. It is not clear at this time if the availability will be within the third quarter. A pilot sampling proposal report is now being prepared and will be submitted to NCDOH for approval.

A second pilot proposal has been finalized with StreamGo with the pilot unit scheduled to be onsite in early September. The treatment process of interest from StreamGo is also an ozone-hydrogen peroxide system although their pilot trailer is equipped to perform UV-hydrogen peroxide, ozone-hydrogen peroxide, RO/NF membrane treatment and IXR/GAC sorption treatment. This will generate direct comparison for the capital and operating costs for both AOP treatment for 1,4 dioxane and for PFAS removal. A pilot proposal report is now being prepared to detail the number and type of samples to be collected. That report will be submitted to NCDOH for approval.

As described in prior quarterly reports the Village water system faces several challenges not impacting most other water suppliers. The Village wells have relatively high concentrations of iron relative to the surrounding water suppliers impacted by 1,4 Dioxane. The two wells located at the Laurel Avenue plant are treated by a manganese green sand iron removal filter. The seven wells located at the Clinton Street water plant have had iron reduction as a byproduct of other aeration processes which has generally removed about half of the iron with no additional treatment. The initial O_3/H_2O_2 bench test results indicate that the ASTs should remain in the treatment train to remove VOCs and oxidize iron with the AOP process following, which will further oxidize any remaining iron and calcium.

The Village of Hempstead has an unusual problem compared to most other water suppliers on Long Island in that it is impacted by VOCs originating from the Roosevelt Field groundwater plume, while also having high concentrations of iron. The 1,4 Dioxane impacting Clinton Street seems to overlap that plume. Iron concentrations tend to increase for wells located further south on Long Island, while VOC contamination, and the coinciding 1,4 Dioxane contamination, is much less common in the southern portion of the Magothy Aquifer. Other Long Island wells impacted with 1,4 Dioxane tend to have lower concentrations of iron. The Clinton Street water plant has two existing air stripping towers (ASTs) to remove the VOCs.

The Village has also finalized arrangements to begin testing with the Trojan Technologies pilot system using UV/ H_2O_2 . The engineering report was revised in accordance with NCDOH comments, and a rental availability for the pilot unit is due during the third quarter. This pilot is more applicable to the two wells at Laurel Avenue than the seven at Clinton Street although neither of the Laurel Avenue wells exceed the MCL for 1,4 dioxane at this time.

It is likely that the iron and calcium deposition will adversely impact that system as well at the Clinton Street Plant so only the lower iron wells will be utilized. It is intended to start the Trojan pilot testing at the Laurel Avenue Plant since these wells are treated for iron, although the lower concentrations of 1,4 Dioxane pose some difficulties for analysis of pilot data. The pilot would use water effluent from the existing iron removal filters and AST so it would be comparable to future water quality from the Clinton Street wells should a conventional manganese greensand filter unit be constructed at Clinton Street. If the StreamGo pilot unit becomes available first then the pilot work with the Trojan unit may become unnecessary.

Although the pilot work has not been completed, work continues on design of site improvements and a new building to house the full scale AOP treatment system. The layout of the building has been completed with approval from the Village Water Department and the remaining details of building design are being worked on at this time. The building has been designed with a “W” shaped pipe trench which surrounds the new AOP treatment areas. The dimensions of the final AOP equipment are now being estimated based on discussions with APT Water and the initial bench sample dosage estimates. The building will be constructed with large roll up doors so that skid mounted AOP equipment can be installed after the building is constructed, and the pipe trench configuration will allow flexibility in the final piping configuration. Plans for the building will be submitted for NCDOH review and it is expected that the building will be bid and in construction before the final AOP mechanical design is approved by NCDOH.

The Village is continuing to pursue alternate supply options as described in previous quarterly reports. It is believed that any new wells located in the southern portion of the village will have better water quality as other water suppliers to the south are not yet impacted by 1,4 Dioxane.

A third water plant has been planned for decades to be collocated with Kennedy Park in the southeastern part of the Village. The Village made application to the New York State Department of Environmental Conservation (NYSDEC) for two 1,500 gpm wells at Kennedy Park and was issued permits. The Village identified a slice of unused land at the High School, near the southwest village boundary, as perhaps the only other suitable parcel for well construction. Negotiations with the School District commenced several years ago and initially resulted in permission to drill two test wells but not the permanent wells. Final details of a site access agreement were being negotiated but the School Board withdrew its permission when a written agreement was requested. As of this writing the options open to the Village are to construct wells at the Kennedy Park site, which has very limited space, or to start on a property appraisal and condemnation of the unused land at the High School site, which may take a long time. No alternate well site has yet been identified.

Plans and specifications for the well work are complete and can be bid quickly once a well site can be identified and approval can be obtained from NCDOH.

Preparation of permit applications and engineering report for the blending of well water is underway. The Village is currently blending the well water to reduce the levels of 1,4 Dioxane in the delivered water until AOP treatment can be fully implemented.

Condition 3

Condition 3 required documentation if exposure mitigation measures cannot be implemented. Currently the Village of Hempstead is in compliance with the exposure minimization measures stipulated in the deferral application. These include deferring use of wells having higher concentrations of 1,4 Dioxane and mixing the water from the wells with elevated concentrations of 1,4 Dioxane with wells that have lower levels of 1,4 Dioxane. Trace concentrations of 1,4 Dioxane are present in the water distributed to the residents since seven out of the nine wells have levels of 1,4 Dioxane above the MCL. It is impossible for the Village to distribute water to their residents below the MCL without at least one full scale AOP treatment unit in operation because the water demand is high and cannot be met with only two wells. The Village is working as quickly as they can to find the most suitable AOP treatment units to implement at the water treatment plants and to bring alternate sources of water supply on line.

Extension Request

The deferral from the MCL for 1,4 dioxane is effective until August 25, 2022 as described in your letter of January 8, 2021. The Village requests that this deferral be extended until such a time that the first two AOP treatment systems can be constructed and placed into service. These systems will be capable of treating a total of 6,000 gpm of water at the Clinton Street water plant.

The construction on this project will be complicated based on the need to maintain the full capacity of Clinton Street water plant in service during all phases of the work. The anticipated milestone schedule follows for your review and consideration.

Milestone	Date
Complete treatment piloting	October 2022
Complete engineering report/submit for regulatory review	November 2022
Complete project design/submit for regulatory review	January 2023
Commence project construction/implementation	April 2023
Complete site pipe lines (except final cut ins)	June 2023
Complete construction on Building shell	September 2023
Complete construction of clear well and booster facility	October 2023
Complete construction on AOP treatment system No. 1	October 2023
Move AST No. 1; site pipe cut ins	November 2023
Complete building interior	December 2023
Complete construction on AOP treatment system No. 2	December 2023
Move AST No. 2	January 2024
Complete site work and paving	April 2024

This schedule anticipates that each treatment system would be placed into service immediately upon receipt of regulatory approval of the equipment start up and that construction on the site

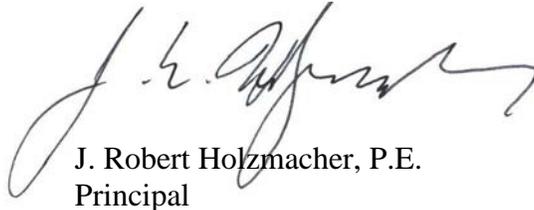
Kristine L. Wheeler, P.E.
Village of Hempstead
Progress Report Q2 2022
July 10, 2022
Page 5

and within other areas of the building would continue while the treatment systems were in operation.

Let us know if you require preparation of a more specific extension request or more detailed supporting materials. Please call me if you have any questions or comments.

Sincerely,

J. R. Holzmacher, P.E., LLC



J. Robert Holzmacher, P.E.
Principal

JRH/j

CC: Hon. Waylyn Hobbs, Jr., Mayor
Jeffery Daniels, Deputy Mayor
Steve Giardino, Supervisor
Matthew Spinelli, Assistant Supervisor

q:\2022\hempv\22-01 retainer\correspondence\nysdoh\mcl deferral\compliance reports\q2\hempv deferral progress report 2022 q2.doc