Groundwater Monitoring Plan

Operable Unit Number 02: Municipal Water Supply

Saint-Gobain McCaffrey Street Site

NYSDEC Site #442046

Revised March 2024

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Acronyms

FSP	field sampling plan
GAC	granular activated carbon
GPM	gallons per minute
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU-01	Operable Unit 01
OU-02	Operable Unit 02
PFAS	per- and polyfluoroalkyl substances
QAPP	Quality Assurance Project Plan
ROD	Record of Decision
WTP	water treatment plant

1.0 Introduction and Objective

This document presents the groundwater monitoring plan for Operable Unit Number 02 (OU-02), which is associated with the Saint-Gobain McCaffrey Street Site (Site; NYSDEC Site #442046). OU-02 is defined as the municipal water supply for the Village of Hoosick Falls (Village). The existing municipal water supply wells are located in the vicinity of and southeast of the Site and have been impacted with per- and polyfluoroalkyl substances (PFAS).

The final selected remedy for OU-02 is documented in the OU-02 Record of Decision (ROD) issued by the New York State Department of Environmental Conservation (NYSDEC) with New York State Department of Health (NYSDOH) concurrence (NYSDEC, 2021). The selected remedy is summarized as follows:

- Development of two new groundwater supply wells;
- Provision of required redundancy by maintaining a minimum of one existing Village well;
- Construction of a water transmission line from the new wells to the Village of Hoosick Falls water treatment plant (WTP);
- Continued maintenance and operation of the WTP; and
- Retention of the existing granular activated carbon (GAC) treatment system.

The ROD includes a discussion of the need for groundwater monitoring at key locations to detect PFAS that may travel to the two new groundwater supply wells located approximately 4,300 feet south of the existing Village well field on property referred to as the "LaCroix property." The plan included herein addresses this requirement.

This groundwater monitoring plan has been developed to identify and track potential movement and migration of PFAS toward the new well field. Importantly, detection of PFAS in the new water supply wells or long-term monitoring wells identified in this plan may not necessitate an immediate/emergency response because the existing full-capacity GAC treatment system will continue to be used as part of the routine source water treatment process and the treatment system is monitored on a regular basis.

1.1 Background

PFAS was detected in the Village's municipal water supply in 2014. In response, several remedial measures were implemented, including distributing bottled water to residents and installing a temporary GAC treatment system at the existing municipal WTP. A full-capacity GAC treatment system was installed in 2016 at the WTP to replace the temporary system.

The full-capacity treatment system was designed to remove PFAS prior to distribution. The GAC treatment system is comprised of two vessels that each contain 40,000 pounds of GAC media. Vessels are operated in series such that there is a lead vessel and lag vessel. Monthly sampling has been completed at multiple sampling points, including the influent, mid-point, and effluent since March 2016. Sampling results are used to determine when the GAC media in the lead vessel is approaching saturation and requires replacement with virgin GAC. This regular sampling has demonstrated the successful removal of PFAS since the GAC treatment system started operating. Monitoring of the WTP is completed in accordance with the Protocol Work Plan, GAC WTP Addition, Hoosick Falls Water Treatment Plan (C.T. Male, 2019).

1.2 Summary of Previous and Ongoing OU-02 Actions

The Order on Consent and Administrative Settlement, Index No. CO 4-20160212-18 (the Order) required the preparation of a study and assessment of alternate potable water supply sources for the Village. Multiple activities and reports have been completed to fulfill this requirement in the Order and in support of ROD requirements. The list of documents relevant to OU-02 includes (full references included in Section 5.0):

- Village of Hoosick Falls Alternative Water Supply Study (July 2016)
- Groundwater Source Aquifer Evaluation: Hoosick Falls Alternative Water Supply Study (July 2017)
- Supplemental Hoosic Valley Aquifer Groundwater Source Investigation Work Plan (July 2018)
- Addendum to Supplemental Hoosic Valley Aquifer Groundwater Source Investigation Work Plan (April 2020)
- Hydrogeologic Report in the Village of Hoosick Falls Municipal Water Supply Study (August 2020)
- Addendum to: Village of Hoosick Falls Water Supply Study; Appendix C – Hydrogeologic Report (October 23, 2020)
- Municipal Water Supply Study for the Village of Hoosick Falls (November 2020)
- Proposed Remedial Action Plan, Operable Unit Number 02: Municipal Water Supply (April 2021)
- Record of Decision, Operable Unit Number 02: Municipal Water Supply (December 2021)
- Geotechnical Investigation Work Plan (October 2022)
- Groundwater Source Investigation Work Plan (February 2023)
- Geotechnical Investigation Data Report: Hoosick Falls OU-02 Water Main Investigation (April 2023)
- Joint Application for Permit: Hoosick Falls Municipal Water Supply Stream Bank Stabilization (May 2023)
- Remedial Design Work Plan: Operable Unit 2: Municipal Water Supply (June 2023)
- Joint Application for Permit: Village of Hoosick Falls Water Supply Project (October 2023)
- Pumping Test Report for LaCroix Wells 1 and 2 (October 2023)
- Village of Hoosick Falls Water Supply Project: Basis of Design Report (January 2024)

Pre-ROD investigations included the installation of test production wells and groundwater monitoring wells on the east and west sides of the Hoosic River (Figure 1). The test and monitoring wells were installed on the Wysocki and LaCroix properties to evaluate the capacity of the aquifer and its ability to produce a sufficient quantity of water to meet the estimated demands for the Village. Additionally, these wells provided data on groundwater quality in this area. Geophysical studies, pumping tests, and collection of groundwater and soil samples were carried out to further evaluate the aquifer characteristics. As discussed in the ROD (NYSDEC, 2021e), this work established that PFAS detected at the current Village well field are not expected to impact the Village's new water supply wells and that wells in this area could support the future demands of the Village. Following issuance of the ROD, several scopes of work have been carried out to support the new water supply design as listed above.

1.3 Well Field Conceptual Model

The discussion below presents key concepts relevant to the Village's new well field. These key concepts include the following:

- A deep sand and gravel unit serves as the aquifer for the Village's existing and new well field.
- The clay and silt layer overlying this aquifer is not continuous near the Village's existing well field. The lack of continuity allows the existing well field to be vulnerable to downward contaminant migration from recharging shallow groundwater.
- A clay and silt layer is present atop the deep aquifer at the Village's new well field and limits downward migration from shallow groundwater. This limited connection with shallow groundwater was demonstrated during recent aquifer testing, where no response was observed in shallow wells when pumping from the deep sand and gravel unit.

The surficial geology near the LaCroix property (i.e., the location of the Village's new water supply wells) consists primarily of glacial deposits. The Hoosic River valley includes areas mapped as outwash sand and gravel, glaciolacustrine sand and silt, glaciolacustrine deltaic deposits, and to a lesser extent, kame deposits (Cadwell and Dineen, 1987; DeSimone, 2017; and Williams and Heisig, 2018). The Village's new well field is screened in these outwash sand and gravel deposits (the "deep sand and gravel" or "deep aquifer"; see Figure 1). This deep aquifer tends to be the most productive groundwater source in the area despite being narrowly confined to the river valley. The Village's existing supply wells are also screened in this deep aquifer but are unconfined in the existing well field. This makes the existing municipal wells susceptible to downward migration of shallow contamination since recharge is possible in areas where this clay and silt are thin or absent.

The deep aquifer becomes thinner and confined toward the south with an overlying clay and silt layer approximately 20-80 feet thick at the LaCroix property (Arcadis, 2017; Williams and Heisig, 2018; ERM/CHA, 2020; CHA/WSP, 2023c). This clay and silt layer was deposited during the glacial retreat and is not present continuously at the existing Village well field. A recent alluvial unit (consisting of channel gravels, sands, and silts deposited by the Hoosic River) overlies this clay and silt layer in the southern portion of the aquifer and directly overlies the unconfined aquifer at the Village's existing well field.

At the LaCroix property, the clay and silt unit limits communication between the deep aquifer and the shallow unconfined aquifer or the Hoosic River, as demonstrated during recent aquifer testing at the LaCroix well (CHA/WSP, 2023c) when there was no response in the shallow aquifer due to pumping from the deep aquifer. The deep aquifer generally thins to the east and west toward the upland areas above the Hoosic River valley.

The deep aquifer is underlain by slate bedrock. This slate bedrock (i.e., the Walloomsac Formation) is frequently jointed, fissile, dips to the east, and is mapped as approximately 500 feet thick (Potter, 1972). Regional faulting (e.g., the Potters Hill Fault with roughly 100 feet of vertical displacement near the Village) is mapped in the area with the Lacroix property located in the lower plate of the thrust sheet and upthrown block of the Potters Hill Fault. Groundwater wells in this underlying bedrock demonstrate highly variable yield with reported average yields of roughly 7 gallons per minute (GPM; Cushman, 1950). Where fractured and/or faulted and in hydraulic connection with the buried sand and gravel, this slate bedrock may possibly provide recharge to the Village's new well field.

1.4 OU-02 Groundwater Monitoring Objective

The objective of the work described in this plan is to assess the water supply performance and effects to new municipal water supply aquifer. This plan includes baseline and ongoing/long-term monitoring, as described below. It is designed to change as needed based on results and evaluation of ongoing monitoring.

2.0 Groundwater Monitoring Program

The OU-02 groundwater monitoring plan is designed to establish baseline conditions prior to start-up of the new Village supply wells, monitor conditions in the first year following start-up of the new Village supply wells, and establish a long-term monitoring plan after the initial year of operation. It provides flexibility for the long-term monitoring program to change as needed based on newly collected data and evaluations. The groundwater monitoring program is summarized on a flowchart presented as Figure 2 and discussed further below. Monitoring well installation, groundwater sampling, and groundwater elevation gauging are discussed in Section 3.

The baseline and year 1 monitoring program includes monitoring wells in the shallow water table aquifer and the deep sand and gravel aquifer. Evaluations conducted to date have indicated no apparent hydraulic response in the shallow/surficial aquifer from pumping in the deep aquifer; however, select shallow monitoring wells have been included in the monitoring program as requested by NYSDEC. The network of wells included in the monitoring program long-term will be evaluated yearly in annual reporting.

After start-up of the new supply wells, the Village's municipal water will continue to be treated with GAC prior to distribution in accordance with the ROD. Monthly sampling at multiple locations within the Village's WTP will continue to ensure the ongoing effectiveness of the GAC treatment for PFAS removal. Therefore, groundwater detections of PFAS in the deep sand and gravel aquifer may not necessitate immediate actions but will be used to evaluate continued protectiveness as new data are collected and regulatory requirements may change (Figure 2).

2.1 Baseline Monitoring and Reporting

Baseline monitoring will be conducted to establish hydraulic gradients and PFAS concentrations in deep groundwater surrounding the new Village supply wells prior to their start-up. The baseline network includes seven existing monitoring wells and five newly proposed locations which are subject to obtaining property access rights. As shown on Figure 3, the baseline monitoring network includes groundwater sampling to the north, south, and west of the new water supply wells and on both sides of the Hoosic River. A baseline monitoring well will also be installed to the east if property access is granted. A greater number of wells are included to the north, between the existing Village well field and new supply wells. Groundwater sampling (one sample prior to start-up) and/or groundwater elevation monitoring (ongoing via the deployment of pressure transducers with monthly data download/review) based on location will be completed as summarized below. PFAS analytical data for existing wells in the OU-02 baseline network that were previously sampled are included as Attachment A.

Baseline OU-02 Groundwater Monitoring Network

Monitoring Well	Status	GW Sampling	GW Elevation Monitoring	Description
GW-02	Existing	X	X	Deep well located 3,600 feet north of new supply wells and east of the Hoosic River; located between the existing and new supply wells
GWI-03	Existing	X	X	Deep well located 490 feet southeast of new supply wells and west of the Hoosic River
GWI-04A	Proposed		X	Shallow well proposed adjacent to GWI-04, located 370 feet northwest of new supply wells and west of the Hoosic River
GWI-04	Existing		X	Deep well located 370 feet northwest of new supply wells and west of the Hoosic River
GWI-05	Existing	X	X	Deep well located 750 feet west of new supply wells and west of the Hoosic River
GWI-MW-09A	Existing	X	X	Shallow well located 1,970 feet northeast of new supply wells and east of the Hoosic River
GWI-MW-09B	Existing	X	X	Deep well located 1,970 feet northeast of new supply wells and east of the Hoosic River
GWI-12	Proposed	X	X	Deep well proposed 920 feet north-northwest of new supply wells; access pending
GWI-12A	Proposed	X	X	Shallow well proposed 920 feet north-northwest of new supply wells; access pending
GWI-13	Proposed	X	X	Deep well proposed 890 feet east of new supply wells; access pending. An alternative location is also shown (GWI-13-Alt) which is 1,130 feet east-northeast of new supply wells
GWI-14	Proposed	X	X	Deep well proposed 3,090 feet south-southeast of new supply wells and west of Hoosic River; access needed/pending
ARC-OBS-BR	Existing		X	Bedrock well located 700 feet southeast of new supply wells and west of Hoosic River
OBS-04	Existing		X	Deep well located 980 feet southwest of new supply wells and west of Hoosic River

One groundwater sample will be collected for PFAS analysis at each selected location (see above) at least 100 days prior to the anticipated start-up of the new supply wells, with the exception of any proposed well that has not been installed by this time due to access delays or denials. In effect, baseline monitoring and start-up of the new supply wells will not be delayed if access is delayed or not granted to one or more of the proposed monitoring well locations.

A data summary report for baseline monitoring will be prepared and submitted prior to start-up of the new supply wells. The reporting will include but may not be limited to the following:

- Groundwater gauging data in table format and posted on maps for the deep groundwater representing ambient (i.e., pre-start-up) conditions.

- Evaluation of groundwater elevation gradients in deep groundwater representing ambient (i.e., pre-start-up) conditions.
- Field documentation from all groundwater sampling, groundwater elevation gauging, and monitoring wells construction/development logs.
- Analytical data from all groundwater samples collected.

2.2 Year 1 Monitoring and Reporting

Year 1 monitoring will be conducted to establish groundwater flow conditions (hydraulic gradients, groundwater flow directions, estimated groundwater velocities, etc.) and PFAS concentrations in the groundwater monitoring network following start-up of the new Village water supply wells.

The year 1 monitoring network will be the same as discussed above for baseline monitoring, with completion of three sampling events (i.e., approximately three, six, and 10 months after start-up). Ongoing groundwater elevation gauging with monthly data review will continue through year 1 to evaluate groundwater flow under full operating conditions of the new supply wells. If baseline monitoring (Section 2.1) indicates unexpected concentrations within the deep sand and gravel aquifer, year 1 monitoring will be conducted at a higher frequency in consultation with NYSDEC.

A data summary report for year 1 monitoring will be prepared and submitted within one year plus 60 days following start-up of the new supply wells. The reporting will include but may not be limited to the following:

- Groundwater gauging data in table format and posted on maps for the deep groundwater representing operational (i.e., post-start-up) conditions.
- Evaluation of groundwater elevation gradients.
- Field documentation from all groundwater sampling, groundwater elevation gauging, and monitoring wells construction/development logs.
- Analytical data from all groundwater samples collected and evaluation of results.
- Recommendations for changes to the monitoring program if needed. These may include changes in sampling frequency, sampling methods, discontinued transducer usage, addition or reduction to the monitoring network, well abandonment, and well maintenance.

2.3 Long-term Monitoring and Reporting

Ongoing sampling, monitoring, and annual reporting will be completed each year. Annual reporting will summarize results, evaluate data collected each year, and provide recommendations for changes to the monitoring program (if appropriate). As such, year 2 monitoring will occur similarly to year 1 with modifications based on recommendations in year 1 annual reporting. When sufficient data have been collected, evaluations of concentration trends and travel times will be provided, allowing for further refinement of the monitoring program. The schedule for submittal of annual reports to NYSDEC will be adjusted following year 2 to occur by March 31 each year.

3.0 Field Activities

3.1 Monitoring Well Installation

Five monitoring wells are proposed for installation (Figure 3), but their locations may change based on access and field conditions. The total number of wells installed may also be reduced if access to desired locations is not granted. Up to three of these monitoring wells are designed to be installed in the deep sand and gravel aquifer (see Section 1.3) at estimated depths from 60 to 140 feet below ground surface, but screened intervals will be determined based on observations made by the onsite geologist during drilling. Two of these monitoring wells are designed to be installed in the shallow sand and gravel aquifer (see Section 1.3) at estimated depths from 20 to 40 feet below ground surface, but screened intervals will be determined based on observations made by the onsite geologist during drilling. Additional monitoring wells may be installed in the shallow sand and gravel aquifer adjacent to planned deep aquifer monitoring wells, if during drilling for deep well installation the confining layer is identified as absent or substantially thinner than other locations in the monitoring network. Monitoring well installation and development will be conducted according to the methods specified in the most recent Field Sampling Plan (FSP; C.T. Male and BEC, 2020a). Well installation and construction methods to mitigate the potential for downward migration of shallow groundwater or flooding from the river will be employed.

3.2 Groundwater Sampling

Groundwater sampling will be conducted according to the methods specified in the most recent Field Sampling Plan (FSP; C.T. Male and BEC, 2020a). As such, samples will be collected via low-stress sampling methodology following the collection of stabilization parameters to ensure representative groundwater samples. Groundwater samples will be submitted for laboratory analysis of PFAS in accordance with the most recently approved QAPP at the time of sampling (current QAPP; C.T. Male and BEC, 2020b).

Analytical data validation will be conducted by an independent data validator in accordance with previously approved methods (C.T. Male, 2016). Analytical data gathered during the work described in this Work Plan will be shared with NYSDEC as part of periodic data submittals and in annual reporting.

3.3 Groundwater Elevation Monitoring

Static water levels will be measured in each monitoring well prior to sampling and deployment of pressure transducers. A pressure transducer data logger (i.e., In-Situ LevelTROLL 700, RuggedTROLL 100) will be used to monitor and record changes in water level. The static water level will be remeasured after deployment of the transducer in each well and will be used to calibrate the data recorded by the instrument. Transducer data files will be downloaded from the device and reviewed monthly with a recording interval of one hour unless observed conditions dictate more frequent recording. The data will be adjusted for barometric pressure if the model of pressure transducer used is non-vented and/or conditions of the well dictate it (i.e., the well is tightly capped).

3.4 Monitoring Well Inspection, Maintenance, and Abandonment

The monitoring wells which serve as long-term data collection points will be inspected prior to the initiation of this monitoring program and on an annual basis thereafter. Any monitoring well requiring

maintenance, including the protective casing (i.e., guard pipe), will be recorded and completed in a timely manner, with documentation included in annual reporting.

Monitoring wells GWI-08B & 08C, and Village Wells 4, and 5 will not be considered for decommissioning at this time, per the request of the NYSDEC. Village Wells 3 and 6 are planned for decommissioning in accordance with the Article 15 Water Withdrawal Permit issued for the Village (DEC#4-3828-00178; issued February 5, 2024). All other test holes, test/monitoring wells, partially completed wells, and production wells that are not initially identified as monitoring points per this program, or are no longer required in the future, will be abandoned through sealing as a best management practice in accordance with the following:

- NYSDEC CP-43: Groundwater Monitoring Well Decommissioning Policy (11/3/2009); and
- NYSDEC Water Supply Well Decommissioning Recommendations – Division of Water (December 2016)

Prior to decommissioning any well, the NYSDEC Project Manager will be provided with a written plan that describes the rationale for the abandonment, the proposed method(s) for the abandonment, and the schedule of the work for review and approval. All abandonment work will be completed by an NYS Licensed Well Driller and observed by the engineer of record. Documentation of the work will be provided to NYSDEC, the property owner, and all other involved parties following the completion of the work. Wells proposed for potential abandonment in the future are shown on Figure 4.

4.0 Schedule

Start-up of the new Village supply wells is currently targeted for late 2024/early 2025. Prior to that, the following activities will be completed:

- Installation and associated testing of the second water supply well at the Village's new well field (completed in 2023).
- Stabilization of the Hoosic River streambank (completed in 2023).
- Construction of raw water pipeline and connection to the existing WTP (estimated completion November/December 2024).
- Baseline monitoring (groundwater sampling and transducer deployment), as discussed in Section 2.1, is planned to begin approximately 180 days prior to start-up of the new Village supply wells and estimated to occur in June or July 2024.
- Access to additional private properties and installation of proposed monitoring wells as shown on Figure 3 (to begin upon final approval of this plan).

Start-up of the new Village supply wells will initiate year 1 monitoring. This will include:

- Ongoing groundwater elevation gauging with monthly review of transducer data at proposed locations (Figure 3).
- Tri-annual groundwater sampling at proposed locations three, six, and ten months following start-up (Figure 3).
- Annual report submittal within one year plus 60 days of start-up of the new Village supply wells. The schedule for year 2 and subsequent annual reporting may be adjusted to correspond with the calendar year such that submittal to NYSDEC occurs by March 31 of each year.

Private property access coordination is currently underway in coordination with NYSDEC. Installation of proposed wells will be initiated following granting of access. Baseline monitoring will begin approximately 180 days prior to start-up of the new water supply system, pending access and completed installation of the new monitoring wells.

5.0 References

Arcadis. 2016. "Village of Hoosick Falls Alternative Water Supply Study." Memorandum to NYSDEC, Clifton Park, NY. July 12, 2016.

Arcadis. 2017. "Groundwater Source Aquifer Evaluation: Hoosick Falls Alternative Water Supply Study." Report to NYSDEC, Clifton Park, NY. July 6, 2017.

Balk, Robert. 1953. Structure of the Graywacke Areas and Taconic Range, east of Troy, New York: Geol. Soc. America Bull., v. 64, pp. 811 - 864.

Bonham, Lawrence D. 1950. Structural Geology of the Hoosick Falls Area, New York-Vermont, in Relation to the Theory of Taconic Overthrust: University of Chicago Ph.D. Thesis, pp 127. June 8, 1950.

Cadwell, D.H. and R.H. Dineen. 1987. Surficial Geologic Map of New York: Hudson-Mohawk Sheet. New York State Geological Survey: New York State Museum and Science Service, Map and Chart Series 40, Map Scale - 1:250,000.

CHA and WSP. 2022. Geotechnical Investigation Workplan, Saint Gobain McCaffrey Street Operable Unit Number 02 Municipal Water Supply. CHA Consulting, Inc. and WSP USA Environment & Infrastructure, Inc. October 2022.

CHA and Amec. 2023. Draft Remedial Design Work Plan, Operable Unit 2: Municipal Water Supply, McCaffrey Street Site (NYSDEC Site No. 442046), Hoosick Falls, New York. CHA Consulting, Inc. and Amec E&E, P.C. June 30, 2023.

CHA and WSP. 2023a. Groundwater Source Investigation Work Plan. February 2023.

CHA and WSP. 2023b. Geotechnical Investigation Data Report Hoosick Falls OU2 Water Main Investigation. Prepared for Saint-Gobain Performance Plastics, Corp. and Honeywell International. WSP USA Environment & Infrastructure, Inc. and CHA Consulting, Inc. April 2023.

CHA and WSP. 2023c. Joint Application for Permit – Hoosick Falls Municipal Water Supply Stream Bank Stabilization, Town of Hoosick, Rensselaer County, NY. May 2023.

CHA and WSP. 2023d. Joint Application for Permit – Village of Hoosick Falls Water Supply Project, Hoosick Falls, New York. October 18, 2023.

CHA. 2023e. Pumping Test Report for LaCroix Wells 1 and 2 – Village of Hoosick Falls Water Supply Project. October 2023.

CHA and WSP. 2023f. Village of Hoosick Falls Water Supply Project Basis of Design Report. Prepared for Saint-Gobain Performance Plastics, Corp. and Honeywell International. January 2024.

C.T. Male. 2019. Protocol Work Plan, GAC WTP Addition, Hoosick Falls Water Treatment Plan, Village of Hoosick Falls, Rensselaer County, New York (PWS ID NY4100041). C.T. Male Associates, Revised April 2019.

C.T. Male, 2019. "Interim Remedial Measure Work Plan, Groundwater Capture and Treatment." Albany, N.Y.

C.T. Male. 2016. "Final Remedial Investigation / Feasibility Study Work Plan." Albany, N.Y.

C.T. Male and BEC. 2020a. Field Sampling Plan. 14 McCaffrey Street (Site No. 442046) and 1 Liberty Street

(Site No. 442048) Village of Hoosick Falls. C.T. Male Associates and BEC Engineering and Geology, P.C. March 2020.

C.T. Male and BEC. 2020b. Quality Assurance Project Plan. 14 McCaffrey Street (Site No. 442046) and 1 Liberty Street (Site No. 442048) Village of Hoosick Falls. C.T. Male Associates and BEC Engineering and Geology, P.C. March 6, 2020.

Cushman, R.V. 1950. "The Ground-Water Resources of Rensselaer County, New York." Groundwater Bulletin: prepared by the USGS in cooperation with the Water Power and Control Commission, Albany, NY, 56 p.

DeSimone, D.J. 2017. "Surficial Geology of the Bennington area, Vermont" (VG2017-1). GIS Data, Vermont Geological Survey.

DeSimone, D.J. 2017. Surficial Geology of Hoosick Falls, New York: Hoosick Falls Central School District, 1:12,000 scale, 31 p., at http://www.hoosickfallscsd.org/hoosick-area-hydrogeology-groundwater-research-data/.

ERM and CHA. 2018. Supplemental Hoosic Valley Aquifer, Groundwater Source Investigation Work Plan. Prepared for Saint-Gobain Performance Plastics and Honeywell International. Environmental Resources Management and CHA Consulting Inc., July 2018.

ERM. 2020. Addendum to Supplemental Hoosic Valley Aquifer Groundwater Source Investigation Work Plan, Order on Consent and Administrative Settlement; Index No. CO 4-20160212-18. Letter to Ian Beilby, NYSDEC. Dated April 6, 2020.

ERM and CHA. 2020. Municipal Water Supply Study for the Village of Hoosick Falls. Prepared for Saint-Gobain Performance Plastics, Corp. and Honeywell International. Environmental Resources Management and CHA Consulting, Inc. November 2020.

Kim, J. and Dowey, C. W. 2017. "Derivative maps generated from water well data logs in the Bennington area, Vermont" (VG2017-3). Map, Vermont Geological Survey.

Lane, M.A. 1970, Structural Geology and Structural Analysis of part of the Central Taconic Region, Eastern New York, University of Indiana PhD Thesis, 68 p.

Lochman, C. 1956. Stratigraphy, paleontology, and paleogeography of the Elliptocephala asaphoides strata in Cambridge and Hoosick quadrangles, New York: Geol. Soc. America Bull., v. 67, pp. 1331-1396.

MRB Group. 2016. Engineering Report for the Village of Hoosick Falls Water System Expansion. August 2016.

NYSDEC. 2021. Record of Decision Saint-Gobain McCaffrey Street, Operable Unit Number 02: Municipal Water Supply, State Superfund Project, Hoosick Falls, Rensselaer County, Site No. 442046, December 2021.

NYSDEC. 2016. Order on Consent and Administrative Settlement. Index No. CO 4-20160212-18. June 3, 2016.

Potter, David B. 1972. Stratigraphy and Structure of the Hoosick Falls Area, east central Taconics, N.Y.-Vt., N.Y. State Museum and Science Service Map and Chart Series No. 19.

Prindle, L. M. and Knopf, E.B. 1932. Geology of the Taconic Quadrangle: Am. Jour. Sci. 5th ser., v. 20, pp. 257-302.

Randall, A.D. 1995. "Hydrology and Well Yield at the Hoosick Falls Well Field."

Ratcliffe, N. M., Stanley, R.S., Gale, M.H., Thompson, P.J., and Walsh. G.J. 2011. "Bedrock Geologic Map of Vermont." USGS Scientific Investigations Series Map 3184. Scale 1:100,000. https://dec.vermont.gov/geological-survey/publication-gis/VTrock

Rickard, L.V., Isachsen, Y.W., and D.W. Fisher. 1970. Geologic Map of New York: Hudson-Mohawk Sheet. New York State Geological Survey: New York State Museum and Science Service, Map and Chart Series 15, Map Scale - 1:250,000. March 1970.

Shilts, W.W. 1966. "Pleistocene Geology of the Bennington Area, Vermont" (VG66-5). Vermont Geological Survey.

Stewart, D., MacClintock, P., and, Doll, C.G. 1970. "Surficial Geologic Map of Vermont." Map, Department of Water Resources.

U.S. Geological Survey. 1996. "Digital and 1:100,000 scale Digital Raster Graphic (DRG)". Earth Science Information Center.

Williams, J.H., and Heisig, P.M. 2018. Groundwater-level analysis of selected wells in the Hoosic River Valley near Hoosick Falls, New York, for aquifer framework and properties: U.S. Geological Survey Open-File Report 2018–1015, 14p.

Figures

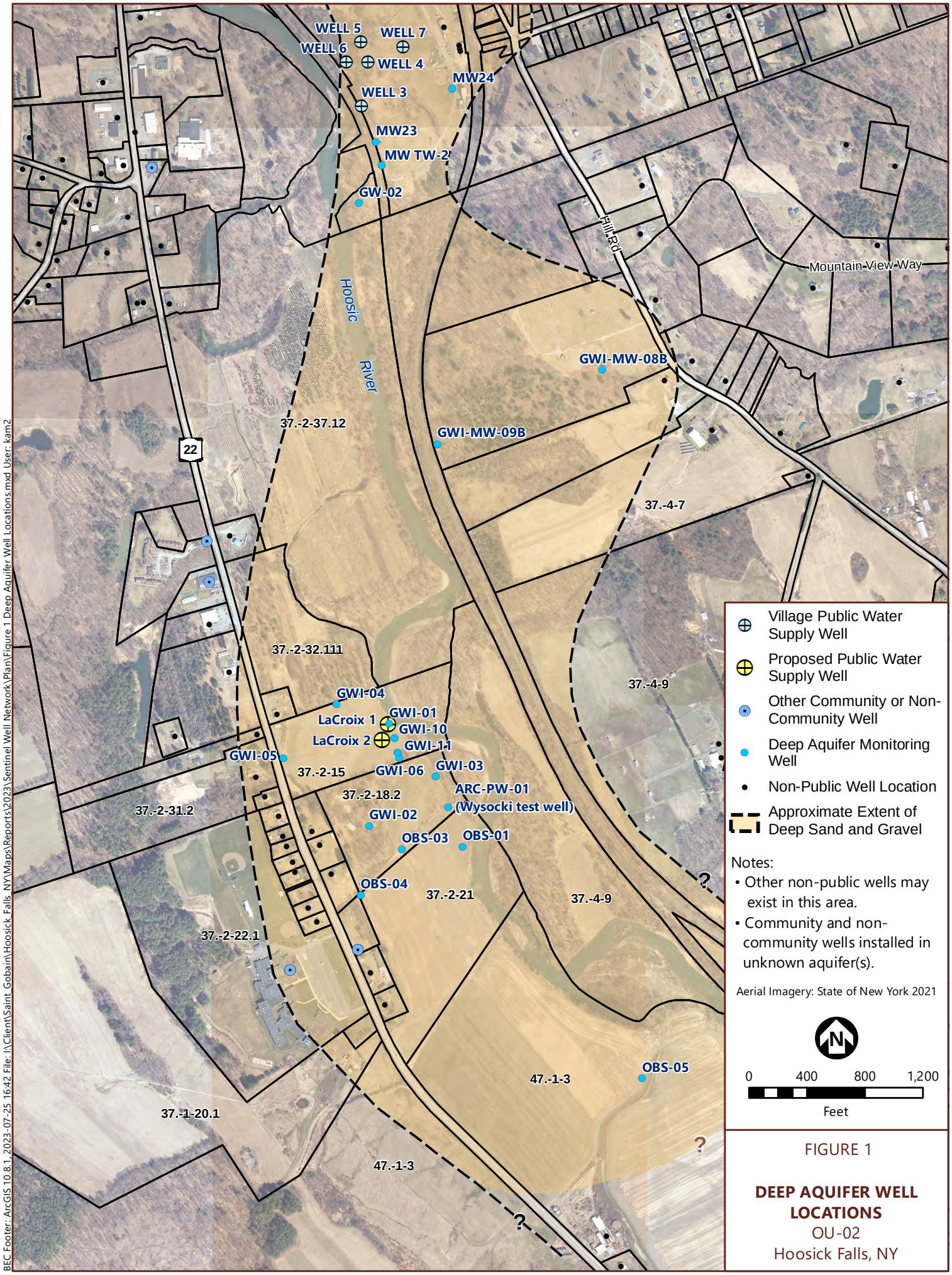

FIGURE 1

DEEP AQUIFER WELL LOCATIONS

OU-02

Hoosick Falls, NY

BEC Footer: ArcGIS 10.8.1, 2023-07-25 16:42 File: I:\Client\Saint Gobain\Hoosick Falls_NY\Maps\Reports\2023\Sentinel Well Network\Plan\Figure 1 Deep Aquifer Well Locations.mxd User: kam2

OU-02 Groundwater Monitoring Program

Objective: Assess the water supply performance and effects to new municipal water supply aquifer (the approved remedy).

New Hoosick Falls Water Supply and Existing Water Treatment Plant (Approved ROD)

New Village Water Supply Well Installation and Connection to Village WTP w/GAC)

Transition to new water supply

Monthly Sampling at WTP; Continued operation and Maintenance of WTP w/GAC

Baseline Monitoring

- Establish OU-02 baseline conditions using monitoring network of existing wells.
  - 5 existing monitoring wells for baseline groundwater sampling, equipped with pressure transducers. Sample once prior to start-up of new water supply wells.
  - 3 existing monitoring wells to be equipped with pressure transducers only (groundwater elevation monitoring; no sampling)
- Seek/acquire access to additional properties to install proposed shallow and deep monitoring wells (see Figure 3). Include in baseline characterization if installed prior to start-up of new water supply wells.
- Monthly review of transducer data to define ambient groundwater flow conditions and calculate hydraulic gradients prior to start-up of new water supply wells.
- Reporting of analytical data and groundwater potentiometric surface elevations.

Year 1 Monitoring

- Tri-annual sampling of select deep monitoring wells (Figure 3)
- Monthly review of transducer data to further characterize the wellhead's cone of depression and recharge zone

Long-term Monitoring and Annual Reporting

Implement Any Approved Changes in Monitoring Program

Continue Operation of WTP w/GAC

Reporting[1]

Evaluations and Recommendations

Will WTP w/GAC remain protective given recent data and regulatory requirements?

Yes

No

Adjust/evaluate WTP operations as appropriate and stakeholder engagement

PFAS detected and confirmed

Exceedance of regulated value[2] ?

No

Yes

Report result to NYSDEC/ NYSDOH in addition to annual reporting

Footnotes

1 – Annual report to be submitted each year and will include evaluation of data and recommendations for any changes to monitoring program (sampling frequency, sampling methods, new wells, well abandonment, well maintenance, etc.).

2 – It is likely that the list of PFAS regulated in drinking water and the relevant standards/criteria/guidance (SCGs) will continue to change. The list of regulated PFAS and SCGs will need to be reviewed on an ongoing basis and discussed in annual reporting.

Figure 2

OU-02 Groundwater Monitoring Program

McCaffrey Street Site
Hoosick Falls, NY

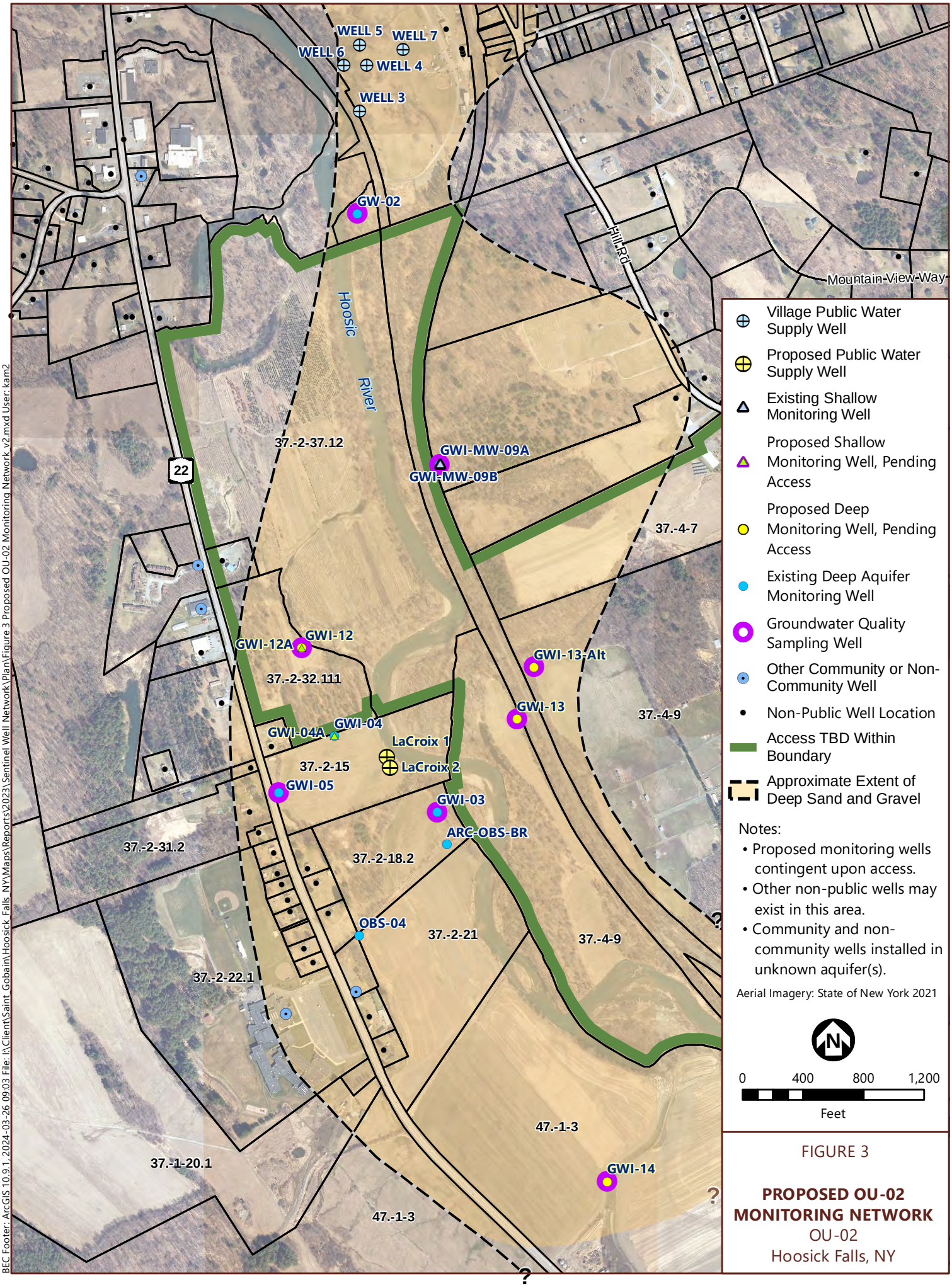

FIGURE 3

PROPOSED OU-02 MONITORING NETWORK

OU-02

Hoosick Falls, NY

BEC Footer: ArcGIS 10.9.1, 2024-03-26 09:03 File: I:\Client\Saint-Gobain\Hoosick_Falls_NY\Maps\Reports\2023\Sentinel Well Network\Plan\Figure 3 Proposed OU-02 Monitoring Network_v2.mxd User: kam2

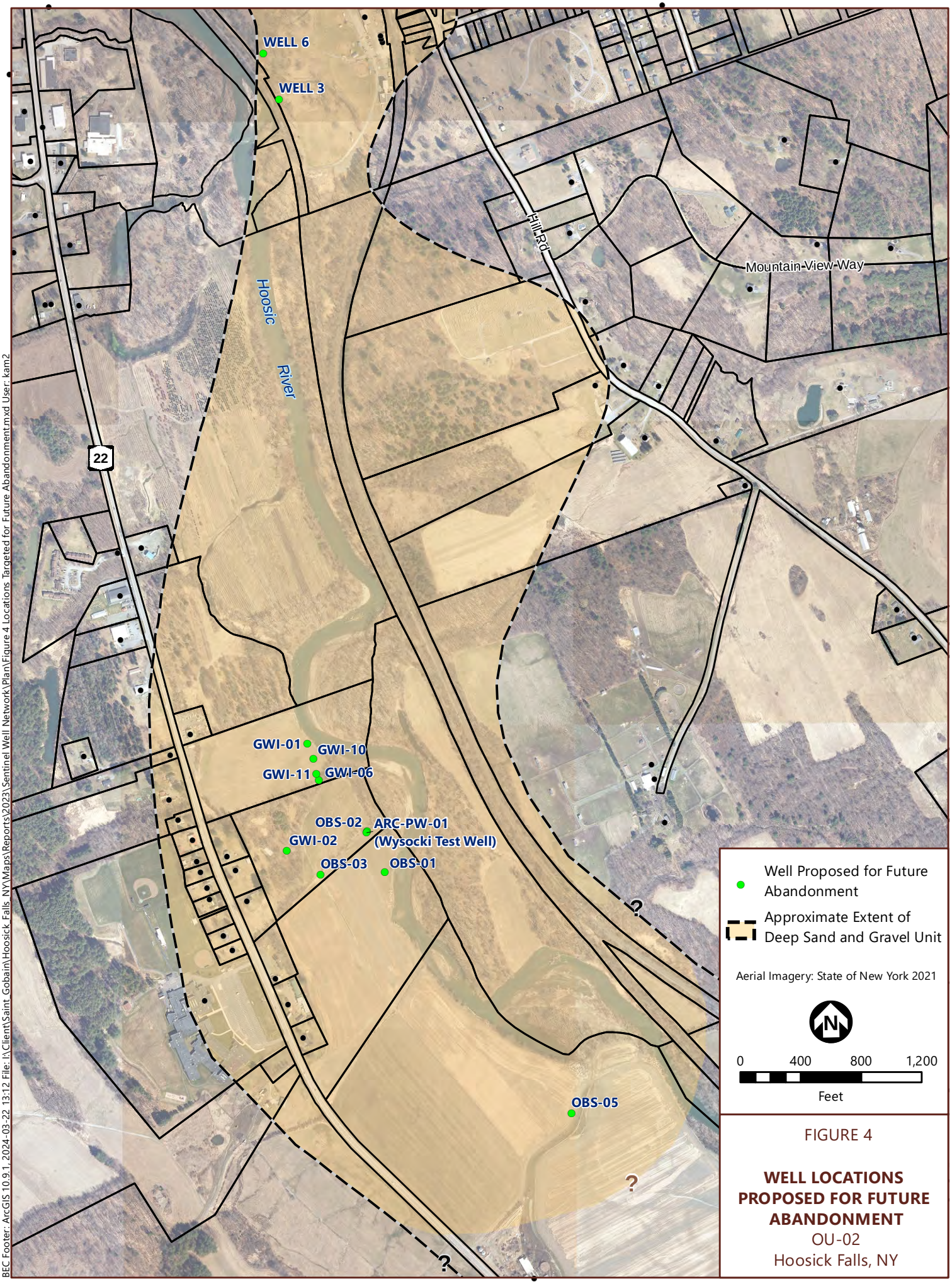

FIGURE 4

WELL LOCATIONS PROPOSED FOR FUTURE ABANDONMENT

OU-02

Hoosick Falls, NY

Attachment A

Analytical Data for Existing Wells in OU-02 Baseline Monitoring Network

(Table 1 from Appendix C of the Municipal Water Supply Study (ERM and CHA, 2020)

Table 1
Monitoring Well Analytical Data
Hydrogeologic Report

			Location ID	GWI-01	GWI-01	GWI-01	GWI-02
			Sample Date	9/26/2018	11/7/2018	5/7/2019	9/27/2018
			Sample Type	N	N	N	N
			Validated - Y/N	Y	Y	Y	N
Parameter	Unit	NYDEC TOGS111 GA GUIDANCE	NYDEC TOGS111 GA STANDARD				
PFAS							
NEtFOSAA	ng/l	NS	NS	1.7 U	0.89 U	1.4 U	
NMeFOSAA	ng/l	NS	NS	2.7 U	0.89 U	1.6 U	
PERFLUORO(2-PROPOXYPROPANOIC) ACID	ng/l	NS	NS	1.3 U		0.62 U	
Perfluorobutanesulfonic acid (PFBS)	ng/l	NS	NS	0.17 U	0.27 U	0.45 U	
Perfluorobutanoic Acid	ng/l	NS	NS	2.5	2 J	1.4 J	
Perfluorodecane Sulfonic Acid	ng/l	NS	NS	0.28 U	0.54 U	0.82 U	
Perfluorodecanoic acid (PFDA)	ng/l	NS	NS	0.27 U	0.8 U	0.7 U	
Perfluorododecanoic acid (PFDoA)	ng/l	NS	NS	0.48 U	0.45 U	0.54 U	
Perfluoroheptane Sulfonate (PFHPS)	ng/l	NS	NS	0.17 U	0.36 U	0.87 U	
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	NS	0.22 U	0.36 U	0.83 U	
Perfluorohexanesulfonic acid (PFHxS)	ng/l	NS	NS	0.31 U	0.36 U	0.73 U	
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	0.51 U	0.36 U	0.69 U	
Perfluorononanoic acid (PFNA)	ng/l	NS	NS	0.24 U	0.36 U	0.25 U	
Perfluorooctanesulfonic acid (PFOS)	ng/l	NS	NS	0.47 U	0.69 J	0.56 U	
Perfluorooctanoic acid (PFOA)	ng/l	NS	NS	0.74 U	0.54 J	0.58 U	
Perfluoropentanoic Acid (PFPeA)	ng/l	NS	NS	0.43 U	1.8 U	0.58 U	
Perfluorotetradecanoic acid (PFTA)	ng/l	NS	NS	0.25 U	0.27 U	0.84 U	
Perfluorotridecanoic Acid (PFTriA)	ng/l	NS	NS	1.1 U	0.36 U	0.55 U	
Perfluoroundecanoic Acid (PFUnA)	ng/l	NS	NS	0.96 U	0.36 U	0.48 U	
SODIUM 1H,1H,2H,2H-PERFLUORODECANE SULFONATE (8:2)	ng/l	NS	NS	1.7 U	1.8 U	2.7 U	
SODIUM 1H,1H,2H,2H-PERFLUOROOCTANE SULFONATE (6:2)	ng/l	NS	NS	1.7 U	8.7	4.2 U	

Notes:
N = Normal Environmental Sample
FD = Field Duplicate Sample
ng/l = nanograms per liter

Qualifiers:
J = Reported value is estimated.
U = Indicates the analyte was analyzed for but not detected.
Empty cells indicate that compound not reported by the laboratory.

Table 1
Monitoring Well Analytical Data
Hydrogeologic Report

			Location ID	GWI-02	GWI-02	GWI-02	GWI-02
			Sample Date	9/27/2018	9/27/2018	9/27/2018	11/7/2018
			Sample Type	N	FD	FD	N
			Validated - Y/N	Y	N	Y	Y
Parameter	Unit	NYDEC TOGS111 GA GUIDANCE	NYDEC TOGS111 GA STANDARD				
PFAS							
NEtFOSAA	ng/l	NS	NS	1.8 U		1.6 U	0.9 U
NMeFOSAA	ng/l	NS	NS	2.9 U		2.7 U	0.9 U
PERFLUORO(2-PROPOXYPROPANOIC) ACID	ng/l	NS	NS	1.4 U		1.3 U	
Perfluorobutanesulfonic acid (PFBS)	ng/l	NS	NS	0.19 U		0.17 U	0.27 U
Perfluorobutanoic Acid	ng/l	NS	NS	3		3	1.8 U
Perfluorodecane Sulfonic Acid	ng/l	NS	NS	0.3 U		0.28 U	0.54 U
Perfluorodecanoic acid (PFDA)	ng/l	NS	NS	0.29 U		0.27 U	0.81 U
Perfluorododecanoic acid (PFDoA)	ng/l	NS	NS	0.52 U		0.48 U	0.45 U
Perfluoroheptane Sulfonate (PFHPS)	ng/l	NS	NS	0.18 U		0.16 U	0.36 U
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	NS	0.23 U		0.22 U	0.36 U
Perfluorohexanesulfonic acid (PFHxS)	ng/l	NS	NS	0.26 U		0.15 U	0.36 U
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	0.54 U		0.5 U	0.36 U
Perfluorononanoic acid (PFNA)	ng/l	NS	NS	0.25 U		0.23 U	0.36 U
Perfluorooctanesulfonic acid (PFOS)	ng/l	NS	NS	0.51 U		0.47 U	0.36 U
Perfluorooctanoic acid (PFOA)	ng/l	NS	NS	0.8 U		0.73 U	0.27 U
Perfluoropentanoic Acid (PFPeA)	ng/l	NS	NS	0.46 U		0.42 U	1.8 U
Perfluorotetradecanoic acid (PFTA)	ng/l	NS	NS	0.27 U		0.25 U	0.27 U
Perfluorotridecanoic Acid (PFTriA)	ng/l	NS	NS	1.2 U		1.1 U	0.36 U
Perfluoroundecanoic Acid (PFUnA)	ng/l	NS	NS	1 U		0.95 U	0.36 U
SODIUM 1H,1H,2H,2H-PERFLUORODECANE SULFONATE (8:2)	ng/l	NS	NS	1.9 U		1.7 U	1.8 U
SODIUM 1H,1H,2H,2H-PERFLUOROOCTANE SULFONATE (6:2)	ng/l	NS	NS	1.9 U		1.7 U	0.9 U

Notes:
N = Normal Environmental Sample
FD = Field Duplicate Sample
ng/l = nanograms per liter

Qualifiers:
J = Reported value is estimated.
U = Indicates the analyte was analyzed for but not detected.
Empty cells indicate that compound not reported by the laboratory.

Table 1
Monitoring Well Analytical Data
Hydrogeologic Report

			Location ID	GWI-02	GWI-02	GWI-03	GWI-03
			Sample Date	5/7/2019	5/7/2019	9/27/2018	9/27/2018
			Sample Type	FD	N	N	N
			Validated - Y/N	Y	Y	N	Y
Parameter	Unit	NYDEC TOGS111 GA GUIDANCE	NYDEC TOGS111 GA STANDARD				
PFAS							
NEtFOSAA	ng/l	NS	NS	1.4 U	1.2 U		1.6 U
NMeFOSAA	ng/l	NS	NS	1.5 U	1.4 U		2.5 U
PERFLUORO(2-PROPOXYPROPANOIC) ACID	ng/l	NS	NS	0.62 U	0.56 U		1.2 U
Perfluorobutanesulfonic acid (PFBS)	ng/l	NS	NS	0.45 U	0.41 U		0.16 U
Perfluorobutanoic Acid	ng/l	NS	NS	1.3 J	1.4 J		0.88 J
Perfluorodecane Sulfonic Acid	ng/l	NS	NS	0.82 U	0.75 U		0.26 U
Perfluorodecanoic acid (PFDA)	ng/l	NS	NS	0.7 U	0.64 U		0.25 U
Perfluorododecanoic acid (PFDoA)	ng/l	NS	NS	0.54 U	0.49 U		0.45 U
Perfluoroheptane Sulfonate (PFHPS)	ng/l	NS	NS	0.86 U	0.79 U		0.16 U
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	NS	0.83 U	0.76 U		0.21 U
Perfluorohexanesulfonic acid (PFHxS)	ng/l	NS	NS	0.73 U	0.66 U		0.27 U
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	0.69 U	0.63 U		0.48 U
Perfluorononanoic acid (PFNA)	ng/l	NS	NS	0.25 U	0.22 U		0.22 U
Perfluorooctanesulfonic acid (PFOS)	ng/l	NS	NS	0.55 U	0.51 U		0.44 U
Perfluorooctanoic acid (PFOA)	ng/l	NS	NS	0.57 U	0.52 U		0.7 U
Perfluoropentanoic Acid (PFPeA)	ng/l	NS	NS	0.57 U	0.52 U		0.4 U
Perfluorotetradecanoic acid (PFTA)	ng/l	NS	NS	0.84 U	0.76 U		0.24 U
Perfluorotridecanoic Acid (PFTriA)	ng/l	NS	NS	0.55 U	0.5 U		1.1 U
Perfluoroundecanoic Acid (PFUnA)	ng/l	NS	NS	0.48 U	0.44 U		0.9 U
SODIUM 1H,1H,2H,2H-PERFLUORODECANE SULFONATE (8:2)	ng/l	NS	NS	2.6 U	2.4 U		1.6 U
SODIUM 1H,1H,2H,2H-PERFLUOROOCTANE SULFONATE (6:2)	ng/l	NS	NS	4.2 U	3.8 U		2.7 J

Notes:
N = Normal Environmental Sample
FD = Field Duplicate Sample
ng/l = nanograms per liter

Qualifiers:
J = Reported value is estimated.
U = Indicates the analyte was analyzed for but not detected.
Empty cells indicate that compound not reported by the laboratory.

Table 1
Monitoring Well Analytical Data
Hydrogeologic Report

			Location ID	GWI-03	GWI-03	GWI-03	GWI-04
			Sample Date	11/7/2018	11/7/2018	5/7/2019	11/7/2018
			Sample Type	N	FD	N	N
			Validated - Y/N	Y	Y	Y	Y
Parameter	Unit	NYDEC TOGS111 GA GUIDANCE	NYDEC TOGS111 GA STANDARD				
PFAS							
NEtFOSAA	ng/l	NS	NS	0.89 U	0.9 U	1.3 U	0.96 U
NMeFOSAA	ng/l	NS	NS	0.89 U	0.9 U	1.5 U	0.96 U
PERFLUORO(2-PROPOXYPROPANOIC) ACID	ng/l	NS	NS			0.59 U	
Perfluorobutanesulfonic acid (PFBS)	ng/l	NS	NS	0.27 U	0.27 U	0.43 U	0.29 U
Perfluorobutanoic Acid	ng/l	NS	NS	1.8 U	1.8 U	0.87 U	1.9 U
Perfluorodecane Sulfonic Acid	ng/l	NS	NS	0.53 U	0.54 U	0.79 U	0.57 U
Perfluorodecanoic acid (PFDA)	ng/l	NS	NS	0.8 U	0.81 U	0.67 U	0.86 U
Perfluorododecanoic acid (PFDoA)	ng/l	NS	NS	0.45 U	0.45 U	0.52 U	0.48 U
Perfluoroheptane Sulfonate (PFHPS)	ng/l	NS	NS	0.36 U	0.36 U	0.83 U	0.38 U
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	NS	0.36 U	0.36 U	1.4 J	0.38 U
Perfluorohexanesulfonic acid (PFHxS)	ng/l	NS	NS	0.36 U	0.36 U	0.7 U	0.38 U
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	0.38 J	0.36 U	2.1	0.38 U
Perfluorononanoic acid (PFNA)	ng/l	NS	NS	0.46 J	0.36 U	0.24 U	0.38 U
Perfluorooctanesulfonic acid (PFOS)	ng/l	NS	NS	0.38 J	0.36 U	0.58 J	0.9 J
Perfluorooctanoic acid (PFOA)	ng/l	NS	NS	1.8	1.8	38	0.71 J
Perfluoropentanoic Acid (PFPeA)	ng/l	NS	NS	1.8 U	1.8 U	0.55 U	1.9 U
Perfluorotetradecanoic acid (PFTA)	ng/l	NS	NS	0.27 U	0.27 U	0.8 U	0.29 U
Perfluorotridecanoic Acid (PFTriA)	ng/l	NS	NS	0.36 U	0.36 U	0.52 U	0.38 U
Perfluoroundecanoic Acid (PFUnA)	ng/l	NS	NS	0.36 U	0.36 U	0.46 U	0.38 U
SODIUM 1H,1H,2H,2H-PERFLUORODECANE SULFONATE (8:2)	ng/l	NS	NS	1.8 U	1.8 U	2.5 U	1.9 U
SODIUM 1H,1H,2H,2H-PERFLUOROOCTANE SULFONATE (6:2)	ng/l	NS	NS	12	13	41 J	0.96 U

Notes:
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FD = Field Duplicate Sample
ng/l = nanograms per liter

Qualifiers:
J = Reported value is estimated.
U = Indicates the analyte was analyzed for but not detected.
Empty cells indicate that compound not reported by the laboratory.

Table 1
Monitoring Well Analytical Data
Hydrogeologic Report

			Location ID	GWI-04	GWI-05	GWI-05	GWI-05
			Sample Date	5/7/2019	11/1/2018	11/1/2018	11/8/2018
			Sample Type	N	FD	N	N
			Validated - Y/N	Y	Y	Y	Y
Parameter	Unit	NYDEC TOGS111 GA GUIDANCE	NYDEC TOGS111 GA STANDARD				
PFAS							
NEtFOSAA	ng/l	NS	NS	1.3 U	1.9 U	1.9 U	0.91 U
NMeFOSAA	ng/l	NS	NS	1.5 UJ	3.1 U	3.1 U	0.91 U
PERFLUORO(2-PROPOXYPROPANOIC) ACID	ng/l	NS	NS	0.59 U			
Perfluorobutanesulfonic acid (PFBS)	ng/l	NS	NS	0.43 U	0.2 U	0.2 U	0.27 U
Perfluorobutanoic Acid	ng/l	NS	NS	0.87 U	2.2 J	2.2 J	3.1 J
Perfluorodecane Sulfonic Acid	ng/l	NS	NS	0.78 U	0.32 U	0.32 U	0.55 U
Perfluorodecanoic acid (PFDA)	ng/l	NS	NS	0.67 U	0.31 U	0.31 U	0.82 U
Perfluorododecanoic acid (PFDoA)	ng/l	NS	NS	0.51 U	0.55 U	0.54 U	0.46 U
Perfluoroheptane Sulfonate (PFHPS)	ng/l	NS	NS	0.83 U	0.19 U	0.19 U	0.37 U
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	NS	0.79 U	0.66 J	0.65 J	0.37 U
Perfluorohexanesulfonic acid (PFHxS)	ng/l	NS	NS	0.7 U	0.17 U	0.17 U	0.37 U
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	0.66 U	1.5 J	1.6 J	0.79 J
Perfluorononanoic acid (PFNA)	ng/l	NS	NS	0.23 U	0.44 J	0.46 J	0.37 U
Perfluorooctanesulfonic acid (PFOS)	ng/l	NS	NS	0.53 U	0.54 U	0.53 U	0.49 J
Perfluorooctanoic acid (PFOA)	ng/l	NS	NS	1.6 J	6.3	7.1	5.5
Perfluoropentanoic Acid (PFPeA)	ng/l	NS	NS	0.55 U	0.79 J	0.88 J	1.8 U
Perfluorotetradecanoic acid (PFTA)	ng/l	NS	NS	0.8 U	0.29 U	0.29 UJ	0.27 U
Perfluorotridecanoic Acid (PFTriA)	ng/l	NS	NS	0.52 U	1.3 U	1.3 U	0.37 U
Perfluoroundecanoic Acid (PFUnA)	ng/l	NS	NS	0.46 U	1.1 U	1.1 U	0.37 U
SODIUM 1H,1H,2H,2H-PERFLUORODECANE SULFONATE (8:2)	ng/l	NS	NS	2.5 U	2 U	2 U	1.8 U
SODIUM 1H,1H,2H,2H-PERFLUOROOCTANE SULFONATE (6:2)	ng/l	NS	NS	4 U	2 U	2 U	0.91 U

Notes:
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FD = Field Duplicate Sample
ng/l = nanograms per liter

Qualifiers:
J = Reported value is estimated.
U = Indicates the analyte was analyzed for but not detected.
Empty cells indicate that compound not reported by the laboratory.

Table 1
Monitoring Well Analytical Data
Hydrogeologic Report

			Location ID	GWI-05	GWI-06	GWI-06
			Sample Date	5/8/2019	11/9/2018	5/7/2019
			Sample Type	N	N	N
			Validated - Y/N	Y	Y	Y
Parameter	Unit	NYDEC TOGS111 GA GUIDANCE	NYDEC TOGS111 GA STANDARD			
PFAS						
NEtFOSAA	ng/l	NS	NS	1.3 U	0.91 U	1.4 U
NMeFOSAA	ng/l	NS	NS	1.5 U	0.91 U	1.6 U
PERFLUORO(2-PROPOXYPROPANOIC) ACID	ng/l	NS	NS	0.60 U		0.62 U
Perfluorobutanesulfonic acid (PFBS)	ng/l	NS	NS	0.43 U	0.27 U	0.45 U
Perfluorobutanoic Acid	ng/l	NS	NS	0.89 U	2.7 J	2 J
Perfluorodecane Sulfonic Acid	ng/l	NS	NS	0.8 U	0.54 U	0.83 U
Perfluorodecanoic acid (PFDA)	ng/l	NS	NS	0.68 U	0.82 U	0.71 U
Perfluorododecanoic acid (PFDoA)	ng/l	NS	NS	0.52 U	0.45 U	0.54 U
Perfluoroheptane Sulfonate (PFHPS)	ng/l	NS	NS	0.84 U	0.36 U	0.87 U
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	NS	0.81 U	0.36 U	0.84 U
Perfluorohexanesulfonic acid (PFHxS)	ng/l	NS	NS	0.71 U	0.36 U	0.73 U
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	0.67 U	0.36 U	0.7 U
Perfluorononanoic acid (PFNA)	ng/l	NS	NS	0.24 U	0.36 U	0.25 U
Perfluorooctanesulfonic acid (PFOS)	ng/l	NS	NS	0.54 U	0.36 U	0.56 U
Perfluorooctanoic acid (PFOA)	ng/l	NS	NS	8.4	0.27 U	0.58 U
Perfluoropentanoic Acid (PFPeA)	ng/l	NS	NS	0.56 U	1.8 U	0.6 J
Perfluorotetradecanoic acid (PFTA)	ng/l	NS	NS	0.81 U	0.27 U	0.84 U
Perfluorotridecanoic Acid (PFTriA)	ng/l	NS	NS	0.53 U	0.36 U	0.55 U
Perfluoroundecanoic Acid (PFUnA)	ng/l	NS	NS	0.47 U	0.36 U	0.49 U
SODIUM 1H,1H,2H,2H-PERFLUORODECANE SULFONATE (8:2)	ng/l	NS	NS	2.6 U	1.8 U	2.7 U
SODIUM 1H,1H,2H,2H-PERFLUOROOCTANE SULFONATE (6:2)	ng/l	NS	NS	4.1 U	0.91 U	4.2 U

Notes:
N = Normal Environmental Sample
FD = Field Duplicate Sample
ng/l = nanograms per liter

Qualifiers:
J = Reported value is estimated.
U = Indicates the analyte was analyzed for but not detected.
Empty cells indicate that compound not reported by the laboratory.