



February 26, 2019

- Copies 1 Planning Board
- Town Board
- Zoning Board
- Legal Dept.
- DOT3 Director
- C.A.C.
- A.B.C.
- Applicant
- _____

Mr. Steve Laker
 Hudson Ridge Wellness Center Inc.
 72 North State Road
 Briarcliff Manor, NY 10510

Via Electronic Transmission

RE: Response to HydroQuest Comments
 Hudson Ridge Wellness Center Sent 2/27/19
 2016 Quaker Ridge Road
 Cortlandt, New York

Dear Mr. Laker:

LBG Hydrogeologic & Engineering Services, P.C. (LBGHES), member of WSP, has prepared the following response to comments from HydroQuest regarding the 2018 Aquifer Test at the proposed Hudson Ridge Wellness Center in Cortlandt, New York. These comments were submitted to the Town of Cortlandt Planning Board in a letter dated January 29, 2019. Each comment and corresponding response is presented below.

- *In terms of “potential impacts”, the 72-hour aquifer test was not sufficient to fully characterize potential impacts to offsite potable supply wells. The test did not adequately stress the aquifer under full project water demand conditions or under seasonally dry or drought conditions.*

The average water demand for the proposed project at full occupancy is 12,660 gpd (gallons per day) or 8.8 gpm (gallons per minute). The August 2018 simultaneous 72-hour pumping test was conducted by pumping the two individual wells at a constant rate of 9 gpm each (for a combined withdrawal of two times the average demand). The 2018 pumping test stressed the aquifer by pumping twice the average demand (17.6 gpm) continuously for three days straight, a scenario that will not occur based on the proposed project occupancy conditions. In addition, the proposed wellness center will have an onsite one-day reserve storage capacity of 12,000 gallons. The wells will be connected to the storage reserve that is designed to fill when the storage capacity is lowered to a certain level, minimizing the wells from being pumped for extended periods of time to meet peak water demands.

These wells have been previously tested (2015 and 2017) and were determined to meet the daily demand requirements. Westchester County Department of Health (WCDH) issued an approval of the proposed design flow (Attachment I). However, the August 2018 test was specifically conducted at the request of WCDH and the Town of Cortlandt’s hydrogeologist (HydroEnvironmental Solutions, Inc. (HES) to observe potential offsite impacts. The proposed pumping test plan, with offsite monitoring, was approved by WCDH and HES. Following the test, the results were submitted to WCDH and the Town hydrogeologist. HES reviewed the 2018 pumping test report and concurred with the pumping test report conclusions. Following a review of plans and specifications (including the August 2018 pumping test results), WCDH approved connection of Well 1 and Well 2 to the community public water supply (Attachment II).

Prior to the 72-hour pumping test, background precipitation data was collected between August 15 through August 19. A total of 1.41 inches of rain was measured at the nearby station KNYOSSIN8 and 1.00 inches in the manual gage on the Hudson Ridge Wellness Center property during



this pre-test background period, with the rain primarily occurring on August 17 (1.22 inches). During the simultaneous pumping test period (August 20 through August 23), a total of 0.68 inch of rain was measured at the KNYOSSIN8 station and 0.80 inch in the onsite manual rain gage. The majority of the rain measured during the simultaneous pumping test occurred in the middle of the test period on August 22. During the recovery period (August 23 through 27) there was no precipitation documented. A total of 0.1 inch of rain was recorded at the KNYOSSIN8 station from the end of the test (August 23 through September 4).

More importantly, prior to initiating the pumping test, the water-level data in the offsite homeowner wells were reviewed to determine if the pre-test precipitation had any influence on the bedrock wells. Of the 16 wells monitored, 7 wells showed a slight rise in water levels that was attributed to the August 17, 2018 precipitation event. Based on the water levels trends in the offsite wells prior to the test, and in consultation with the Town consultant, it was determined that background monitoring conditions were acceptable to initiate the 72-hour pumping test. During the test, two homes showed minor impact from the August 22nd rain event, including 78 Quaker Hill Drive and 60 Glendale Road. Water levels at both wells returned to pre-precipitation conditions within 24 hours of the rain event.

With regard to the seasonal and multi-year dry period assessment, prior to the completion of the well testing in August 2018, the region has experienced a long-duration dry period dating back to 2012. The table below is a summary of the precipitation data from the Westchester County AP weather station for the time period of 2012 through July 2018, prior to when the testing was completed.

Year	Total Precipitation (inches)	Annual Precipitation Normal 1980-2010 (inches)	Difference	Percent Difference
2012	38.78	49.35	-10.57	-21%
2013	38.59	49.35	-10.76	-22%
2014	47.72	49.35	-1.63	-3%
2015	44.35	49.35	-5.00	-10%
2016	37.43	49.35	-11.92	-24%
2017	36.19	49.35	-13.16	-27%
2018 (January through July 2018)	25.38	27.77	-2.39	-9%

These precipitation conditions constitute a multi-year dry period with 2017 being the driest year at -27% below average precipitation. This data supports that the testing that was conducted was completed after a long-duration dry period and adequately demonstrates the wells’ performance during seasonal and multi-year dry periods.

- *The LBG stated “water demand requirement of 110 gpd (gallons per day) per hospital bed...” is well below the NYS DEC design standard of 175 gpd for hospital beds. Water use data specific to substance abuse rehabilitation facilities was not supplied to justify use of 110 gpd. Water demand requirements should be reviewed as more demand will require higher groundwater yields which will increase impact on some offsite homeowner wells.*

The proposed Hudson Ridge Wellness Center (HRWC) is not a general hospital or like a typical nursing home. There will be no outpatient treatment or emergency room, very restricted visitation, no irrigation system and no laundry done on site. The proposed demand was based on NYSDEC standards and the 110 gpd per hospital bed was approved by the WCDH in a letter dated December 14, 2017. A copy of the WCDH approval letter is included in Attachment I. The Town’s consultant agreed with the WCDH-approved use demand.



- *Neither of the two onsite monitoring wells were drawn down as a result of pumping two onsite production wells simultaneously at 9 gallons per minute during the 2018 aquifer test.*

Based on the test results, the two onsite wells were not influenced by the pumping wells during the 72-hour test, indicating that they are not hydrogeologically connected.

- *The aquifer test documented that only two of 16 offsite homeowner wells monitored were impacted, effectively making them the only true monitoring wells during the test and documenting that the extent of the aquifer is limited due to poor water-bearing fracture connectivity.*

The effects to the two offsite wells indicate that these wells have some degree of interconnection with the same water-bearing fractures as the two onsite HRWC bedrock supply wells. The properties that were monitored as part of the August 2018 pumping test included homes within close proximity (located less than 1,500 feet) of the two test wells, wells with purported water-supply shortages or water pressure issues¹ and wells mapped along fracture-trace patterns. The offsite wells that were included in the monitoring program provided excellent spatial coverage to determine any impacts from the pumping test. The test results indicate that impact was limited in extent. It is not unusual to see some degree of offsite effects during an extended testing period. The monitoring program was approved by the Town's consultant and WCDH, as noted above. In addition, considering the facts listed above regarding the wells that were included in the offsite monitoring program (spatial coverage, located on/near fracture-trace patterns), data from all of the wells provides clear information on offsite impacts.

- *At the conclusion of the test, water level drawdowns were approximately 18.5 and 24.5 feet in the Greenstein (83 Quaker Ridge Road) and Shapiro (78 Quaker Ridge Road) wells, respectively. Under drier hydrogeologic conditions than those that prevailed during the 2018 aquifer test, the drawdown may be significantly greater than observed.*

As concluded in the October 2018 report², the effect observed in the two offsite wells was significantly greater than what is expected under normal pumping operations because the aquifer was stressed at twice the average demand of the project for 72 continuous hours. Based on the demand requirements, the proposed HRWC supply wells will never pump continuously at twice the average demand for three days straight under the proposed occupancy conditions. In addition, the proposed wellness center will have an onsite one-day reserve storage capacity of 12,000 gallons. The wells will be connected to the storage reserve that is designed to fill when the storage capacity is lowered to a certain level, minimizing the wells from being pumped for extended periods of time to meet peak water demands. As a result, the effects observed in the two offsite wells as a result of the 72-hour pumping test was significantly greater than what is expected under normal pumping operations. The water budget for the proposed wellness center and adjacent wooded buffer indicates that precipitation recharge is more than double the average water demand estimate and over 16 times the actual total consumptive use of the project (taking into consideration the onsite wastewater septic system). Under drought conditions, recharge to the proposed wellness center and adjacent wooded buffer would also be well above the total consumptive use³. Based on the recharge conditions, we do not expect there to be drawdown "significantly greater" than that observed during the August 2018 pumping test during drought conditions. At the end of the test there was approximately 475 feet of water available above the pump at

¹ Zarin & Steinmetz letter to Cortlandt Planning Board, April 20, 2018.

² *Well Pumping Program and Test Results, Hudson Ridge Wellness Center Property, 2016 Quaker Ridge Road, Cortlandt, New York*, LBG Hydrogeologic & Engineering Services, P.C. (Member of WSP), October 2018.

³ LBG Hydrogeologic & Engineering Services, P.C. letter to Mr. Steve Laker, *Hydrogeologic Assessment, 2016 Quaker Ridge Road, Town of Cortlandt, New York*, revised August 10, 2018.



78 Quaker Hill Drive and 176 feet of water available above the pump at 83 Quaker Hill Drive. This demonstrates there is a sufficient amount of water available above the existing pump settings and utilization of the HRWC wells should have no discernible impact to the offsite wells. To address the public’s concern, the applicant has agreed to conduct an offsite monitoring program as proposed in the hydrogeologic assessment report. WSP has recommended soliciting these two homeowners to participate in the offsite well monitoring program, which would start three to six months before the certificate of occupancy is issued and continue for up to two years after 75 percent of full occupancy. The duration of the monitoring plan may be extended, at the discretion of the Town, if offsite impacts are observed. If long-term monitoring were to unexpectedly demonstrate any significant interference from the proposed wellness center wells, mitigation options (including but not limited to, lowering the homeowner pump or deepening their well) would be evaluated and implemented. Note that to date, neither of these neighbors have contacted us with any questions or concerns, which they were invited to do when we provided them with the hydrographs of the water levels in their wells.

In addition to the post-approval offsite monitoring plan, as another condition of approval the applicant will submit monthly operation reports of the project’s water usage to the WCDH and to the Town.

As noted above, the 2018 pumping test was conducted after a long-duration dry period and adequately demonstrates the wells’ performance during seasonal and multi-year dry periods.

- *At the termination of the aquifer test, water levels in these wells were still declining indicating that water stored in fractures was being pulled in from ever greater distances in an attempt to keep up with the rate of water withdrawal.*

This statement is a misrepresentation of the August 2018 pumping test results. The water-level change in Well 1 and Well 2 over the final 6 hours of the test was -0.11 feet and +0.14 feet at a constant pumping rate of 9 gpm, respectively. The water-level changes in both wells met the criteria of demonstrating less than 0.5 foot per 100 feet of available drawdown in the well over the final 6 hours of the test period and did not demonstrate a decline at the termination of the test. During the testing period, water-levels in the wells at 78 Quaker Ridge Drive and 83 Quaker Ridge Drive showed declining levels. However, once the test was terminated, water-levels in both wells showed recovery. As shown on the table below, once the pumps in the wells were shut down on August 23, 2018 (17:31 at Well 1 and 17:45 at Well 2), the water levels in the offsite wells began to rise and sustained a recovery trend.

Date/Time	78 Quaker Hill Drive Water Levels	83 Quaker Hill Drive Water Levels	Comment
8/23/18 17:01	90.52	64.56	Both wells pumping
8/23/18 17:31	89.06	66.52	Well 1 off
8/23/18 17:45	88.82	65.62	Well 2 off
8/23/18 18:01	88.21	65.32	
8/23/18 18:31	87.48	64.98	

Note: Well 1 pump off at 17:31 on 8/23/18 and Well 2 pump off at 17:45 on 8/23/2018

- *The Greenstein and Shapiro wells were in use during the test, thereby compromising hydrologic data and making it impossible to A) determine which of the two onsite wells caused the observed water levels declines, B) accurately predict future water level declines at rates of pumping different from the test rate; and C) determine the quantity of water available for removal (i.e. storage).*



As stated in the pumping test report, because of interference from the domestic use of the two impacted wells prior to and immediately before the start of the test, the water level effects cannot be attributed to one particular pumping well. However, because the test was designed to stress the aquifer at twice the average demand of the project for an extended period of time (72 hours), the impact observed in the two offsite wells was significantly greater than what is expected under normal pumping operations, therefore, A) has no merit.

With respect to B), based on the demand requirements, the proposed wellness center supply wells will never pump continuously at twice the average demand for three days straight under the proposed occupancy conditions. In addition, the proposed wellness center will have an onsite one-day reserve storage capacity of 12,000 gallons. The wells will be connected to the storage reserve that is designed to fill when the storage capacity is lowered to a certain level, minimizing the wells from being pumped for extended periods of time to meet peak water demands. Therefore, utilization of the HRWC wells should have no discernible impact to the offsite wells.

As to C), based on the water level drawdown and the depths of the homeowner wells, there was approximately 475 feet of water available above the pump at 78 Quaker Hill Drive and 176 feet of water available above the pump at 83 Quaker Hill Drive at the conclusion of the test. This demonstrates there is a significant amount of water available above the existing pump setting. At the current pump settings, the pumps at each home can be lowered an additional 40 feet and 125 feet at 78 Quaker Hill Drive and 83 Quaker Hill Drive (with 10 feet above the bottom of the well), respectively. Under either scenario, there is sufficient quantity of water available for removal (i.e. storage) at each of the wells.

Further, the Greenstein and Shapiro wells were monitored for 5 days prior to the start of the test which allows the determination of pre-test regional water trends and fluctuation in the water levels from their own use. Therefore, the use of these wells during the test does not compromise that data during the test event. No additional testing of individual offsite wells is necessary at this time.

- *LBG points out that drought conditions may impact groundwater availability: "During drought periods, groundwater levels decline and water supplies draw on groundwater storage to make up the difference between withdrawals and recharge rates. Lower than normal groundwater levels may cause some normally productive wells to run dry....Marginal well supplies can be vulnerable to failure during periods of drought." The aquifer test was not conducted in a manner to allow assessment of potential impact during drought conditions when there may not be sufficient water for both homeowner and project water use.*

This language was from a groundwater supply overview conducted for the Town of Lewisboro. This is a broad statement regarding potential issues that are experienced during drought periods. The comment as presented above misrepresents the site-specific conditions. Based on the August 2018 pumping test results, this is not a concern and therefore this statement was not included in any of our reports, as it is not applicable.

As previously discussed, the 72 hour test thoroughly allowed the assessment of potential impacts to offsite wells because the two wells were pumped simultaneously at twice the average demand for three days. Again, as noted above, the pumping test procedures were approved by WCDH and the Town's hydrogeologic consultant.

The water budget for the proposed wellness center and adjacent wooded buffer indicates that groundwater recharge to the project site demonstrates that there is substantially more than sufficient water available to meet the project water demands during average and drought conditions. To address any



potential concerns of offsite impacts, an offsite well monitoring program has been proposed, as described above. In addition to the post-approval offsite monitoring plan, as another condition of approval the applicant will submit monthly operation reports of the project's water usage to the WCDH and to the Town.

- *Other homeowner wells that were not monitored during the test may also be impacted as a result of water use from the project site.*

Sixty-seven property owners were solicited to participate in the offsite monitoring program. This effort is significantly beyond what is typically implemented for solicitation of offsite homeowners to be included in a monitoring program. All 18 of the property owners that accepted our invitation, with the exception of two wells that were inaccessible, were included in the offsite monitoring program. Thus, sixteen, including six of the nine requested by the Citizen's Group council granted permission and their wells were included in the offsite monitoring program (the two additional wells that were inaccessible mentioned above were not included in the program). Prior to conducting the 72-hour pumping test, a testing and monitoring protocol (Pumping Test Plan) was prepared and submitted to the Town and their hydrogeologic consultant and WCDH. Both WCDH and the Town and consultant granted approval of the plan. The solicitation of the 67 invitees and the inclusion of the 16 homeowner wells was reviewed and approved by the Town and their hydrogeologic consultant. Based on the results of the extensive offsite monitoring program, the impact was limited in extent. To address public concern, the applicant has committed to conducting an offsite monitoring plan to document the expectation that pumping the proposed wellness center wells will not have any significant impact on offsite neighboring wells. Contrary to Mr. Rubin's recommendation, no additional testing of individual offsite wells is necessary at this time.

In addition to the post-approval offsite monitoring plan, as another condition of approval the applicant will submit monthly operation reports of the project's water usage to the WCDH and to the Town.

Kind regards,

WSP USA, Inc.

Karen Destefanis, CPG, PG (NY)
Lead Hydrogeologist

Affirmed by:

Thomas P. Cusack, CPG, PG (NY)
Senior Supervising Hydrogeologist

nv

Enclosure

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ATTACHMENT I



Robert P. Astorino
County Executive

Sherlita Antler, M.D.
Commissioner of Health

December 14, 2017

Ralph G. Mastromonaco, P.E., P.C.
Consulting Engineers
13 Dove Court
Croton-on-Hudson, NY 10520

Re: Design Flow Confirmation
Hudson Ridge Wellness Center, Inc.
2016 Quaker Ridge Road
Cortlandt (T)

Dear Mr. Mastromonaco:

The Department has reviewed the Engineer's Report, Design Plans and details, dated December 5, 2017, submitted with respect to your application to the New York State Department of Environmental Conservation (NYSDEC) for a State Pollution Discharge Elimination System (SPDES) for an Onsite Wastewater Treatment System (OWTS) at the above referenced property.

GENERAL

The proposed design flow of 12,440 gallons per day is acceptable based on NYSDEC standards. The project consists of:

Addiction recovery hospital:	92 beds x 110 gallons per day (gpd)	=	10,120 gpd
Support staff and personnel:	86 staff x 15 gpd	=	1,290 gpd
Outbuilding 3, Garage storage/Office space:	400 sf x 0.1 gpd/sf	=	40 gpd
Outbuildings 4, 5, 7, Transient beds per cottage:	6 beds x 110 gpd	=	660 gpd
Outbuilding 6, Residence (3 bedrooms)	3 bedrooms x 110 gpd	=	330 gpd
	Total	=	12,440 gpd

SUB-SURFACE DISCHARGES

Based on our review of the site conditions and your submission, we believe that you have demonstrated that a disposal system can be constructed consistent with standards and should not contravene groundwater standards.



With all these items completed, you may proceed with the filing of a SPDES Permit application to:

Regional Permit Administrator
NYS Department of Environmental Conservation – Region III
21 South Putt Corners Road
New Paltz, NY 12561

Please include the following:

1. A completed application form "D" (original and one copy)
2. A completed Environmental Assessment Form (or other appropriate SEQRA documentation)
3. Two (2) copies of U.S.G.S, quadrangle map showing the property boundaries
4. Two (2) copies of this letter
5. Two (2) copies of the site plan for the project identifying the discharge locations and all other proposed site disturbances

A copy of the SPDES application (Item 1) should be sent to this office at the time of submission to the Regional Permit Administrator.

Please recognize that the Department of Environmental Conservation may have additional submission requirements relating to other regulatory programs under which your project may fall. You may wish to contact the Division of Environmental Permits at (845) 256-3054.

Please note that following issuance by the NYSDEC, detailed plans and specifications shall be submitted to this office for review and approval. Construction of the sanitary facilities is prohibited prior to this approval.

Should you have any questions concerning this matter, please feel free to contact this office.

Thank you for your cooperation.

Very truly yours,



Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

Cc: NYSDEC – Regional Permit Administrator
Hudson Ridge Wellness Center, Inc.
Meena George, P.E. - NYSDEC – White Plains
Martin Rogers – Code Enforcement – Town of Cortlandt
Zaw Thein – WCDOH
File



ATTACHMENT II



George Latimer
County Executive

Sherita Amler, M.D.
Commissioner of Health

January 25, 2019

OLA Consulting Engineers
50 Broadway
Hawthorne, NY 10532
Attn: Barbara Jill Walsh, P.E.

RE: File I.D. C17-064
Approval of Plans for
Well #1 & Well #2 Connection and
New Water Treatment Plant at
Hudson Ridge Wellness Center
Community Public Water Supply
2016 Quaker Ridge Road
Croton on Hudson (V)
PWS I.D: NY5930199

Dear Ms. Walsh:

Enclosed is an Approval of Plans for Public Water Supply Improvement issued this day and approved plans prepared by you consisting of ten (10) sheets, dated November 30, 2018 and prepared by Ralph G. Mastromonaco, P.E., P.C., consisting of three (3) sheets, dated January 8, 2018. This approval is issued pursuant to 10NYCRR Part 5, Subpart 5-1, Section 5-1.22 and Chapter 873, Article VII, Section 873.707.1, of the Laws of Westchester County.

The Approval of Plans for Public Water Supply Improvement and approved plans should be filed in the appropriate office of the applicant. The Applicant is obligated to comply with each of the conditions stipulated in this Approval of Plans for Public Water Supply Improvement.

Supervision of the construction by a licensed and registered professional engineer in the State of New York who will furnish a certificate of construction compliance to the Westchester County Department of Health is a responsibility of the Applicant.

The certificate of construction compliance, including two (2) sets of As-Built plans and results of acceptable bacteriological analyses of water, and satisfactory pressure leakage test (see conditions of approval) must be forwarded promptly to this office after completion of construction. Please note that an Approval of Completed Works, issued by the Westchester County Department of Health, is required before this construction may be put into service.



The approved plans call for the installation of one (1) 1 ½ HP Goulds model 10GS15 submersible pump at Well #1 (Pond Well), rated 10 gpm at 400 feet of total dynamic head (TDH), one (1) 1HP Goulds model 10GS10 submersible pump at Well #2 (Castle/Building Well), rated 10 gpm at 250 feet TDH, installation of approximately 900 linear feet of 2-inch diameter HDPE raw water pipe from Well #1 to treatment building, approximately 40 linear feet of 2-inch diameter HDPE raw water pipe from Well #2 to treatment building, a construction of a new water treatment plant, consisting of four (4) Harmsco model Muni 40MP filter housings, each equipped with Harmsco model HC/40-20 20-micron filter cartridges, two (2) Harmsco model Muni 40MP filter housings, each equipped with Harmsco HC/40-5 5-micron filter cartridges, two (2) Harmsco model Muni 40MP filter housings, each equipped with Harmsco HC/170-LT2 1 micron absolute rated filter cartridges, two (2) Neptune Benson/ETS UV model ECP-113-5 ultra violet disinfection units, each rated 50 gpm, two (2) Hungerford & Terry, Inc. model GSP36-X1 Greensand Plus system sand filters, rated 35 gpm, 200 linear feet of 8-inch diameter PVC C900-DR25 contact pipe, , four (4) LMI model PDX1 chemical metering pumps, each rated 0.25 GPH at 250 psi, two (2) LMI model 27400 chlorine crocks, each rated 35 gallon capacity, three (3) Modutank, Inc. model VT0305-3.5 galvanized steel water storage tanks, each rated 4,000 gallon capacity, equipped with NSF61 rated 40 mil Carlisle Reinforced Polypropylene Geomembrane liner, one (1) Canaris model TM-90-55-3VS booster pump skid, equipped with three (3) 3HP, 10SV-3 variable frequency drive multi stage pumps, each rated 45 gpm at 127 feet TDH, one (1) Hach model TU5300SC continuous turbidity analyzer, one (1) Hach model CLF10SC reagentless continuous chlorine analyzer, two (2) Hach SC200 data recorders, one (1) 2,500 gallon waste holding tank, four (4) totalizer water meters, one (1) 500 kW diesel generator, approximately 600 linear feet of 3-inch diameter class 52 ductile Iron pipe water main, two (2) blowoff units and related appurtenances at Hudson Ridge Wellness Center Community Public Water Supply, 2016 Quaker Ridge Road, Croton on Hudson (V).

Very truly yours,



Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

DT:ZT

Enclosure

cc: *Steven Laker, Hudson Ridge Wellness Center
Daniel O'Connor, P.E., Village Engineer, Croton on Hudson (V)
Andy Tse, NYSDOH
Frederick Beck, P.E., WCDOH
File

**NEW YORK STATE DEPARTMENT OF HEALTH
APPROVAL OF PLANS
FOR PUBLIC WATER SUPPLY IMPROVEMENT**

THIS APPROVAL IS ISSUED UNDER THE PROVISIONS OF 10 NYCRR, PART 5, SUBPART 5-1, SECTION 5-1.22 AND CHAPTER 873, ARTICLE VII, SECTION 873.707.1 OF THE WESTCHESTER COUNTY SANITARY CODE

1. APPLICANT	2. LOCATION OF WORKS	3. COUNTY	4. WATER DISTRICT												
Hudson Ridge Wellness Center	Croton on Hudson (V)	Westchester	-												
<p>5. TYPE OF PROJECT:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;"><input type="checkbox"/> 1 Source</td> <td style="width: 25%;"><input checked="" type="checkbox"/> 3 Pumping Units</td> <td style="width: 25%;"><input type="checkbox"/> 5 Fluoridation</td> <td style="width: 25%;"><input checked="" type="checkbox"/> 7 Distribution</td> </tr> <tr> <td><input checked="" type="checkbox"/> 2 Transmission</td> <td><input checked="" type="checkbox"/> 4 Chlorination</td> <td><input checked="" type="checkbox"/> 6 Other Treatment – U.V.</td> <td><input checked="" type="checkbox"/> 8 Storage</td> </tr> <tr> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/> 9 Other</td> </tr> </table> <p>REMARKS: The approved plans call for the installation of one (1) 1 ½ HP Goulds model 10GS15 submersible pump at Well #1 (Pond Well), rated 10 gpm at 400 feet of total dynamic head (TDH), one (1) 1HP Goulds model 10GS10 submersible pump at Well #2 (Castle/Building Well), rated 10 gpm at 250 feet TDH, installation of approximately 900 linear feet of 2-inch diameter HDPE raw water pipe from Well #1 to treatment building, approximately 40 linear feet of 2-inch diameter HDPE raw water pipe from Well #2 to treatment building, a construction of a new water treatment plant, consisting of four (4) Harmsco model Muni 40MP filter housings, each equipped with Harmsco model HC/40-20 20-micron filter cartridges, two (2) Harmsco model Muni 40MP filter housings, each equipped with Harmsco HC/40-5 5-micron filter cartridges, two (2) Harmsco model Muni 40MP filter housings, each equipped with Harmsco HC/170-LT2 1 micron absolute rated filter cartridges, two (2) Neptune Benson/ETS UV model ECP-113-5 ultra violet disinfection units, each rated 50 gpm, two (2) Hungerford & Terry, Inc. model GSP36-X1 Greensand Plus system sand filters, rated 35 gpm, 200 linear feet of 8-inch diameter PVC C900-DR25 contact pipe, , four (4) LMI model PDx1 chemical metering pumps, each rated 0.25 GPH at 250 psi, two (2) LMI model 27400 chlorine crocks, each rated 35 gallon capacity, three (3) Modutank, Inc. model VT0305-3.5 galvanized steel water storage tanks, each rated 4,000 gallon capacity, equipped with NSF61 rated 40 mil Carlisle Reinforced Polypropylene Geomembrane liner, one (1) Canaris model TM-90-55-3VS booster pump skid, equipped with three (3) 3HP, 10SV-3 variable frequency drive multi stage pumps, each rated 45 gpm at 127 feet TDH, one (1) Hach model TU5300SC continuous turbidity analyzer, one (1) Hach model CLF10SC reagentless continuous chlorine analyzer, two (2) Hach SC200 data recorders, one (1) 2,500 gallon waste holding tank, four (4) totalizer water meters, one (1) 500 kW diesel generator, approximately 600 linear feet of 3-inch diameter class 52 ductile iron pipe water main, two (2) blowoff units and related appurtenances at Hudson Ridge Wellness Center Community Public Water Supply, 2016 Quaker Ridge Road, Croton on Hudson (V).</p>				<input type="checkbox"/> 1 Source	<input checked="" type="checkbox"/> 3 Pumping Units	<input type="checkbox"/> 5 Fluoridation	<input checked="" type="checkbox"/> 7 Distribution	<input checked="" type="checkbox"/> 2 Transmission	<input checked="" type="checkbox"/> 4 Chlorination	<input checked="" type="checkbox"/> 6 Other Treatment – U.V.	<input checked="" type="checkbox"/> 8 Storage				<input checked="" type="checkbox"/> 9 Other
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			<input checked="" type="checkbox"/> 9 Other												

By initiating improvement of the approved supply, the applicant accepts and agrees to abide by and conform with the following:

- a. **THAT** the proposed work be constructed in complete conformity with the plans and specifications approved this day or approved amendments thereto.
- b. **THAT** the proposed works not be placed into operation until such time as a Completed Works Approval is issued in accordance with Part 5 of the New York State Sanitary Code and Article VII, of the Westchester County Sanitary Code.
- c. **THAT** the proposed water distribution lines be disinfected in accordance with the AWWA Standard C651-05 except for Section 4.4.2, for disinfecting water mains.
- d. **THAT** upon completion of the proposed work, the tank is disinfected in accordance with AWWA Standard C652-05 except Section 4.3 or latest revision.
- e. **THAT** two acceptable results of bacteriological analyses of samples of water collected from the new distribution system main after disinfection and before use of the mains at 24 hour intervals shall be submitted to the Westchester County Department of Health in accordance with Section 5.1 of the AWWA Standard C651-05.
- f. **THAT** two acceptable results of bacteriological and organic analyses, EPA method 524.2 of water samples collected from the newly lined tank after disinfection and before use at 24 hour intervals be submitted to the Westchester County Department of Health.
- g. **THAT** supervision of construction be by a licensed and registered professional engineer in the State of New York who shall furnish a certificate of construction compliance and two (2) sets of As-Built plans after completion of construction.
- h. **THAT** the Department must be notified 48 hours prior to the Pressure Test in order for a representative to verify such test.
- i. **THAT** this approval is valid for one (1) year.
- j. **THAT** any temporary water mains installed during construction of the above mentioned water supply improvements shall not be placed into service until the temporary piping installed is disinfected in accordance with AWWA Standard C651-05 except Section 4.4.2, and until acceptable bacteriological test results are accepted by this Department.
- k. **THAT** a request for an extension of the expiration date of this permit must be received by this Department before the permit's expiration date. Request received after the permit has expired will not be considered.

ISSUED FOR THE STATE COMMISSIONER OF HEALTH

January 25, 2019
DATE



P.E.

DESIGNATED REPRESENTATIVE
Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

GENERAL

6. Type of Ownership: Westchester County <input type="checkbox"/> Municipal <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> 68 Private Other <input type="checkbox"/> 1 Authority <input type="checkbox"/> 30 Interstate <input type="checkbox"/> Industrial Corp. <input type="checkbox"/> Water Works <input type="checkbox"/> Private Institutional <input type="checkbox"/> 9 Federal <input type="checkbox"/> 40 International Corp. <input type="checkbox"/> 26 Board of Education <input type="checkbox"/> 20 State <input type="checkbox"/> 18 Indian Reservation			
7. Estimated Total Cost \$1,050,000.00	8. Population Served 92	9. Drainage Basin Croton	
10. Federal Aid Involved? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		11. WSA Project? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
SOURCE			
12. SURFACE Name _____ Class _____ GROUND Name _____ Class _____		13. Estimated Source Development Cost	
14. Safe Yield: GPD	15. Description		
TREATMENT			
16. Type of Treatment <input type="checkbox"/> 1 Alteration <input type="checkbox"/> 5 Clarifiers <input type="checkbox"/> 9 Fluoridation <input type="checkbox"/> 2 Microstrainers <input checked="" type="checkbox"/> 6 Filtration <input type="checkbox"/> 10 Softening <input type="checkbox"/> 3 Mixing <input checked="" type="checkbox"/> 7 Iron Removal <input type="checkbox"/> 11 Corrosion Control <input type="checkbox"/> 4 Sedimentation <input checked="" type="checkbox"/> 8 Chlorination <input checked="" type="checkbox"/> 12 Other U.V.			
17. Name of Treatment Works Hudson Ridge Wellness Center	18. Max. Treat. Cap. 35 gpm	19. Grade of Plant Operator Req. C	20. Est. Cost \$200,000.00
21. Description: See Item #5			
DISTRIBUTION			
22. Type of Project <input type="checkbox"/> 1 Cross Connection <input checked="" type="checkbox"/> 3 Transmission <input type="checkbox"/> 2 Interconnection <input type="checkbox"/> 4 Fire Pump Chl.		23. Type of Storage Elevated _____ gal. Underground <u>12,000</u> gal.	24. Est. Cost Distribution \$ 300,000.00
25. Anticipated Distribution System Demand: Avg. <u>0.012</u> MGD Max. <u>0.024</u> MGD		26. Designed For Fire Flow <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
27. Description: See Item #5			