AQUIFER TEST REPORT

Green Medicine NJ LLC Facility
638 Brunswick Pike (Route 518)
Block 16, Lot 17.02
West Amwell Twp., Hunterdon County, NJ

Prepared for:

West Amwell Township Planning Board
150 Rocktown Lambertville Road
Lambertville, NJ 08530-3204

c/o

West Amwell Township Engineer
Colliers Engineering and Design
53 Frontage Road, Suite 110
Hampton, NJ 08827

Prepared on behalf of:

Green Medicine NJ LLC
638 Brunswick Pike
West Amwell Township, NJ

Prepared by:

Princeton Geoscience, Inc.
209 Nassau Street
Princeton, New Jersey
08542

September 20, 2023

PRINCETON GEOSCIENCE, INC.

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James L. Peterson, PG
President

September 20, 2023

Princeton Geoscience Project No. 22122

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1. INTRODUCTION

In accordance with the Site Plan Resolution of Approval (No. 2022-07) passed by the West Amwell Township, New Jersey ("the Township") Planning Board; and in accordance with the June 27, 2023 Final Aquifer Test Workplan developed pursuant thereto, and approved on that same date by West Amwell Township ("the Workplan"); Princeton Geoscience, Inc. ("Princeton Geoscience") recently completed aquifer testing at and in the vicinity of property located at 638 Brunswick Pike, West Amwell Township, New Jersey ("the site") as hydrogeologic consultant to Green Medicine New Jersey ("GMNJ" or "Applicant").

The purpose of the testing described herein was to support evaluation of whether the new well installed in 2022 on the GMNJ property ("New Well") can be operated as intended in the planned use of the facility by GMNJ without causing significant and unacceptable interference with existing wells on nearby properties. As discussed in the Workplan, for purposes of pumping approvals to be granted by the Planning Board and Town Engineer, the probability of well interference is assessed herein based upon test results, in a manner similar to that established in Sections 176-13 (8) and (9) of East Amwell Township's Administrative Code "Well Interference Tests".

The completed activities include the well interference testing explicitly referenced in the Resolution, which consists of pumping the New Well while monitoring for potential responses at other wells. As described in the Workplan, the testing also included monitoring during pre-pumping (background) and post-pumping (recovery) periods, to accurately attribute water level changes observed to onsite or offsite pumping, or to other ambient background conditions.

This remainder of this report provides site and project background information, describes implementation of the aquifer testing, and presents our findings, conclusions and recommendations based on the completed testing and the decision criteria outlined in the Workplan.

2. BACKGROUND INFORMATION

2.1. Site Location

The site is a 22.12-acre parcel of land, designated Block 16, Lot 17.02 in West Amwell Township, Hunterdon County, NJ. It is positioned in the western portion of the Lambertville USGS 7.5-minute Quadrangle (see **Figure 1**), in the Piedmont Physiographic Province. Ground surface elevations onsite range from about 420 feet above mean sea level (i.e., North American Vertical Datum, hereinafter, "msl") in the southern portion of the site, to about 405 feet msl at the northwestern end of the site. The land surface slopes gently to the northwest toward offsite tributaries of Swan Creek, which drains to the Lambertville Middle Reservoir, located about 0.6 miles west of the site.

2.2. Site History / Planned Operations

Based on review of historic aerial photographs, the property on which the site is located was undeveloped and for agricultural purposes between at least 1931 and 1988. By 1995, the building and parking area currently on the site were added. In approximately 1990, the property began use as a church. In December 2021, GMNJ purchased the property, for use as a medical cannabis growing facility.

GMNJ plans to utilize the New Well installed in 2022 to supply all irrigation water needs for the growing facility. GMNJ's plans incorporate measures for onsite recycling and re-use of water withdrawn from the well in the irrigation process. Based on relatively stated irrigation water needs, the Township has imposed, and GMNJ has agreed to adhere to (and document via metering) a maximum total daily withdrawal of 1,100 gallons from the New Well. This daily maximum rate of withdrawal is equivalent to a constant withdrawal rate of 0.76 gpm (if pumping were continuous 24 hours per day) or to withdrawal rates of 1.53 gpm or 2.29 gpm, for 12-hour or 8-hour periods of continuous withdrawal during business hours, respectively.

2.3. Area Land Use

The site is situated in an area with several types of land use (see **Figure 2**), including residential properties to the immediate west, north, northeast and (across Brunswick Pike) south. The land immediately east of the site (across Rock Road West) is used for agricultural purposes. To the southeast (across Hunter Road), there are agricultural and residential land uses.

2.4. Area Hydrogeologic Conditions

Hydrogeologic conditions in the site vicinity have been evaluated, based upon review of available scientific publications and site-specific information gathered as part of preparation of this workplan.

The most detailed bedrock geologic map (Herman, et. al., 2022) covering the site area (see **Figures 3 and 4**) indicates the rock immediately underlying the site consists of the Passaic Formation (map symbol, JTrp), which consists of interbedded mudstones, siltstones and sandstones deposited in as sediments in a Mesozoic-aged rift basin known as the Newark Basin. The rock units in the area surrounding the site are inclined from horizontal along the "dip" direction, plunging to the north-northwest at about 20 degrees from horizontal. As shown in cross-section on Figure 4, these tilted sedimentary strata are overlain to the north by diabase ("traprock", map symbol, Jd) which was injected into the sedimentary layers as an igneous "intrusion".

Groundwater flow in the sedimentary rocks takes place in fractures, which can include partings between the sedimentary layers ("bedding plane fractures") which are common, and in fractures caused by structural deformation of the rocks in response to major geologic events (Freeze and Cherry, 1979). This latter group can include faults (large ruptures where rocks on either side of the feature are displaced relative to one another) and so-called "joints" which can result from extensional forces, or fracturing due to thermal effects (e.g., adjacent to the traprock intrusion).

The generic Conceptual Site model (CSM) outlined in the NJDEP guidance document for conducting investigations to support remediation of groundwater (NJDEP, 2012) envisions the dipping sedimentary rocks of the Newark Basin as a Leaky, Multi-unit Aquifer System (LMAS), based on work by Dr. Andrew Michalski and Rich Britton (Michalski and Britton, 1997). Within this system, flow takes place mainly within laterally extensive bedding plane fractures, with dominant flow frequently oriented along "strike" (the map direction perpendicular to the "dip" direction in which the rocks are tilted), toward discharge points at surface water bodies or pumping wells. Much lesser quantities of groundwater flow transverse to the strike direction and vertically between individual bedding parallel zones, following less-frequent, discontinuous near vertical extension joints which connect the zones, documented in Michalski and Britton (1997), and as "Type 2" water-bearing features in a recent compilation of hydrogeologic and geophysical studies conducted in rock units of the Newark Basin by the New Jersey Geological Survey (NJGS) (Herman, 2010). Given these attributes of the LMAS, fractured rock groundwater investigations need to account for preferential flow along bedding-parallel fractures whose extent and orientation must be accurately known.

The reason for reported strike-parallel flow has to do with the physical limits of individual fractures. Within any single bedding plane fracture, groundwater flow is impeded at depth due to diminished aperture and eventual closure of the fracture owing to stress imposed by the overlying rocks. At shallow depths in the "up-dip" direction, the fracture terminates, either at the base of the unconsolidated overburden or weathered zone, or at the ground surface where no overburden or weathered zone is present. As a result of these geologic limitations, regional flow within individual bedding plane fractures is channeled in directions parallel to strike.

Some enhancement of permeability has been reported at, and parallel to, boundaries of igneous intrusions such as the one at the site (Matter, et. al., 2006). Other research (Kasabach, 1966) emphasizes generally lower permeability within the sedimentary rocks

adjacent to these intrusive bodies, resulting from thermal "contact metamorphism" caused by the igneous activity.

2.5. Existing Site Hydrogeologic Data

The following section presents a summary of hydrogeologic data that was available prior to the recently completed testing, and which was used in preparation of the Workplan, where a more detailed description of the data is provided.

2.5.1. Well Installation and Construction

2.5.1.1.New Well

To provide an irrigation well to support the planned growing facility, GMNJ hired Stover Well Drilling (Stover), who installed a new 6-inch diameter irrigation well in the grass-covered area in the northern (rear) portion of the property (New Well), completing the installation on February 22, 2022 (Figure 1). Based on the Well Record that Stover submitted to NJDEP and discussion with Tom Stover, the well is constructed with steel casing to a depth of 50 feet, with an open borehole interval from 50 feet to the total depth drilled of 320 feet. Rocks encountered during drilling were described as gray "argillite" and "traprock" from 12 to 320 feet. Water production was low (about 2 to 3 gallons per minute (gpm)) during drilling of the upper portions of the well. A zone of significant (about 20 gpm) water production was evident during drilling after the drill bit passed a depth of 280 feet. The stabilized water level in the well was 10 feet below land surface after the well was completed.

2.5.1.2.Old Well

Based on the Well Record recorded after its installation, the existing potable supply well (Old Well) onsite was drilled in 1990, as a 6-inch diameter well, with steel casing to 50 feet and an open borehole interval from 50 feet to the total depth drilled of 785 feet. The driller's record of testing indicated a specific capacity of 1.75 gpm/foot of drawdown from a 6 hour test of the well, pumping at a rate of 1.75 gpm. This seems erroneous, however,

as the same record indicates that drawdown during the test was 416 feet. Permanent pumping equipment was installed in the well set to a depth of 145 feet, which served all water supply needs of the church onsite from 1990 until recently.

2.5.2. Yield and Drawdown Testing of New Well

Based on discussions with Tom Stover, several weeks after the New Well was drilled, Stover pumped the well for a period of 4 hours, with a reported yield of 23 gallons per minute (gpm). At the end of this pumping period, the stabilized water level measured in the well was 160 feet below grade. Because static water level is about 10 feet below grade, the drawdown measured was about 150 feet, corresponding to a Specific Capacity of about 0.15 gpm/foot of drawdown.

2.5.3. Geophysical Logging of New Well

As described in the Workplan, Princeton Geoscience conducted geophysical logging of the new well on May 24, 2022. The testing included a full suite of logs (three-arm caliper, fluid temperature, fluid resistivity, natural gamma, electric logs, optical televiewer (OTV), acoustic televiewer (ATV) and heat-pulse flow meter (HPFM – under ambient conditions and while pumping at the top of the water column in the well).

Findings of the geophysical logging were consistent with expectations based upon regional geology (Figures 3 and 4) and Stover's records of drilling and pumping observations. Specifically, the geophysical logging confirmed that:

- Rocks encountered included mostly gray and lesser light colored sedimentary units ranging from mudstones to siltstones.

- The layering of these sedimentary rocks is inclined toward the North-Northwest, dipping about 20 degrees down from horizontal, and striking sub-parallel to Route 518.

- After 1 hour of continuous pumping at 1 gpm for the HPFM testing, the stabilized drawdown in the well was 3.3 feet, corresponding to a Specific Capacity of 0.30 gpm/foot of drawdown.

- Numerous steeply-inclined fractures are present, many with secondary mineralization; the contribution of these features individually to well yield under the limited stress induced by the low rate of HPFM pumping ranges from none measurable (<0.01 gpm) to very low (0.02 to 0.09 gpm).

- Additional fractures are present with sub-horizontal orientation parallel to sedimentary bedding. These features comprise the main water-bearing subunits in the Leaky, Multi-unit Aquifer System which NJDEP guidance envisions for sedimentary rock such as those at the site. HPFM testing showed that most (>70%) of the water entering the well under pumping comes from a single, bedding parallel fracture at a depth of 270 feet. This finding is also consistent with LMAS concepts, as individual, large-aperture fractures constitute pathways for most of the flow within the aquifer system.

2.5.4. Summary of Conditions Anticipated at time of Workplan Development

Based on the pumping performed by Stover and Princeton Geoscience, it was evident at the time the Workplan was developed that the New Well can produce significantly more water than will be needed to support facility needs. Based on the bedding fracture orientation evident in published geological maps and in the geophysical logging results, it was noted that the up-dip extension of the main water-bearing fracture suppling the New Well (encountered at 270 feet) would intercept the ground surface about 100 feet south of Route 518, likely limiting the southward extent of the potential hydraulic connection along this feature to wells located along Route 518.

It was also noted in the Workplan that the area of expected connectivity is also limited to the north, where the rocks are of igneous origin; the bedding fractures of the sedimentary

rocks tapped by the new onsite well would not extend into the igneous rocks. Therefore, wells drilled on properties to the north would only have potential direct connection to the fracture encountered at 270 feet in the new onsite well if they were drilled deep enough to encounter its down-dip extension.

The Workplan also noted that the nearest properties "along-strike" the west-southwest and east-northeast are greater than 500 feet from the new well on the GMNJ property. Based on the limited drawdown evident at the New Well while pumping at 1 gpm, the distance to offsite wells, and conditions identified during the borehole geophysical logging, Princeton Geoscience anticipated in the Workplan that there is a low probability that use of the New Well as planned by GMNJ would cause problematic interference with operation of existing wells on adjacent properties.

2.6. Aquifer Testing Scope and Approval Decision Criteria Outlined in Workplan

The planned aquifer testing scope was described in detail in the Workplan, including Pre-Test Activities (Workplan Section 4.1); Aquifer Test Description (Workplan Section 4.2); Proposed Monitoring During Tests (Workplan Section 4.3); Post-Test Activities (Workplan Section 4.4); and Permits, Approvals and Notifications (Workplan Section 4.5). Generally, the plan included manual and automated monitoring of water levels during 3 stages of testing, including Background Monitoring; Pumping / Well Interference Testing, and Recovery Monitoring, at the New Well and Old Well (both onsite) and at four properties surrounding the site to the West, North, East and South. The plan called for pumping from the New Well during the Pumping / Interference at a continuous rate of 5 gpm, for a period of 8 hours.

As described in Section 4.2.2 of the Workplan, it was recognized that pumping at 5 GPM for the minimum 8-hour period would result in a minimum total withdrawal during the test of 2,400 gallons; a quantity more than twice the 1,100 gallon maximum volume GMNJ could be authorized to withdraw per the Planning Board approval. Pumping a greater volume than the maximum authorized daily withdrawal amount was proposed to increase

the probability that some measurable drawdown would be observed at the observation wells monitored during the test, to enable derivation of aquifer hydraulic parameters, Transmissivity (T) and Storativity (S). As discussed in Section 5.0 of the Workplan, it was recognized that measured values of T and S values could become important in evaluating effects of future water use. Were the New Well to be pumped, for example, at a lower rate such as the 2.29 gpm rate (which corresponds to the 1,100 gallon maximum allowed over an 8- hour period of continuous withdrawal, noted above), total drawdowns onsite and offsite would be significantly less than those that may be measured while pumping at 5 gpm during the test.

As noted in Section 1, above, GMNJ was required to perform a well interference test, to evaluate whether its New Well could be operated as intended in the new use of the facility without causing significant interference with existing wells on nearby properties. The test procedures outlined in the Workplan were intended to support such evaluation, by measuring water level changes related to both the planned pumping of the New Well and to background conditions that may affect water levels onsite and offsite during the testing.

The Workplan outlined initial decision criteria for evaluation of planned pumping approval as follows (emphasis added):

> "For purposes of this workplan and the conclusions that will be developed based on implementation of the aquifer testing, evaluation of test results for offsite wells monitored during the testing, the probability of "significant well interference" will be assessed in a manner similar to that established in Sections 176-13 (8) and (9) East Amwell Township's Administrative Code "Well Interference Tests", which states that:
>
> > *If the drawdown in any properly monitored observation well during the pump tests of the new residential well exceeds the greater of five feet or of*

10% of the maximum drawdown of the new well during the pump tests, significant well interference is likely, and the new well cannot be certified for use as such.

In such instances, the administrative authority may require the applicant to show why the documented well interference is not significant. If a significant adverse impact of interference cannot be remedied, the administrative authority may deny certification of the new well.

Based on these criteria, if drawdowns in the offsite wells monitored pursuant to this workplan, that are attributed to pumping of the New Well during the test, do not exceed the greater of 5 feet, or 10% of the maximum drawdown observed in the New Well during the test, future use of the New Well as planned by GMNJ will, by definition, be acceptable to the Township. Otherwise, GMNJ and their hydrogeologic consultant may present additional information for consideration by the Township's Engineer and Hydrogeologist, supporting the conclusion that GMNJ's planned use of the New Well is nevertheless not expected to cause problematic and unacceptable interference, or such interference which cannot be mitigated."

3. AQUIFER TEST IMPLEMENTATION

The aquifer test was performed in accordance with the scope and procedures outlined in detail in the Workplan. The following section describes the implementation of the test, including dates for completion of specific tasks, pumping rates and monitoring locations and provides reference to test data summarized in Tables and Appendices.

3.1. Pre-Test Activities

3.1.1. Pre-Test Activities Performed by the Township and GMNJ

Per Section 4.1.1 of the Workplan, during the summer of 2023, the Township and GMNJ coordinating for and completed preparatory activities associated with the aquifer testing, including:

- Providing notice to offsite property owners of the planned dates for the aquifer testing consistent with Resolution No. 2022-07, and, if necessary, providing notification to participating offsite property owners, including any undertaking independent monitoring, of any deferral of the planned pumping stage of the test

- Obtaining permission from offsite property owners at 4 locations surrounding the site (see **Figure 5**), selected based on information described on Figure 8 of the Workplan, to utilize their wells for monitoring during the aquifer test, and related available information, including:

    - Permission for a NJ certified laboratory hired by GMNJ to conduct bacterial testing of well water before the testing, and after post-test sterilization of the well that will be performed by GMNJ's NJ licensed well driller, in accordance with guidelines from the Hunterdon County Health Department with the use of liquid or granular chlorine

- Permission to install drop-tubes and dataloggers in the wells and to monitor automatically and manually throughout test duration (Background, Pumping and Recovery stages)

- Owner promise not to use water and operate well pump during specified "non-use period"

- Owner waiver of any claims against parties conducting the aquifer test (Princeton Geoscience, Stover, GMNJ) related to disturbances in well/cloudy water that may be caused by test equipment installation, use and removal

- Owner providing any available information on well location, construction and installed pumping equipment.

- Coordinating by GMNJ to obtain NJ-certified laboratory services for bacterial sampling and testing; and to confirm schedule with, and authorize Stover and Princeton Geoscience to perform, their respective work activities described in Sections 4 and 5 of the Workplan

3.1.2. Pre-Test Activities Performed by Others

Per Section 4.1.2 of the Workplan, GMNJ's NJ-certified laboratory (Pace Analytical Services, LLC-Ewing – "Pace"), hydrogeologic consultant (Princeton Geoscience) and NJ-licensed drilling contractor (Stover) coordinated to accomplish the following activities in the period leading up to the test:

- Pre-test bacterial sampling and testing of wells to be monitored pursuant to the Workplan was conducted by Pace on August 7, 2023. Results of the testing were delivered to GMNJ, who Princeton Geoscience understands subsequently provided copies to the Township and the well owners.

- Pump installation, power connection and testing in New Well onsite were completed by Stover prior to initiation of the Background stage of the testing, described subsequently. Stover installed a 20 gpm-capacity electric submersible pump with intake at a depth of 250 feet, and permanent conveyance piping connected to the building onsite. In addition, the equipment included a constant pressure regulating device (set to maintain 60 psi); totalizing flowmeter; ball valve prior to garden hose outflow connection to be used during the aquifer testing. A garden hose was attached to the outflow fitting and directed to pavement outside the building, such that all pumped water flowed to the onsite stormwater sewer system, which discharges to a surface swale west of the site. Stover additionally tested the pump to ensure its proper operation and made gate valve adjustments "valving back" the rate of discharge to slightly greater than 5 gpm.

- Stover installed new, 1-inch diameter PVC drop tubes in New Well and Old Well onsite and in all offsite wells monitored pursuant to the Workplan except for the well at 121 Rock Road West (Block 18, Lot 12), to the East. At this location, Stover expressed concern, based on well construction and owner concerns, that drop tube installation might disrupt pumping equipment in the well more than the pressure transducer itself. Therefore, a choice was made not to install a drop tube in the well.

- Princeton Geoscience set up Solinst-brand Levelogger pressure transducer dataloggers in all wells to be monitored during the testing on August 8, 2023, beginning at 10:00 AM. At 121 Rock Road West, the transducer was installed directly in the well. At all other locations, the transducers were installed in the PVC drop tubes set in the wells by Stover.

3.2. Performance of Aquifer Test

3.2.1. Stages of Testing

The aquifer test was completed between August 8, 2023, and August 23, 2023, in three consecutive stages, with continuous monitoring of water levels throughout, including:

- Background Monitoring
- Pumping / Well Interference Test, and
- Recovery Monitoring

During each stage of testing, water levels were monitored by automated methods and manually (as described in Section 3.2.2, at each of the following well locations shown on Figure 5:

- Wells on GMNJ Property
    - New Well (pumping well) and
    - Old Well (observation)
- Wells on Adjacent Offsite Properties
    - 115 Rock Road West (Block 16, Lot 4) to the North
    - 121 Rock Road West (Block 18, Lot 12) to the East
    - 639 Brunswick Pike (Block 30, Lot 10.01) to the South
    - 658 Brunswick Pike (Block 16, Lot 17.01) to the West

The Workplan included a provision for monitoring at alternate locations, should access or conditions at one or more of the locations initially considered inaccessible or otherwise unsuitable. As shown on Figure 8 in the Workplan, the location initially chosen for monitoring south of the site was the property at 641 Brunswick Pike (Block 30, Lot 10.03). Stover noted that the well at this location was in disrepair, so access was sought and obtained for the well next door at 639 Brunswick Pike, where the testing was performed instead, as provided for in the Workplan.

3.2.2. Monitoring During the Testing

3.2.2.1.Water Level Monitoring at Well Locations

During each stage of testing, water levels were measured continuously (at 2-minute intervals) using pressure transducer probes equipped with internal dataloggers (e.g., Solinst Leveloggers). The continuous datalogger measurements were supplemented by manual gaging events conducted using an electronic water level indicator; at the beginning of, during and at the end of, the Background and Recovery monitoring periods; and approximately hourly during the Pumping / Interference Testing stage of the testing.

Manual gaging performed during the testing was conducted with measurements made as depth to groundwater (to the nearest 0.01 foot) from a consistent measuring point at the well. At all locations except for the well at 121 Rock Road West (Block 18, Lot 12 - to the East), the measurements were made from the top of the PVC drop tube installed in the well during Pre-Test Activities. At 121 Rock Road West, no drop tube was installed, so measurements were made from the top of the steel well casing.

Results of manual water level gaging are summarized in **Table 1**. Tabulated data from the pressure transducer monitoring can be made available to the Township in electronic format upon request. Figures prepared based upon these data sets are presented and discussed in Section 4 of this report.

3.2.2.2.Monitoring of Pump Discharge Rate

During the Pumping stage of the aquifer test, the pump discharge rate was measured using the totalizing flowmeter installed in-line on the discharge from the New Well. Meter readings and instantaneous flow rate measurements were made at a 10-minute frequency during the first hour of pumping and hourly thereafter throughout the duration of pumping. A ball valve had been installed during Pre-Test Activities as a means of control for flow adjustments; with the aim of restricting flow variations to no more than 5% from the slightly increased targeted 5.25 gpm pumping rate established for the test

during pre-test monitoring (discussed in Section 3.2.3.1 and summarized in **Table 2**). Monitoring of pumping rates during the pumping stage of the test (**Table 3**) showed that the pumping rate varied by 0.19 gpm (3.6 %), or less, from the targeted rate of 5.25 gpm, and, as such, no adjustments to the flow were necessary.

All water pumped during the tests was directed away from the well head through the permanently installed pump discharge piping, to the facility building and out through a hose (as described in Section 3.1.2) to the onsite stormwater sewer system and its discharge point west of the site.

3.2.3. Field Implementation

3.2.3.1. Background Monitoring Stage of Test / Pump Discharge Adjustment

Background monitoring was conducted over a 14-day period, extending from 10:00 AM on August 8, 2023, when the first datalogger was installed, to 7:52 AM on August 22, 2023, when the Pumping stage of the test began.

As discussed in Section 4, the pre-pumping Background water level data provide a baseline that is used along with water levels collected during the remainder of the aquifer test, to assess ambient water level changes that occur throughout the testing, including in response to offsite pumping. The background records were also collected to enable identification of, and water level adjustment for, linear groundwater trends as identified from background data; and identification of, and water level adjustments for, barometric and earth tidal efficiencies, if necessary. The Background monitoring is therefore meant to enable accurate attribution of water level changes that may be observed to onsite or offsite pumping, or to other ambient background conditions.

In addition, the pump in the New Well was operated at the ball valve setting put in place by Stover during the Pre-Test Activities, between 3:08 PM and 6:22 PM on August 8, 2023, during the Background stage of the testing. During this period, the pump discharge was

carefully monitored, as a pre-test for the upcoming Pumping stage of the test. This monitoring (Table 2) showed that, at the setting put in place by Stover, the pump operated continuously from the time of pump activation to the end of the pre-test period at a flow rate averaging 5.27 gpm, varying by 0.12 gpm (2.2 %), or less, without need for valve adjustments. This range of flow was within the 5% flow variation threshold for the pumping stage of testing targeted in the Workplan. *Therefore, a decision was made to run the Pumping stage of the test using the valve setting put in place by Stover, targeting a slightly higher 5.25 gpm discharge rate for this stage of the test, rather than the 5 gpm rate indicated in the Workplan.*

3.2.3.2.Pumping / Well Interference Stage of Test

The Pumping / Well Interference stage of the aquifer test was performed continuously with, and immediately following, the Background monitoring discussed in Section 3.2.3.1. This stage of the testing took place over an 8-hour period on August 22, 2023 from 7:52 AM through 3:54 PM. During this period, the pump in the New Well was operated at a targeted rate of 5.25 gpm, as discussed at the end of Section 3.2.1.1. A total volume of 2,536 gallons of water was pumped from the New Well over the 482 minute duration of this stage of the testing (Table 2). This equates to an average discharge rate of 5.26 gpm. Monitoring during the pumping stage of the test (Table 3) showed that the pumping rate varied by 0.19 gpm (3.6 %), or less, from the targeted rate of 5.25 gpm. As such, no adjustments to the flow were necessary and constant-rate flow conditions specified in the Workplan were achieved.

As was anticipated at the time the Workplan was prepared, this quantity is more than twice the 1,100 gallon maximum volume GMNJ is authorized to withdraw per the Planning Board approval. Pumping of a greater volume than the maximum authorized daily withdrawal amount was proposed to increase the probability that some measurable drawdown would be observed at the observation wells monitored during the test, to enable derivation of aquifer hydraulic parameters, Transmissivity (T) and Storativity (S).

As discussed in Section 5.0 of the Workplan, it was recognized that measured values of T and S values could become important in evaluating effects of future water use. Were the New Well to be pumped, for example, at a lower rate such as the 2.29 gpm rate (which corresponds to the 1,100 gallon maximum allowed over an 8- hour period of continuous withdrawal, noted above), total drawdowns onsite and offsite would be significantly less than those that may be measured while pumping at the then anticipated rate of 5 gpm during the test.

3.2.3.3. Water Level Recovery Monitoring after Cessation of Pumping

Upon completion of the Pumping stage of the testing described in Section 3.2.3.2, at 3:54 PM on August 22, 2023, discharge from the New Well was terminated and Recovery of water levels was monitored in the New Well and Old Well onsite, and in each of the 4 offsite wells selected for monitoring pursuant to the Workplan. The Workplan called for the Recovery monitoring period to last for 8 to 10 hours, but a choice was made to extend the monitoring overnight until 9:30 AM on August 23, 2023, when removal of pressure transducers from the wells was complete. As a result, the Recovery monitoring extended for period of 17.5 hours. During this period, water levels were monitored continuously (via dataloggers, at 2-minute intervals, as during the prior two stages of aquifer test) supplemented by manual measurements.

3.3. Post-Test Activities

At the completion of the testing discussed in Section 3.2.3, between 8:30 AM and 9:30 AM on August 23, 2023, Princeton Geoscience removed the pressure transducers from all the wells monitored during the test pursuant to the Workplan.

Princeton Geoscience understands that post-test activities outlined in the Workplan were subsequently completed by others as follows:

- Stover subsequently removed all drop tubes installed wells monitored pursuant to the Workplan and conducted post-test sterilization of the wells monitored pursuant to the Workplan.

- Pace subsequently conducted post-test bacterial sampling and testing of wells monitored pursuant to the Workplan. Results of the testing were delivered to GMNJ, who Princeton Geoscience understands subsequently provided copies to the Township and the well owners.

3.4. Permits, Approvals and Notifications

Other than Township approval of the Workplan and the offsite access and notifications described in Section 3.1.1, no additional permits, approvals or notifications were required or obtained/performed to enable conducting the work described in this report.

4. FINDINGS AND CONCLUSIONS

Upon completion of the aquifer testing, Princeton Geoscience, with support from Appalachia Hydrogeologic & Environmental Consulting, LLC (Appalachia) evaluated all of the test data and developed findings and conclusions summarized in this Section and presented in detail in **Appendix A**, which contains the September 18, 2023 aquifer test analysis report, *Commercial Water Supply Evaluation - Green Medicine NJ LLC - 638 Brunswick Pike (Route 518), West Amwell Township, Hunterdon County, NJ*, prepared by Appalachia.

4.1. Findings of Aquifer Test

The aquifer testing included all the basic testing and analysis outlined in the Workplan, enabling evaluation vs. the key drawdown criterion discussed in Section 2.6 ("Key Criterion Assessment"). Additional test data analysis ("Extended Assessment") was also performed to expand the understanding and interpretation, considering background conditions observed during the testing and based on discussion with the Township's hydrogeologic consultant. These findings are presented separately in the subsections below.

4.1.1. Key Criterion Assessment

As indicated in the Workplan, the key criterion for evaluating offsite wells is to conduct an 8 hour aquifer test using the "New Well" as a pumping well (~5 gpm) and compare offsite well drawdown (induced by pumping "New Well") against 5 feet or 10% of New Well's maximum drawdown (whichever is greater). If drawdown is less than this key criterion in designated offsite wells, no further evaluation is required by West Amwell Township.

Drawdowns resulting from the pumping stage of the aquifer test are shown on hydrographs included in **Appendix A** and are mapped at each well location on **Figure 6**. As shown, the total drawdown observed at the New Well during the pumping was 21.2

feet. Therefore, the applicable evaluation criterion is 5 feet (i.e., the larger of 5 feet and 10% of the New Well drawdown). As also shown on Figure 6, drawdowns at all offsite wells monitored pursuant to the Workplan were less than this 5 foot assessment criterion. Specifically, there was no measurable drawdown at either 115 Rock Road West, or 121 Rock Road West; while the drawdowns estimated at 658 Brunswick Pike (approximately 1.4 feet) and 639 Brunswick Pike (approximately 1.5 feet). As discussed in Appendix A, offsite pumping effects necessitated estimation of the drawdown values for the two wells where drawdown was observable, but the data are sufficiently constrained to conclude that drawdowns are less than 5 feet at these locations.

Additionally, as shown on Figure 5, two wells with measurable drawdown (at 658 Brunswick Pike and 639 Brunswick Pike) are drilled to depths of 735 feet and 436 feet, respectively, and the static water level at both is less than 40 feet below grade. Therefore, each of these wells has hundreds of feet of available drawdown. As such, the observed drawdown associated with the 8-hour pumping during the aquifer test (which exceeds GMNJ's maximum allowed daily withdrawal) is negligible.

4.1.2. Extended Assessment (detailed in Appendix A)

To allow evaluation accounting for background effects and to incorporate more robust consideration of potential effects of site pumping consistent with requests from the Township's hydrogeologist, Appalachia performed extended assessment of the aquifer test data, as presented in Appendix A. Extended assessment activities, results of which are briefly summarized in this Section, included:

- Evaluation to assess "background" environmental variables that could affect and/or obscure the aquifer testing results and interpretation, such as:
    - Barometric and earth tide effects (e.g. barometric and tidal efficiency corrections),
    - Groundwater level trends due to precipitation events or periods of aquifer decline and

    - Effects/influence from nearby pumping wells.

- Aquifer test parameterization, deriving Transmissivity (T) and Storativity (S) from the aquifer test response data, and
- Applying the derived aquifer parameters to forward model potential effects of combined pumping of both the New Well (for cultivation support) and the Old Well (for bathroom use), under:
    - Typical expected facility conditions and
    - Maximum withdrawals allowed based on planning board resolution.

As described in Appendix A, review of the monitoring data identified background conditions (e.g. "noise") attributed to residential pumping or boundary effects (e.g. wells situated in the Jurassic Diabase). As a result, aquifer parameterization was completed using data from the Old Well, where effects of offsite pumping were negligible relative to the test-induced drawdown. Additionally, based on barometric monitoring and typical barometric efficiencies for confined aquifers, the potential for barometric effects to be a significant factor affecting aquifer test data was determined to be negligible.

After reviewing several diagnostic flow plots to aid in the identification of applicable flow regimes and boundary conditions, Appalachia selected and applied the Papadopulos-Cooper (1967) aquifer test solution, based on its ability to account for wellbore storage of wells situated in confined aquifers. Type curve matching of aquifer data was conducted using displacement-time and residual-drawdown graphs (See Attachment 1 in Appendix A), producing the following aquifer parameter estimates:

- Transmissivity (T) = 48 ft^2/day and
- Storativity (S) = 1.8e-5.

Drawdown contours predicted by the Papadopulos-Cooper (1967) aquifer test solution are illustrated in Figure 10 of Appendix A along with observed drawdown, following 8 hours of pumping the New Well at an average of 5.24 gpm. Appalachia's report notes that the observed drawdown in offsite domestic wells at 639 Brunswick Pike and at 658

Brunswick Pike was significantly less than what is predicted (e.g. 1.5 ft & 1.4 ft observed versus 5 ft & 4 ft projected) by the aquifer test solution, and attributes the difference to partial penetration of the pumped aquifer by the boreholes at these locations.

As also described in Appendix A, the derived aquifer parameters were applied using AQTESOLV forward modeling simulated to time = 10080 minutes to allow for aquifer stabilization (e.g. ~ 1 week), to assess potential effects of combined pumping of both the New Well (for cultivation support) and the Old Well (for bathroom use). The forward modeling was conducted applying "Typical" and "Maximum" pumping conditions based on scenarios and limits outlined in the table below:

Well ID	Use	Daily Withdrawals (gallons)		Operating Schedule
		Typical	Maximum	
New Well	Cultivation activities	850	1100	Continuous 24/7/365 basis, as needed to keep cultivation irrigation storage tank topped off. Operations include capture and recycling from HVAC, so 850 gallons noted is the net new water that will need to be pumped from the New Well each day to keep the irrigation operations going.
Old Well	Bathroom: Toilets, Sink for 35 (typical) to 60 (maximum, perhaps once or twice a year) employees/visitors x 15 gallons/person/day	525	900	As demand requires, during operating hours (7:00 AM to 7:00 PM). No storage tank as at New Well, so usage triggers pumping.
Totals		**1375**	**2000**	
Maximum Daily Total (Both Wells) per Planning Board Resolution		**2000**		

Under the "Typical" scenario, five feet of drawdown is only projected to propagate a maximum distance of approximately 100 feet from the onsite New Well at time = 10080 minutes, as shown on Figure 11 of Appendix A. Under the "Maximum" scenario illustrated in Figure 12 of Appendix A, five feet of drawdown is projected to propagate close to private domestic well 639 Brunswick Pike. Additionally, the well at 658 Brunswick Pike is projected to have between 3-4 feet of drawdown. These scenarios assume full aquifer penetration, which does not occur in either location; therefore, these projections are

conservative. Also, this modeling projection assumes a continuous “maximum” pumping scenario, which is additionally conservative.

Furthermore, as stated in Section 4.1.1, the wells at 658 Brunswick Pike and 639 Brunswick Pike are drilled to depths of 735 feet and 436 feet, respectively, and the static water level at both is less than 40 feet below grade. Therefore, each of these wells has hundreds of feet of available drawdown. As such, the projected drawdowns associated even with the “maximum” pumping scenario are negligible relative to water availability at these locations.

4.2. Conclusions

Based on the completed aquifer testing and the analysis performed, Princeton Geoscience concludes that:

1. The 8 hour constant rate aquifer test resulted in less than 5 feet of observed drawdown in all monitored offsite domestic wells, including 115 Rock Road West, 121 Rock Road West, 658 Brunswick Pike and 639 Brunswick Pike. As indicated in the Township-approved Final Work Plan, the “future use of the New Well as planned by GMNJ will, by definition, be acceptable to the Township.”

2. The “Typical” planned pumping schedule, utilizing both the New Well and Old Well has been modeled using the transmissivity and storativity parameters estimated from the aquifer test. Offsite drawdown is projected to be less than 4 feet. This is considered conservative, since offsite wells partially penetrate the aquifer and exhibit observed drawdown less than what is projected from modeling. The threshold of five feet of drawdown is only projected to extend approximately 100 feet from the New Well.

3. Utilizing the same techniques as the "Typical" planned pumping schedule, the model was adjusted to account for "Maximum" planned pumping, which produces modest increases of projected drawdown. Five feet of drawdown is projected along the Site property edge and also approaches offsite domestic well at 639 Brunswick Pike. However, this projection assumes the "Maximum" pumping schedule is sustained for 7 days or greater and is additionally conservative in that drawdown projections are for those wells that fully penetrate the utilized aquifer.

4. Furthermore, the wells at 658 Brunswick Pike and 639 Brunswick Pike are drilled to depths of 735 feet and 436 feet, respectively, and the static water level at both is less than 40 feet below grade. Therefore, each of these wells has hundreds of feet of available drawdown. As such, the projected drawdowns associated even with the "Maximum" pumping scenario are negligible relative to water availability at these locations.

5. Propagation of pumping influence to the north is precluded or significantly limited by the presence of the geologic and hydrogeologic boundary of the Jurassic Diabase, as evidenced by the absence of any measurable drawdown 115 Rock Road West or 121 Rock Road West.

Overall, the 8 hour aquifer testing results and forward modeling of GMNJ's typical and maximum pumping schedules provide strong lines of evidence that the Site's operations will not excessively influence the surrounding private domestic wells. In conclusion, GMNJ and offsite residents will be able to utilize (or continue utilizing) their private wells as currently planned and without modification.

5. REFERENCES

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Matter, J.M., Goldberg, D.S., Morin, R.H. and Stute, M., 2006, Contact zone permeability at intrusion boundaries: new results from hydraulic testing and geophysical logging in the Newark Rift Basin, New York, USA. Hydrogeology Journal, 14(5), pp.689-699.

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Source: USGS National Map coverage for the Lambertville Quadrangle, Hunterdon and Mercer Counties, New Jersey, https://apps.nationalmap.gov/viewer/

FIGURE 1: Site Location Map

Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ

PRINCETON GEOSCIENCE

SCALE: As Shown
DATE: September 2023
PREPARED BY: JLP
CHECKED BY: JLP
PROJECT #: 22122
FILE NAME: Figure 1

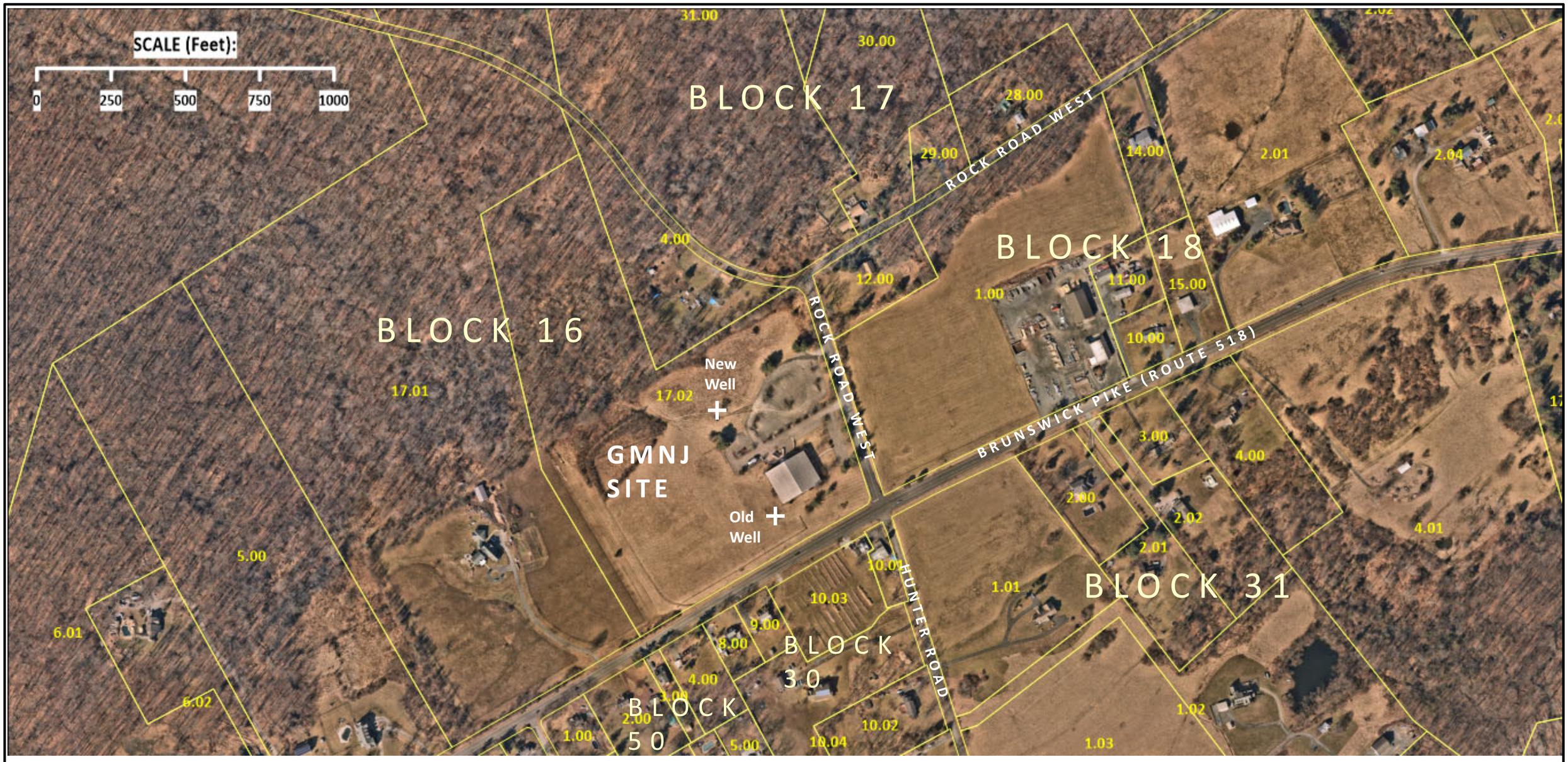

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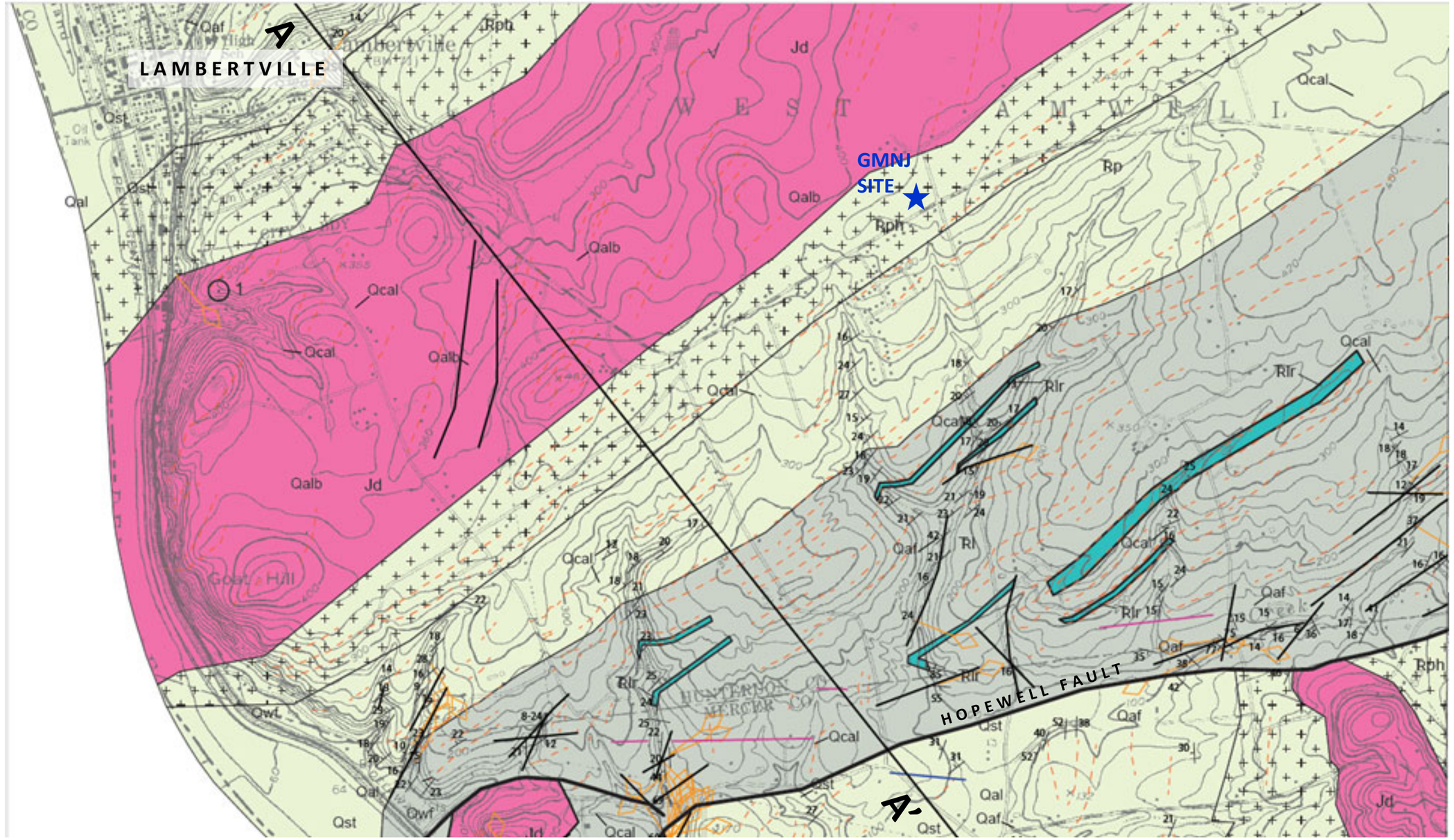
FIGURE 2: Area Map Showing Green Medicine NJ LLC Site, Other Nearby Properties

Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ

PRINCETON GEOSCIENCE

SCALE: As Shown
DATE: September 2023
PREPARED BY: JLP
CHECKED BY: JLP
PROJECT #: 22122
FILE NAME: Figure 2



Legend

- Jd — Jurassic Aged Diabase (a.k.a., "Traprock")
- Rp — Triassic Aged Passaic Formation – Mudstone, siltstone, lesser sandstone (stippled where contact metamorphosed adjacent to diabase intrusions)
- Rl — Triassic Aged Lockatong Formation – Mudstone, siltstone, shale and argillite
- 11 — Strike and Dip of Sedimentary Bedding
- Fault

N

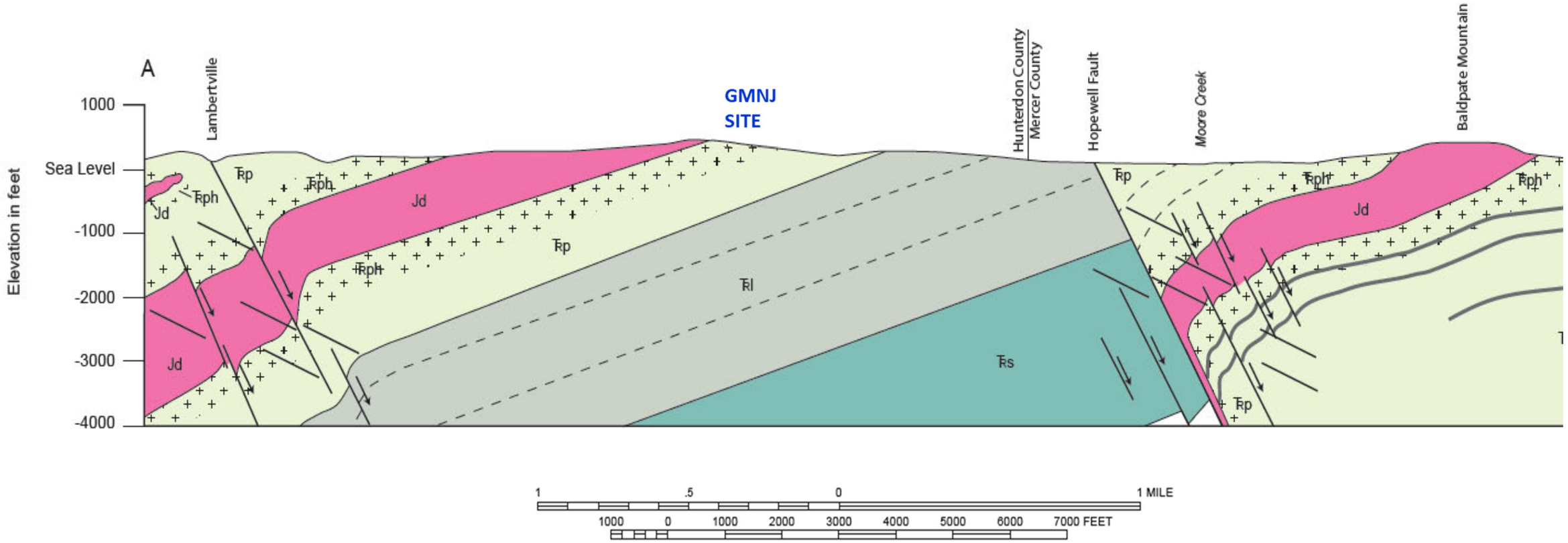
Source: "Bedrock Geologic Map of the Lambertville Quadrangle, Hunterdon and Mercer Counties, New Jersey", Gregory C. Herman, Ron W. Witte, and Donald H. Monteverde, NJ Geological Survey Geologic Map Series GMS-XX (in review) – Copy provided by Donald Monteverde May 2022

FIGURE 3: Excerpt of Bedrock Geologic Map for the Lambertville Quadrangle, showing GMNJ Site Location

Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ

PRINCETON GEOSCIENCE

SCALE:	As Shown
DATE:	September 2023
PREPARED BY:	JLP
CHECKED BY:	JLP
PROJECT #:	22122
FILE NAME:	Figure 3



Legend

Jd — Jurassic Aged Diabase (a.k.a., "Traprock")

Trp — Triassic Aged Passaic Formation – Mudstone, siltstone, lesser sandstone (stippled where contact metamorphosed adjacent to diabase intrusions)

Trl — Triassic Aged Lockatong Formation – Mudstone, siltstone, shale and argillite

Fault

Source: **"Bedrock Geologic Map of the Lambertville Quadrangle, Hunterdon and Mercer Counties, New Jersey", Gregory C. Herman, Ron W. Witte, and Donald H. Monteverde, NJ Geological Survey Geologic Map Series GMS-XX (in review) – Copy provided by Donald Monteverde May 2022**

FIGURE 4: Cross-Section Excerpt from Lambertville Quadrangle Geologic Map – Area Near the Site

Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ

PRINCETON GEOSCIENCE

SCALE: As Shown
DATE: September 2023
PREPARED BY: JLP
CHECKED BY: JLP
PROJECT #: 22122
FILE NAME: Figure 4

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NOTES:

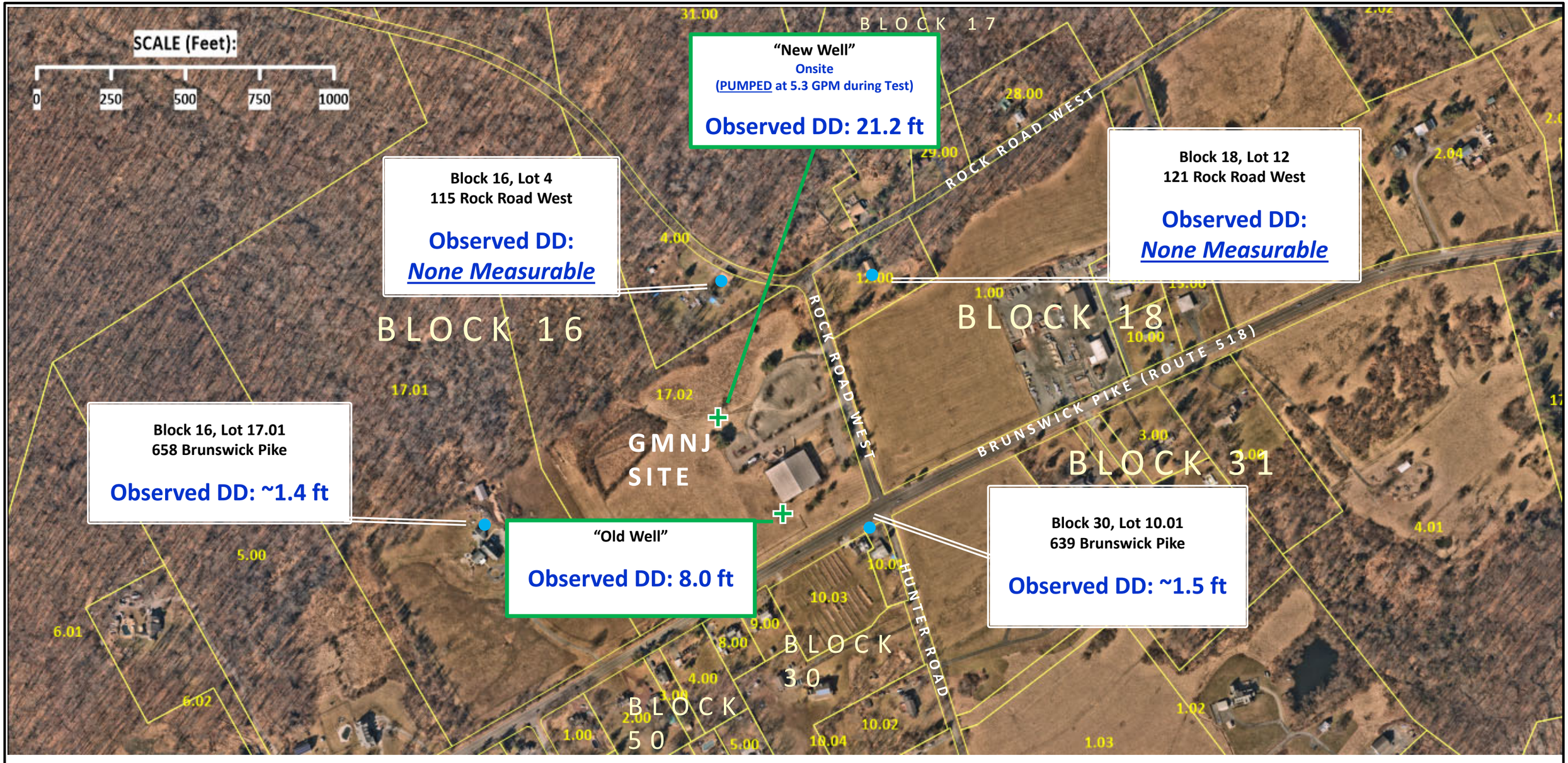
- Well Permit and construction information shown based on Well Records obtained via a request submitted to NJDEP Bureau of Water Allocation. Where no NJDEP records were located, *available information provided by current property owner is shown in italics*. N/A means information was not available from either source.
- Approximate static water levels shown are as measured during the testing with pressure transducers during background monitoring, on July 16, 2023, at 6:00 AM, when all monitored wells onsite and offsite were at or near a state of non-pumping equilibrium.
- All depths are in feet below ground surface.

FIGURE 5: Locations and Available Construction Details for Wells Pumped and Monitored during the Aquifer Testing

Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ

PRINCETON GEOSCIENCE

SCALE:	As Shown
DATE:	September 2023
PREPARED BY:	JLP
CHECKED BY:	JLP
PROJECT #:	22122
FILE NAME:	Figure 5



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NOTES:

- Observed Drawdown (DD) values shown based upon end of pumping water levels measured during 8-hour Pumping Stage of Aquifer Test and consideration of linear trends as described in **Appendix A**.

FIGURE 6: Observed Drawdowns at End of 8-Hour Pumping Stage of Aquifer Test

Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ

PRINCETON GEOSCIENCE

SCALE:	As Shown
DATE:	September 2023
PREPARED BY:	JLP
CHECKED BY:	JLP
PROJECT #:	22122
FILE NAME:	Figure 6

Table 1 - Water Levels Measured by Manual Gaging[1] during Background, Pumping and Recovery Stages of Aquifer Test
Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ - August 2023

New Well			Old Well			115 Rock Road West			121 Rock Road West			641 Brunswick Pike			658 Brunswick Pike		
Date	Time	Depth to Water (ft)	Date	Time	Depth to Water (ft)	Date	Time	Depth to Water (ft)	Date	Time	Depth to Water (ft)	Date	Time	Depth to Water (ft)	Date	Time	Depth to Water (ft)
8/8/2023	11:10	29.27	8/8/2023	11:40	42.14	8/8/2023	11:59	9.84	8/8/2023	10:07	12.40	8/8/2023	12:17	38.88	8/8/2023	12:42	17.90
8/8/2023	11:36	29.10	8/8/2023	11:48	42.09	8/8/2023	12:04	9.84	8/8/2023	12:10	12.31	8/8/2023	12:26	39.27	8/8/2023	12:48	16.52
8/8/2023	13:40	28.84	8/9/2023	10:36	42.56	8/9/2023	10:12	9.96	8/9/2023	10:06	12.37	8/9/2023	9:34	40.90	8/9/2023	9:56	16.93
8/9/2023	10:44	29.54	8/17/2023	11:04	41.49	8/17/2023	12:04	9.83	8/17/2023	12:14	12.44	8/17/2023	12:26	38.69	8/17/2023	12:42	32.91
8/17/2023	11:00	28.61	8/22/2023	7:12	43.70	8/22/2023	7:20	10.16	8/22/2023	7:25	12.88	8/22/2023	7:32	39.92	8/22/2023	7:39	19.92
8/22/2023	7:08	30.81	8/22/2023	8:09	43.42	8/22/2023	8:56	10.18	8/22/2023	9:02	12.16	8/22/2023	9:06	40.34	8/22/2023	9:12	16.29
8/22/2023	7:57	35.94	8/22/2023	8:20	44.22	8/22/2023	10:04	10.20	8/22/2023	10:10	12.83	8/22/2023	10:14	40.04	8/22/2023	10:22	15.92
8/22/2023	8:15	40.92	8/22/2023	8:32	44.64	8/22/2023	11:30	10.18	8/22/2023	11:38	12.82	8/22/2023	11:46	40.36	8/22/2023	11:52	15.83
8/22/2023	8:27	42.40	8/22/2023	8:46	45.08	8/22/2023	12:30	10.18	8/22/2023	12:32	12.82	8/22/2023	12:38	40.62	8/22/2023	12:42	15.86
8/22/2023	8:37	43.85	8/22/2023	9:56	47.55	8/22/2023	13:40	10.18	8/22/2023	13:46	12.82	8/22/2023	13:52	40.84	8/22/2023	13:58	15.90
8/22/2023	9:52	47.29	8/22/2023	10:56	48.71	8/22/2023	14:40	10.18	8/22/2023	14:46	12.82	8/22/2023	14:50	40.95	8/22/2023	14:56	15.96
8/22/2023	10:51	48.89	8/22/2023	12:02	49.61	8/22/2023	15:18	10.18	8/22/2023	15:23	12.82	8/22/2023	15:30	41.01	8/22/2023	15:36	16.02
8/22/2023	11:58	50.34	8/22/2023	13:04	50.11	8/22/2023	16:18	10.17	8/22/2023	16:22	12.80	8/22/2023	16:14	41.11	8/22/2023	16:10	15.95
8/22/2023	13:00	50.92	8/22/2023	14:10	50.76	8/22/2023	17:00	10.17	8/22/2023	17:05	12.79	8/22/2023	17:11	41.01	8/22/2023	17:16	15.49
8/22/2023	14:06	51.34	8/22/2023	15:08	51.21	8/23/2023	8:26	10.21	8/23/2023	8:44	12.90	8/23/2023	9:00	39.88	8/23/2023	9:10	23.64
8/22/2023	15:04	51.91	8/22/2023	15:49	51.34												
8/22/2023	15:46	51.81	8/22/2023	16:02	51.27												
8/22/2023	15:58	46.21	8/22/2023	16:34	50.03												
8/22/2023	16:30	40.22	8/22/2023	17:26	48.48												
8/22/2023	17:23	37.17	8/23/2023	9:48	43.65												
8/23/2023	9:36	31.29															

Notes: 1 - All depths measured from top of PVC drop tube except at for the well at 121 Rock Road West, where depths were measured below top of steel casing.

Table 2 - Record of New Well Pumping and Discharge Rate (Pre-test during Background Stage of Aquifer Test)
Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ - August 8, 2023

Time	Elapsed Time (hrs:minutes)	Time Change (hrs:minutes)	Time Change (minutes)	Meter Reading (gals)	Pumped Volume Change (gals)	Total Gallons Pumped	Interval Flow Rate (gpm)[1]	Notes
15:15	0	0	0	238.0	0	0	0	Pump turned On
15:20	0:05	0:05	5	264.2	26.2	26.2	5.24	
15:21	0:06	0:01	1	269.4	5.2	31.4	5.20	
15:29	0:14	0:08	8	311.4	42.0	73.4	5.25	
15:31	0:16	0:02	2	321.9	10.5	83.9	5.25	
15:50	0:35	0:19	19	421.4	99.5	183.4	5.24	
15:51	0:36	0:01	1	426.6	5.2	188.6	5.20	
15:56	0:41	0:05	5	452.9	26.3	214.9	5.26	
18:20	3:05	2:24	144	1212.5	759.6	974.5	5.28	
18:22	3:07	0:02	2	1222.8	10.3	984.8	5.15	
Average							**5.27**	

Notes: 1 - Interval flow rate determined from gallons pumped and time elapsed between successive readings of totalizing flow meter

Table 3 - Record of New Well Pumping and Discharge Rate during Pumping Stage of Aquifer Test
Green Medicine NJ LLC, West Amwell Township, Hunterdon County, NJ - August 22, 2023

Time	Elapsed Time (hrs:minutes)	Time Change (hrs:minutes)	Time Change (minutes)	Meter Reading (gals)	Pumped Volume Change (gals)	Total Gallons Pumped	Instantaneous Flow Rate (gpm)[1]	Interval Flow Rate (gpm)[2]	Notes
7:52	0	0	0	1286.0	0	0	0	0	Pump turned On
8:02	0:10	0:10	10	1338.5	52.5	52.5	- - -	5.25	
8:12	0:20	0:10	10	1389.1	50.6	103.1	- - -	5.06	
8:22	0:30	0:10	10	1440.9	51.8	154.9	- - -	5.18	
8:32	0:40	0:10	10	1492.7	51.8	206.7	- - -	5.18	
8:42	0:50	0:10	10	1544.9	52.2	258.9	- - -	5.22	
8:52	1:00	0:10	10	1596.8	51.9	310.8	- - -	5.19	
9:02	1:10	0:10	10	1650.3	53.5	364.3	- - -	5.35	
9:08	1:16	- - -	- - -	- - -	- - -	- - -	5.28	- - -	
9:19	1:27	- - -	- - -	- - -	- - -	- - -	5.23	- - -	
9:32	1:40	- - -	- - -	- - -	- - -	- - -	5.22	- - -	
10:02	2:10	1:00	60	1963.4	313.1	677.4	5.22	5.22	
10:32	2:40	- - -	- - -	- - -	- - -	- - -	5.27	- - -	
11:02	3:10	1:00	60	2279.3	315.9	993.3	5.25	5.27	
12:02	4:10	1:00	60	2595.4	316.1	1309.4	5.2	5.27	
13:02	5:10	1:00	60	2912.7	317.3	1626.7	5.26	5.29	
14:02	6:10	1:00	60	3230.9	318.2	1944.9	5.23	5.30	
15:02	7:10	1:00	60	3549.1	318.2	2263.1	5.27	5.30	
15:53	8:01	0:51	51	3817.6	268.5	2531.6	- - -	5.26	
15:54	8:02	0:01	1	3821.6	4.0	2535.6	- - -	- - -	
Averages							**5.24**	**5.26**	

Notes: 1 - Instantaneous flow rate determined by measuring time for flow to fill a 5-gallon bucket
2 - Interval flow rate determined from gallons pumped and time elapsed between successive readings of totalizing flow meter

APPENDIX A

Appalachia Hydrogeologic & Environmental Consulting, LLC

September 18, 2023

Princeton Geoscience, Inc.
209 Nassau Street
Princeton, NJ 08542
609-279-0008

Attn: James L. Peterson, PG, LSRP

Re: Commercial Water Supply Evaluation
Green Medicine NJ LLC
638 Brunswick Pike (Route 518)
West Amwell Township, Hunterdon County, NJ

Dear Jim:

Appalachia Hydrogeologic and Environmental Consulting, LLC (Appalachia) has prepared this letter report and attachments to complete our scope of work (SOW) outlined in our May 18, 2023 proposal and requested field participation and pumping scenario evaluations/modeling. This work is in connection with aquifer testing of the Green Medicine NJ site, located at 638 Brunswick Pike, West Amwell Township, NJ (Site). The overall objective is to evaluate Green Medicine's anticipated commercial groundwater usage from onsite wells (e.g. "New Well" and "Old Well", Figure 1), to ensure they do not unacceptably interfere with nearby private residential groundwater supply wells (Figure 1).

As indicated in your Final Work Plan, dated June 27, 2023, the key criterion for evaluating offsite wells is to conduct an 8 hour aquifer test using the "New Well" as a pumping well (~5 gpm) and compare offsite well drawdown (induced by pumping "New Well") against 5 feet or 10% of New Well's maximum drawdown (whichever is greater). In the event that drawdown is less than this key criterion in designated offsite wells, no further evaluation is required by West Amwell Township.

Aquifer test parameterization is also part of the aquifer test objectives to allow for modeling and evaluation of Green Medicine's commercial groundwater usage. Following the approval of the Final Work Plan, the Township made an additional request that the combined New and Old Well pumping scheme be evaluated for its effect on surrounding groundwater conditions. The aquifer test parameterization and forward modeling of Green Medicine's typical/maximum pumping schedule assists in answering questions posed by nearby residents and other interested parties.

This letter report is divided into six (6) summary sections, including:

1. Hydrogeologic Setting
2. Antecedent Data Collection & Evaluation
3. "New Well" 8 Hour Constant Rate Aquifer Test Evaluation
4. "Typical" Pumping Scenario Forward Modeling
5. "Maximum" Pumping Scenario Forward Modeling and

6. Conclusions

1. Hydrogeologic Setting

The Site is underlain by the Passaic Formation, which outcrops in a NE x SW orientation and directly abuts Jurassic Diabase to the northwest (Figure 1). A number of key borehole geophysical data were obtained by Princeton Geoscience, Inc. (PGI) as part of the geophysical logging of the "New Well" and summarized in a report dated May 10, 2022. Overall, the following hydrogeologic information is most relevant for this assessment:

- PGI identified a significant water-bearing bedding plane-related fracture zone at a depth of 270 feet in the New Well borehole.
- Bedrock strike-dip is 229/21.9 (RHR) as interpreted from the borehole geophysical features and can be used to project the bedding plane fracture from the New Well throughout the study area to other well locations.
- The close proximity of the hydrologically restrictive Jurassic Diabase to the NW likely has a significant impact on the movement of groundwater (likely serves as a no-flow boundary condition).

2. Antecedent Data Collection & Evaluation

Background Site-specific data collection of well water levels and barometric pressure began on or about August 8, 2023 and continued through August 23, 2023 (see Figures 2-9) by PGI. The purpose of antecedent data and its evaluation is to assess "background" environmental variables that could affect and/or obscure the aquifer testing results and interpretation, such as:

- barometric and earth tide effects (e.g. barometric and tidal efficiency corrections),
- groundwater level trends due to precipitation events or periods of aquifer decline and
- effects/influence from nearby pumping wells.

To the extent possible and necessary, it is desirable to document and apply correction factors associated with these variables to groundwater level data, prior to aquifer test evaluation. In consultation and agreement with W. Amwell Township, four (4) private domestic offsite wells were selected and monitored along with the onsite "New" and "Old" wells. The former are associated with the following residences (see Figure 1):

1. "115RRW", located at 115 Rock Road West,
2. "121RRW", located at 121 Rock Road West,
3. "658BP", located at 658 Brunswick Pike and
4. "639BP", located at 639 Brunswick Pike.

Individual well time-series graphs are provided as Figures 2 - 9, which illustrate:

- site barometric pressure (ft-H2O),
- "unadjusted drawdown", which sets drawdown = 0 at time = 0 for the 8 hour aquifer test,
- identification of linear trends/equations and
- relevant annotations.

Site barometric pressure during the 8 hour aquifer test pumping phase fluctuated approximately 0.04 ft-H2O (see Figures 2, 4, 6, 7, 8 and 9). Given that confined aquifers generally exhibit a barometric

efficiency of 30-70 percent, the potential for this to be a significant factor affecting aquifer test data is negligible.

New Well

Figure 2 illustrates unadjusted drawdown for the "New Well", including antecedent and aquifer test phases. One to two foot water level fluctuations are apparent from 8/9 to 8/22 and likely reflect offsite residential pumping. Additionally, a downward linear trend is apparent during the aquifer test, which can be corrected for by using the trend's slope (see Figure 2). Figure 3 illustrates the unadjusted versus trend-corrected drawdown data from the aquifer test. In total, the "New Well" exhibited 21.2 feet of drawdown at the conclusion of 8 hours of pumping at 5.24 gpm.

Old Well

The onsite "Old Well" exhibited a similar water level response as the New Well. One to two foot water level fluctuations are apparent from 8/9 to 8/22 and likely reflect offsite residential pumping. Rapid decreases/increases in drawdown (~13 feet) are notable in the hydrograph for 10 events preceding the aquifer test and likely represent the well's onsite usage (Figure 4). A more subtle linear trend was also observed and corrected for through the aquifer testing period (Figure 5). In total, the "Old Well" exhibited 8.0 feet of drawdown at the aquifer test's conclusion.

639BP & 658BP

The antecedent data collection period revealed frequent residential usage of 639BP with groundwater drawdown ranging from one foot to twelve feet. Although the drawdown data collected during the aquifer test is of poor quality for evaluating aquifer parameters, it is estimated that the well exhibited approximately 1.5 feet of drawdown (Figure 6).

Similarly, well 658BP exhibited significant well usage and drawdown that exceeded the pressure transducer well setting, exceeding the ~20 feet of available recording. This well exhibited a similar and approximate 1.4 feet of drawdown as a result of the aquifer testing (Figure 7).

115RRW & 121RRW

Residential wells 115RRW and 121RRW are situated in the Jurassic Diabase (Figure 1) and unsurprisingly revealed no observable drawdown as a result of pumping the New Well (see Figures 8 and 9). Based upon the antecedent data, 115RRW appears to be used infrequently, while 121RRW exhibits five to greater than ten feet of drawdown from domestic use.

3. "New Well" 8 Hour Constant Rate Aquifer Test Evaluation

Review and inspection of the aquifer test observation well data indicates usage of the "Old Well" as most appropriate for aquifer parameterization. Background variables (e.g. "noise") as a result of residential pumping or boundary effects (e.g. wells situated in the Jurassic Diabase) prevented use of additional observation well data.

The software package "AQTESOLV" was utilized to post-process the trend-corrected "Old Well" observation data with documentation included as Attachment 1. As part of the initial aquifer test evaluation, various diagnostic flow plots were reviewed to aid in the identification of applicable flow

regimes and boundary conditions, including:

- radial flow plots (log-linear & log-log) of displacement (s) versus time (t),
- linear flow plot (log-log) of s versus t^0.5,
- bilinear flow plot (log-log) of s versus t^0.25 and
- spherical flow plot (log-log) of s versus t^-0.5.

The following was identified from these plots, which aids in the aquifer test evaluation:

- Wellbore storage was identified as an applicable condition requiring consideration from a characteristic unit slope, observed at early time in the radial flow plot (log-log) (see Attachment 1).
- A "channel" or "strip" type aquifer condition was identified from late time unit slope adherence to observed data plotted on the linear flow graph. This further validates the presence of a "no-flow" boundary condition associated with the Jurassic Diabase (see Attachment 1). As a result, the no-flow boundary condition has been accounted for in AQTESOLV as a straight line from Point A (E378022, N556203) to Point B (E380981, N558128) and approximates the Passaic Formation/Jurassic Diabase surficial contact.

The Papadopulos-Cooper (1967) aquifer test solution was chosen for its ability to account for wellbore storage of wells situated in confined aquifers. Type curve matching of aquifer data was conducted using displacement-time and residual-drawdown graphs (Attachment 1). The analytical type curve matching solution produced the following aquifer parameter estimates:

- Transmissivity (T) = 48 ft^2/day and
- Storativity (S) = 1.8e-5.

Drawdown contours predicted by the Papadopulos-Cooper (1967) aquifer test solution are illustrated in Figure 10 along with observed drawdown, following 8 hours of pumping the "New Well" at an average of 5.24 gpm. Projected drawdown in the Old Well is identical to what is observed, since it was used as part of the aquifer test solution.

Observed drawdown in offsite domestic wells 639BP and 658BP is significantly less than what is predicted (e.g. 1.5 ft & 1.4 ft observed versus 5 ft & 4 ft projected) by the aquifer test solution. The primary water-bearing zone (bedding plane fracture) identified by PGI in the New Well via geophysical logging has been projected to both 639BP and 658BP and reviewed along with their well construction characteristics (see Figure 10 annotations). The following observations and conclusions are notable:

- The projected water-bearing fracture depth in 639BP is 34 feet; however, well casing extends to a depth of 100 feet. Therefore, this well likely only "partially penetrates" the pumped aquifer, explaining its less than projected drawdown.
- Similarly, well 658BP was initially advanced into the Jurassic Diabase, but extends to a total depth of 815 feet and likely only partially penetrates the underlying Passaic Formation.

4. "Typical" Pumping Scenario Forward Modeling

Green Medicine's "typical" pumping scenario including the "New Well" and "Old Well" is summarized in Table I and has been evaluated using AQTESOLV forward modeling (see

Attachment 2).

Table I: Green Medicine's Anticipated Groundwater Usage

Well ID	Use	Daily Withdrawals (gallons)		Operating Schedule
		Typical	Maximum	
New Well	Cultivation activities	850	1100	Continuous 24/7/365 basis, as needed to keep cultivation irrigation storage tank topped off. Operations include capture and recycling from HVAC, so 850 gallons noted is the net new water that will need to be pumped from the New Well each day to keep the irrigation operations going.
Old Well	Bathroom: Toilets, Sink for 35 (typical) to 60 (maximum, perhaps once or twice a year) employees/visitors x 15 gallons/person/day	525	900	As demand requires, during operating hours (7:00 AM to 7:00 PM). No storage tank as at New Well, so usage triggers pumping.
Totals		1375	2000	
Maximum Daily Total (Both Wells) per Planning Board Resolution		2000		

The following key assumptions have been made:

- Aquifer parameters are T=48 ft^2/day, S=1.8e-5 as estimated from the aquifer test.
- A no-flow boundary exists from point A (E378022, N556203) to point B (E380981, N558128), which estimates the Passaic Formation/Jurassic Diabase surficial contact.
- The New Well is pumped continuously at 0.59 gpm to simulate the 850 gpd maximum withdrawal in connection with cultivation/irrigation.
- The Old Well is pumped continuously for 12 hours per day at 0.73 gpm to simulate the 525 gpd maximum withdrawal to service the onsite bathroom facilities.
- The combined well operation is simulated to time = 10080 minutes with the combined drawdown illustrated in Figure 11. This is done to allow for aquifer stabilization (e.g. ~ 1 week).

As illustrated in Figure 11, five feet of drawdown is only projected to propagate a maximum distance of ~100 feet from the onsite "New Well" following a week of combined onsite well operation.

5. "Maximum" Pumping Scenario Forward Modeling

Green Medicine's "maximum" pumping scenario including the "New Well" and "Old Well" is also summarized in Table I and has been evaluated using AQTESOLV forward modeling (see Attachment 3). The following key assumptions have been made:

- Aquifer parameters are T=48 ft^2/day, S=1.8e-5 as estimated from the aquifer test.
- A no-flow boundary exists from point A (E378022, N556203) to point B (E380981,

N558128), which estimates the Passaic Formation/Jurassic Diabase surficial contact.
- The New Well is pumped continuously at 0.76 gpm to simulate the 1100 gpd maximum withdrawal in connection with cultivation/irrigation.
- The Old Well is pumped continuously for 12 hours per day at 1.25 gpm to simulate the 900 gpd maximum withdrawal to service the onsite bathroom facilities.
- The combined well operation is simulated to time = 10080 minutes with the combined drawdown illustrated in Figure 12. This is done to allow for aquifer stabilization (e.g. ~ 1 week).

As illustrated in Figure 12, five feet of drawdown is projected to propagate close to private domestic well 639BP. Additionally, 658BP is projected to have between 3-4 feet of drawdown. These scenarios assume full aquifer penetration, which does not occur in 639BP nor 658BP; therefore, these projections are conservative. Also, this modeling projection assumes a continuous "maximum" pumping scenario, which is additionally conservative.

6. Conclusions

The following has been concluded regarding Green Medicine NJ's anticipated groundwater usage, aquifer testing of the "New Well" and forward modeling of "typical" and "maximum" groundwater usage scenarios:

1. The 8 hour constant rate aquifer test resulted in less than 5 feet of observed drawdown in all monitored offsite domestic wells, including 115RRW, 121RRW, 658BP and 639BP. As indicated in the Township-approved Final Work Plan, the "future use of the New Well as planned by GMNJ will, by definition, be acceptable to the Township."
2. The "typical" planned pumping schedule, utilizing both the "New" and "Old" wells has been modeled using the transmissivity and storativity parameters, estimated from the aquifer test. Offsite drawdown is projected to be less than 4 feet (see Figure 11). This is considered conservative, since offsite wells partially penetrate the aquifer and exhibit observed drawdown less than what is projected from modeling (e.g. see the 8 hour aquifer test model projection versus observed drawdowns illustrated in Figure 10). The threshold of five feet of drawdown is only projected to extend approximately 100 feet from the "New Well".
3. Utilizing the same techniques as the "typical" planned pumping schedule, the model was adjusted to account for "maximum" planned pumping, which produces modest increases of projected drawdown as illustrated in Figure 12. Five feet of drawdown is projected along the Site property edge and also approaches offsite domestic well 639BP. However, this projection assumes the "maximum" pumping schedule is sustained for 7 days or greater and is additionally conservative in that drawdown projections are for those wells that fully penetrate the utilized aquifer.

Overall, the 8 hour aquifer testing results and forward modeling of the Green Medicine's typical/maximum pumping schedule provide strong lines of evidence that the Site's operations will not excessively influence the surrounding private domestic wells. In conclusion, Green Medicine and offsite residents will be able to utilize (or continue utilizing) their private wells as currently planned and without further modification.

Sincerely,

Garth T. Llewellyn, PG, LSRP #668083
Principal Hydrogeologist

Attachments

678 Route 202-206, Bldg 5, Unit 4, Bridgewater, NJ 08807 Phone: (888) 240-1984 Fax: (908) 450-7454
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FIGURES

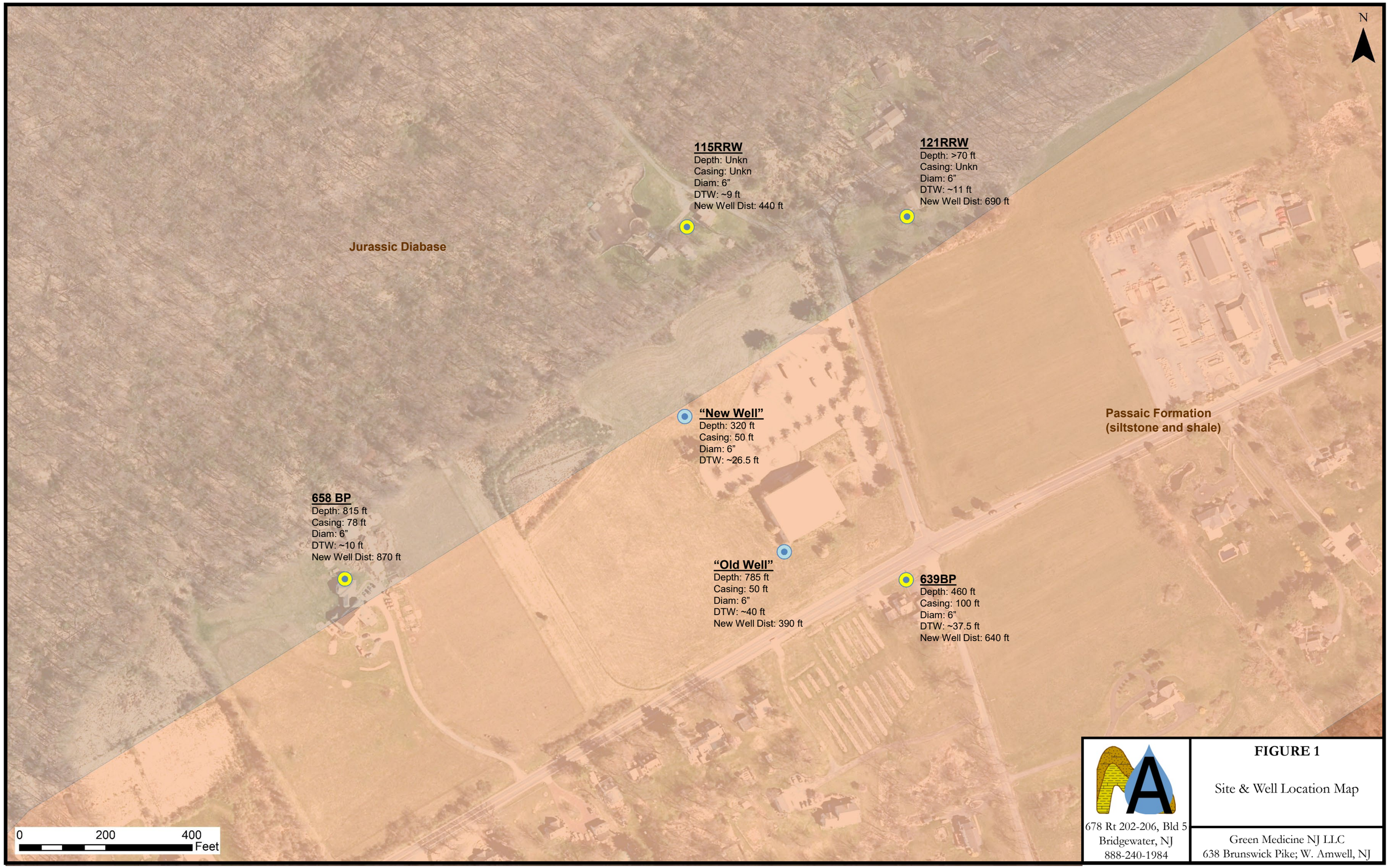

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FIGURE 1

Site & Well Location Map

Green Medicine NJ LLC
638 Brunswick Pike; W. Amwell, NJ

FIGURE 2
"New Well" Unadjusted Drawdown & Environmental Variables
GMNJ, West Amwell, NJ

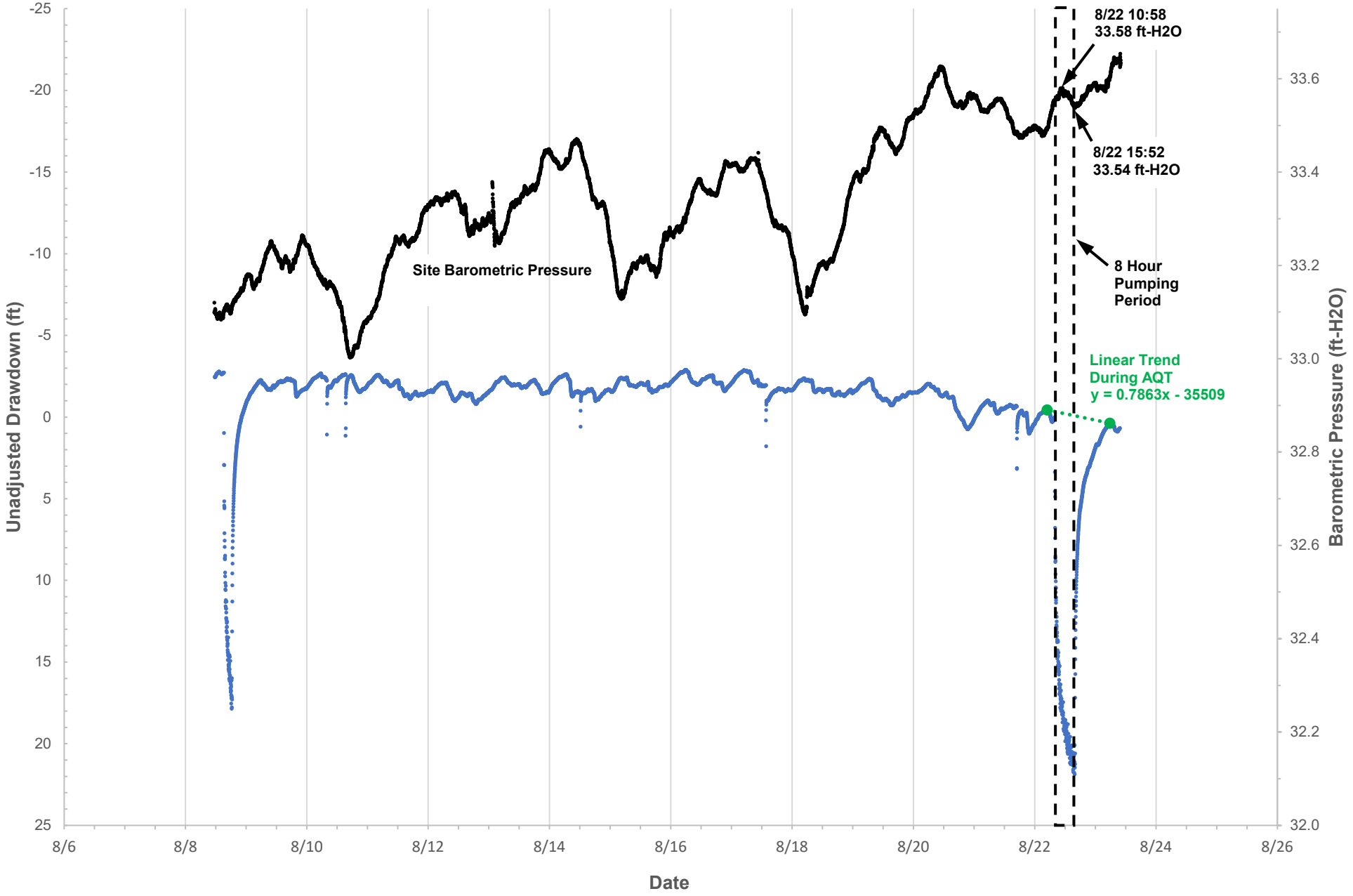


FIGURE 3
"New Well" Unadjusted & Trend-Corrected Drawdown
GMNJ, West Amwell, NJ

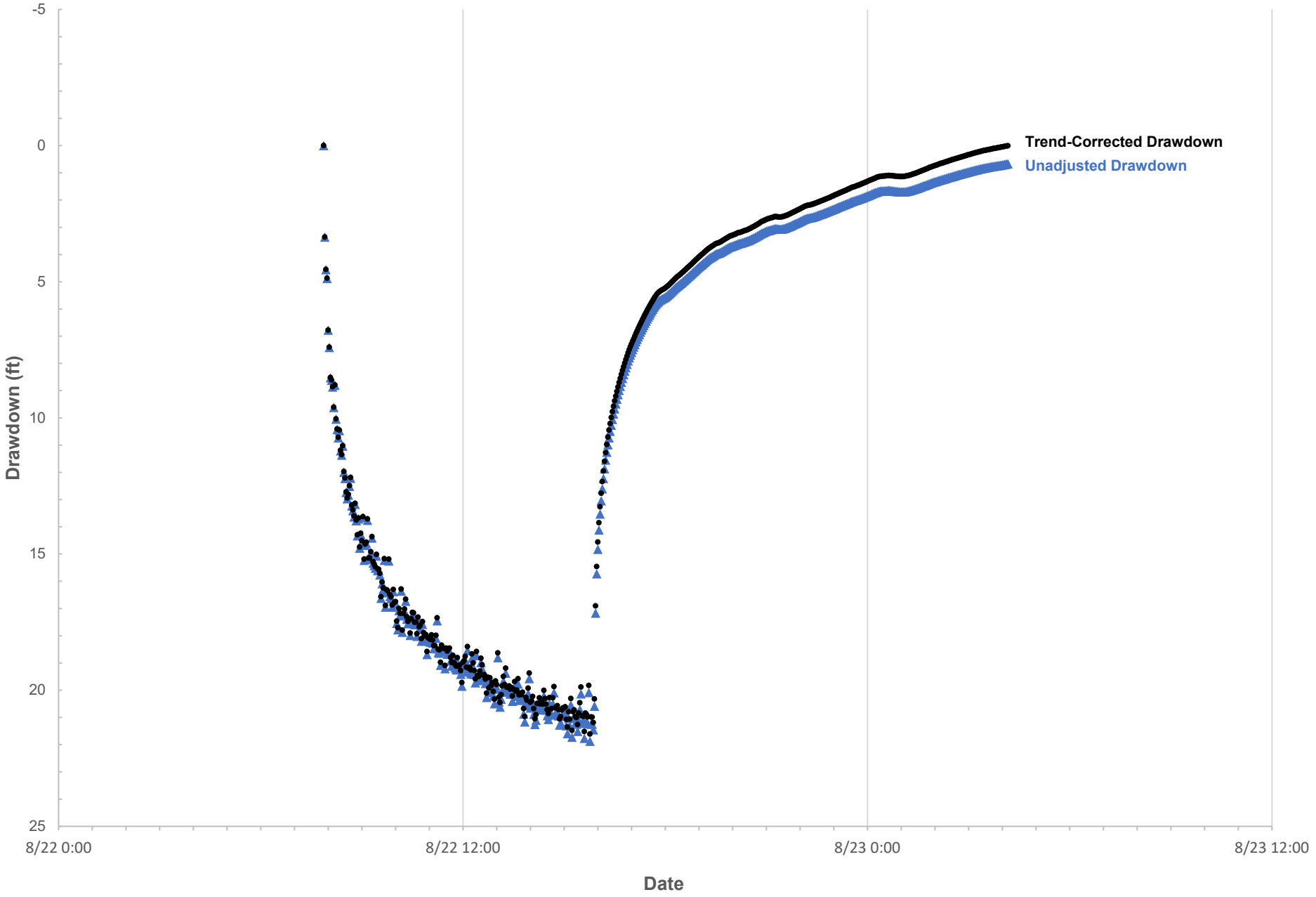


FIGURE 4
"Old Well" Unadjusted Drawdown and Environmental Variables
GMNJ, West Amwell, NJ

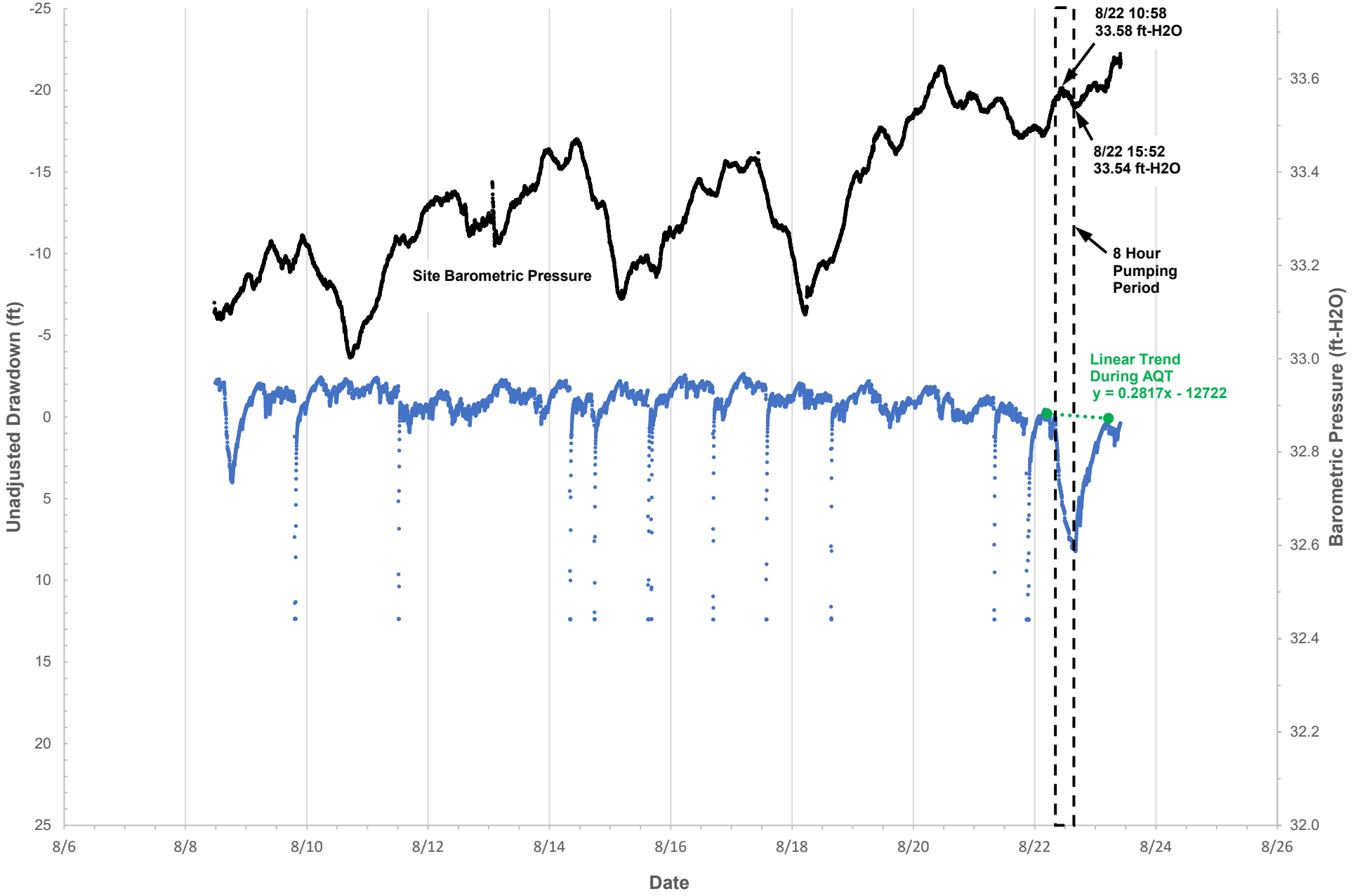


FIGURE 5
"Old Well" Unadjusted & Trend-Corrected Drawdown
GMNJ, West Amwell, NJ

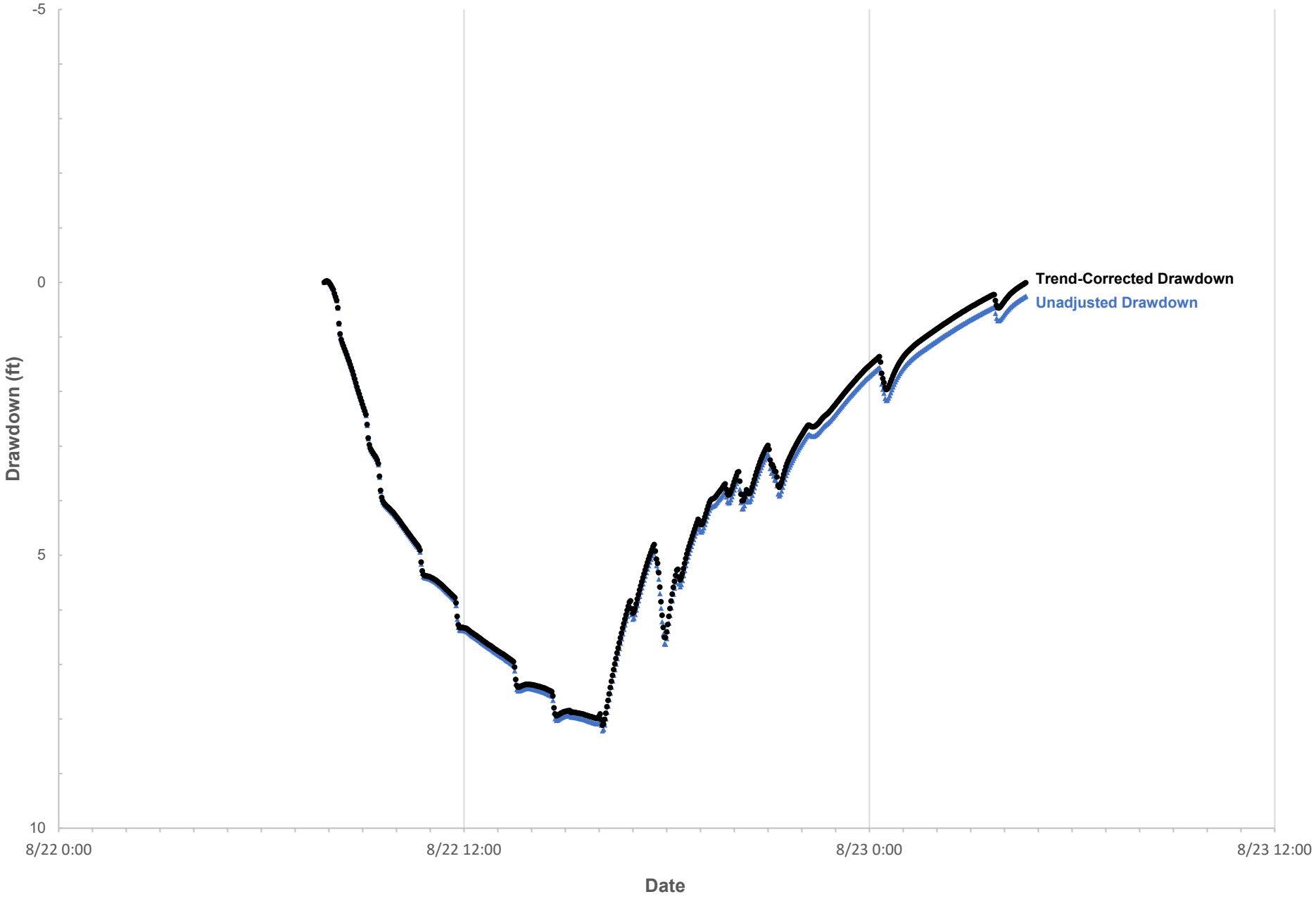


FIGURE 6
"639BP" Unadjusted Drawdown & Environmental Variables
GMNJ, West Amwell, NJ

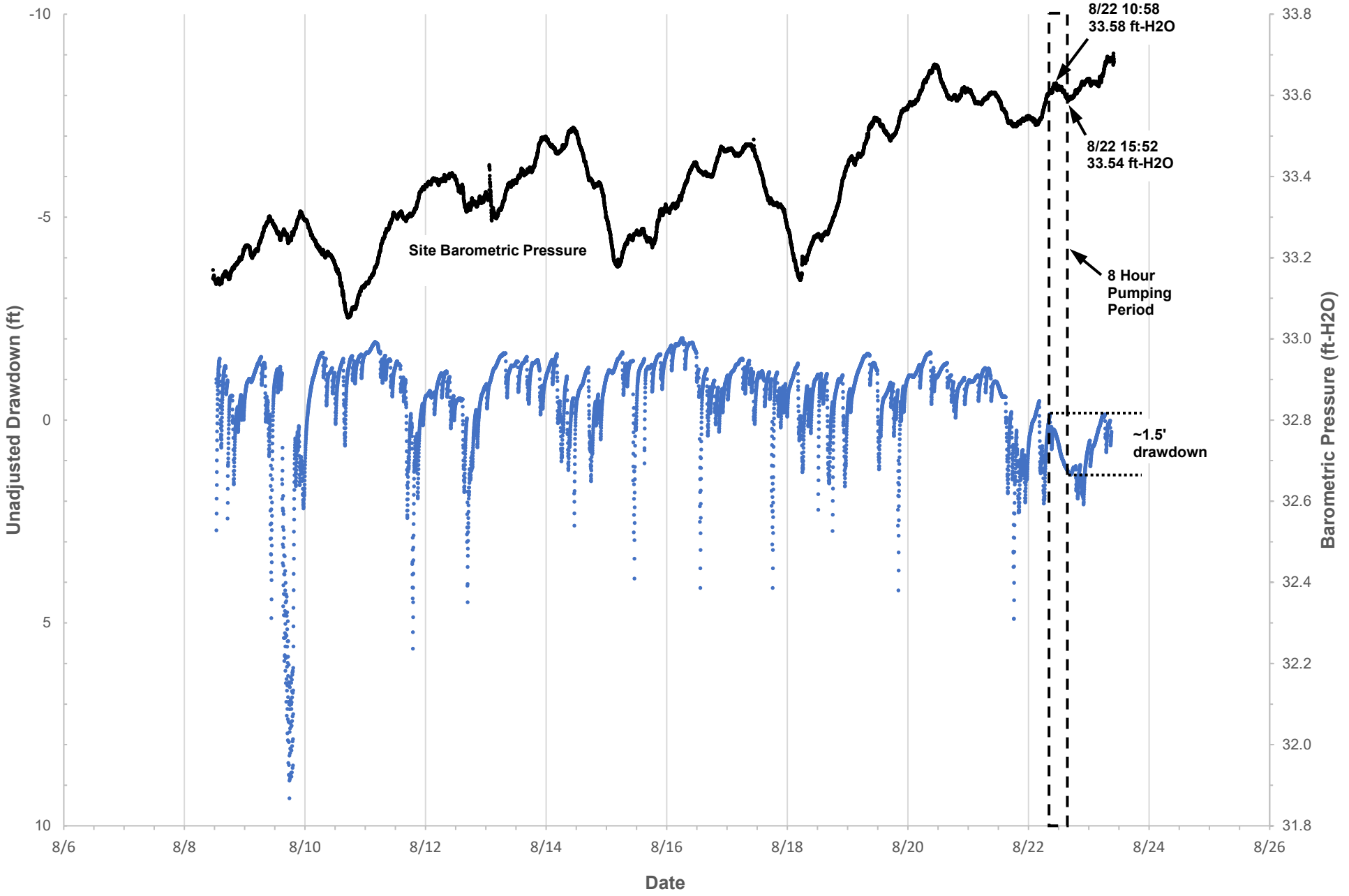


FIGURE 7
"658BP" Unadjusted Drawdown & Environmental Variables
GMNJ, West Amwell, NJ

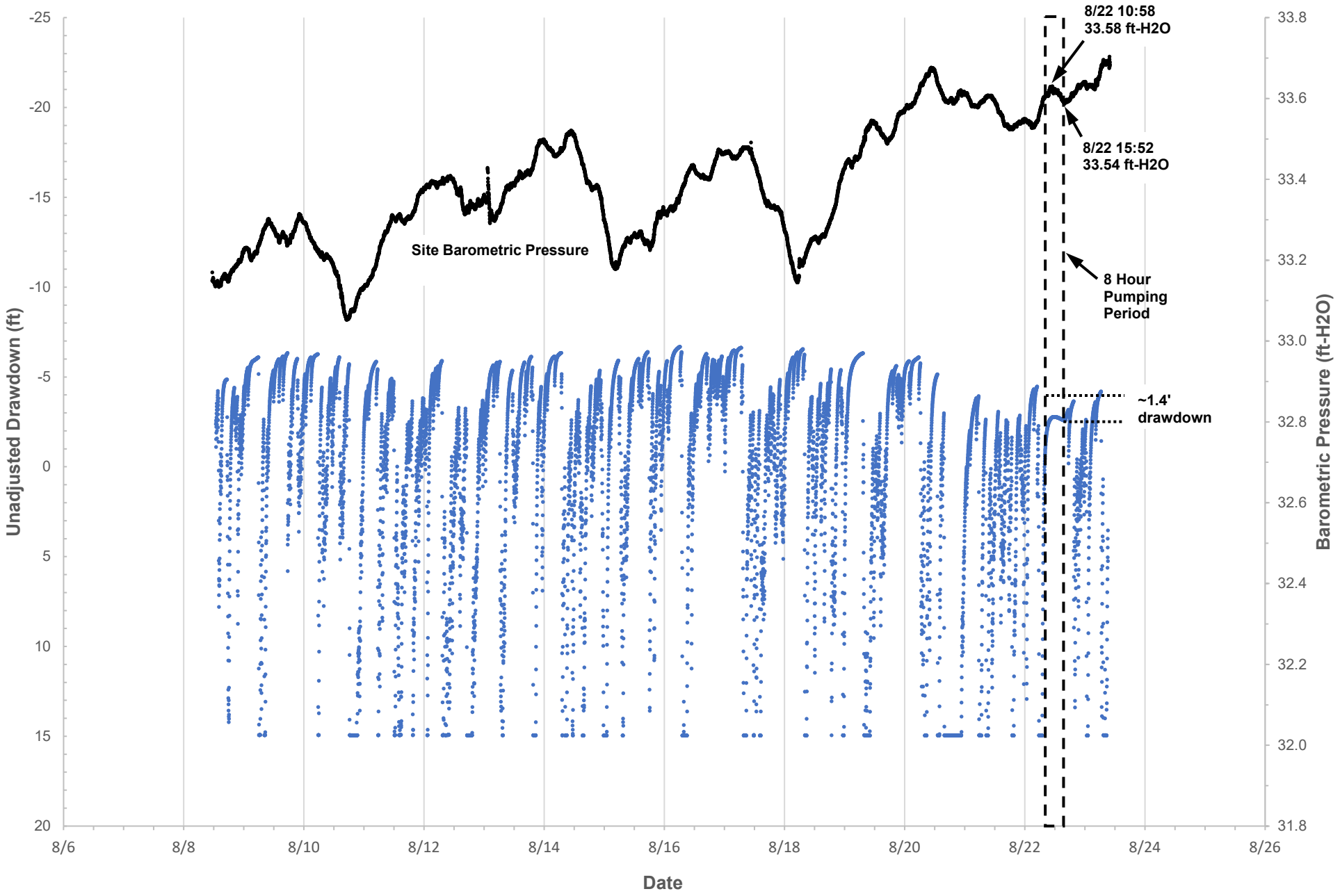


FIGURE 8
"115RRW" Unadjusted Drawdown & Environmental Variables
GMNJ, West Amwell, NJ

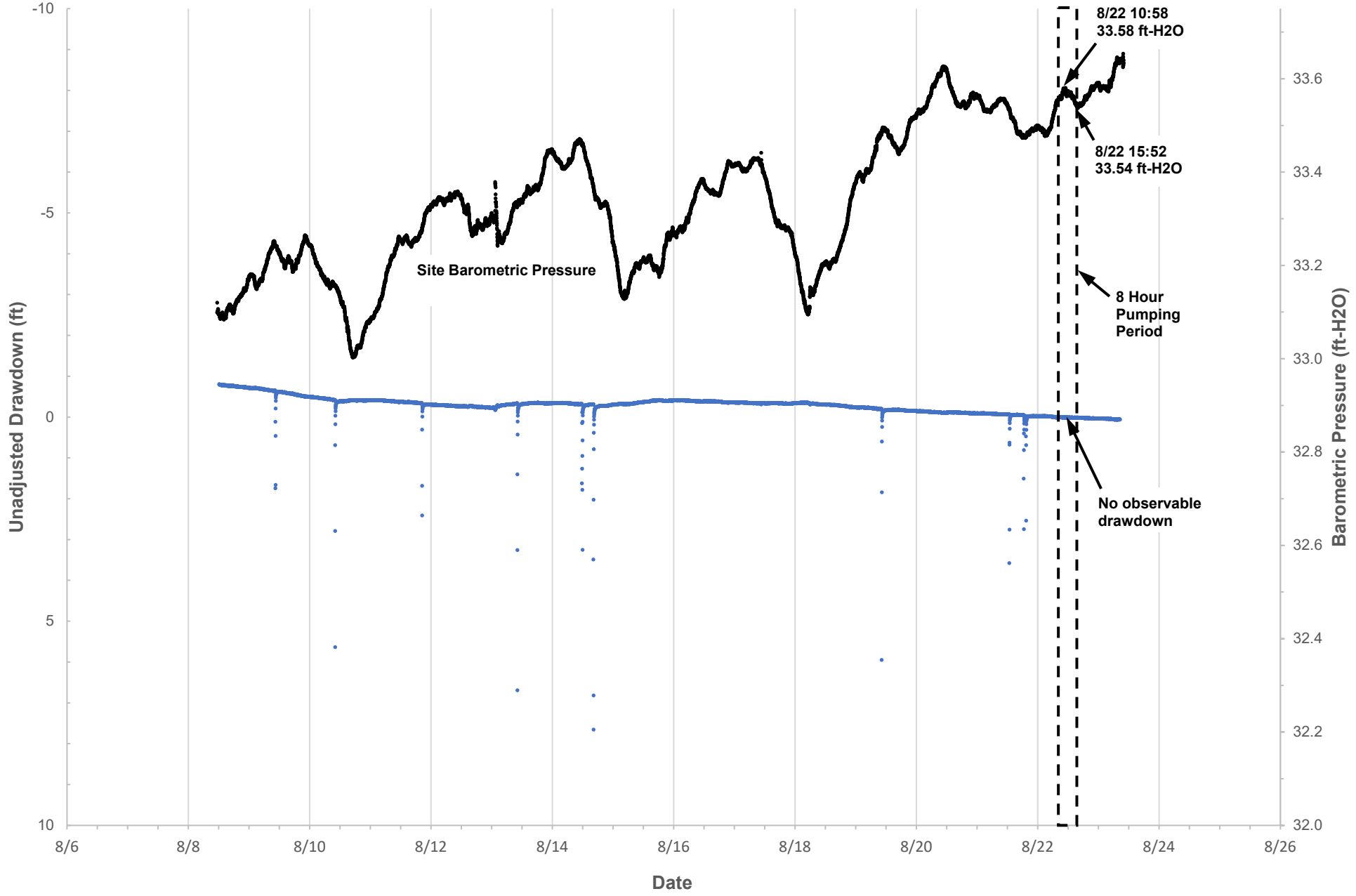
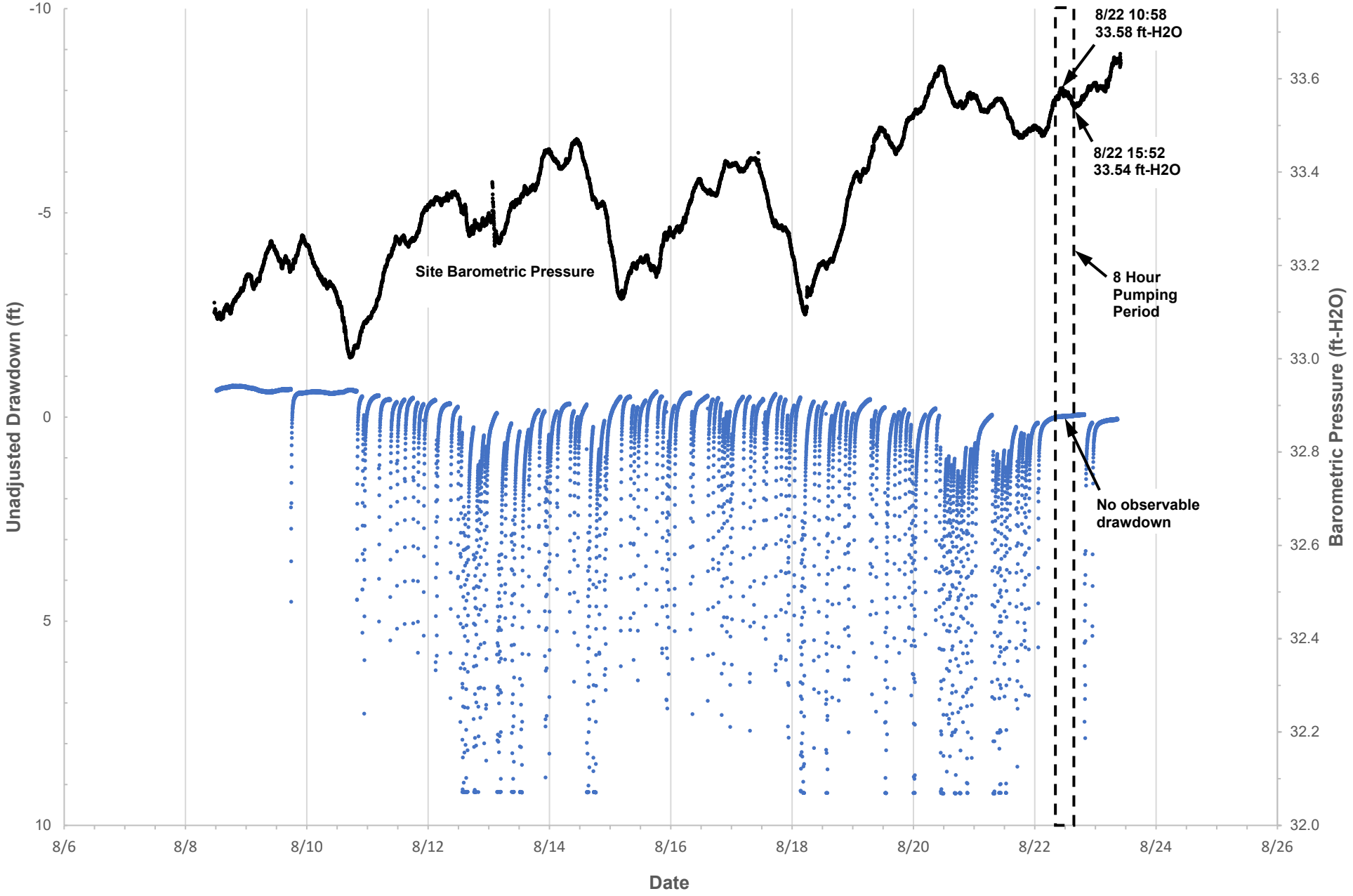


FIGURE 9
"121RRW" Unadjusted Drawdown & Environmental Variables
GMNJ, West Amwell, NJ



Notes

1. Onsite wells illustrated in blue. Offsite residential wells illustrated in yellow.
2. "New Well" pumped at 5.24 gpm for 8 hours on 8/22/2023.
3. The pumping rate is approximately twice the intended use as a conservative measure and to better evaluate aquifer parameters.
4. Residential wells 115RRW and 121RRW are situated in Jurassic Diabase and exhibited no drawdown (hydraulically isolated from the Passaic Fm aquifer).
5. Drawdown data from wells 639BP and 658BP exhibited significant interference from nearby residential pumping. Total drawdown as a result of "New Well" pumping is approximate, but well below the key threshold of 5 ft.
6. Time-Drawdown data obtained from observation well "Old Well" is used to estimate aquifer parameters (e.g. T=48 ft^2/day, S=1.8e-5).
7. Aquifer test projections are illustrated for T=8 hours.
8. The primary water bearing zone observed in "New Well" (e.g. fracture zone observed at ~270 depth) is bedding plane-related and was projected throughout the study area using strike/dip: 229/21.9.
9. Residential well "639BP" is located up-dip and has the primary water bearing zone used by the "New Well" cased off. This is the probable explanation for the estimated observed drawdown of 1.5 feet versus the projected drawdown of 5 ft (e.g. aquifer partial penetration).
10. Residential well "658BP" is situated surficially in Jurassic Diabase, but is also likely advanced into the underlying Passaic Formation, given its significant depth (e.g. 815 ft). Aquifer partial penetration is the likely explanation for less-than-projected drawdown.

N

115RRW
Depth: Unkn
Casing: Unkn
New Well Dist: 440 ft
Observed DD: None
Projected DD: NA

121RRW
Depth: >70 ft
Casing: Unkn
New Well Dist: 690 ft
Observed DD: None
Projected DD: NA

Jurassic Diabase

5'
10'
15'
20'

"New Well"
Depth: 320 ft
Casing: 50 ft
Fracture Depth: 270 ft
Observed DD: 21.2 ft
Projected DD: NA

Passaic Formation
(siltstone and shale)

658BP
Depth: 815 ft
Casing: 78 ft
Proj. Fracture Depth: 400 ft
New Well Dist: 870 ft
Observed DD Est: ~1.4 ft
Projected DD: 4 ft

"Old Well"
Depth: 785 ft
Casing: 50 ft
Proj. Fracture Depth: 126 ft
New Well Dist: 390 ft
Observed DD: 8.0 ft
Projected DD: NA

639BP
Depth: 460 ft
Casing: 100 ft
Proj. Fracture Depth: 34 ft
New Well Dist: 640 ft
Observed DD Est: ~1.5 ft
Projected DD: 5 ft

0 200 400 Feet

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FIGURE 10

Observed 8 Hour Drawdown vs Aquifer Test Forward Model Projection

Green Medicine NJ LLC
638 Brunswick Pike; W. Amwell, NJ

Notes

1. Onsite wells illustrated in blue. Offsite residential wells illustrated in yellow.
2. "Typical" pumping scenario includes a withdrawal of 850 gallons/day from the "New Well" on a 24/7 basis (e.g. continuous 0.59 gpm) and 525 gallons from the "Old Well" for 12 hours (~7am to 7pm) per day (e.g. 0.73 gpm per 12 hour cycle). Drawdown plotted for time = 10080 minutes (max. drawdown after a week of combined New and Old Well pumping).
3. Time-Drawdown data obtained from observation well "Old Well" is used to estimate aquifer parameters (e.g. T=48 ft^2/day, S=1.8e-5).

N

115RRW
Depth: Unkn
Casing: Unkn

121RRW
Depth: >70 ft
Casing: Unkn

Jurassic Diabase

2'

3'

4'

5'

"New Well"
Depth: 320 ft
Casing: 50 ft

Passaic Formation
(siltstone and shale)

"Old Well"
Depth: 785 ft
Casing: 50 ft

658BP
Depth: 815 ft
Casing: 78 ft

639BP
Depth: 460 ft
Casing: 100 ft

0 200 400 Feet

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FIGURE 11

"Typical" Pumping Scenario - Drawdown Forward Modeling

Green Medicine NJ LLC
638 Brunswick Pike; W. Amwell, NJ

Notes

1. Onsite wells illustrated in blue. Offsite residential wells illustrated in yellow.
2. "Maximum" pumping scenario includes a withdrawal of 1100 gallons/day from the "New Well" on a 24/7 basis (e.g. continuous 0.76 gpm) and 900 gallons from the "Old Well" for 12 hours (~7am to 7pm) per day (e.g. 1.25 gpm per 12 hour cycle). Drawdown plotted for time = 10080 minutes (max. drawdown after a week of combined New and Old Well pumping).
3. Time-Drawdown data obtained from observation well "Old Well" is used to estimate aquifer parameters (e.g. T=48 ft²/day, S=1.8e-5).

N

115RRW
Depth: Unkn
Casing: Unkn

121RRW
Depth: >70 ft
Casing: Unkn

Jurassic Diabase

3'

4'

5'

6'

7'

"New Well"
Depth: 320 ft
Casing: 50 ft

Passaic Formation
(siltstone and shale)

"Old Well"
Depth: 785 ft
Casing: 50 ft

7'

658BP
Depth: 815 ft
Casing: 78 ft

639BP
Depth: 460 ft
Casing: 100 ft

0 200 400 Feet

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FIGURE 12

"Maximuml" Pumping Scenario - Drawdown Forward Modeling

Green Medicine NJ LLC
638 Brunswick Pike; W. Amwell, NJ

ATTACHMENT 1

8 Hour Aquifer Test Documentation/Evaluation

Data Set: Z:\Jobs\GMNJ - Princeton Geoscience\3. Field Data (Well Logs, Survey Data, Purge Data, etc)\AQT\AQT

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Date: 8/22/2023
Test Well: New Well

AQUIFER DATA

Saturated Thickness: 270. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: New Well

X Location: 379599. ft
Y Location: 557177. ft

Casing Radius: 0.25 ft
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	5.24	482.	0.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: Old Well

X Location: 379830. ft
Y Location: 556863. ft

Radial distance from New Well: 389.8166236 ft

Fully Penetrating Well

No. of Observations: 619

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.	0.02354	630.	5.401
12.	0.05785	632.	5.451
14.	0.1003	634.	5.413
16.	0.1315	636.	5.336
18.	0.2075	638.	5.245
20.	0.2683	640.	5.153
22.	0.3311	642.	5.063
24.	0.465	644.	4.977
26.	0.7546	646.	4.904
28.	0.9468	648.	4.838
30.	1.049	650.	4.771
32.	1.116	652.	4.71
34.	1.17	654.	4.645
36.	1.223	656.	4.582

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
38.	1.275	658.	4.521
40.	1.33	660.	4.46
42.	1.39	662.	4.4
44.	1.447	664.	4.343
46.	1.506	666.	4.373
48.	1.569	668.	4.432
50.	1.631	670.	4.443
52.	1.702	672.	4.415
54.	1.771	674.	4.364
56.	1.848	676.	4.301
58.	1.918	678.	4.234
60.	1.986	680.	4.164
62.	2.049	682.	4.098
64.	2.115	684.	4.038
66.	2.178	686.	3.996
68.	2.243	688.	3.974
70.	2.302	690.	3.967
72.	2.362	692.	3.957
74.	2.424	694.	3.941
76.	2.607	696.	3.918
78.	2.851	698.	3.889
80.	2.978	700.	3.86
82.	3.047	702.	3.835
84.	3.084	704.	3.808
86.	3.115	706.	3.78
88.	3.148	708.	3.748
90.	3.178	710.	3.714
92.	3.213	712.	3.694
94.	3.257	714.	3.791
96.	3.322	716.	3.876
98.	3.554	718.	3.9
100.	3.813	720.	3.883
102.	3.944	722.	3.839
104.	4.009	724.	3.784
106.	4.045	726.	3.722
108.	4.069	728.	3.659
110.	4.09	730.	3.598
112.	4.111	732.	3.541
114.	4.129	734.	3.486
116.	4.15	736.	3.472
118.	4.175	738.	3.645
120.	4.194	740.	3.887
122.	4.212	742.	4.005
124.	4.241	744.	3.999
126.	4.266	746.	3.943
128.	4.291	748.	3.869
130.	4.318	750.	3.802
132.	4.349	752.	3.841
134.	4.372	754.	3.875
136.	4.405	756.	3.862
138.	4.433	758.	3.817
140.	4.463	760.	3.754
142.	4.49	762.	3.684
144.	4.518	764.	3.612
146.	4.549	766.	3.539
148.	4.577	768.	3.473
150.	4.604	770.	3.41
152.	4.631	772.	3.351
154.	4.659	774.	3.292
156.	4.689	776.	3.238
158.	4.716	778.	3.187
160.	4.744	780.	3.141
162.	4.772	782.	3.097
164.	4.796	784.	3.055
166.	4.82	786.	3.018
168.	4.853	788.	2.991

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
170.	4.907	790.	3.062
172.	5.126	792.	3.256
174.	5.289	794.	3.342
176.	5.355	796.	3.342
178.	5.373	798.	3.395
180.	5.379	800.	3.46
182.	5.383	802.	3.473
184.	5.388	804.	3.565
186.	5.392	806.	3.72
188.	5.399	808.	3.757
190.	5.41	810.	3.726
192.	5.419	812.	3.664
194.	5.431	814.	3.592
196.	5.443	816.	3.518
198.	5.457	818.	3.447
200.	5.474	820.	3.379
202.	5.489	822.	3.321
204.	5.506	824.	3.271
206.	5.524	826.	3.225
208.	5.542	828.	3.182
210.	5.562	830.	3.139
212.	5.579	832.	3.097
214.	5.601	834.	3.056
216.	5.624	836.	3.017
218.	5.642	838.	2.977
220.	5.66	840.	2.94
222.	5.68	842.	2.903
224.	5.699	844.	2.866
226.	5.719	846.	2.832
228.	5.74	848.	2.798
230.	5.757	850.	2.764
232.	5.78	852.	2.731
234.	5.873	854.	2.698
236.	6.124	856.	2.666
238.	6.273	858.	2.635
240.	6.323	860.	2.619
242.	6.33	862.	2.622
244.	6.325	864.	2.636
246.	6.326	866.	2.647
248.	6.33	868.	2.65
250.	6.334	870.	2.645
252.	6.342	872.	2.634
254.	6.354	874.	2.618
256.	6.37	876.	2.6
258.	6.385	878.	2.579
260.	6.406	880.	2.554
262.	6.42	882.	2.528
264.	6.433	884.	2.502
266.	6.446	886.	2.476
268.	6.461	888.	2.455
270.	6.473	890.	2.44
272.	6.49	892.	2.424
274.	6.504	894.	2.406
276.	6.518	896.	2.385
278.	6.536	898.	2.361
280.	6.552	900.	2.339
282.	6.566	902.	2.312
284.	6.581	904.	2.289
286.	6.595	906.	2.262
288.	6.609	908.	2.237
290.	6.623	910.	2.21
292.	6.64	912.	2.184
294.	6.648	914.	2.157
296.	6.662	916.	2.132
298.	6.677	918.	2.105
300.	6.693	920.	2.081

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
302.	6.71	922.	2.053
304.	6.723	924.	2.028
306.	6.736	926.	2.003
308.	6.752	928.	1.978
310.	6.765	930.	1.953
312.	6.779	932.	1.929
314.	6.794	934.	1.903
316.	6.804	936.	1.882
318.	6.817	938.	1.857
320.	6.831	940.	1.834
322.	6.845	942.	1.81
324.	6.862	944.	1.786
326.	6.875	946.	1.762
328.	6.888	948.	1.74
330.	6.905	950.	1.717
332.	6.919	952.	1.694
334.	6.933	954.	1.672
336.	6.95	956.	1.651
338.	7.051	958.	1.627
340.	7.277	960.	1.606
342.	7.388	962.	1.585
344.	7.417	964.	1.567
346.	7.416	966.	1.548
348.	7.406	968.	1.529
350.	7.398	970.	1.511
352.	7.389	972.	1.492
354.	7.38	974.	1.474
356.	7.373	976.	1.454
358.	7.37	978.	1.437
360.	7.369	980.	1.417
362.	7.366	982.	1.399
364.	7.369	984.	1.381
366.	7.371	986.	1.364
368.	7.371	988.	1.461
370.	7.377	990.	1.67
372.	7.38	992.	1.762
374.	7.386	994.	1.837
376.	7.393	996.	1.93
378.	7.395	998.	1.966
380.	7.403	1000.	1.958
382.	7.407	1002.	1.923
384.	7.414	1004.	1.875
386.	7.421	1006.	1.823
388.	7.428	1008.	1.77
390.	7.434	1010.	1.718
392.	7.44	1012.	1.669
394.	7.45	1014.	1.624
396.	7.459	1016.	1.581
398.	7.47	1018.	1.541
400.	7.48	1020.	1.505
402.	7.489	1022.	1.467
404.	7.499	1024.	1.435
406.	7.577	1026.	1.405
408.	7.796	1028.	1.375
410.	7.909	1030.	1.348
412.	7.942	1032.	1.323
414.	7.938	1034.	1.298
416.	7.926	1036.	1.276
418.	7.911	1038.	1.255
420.	7.896	1040.	1.234
422.	7.886	1042.	1.214
424.	7.874	1044.	1.196
426.	7.867	1046.	1.175
428.	7.861	1048.	1.158
430.	7.858	1050.	1.141
432.	7.852	1052.	1.122

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
434.	7.85	1054.	1.106
436.	7.847	1056.	1.091
438.	7.879	1058.	1.077
440.	7.876	1060.	1.061
442.	7.876	1062.	1.046
444.	7.88	1064.	1.031
446.	7.883	1066.	1.016
448.	7.887	1068.	1.001
450.	7.891	1070.	0.9875
452.	7.896	1072.	0.9723
454.	7.9	1074.	0.9579
456.	7.905	1076.	0.9437
458.	7.91	1078.	0.9281
460.	7.914	1080.	0.9134
462.	7.919	1082.	0.8993
464.	7.927	1084.	0.885
466.	7.935	1086.	0.8697
468.	7.94	1088.	0.8553
470.	7.947	1090.	0.8406
472.	7.957	1092.	0.8263
474.	7.959	1094.	0.8121
476.	7.968	1096.	0.7967
478.	7.975	1098.	0.7835
480.	7.98	1100.	0.7693
482.	7.987	1102.	0.7563
484.	7.992	1104.	0.7425
486.	7.982	1106.	0.7295
488.	7.951	1108.	0.7155
490.	7.909	1110.	0.7025
492.	8.013	1112.	0.6884
494.	8.116	1114.	0.6754
496.	8.093	1116.	0.6605
498.	8.008	1118.	0.6477
500.	7.898	1120.	0.6338
502.	7.777	1122.	0.6201
504.	7.66	1124.	0.6081
506.	7.541	1126.	0.5944
508.	7.426	1128.	0.5814
510.	7.312	1130.	0.5686
512.	7.204	1132.	0.5548
514.	7.094	1134.	0.5428
516.	6.993	1136.	0.5304
518.	6.891	1138.	0.519
520.	6.792	1140.	0.506
522.	6.698	1142.	0.4931
524.	6.605	1144.	0.4804
526.	6.512	1146.	0.4676
528.	6.425	1148.	0.4565
530.	6.338	1150.	0.4441
532.	6.252	1152.	0.4306
534.	6.171	1154.	0.4201
536.	6.091	1156.	0.4076
538.	6.011	1158.	0.396
540.	5.937	1160.	0.3843
542.	5.861	1162.	0.3734
544.	5.836	1164.	0.3617
546.	5.982	1166.	0.3505
548.	6.066	1168.	0.3395
550.	6.045	1170.	0.3261
552.	5.977	1172.	0.3152
554.	5.894	1174.	0.3042
556.	5.805	1176.	0.2931
558.	5.722	1178.	0.2826
560.	5.64	1180.	0.2714
562.	5.561	1182.	0.26
564.	5.484	1184.	0.2494

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
566.	5.412	1186.	0.2386
568.	5.34	1188.	0.2267
570.	5.271	1190.	0.2295
572.	5.203	1192.	0.3334
574.	5.137	1194.	0.4213
576.	5.075	1196.	0.4627
578.	5.012	1198.	0.4691
580.	4.954	1200.	0.457
582.	4.898	1202.	0.4346
584.	4.842	1204.	0.4065
586.	4.804	1206.	0.3755
588.	4.923	1208.	0.3463
590.	5.072	1210.	0.3185
592.	5.147	1212.	0.292
594.	5.321	1214.	0.2679
596.	5.584	1216.	0.2437
598.	5.853	1218.	0.2205
600.	6.1	1220.	0.2025
602.	6.325	1222.	0.1838
604.	6.504	1224.	0.1661
606.	6.51	1226.	0.1479
608.	6.408	1228.	0.1332
610.	6.27	1230.	0.1181
612.	6.123	1232.	0.1033
614.	5.979	1234.	0.0887
616.	5.842	1236.	0.07441
618.	5.712	1238.	0.06202
620.	5.59	1240.	0.04743
622.	5.478	1242.	0.03603
624.	5.37	1244.	0.02334
626.	5.274	1246.	0.01015
628.	5.261		

SOLUTION

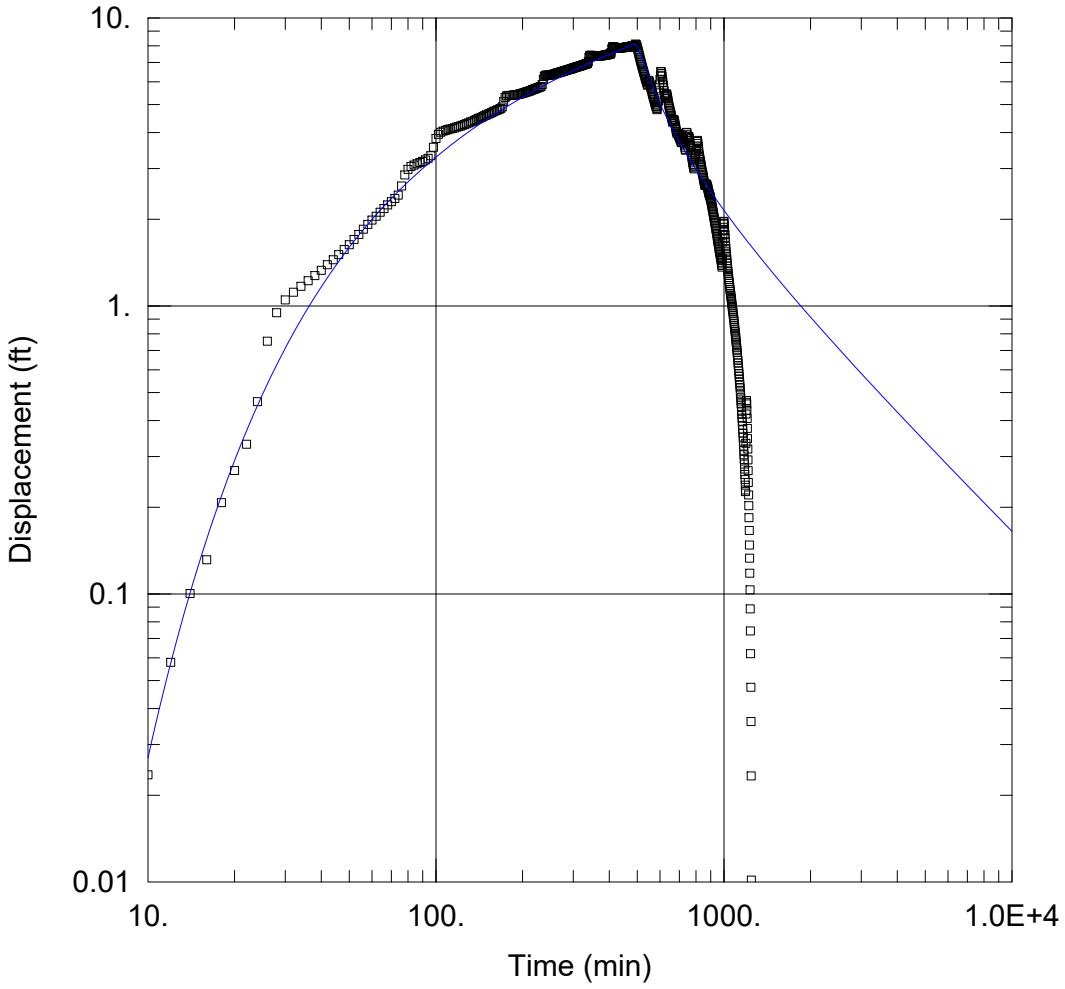
Pumping Test
Aquifer Model: Confined
Solution Method: Papadopulos-Cooper

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	48.	ft^2/day
S	1.8E-5	
r(w)	0.25	ft
r(c)	0.25	ft

K = T/b = 0.1778 ft/day (6.272E-5 cm/sec)
Ss = S/b = 6.667E-8 1/ft



DISPLACEMENT-TIME

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

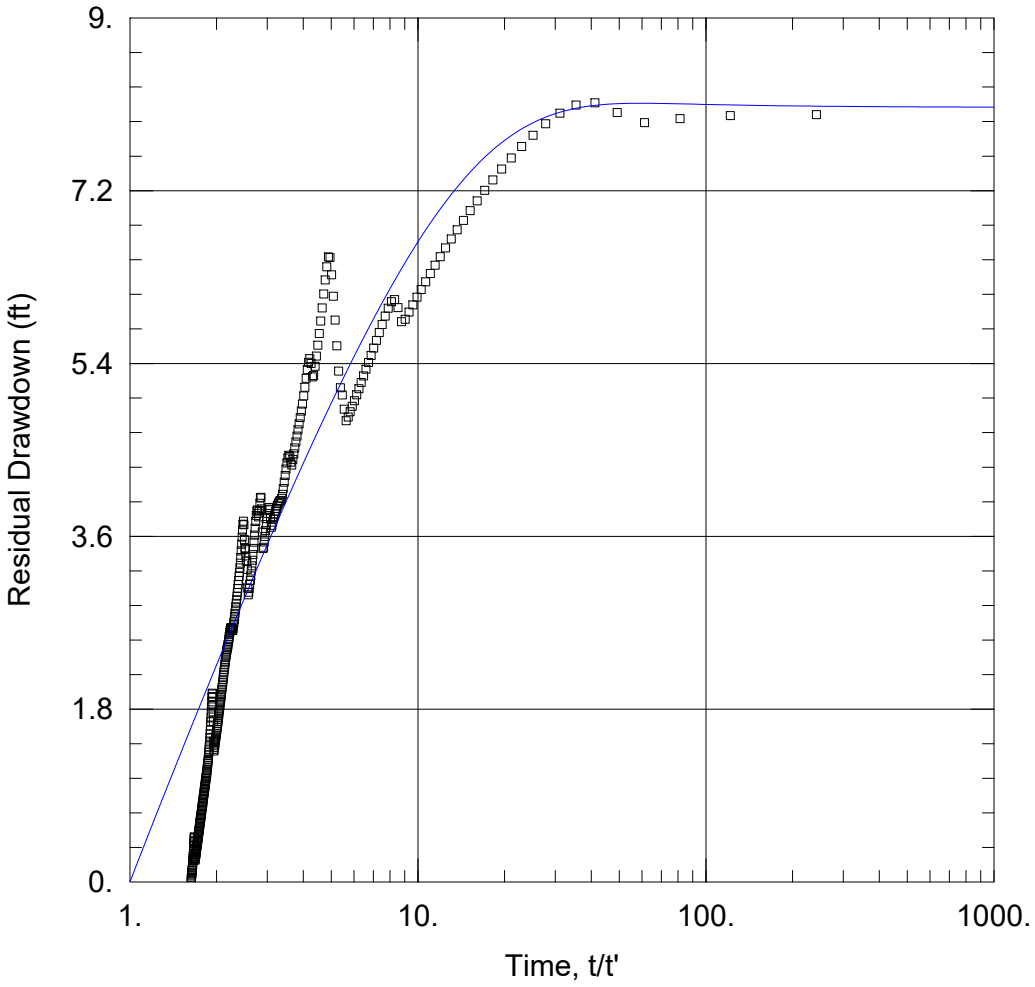
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



RESIDUAL-DRAWDOWN

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

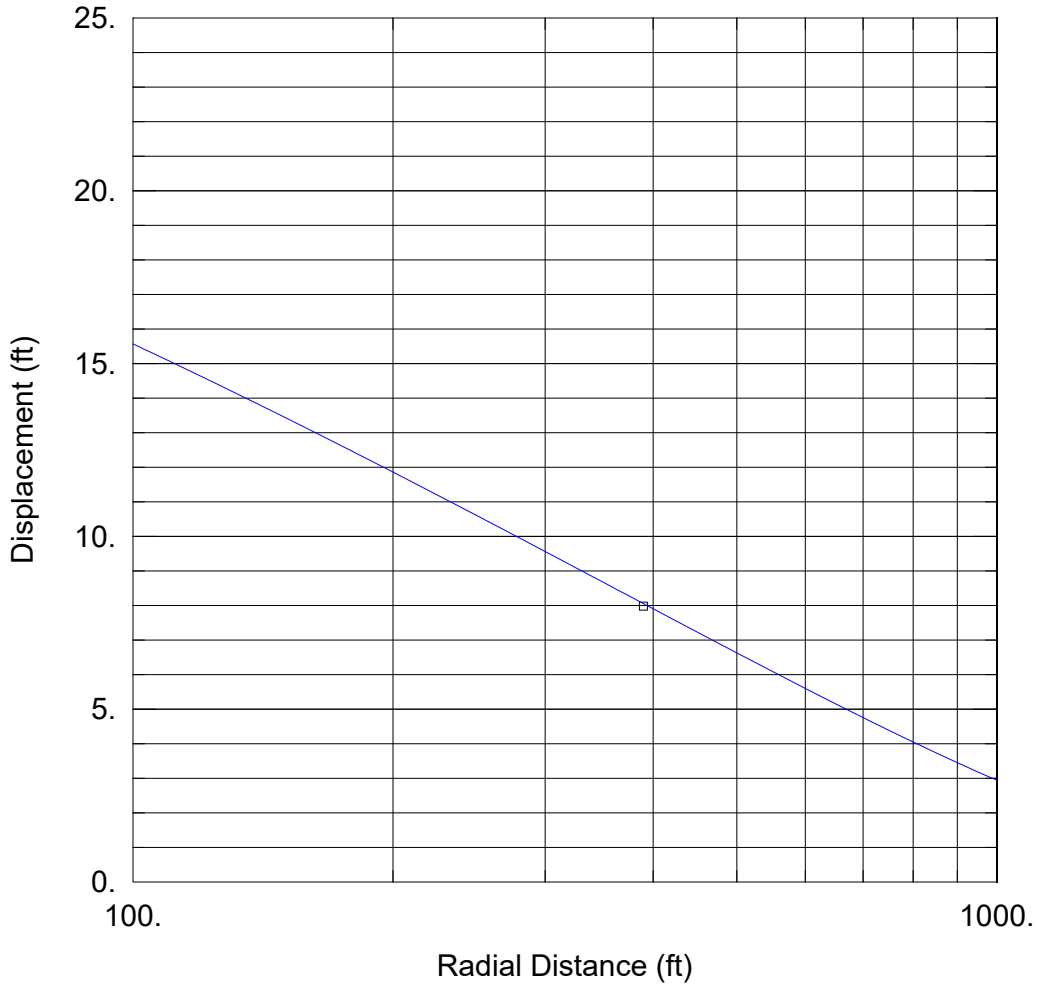
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



DISTANCE-DRAWDOWN

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

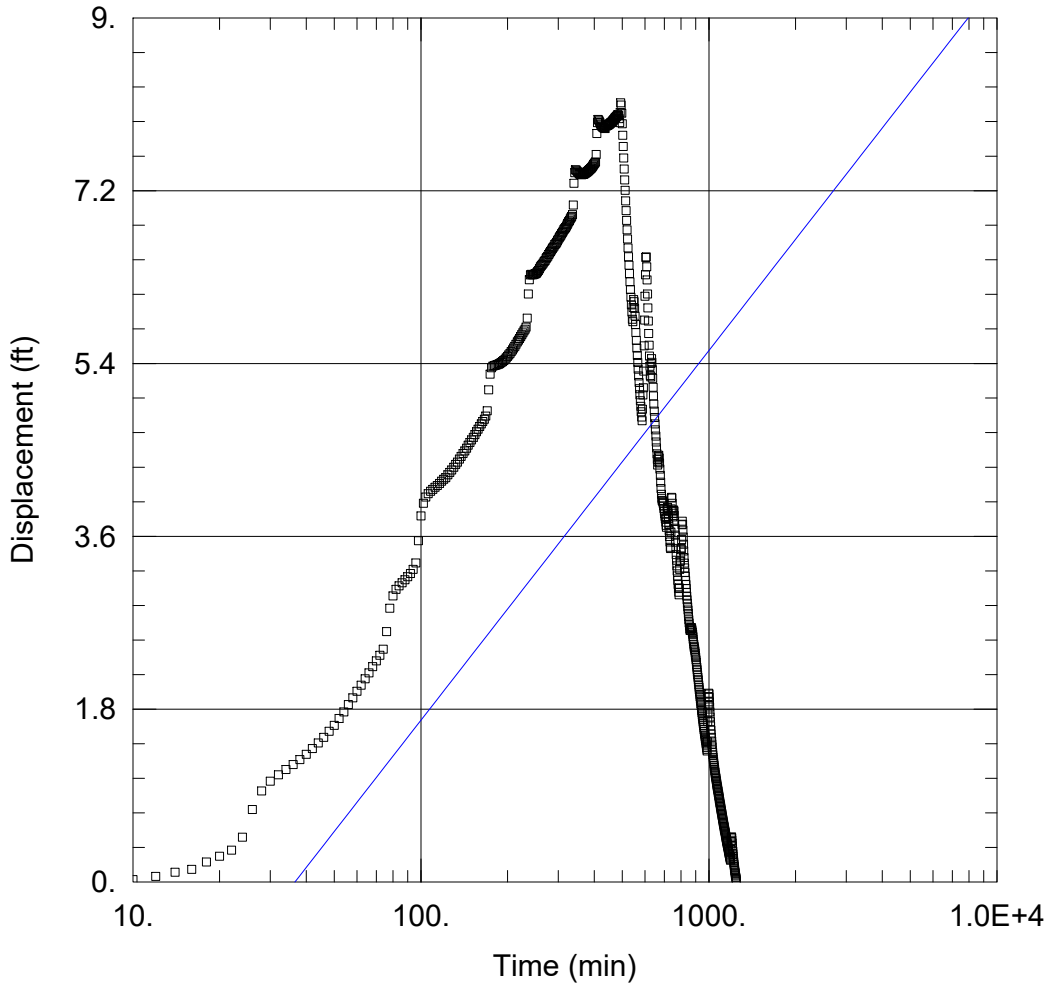
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



RADIAL LOG-LINEAR

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

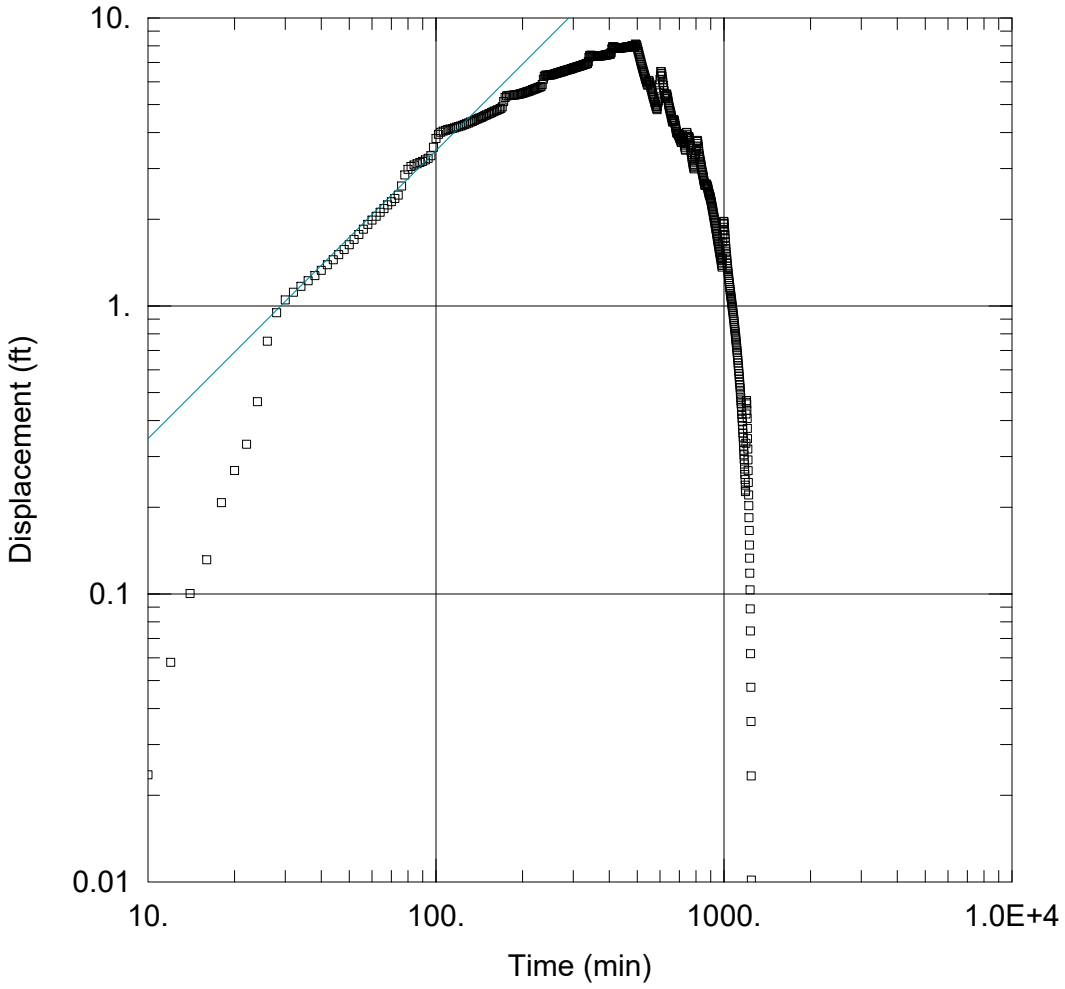
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



RADIAL LOG-LOG

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

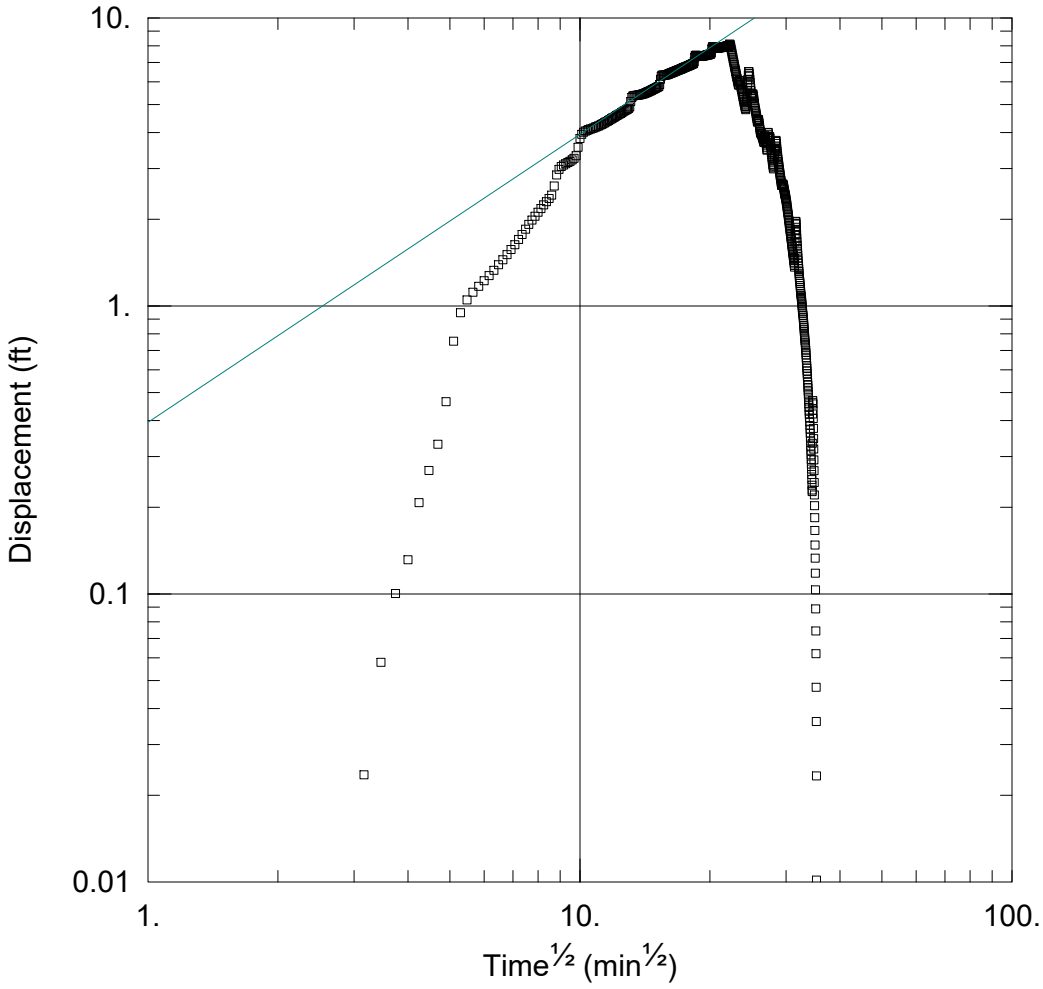
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



LINEAR FLOW

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

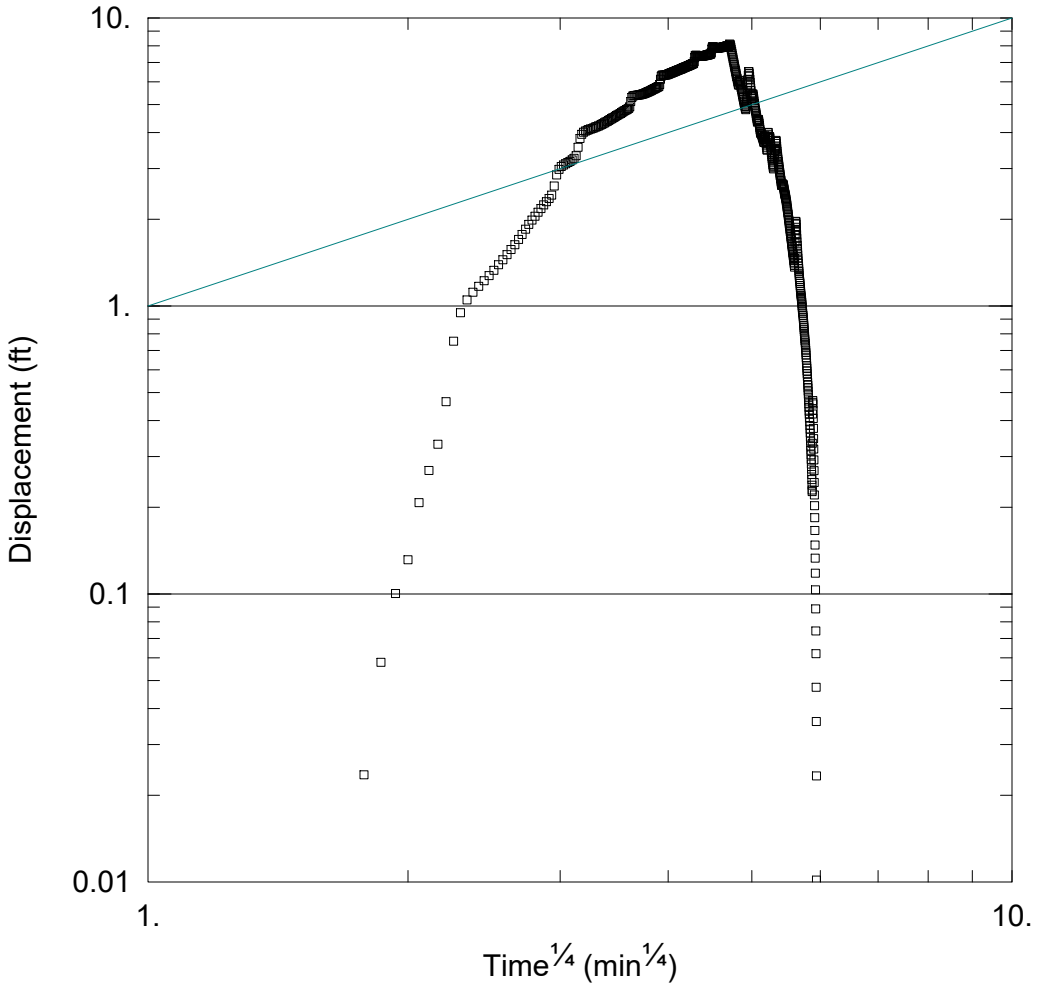
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



BILINEAR FLOW

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

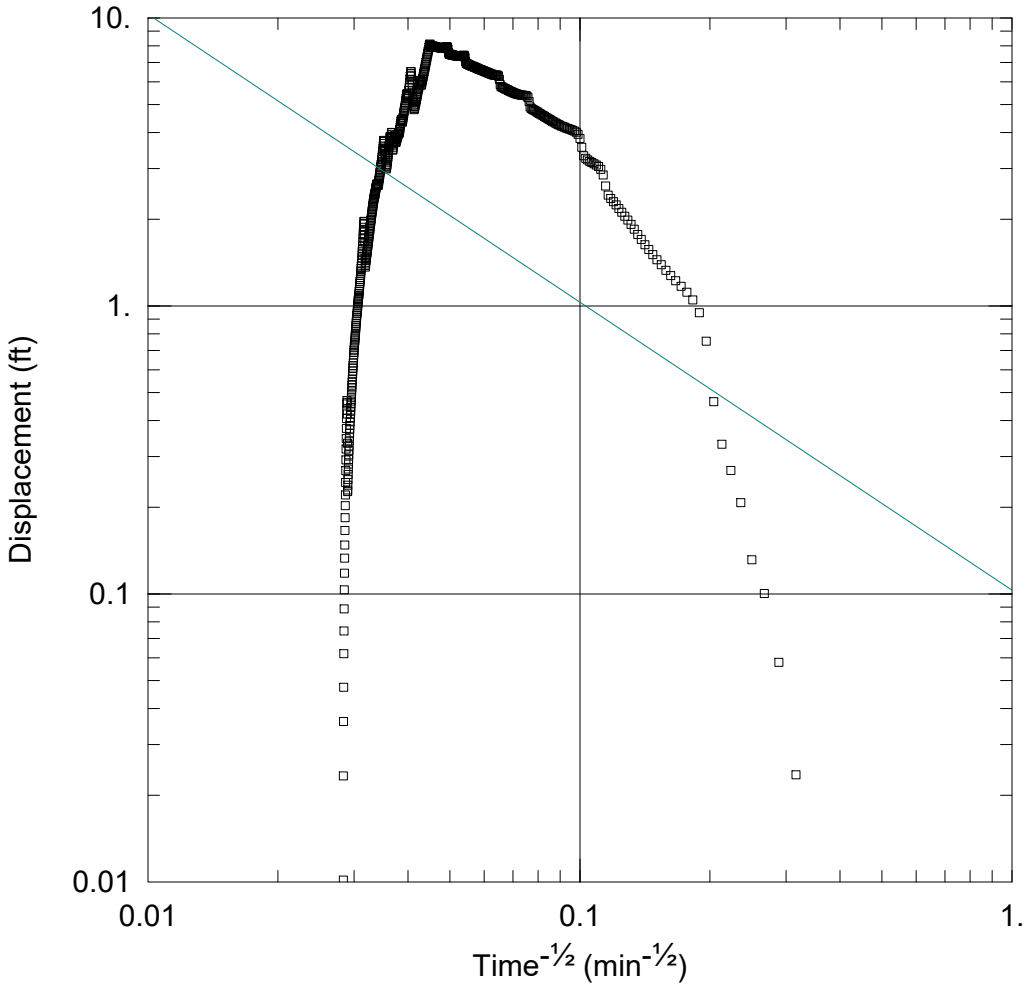
Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft



SPHERICAL FLOW

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ
Test Well: New Well
Test Date: 8/22/2023

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

Solution Method: Papadopulos-Cooper

T = 48. ft^2/day

S = 1.8E-5

r(w) = 0.25 ft

r(c) = 0.25 ft

ATTACHMENT 2

Typical Pumping Scenario Forward Modeling Documentation

Data Set: Z:\Jobs\GMNJ - Princeton Geoscience\3. Field Data (Well Logs, Survey Data, Purge Data, etc)\AQT\AQT

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ

AQUIFER DATA

Saturated Thickness: 270. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 2

Pumping Well No. 1: New Well

X Location: 379599. ft
Y Location: 557177. ft

Casing Radius: 0.25 ft
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	0.59	1.008E+4	0.

Pumping Well No. 2: Old Well

X Location: 379830. ft
Y Location: 556863. ft

Casing Radius: 0.25 ft
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 15

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	0.73	5760.	0.73
720.	0.	6480.	0.
1440.	0.73	7200.	0.73
2160.	0.	7920.	0.
2880.	0.73	8640.	0.73
3600.	0.	9360.	0.
4320.	0.73	1.008E+4	0.73
5040.	0.		

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: New Well

X Location: 379599. ft
Y Location: 557177. ft

Radial distance from New Well: 0. ft

Radial distance from Old Well: 389.8166236 ft

Fully Penetrating Well

No. of Observations: 0

Observation Well No. 2: Old Well

X Location: 379830. ft
Y Location: 556863. ft

Radial distance from New Well: 389.8166236 ft
Radial distance from Old Well: 0. ft

Fully Penetrating Well

No. of Observations: 0

SOLUTION

Pumping Test
Aquifer Model: Confined
Solution Method: Papadopulos-Cooper

VISUAL ESTIMATION RESULTS

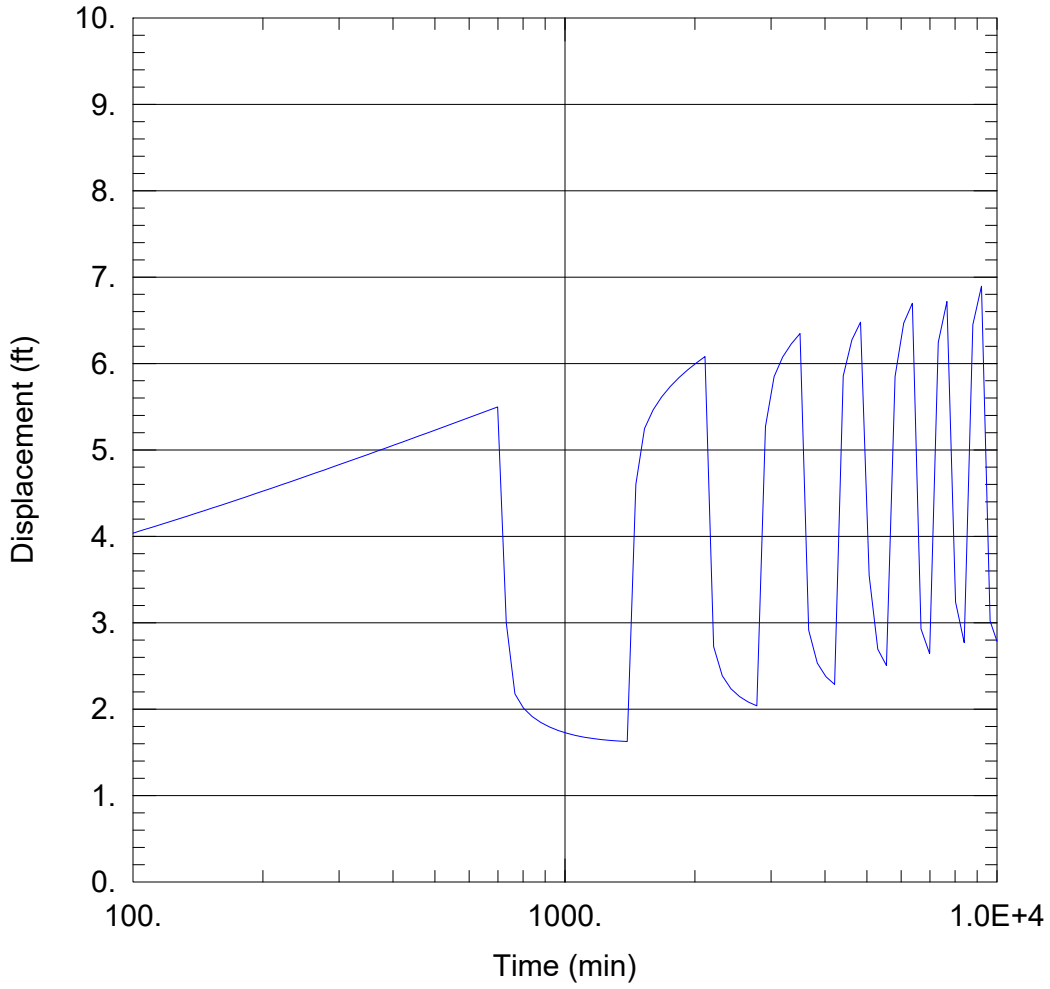
Estimated Parameters

Parameter	Estimate	
T	48.	ft^2/day
S	1.8E-5	
r(w)	0.25	ft
r(c)	0.25	ft

K = T/b = 0.1778 ft/day (6.272E-5 cm/sec)
Ss = S/b = 6.667E-8 1/ft

NOTES

Simulates "typical" daily withdrawal consisting of 850 gallons daily from the "New Well" on a 24/7 basis (e.g. 0.59 gp



FORWARD MODELING - TYPICAL WITHDRAWAL SCENARIO

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177
Old Well	379830	556863

Observation Wells

Well Name	X (ft)	Y (ft)
Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

Solution Method: Papadopulos-Cooper

T = 48. ft^2/day
r(w) = 0.25 ft

S = 1.8E-5
r(c) = 0.25 ft

ATTACHMENT 3

Maximum Pumping Scenario Forward Modeling Documentation

Data Set: Z:\Jobs\GMNJ - Princeton Geoscience\3. Field Data (Well Logs, Survey Data, Purge Data, etc)\AQT\AQT

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ

AQUIFER DATA

Saturated Thickness: 270. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 2

Pumping Well No. 1: New Well

X Location: 379599. ft
Y Location: 557177. ft

Casing Radius: 0.25 ft
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	0.76	1.008E+4	0.

Pumping Well No. 2: Old Well

X Location: 379830. ft
Y Location: 556863. ft

Casing Radius: 0.25 ft
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 15

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	1.25	5760.	1.25
720.	0.	6480.	0.
1440.	1.25	7200.	1.25
2160.	0.	7920.	0.
2880.	1.25	8640.	1.25
3600.	0.	9360.	0.
4320.	1.25	1.008E+4	1.25
5040.	0.		

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: New Well

X Location: 379599. ft
Y Location: 557177. ft

Radial distance from New Well: 0. ft

Radial distance from Old Well: 389.8166236 ft

Fully Penetrating Well

No. of Observations: 0

Observation Well No. 2: Old Well

X Location: 379830. ft
Y Location: 556863. ft

Radial distance from New Well: 389.8166236 ft
Radial distance from Old Well: 0. ft

Fully Penetrating Well

No. of Observations: 0

SOLUTION

Pumping Test
Aquifer Model: Confined
Solution Method: Papadopulos-Cooper

VISUAL ESTIMATION RESULTS

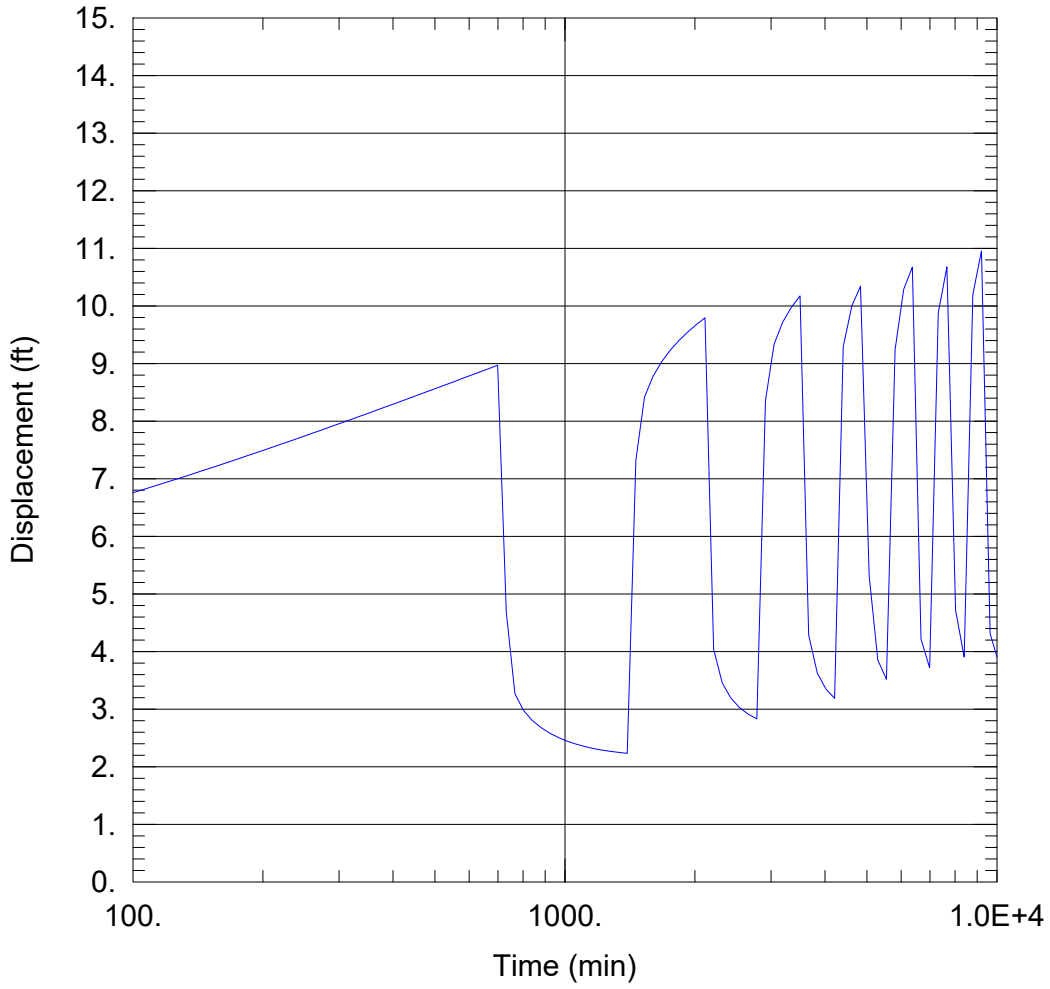
Estimated Parameters

Parameter	Estimate	
T	48.	ft^2/day
S	1.8E-5	
r(w)	0.25	ft
r(c)	0.25	ft

K = T/b = 0.1778 ft/day (6.272E-5 cm/sec)
Ss = S/b = 6.667E-8 1/ft

NOTES

Simulates "maximum" daily withdrawal consisting of 1100 gallons daily from the "New Well" on a 24/7 basis (e.g. 0.7



FORWARD MODELING - MAXIMUM WITHDRAWAL SCENARIO

PROJECT INFORMATION

Company: Appalachia Consulting
Client: Princeton Geoscience Inc.
Project: GMNJ-West Amwell
Location: West Amwell, NJ

AQUIFER DATA

Saturated Thickness: 270. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Well	379599	557177
Old Well	379830	556863

Observation Wells

Well Name	X (ft)	Y (ft)
Old Well	379830	556863

SOLUTION

Aquifer Model: Confined

Solution Method: Papadopulos-Cooper

T = 48. ft^2/day
r(w) = 0.25 ft

S = 1.8E-5
r(c) = 0.25 ft