Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

September 7, 2023

Salem Country Club
133 Forest St
Attn: William Shaw
Peabody, MA 01960

Town: Peabody
WMA Permit #: Permit 9P2-3-18-229.03
Program: Water Management Act
Action: Final Permit

Dear Mr. Shaw:

Please find the following attached:

- Findings of Fact in Support of the issuance of Permit #9P2-3-18-229.03; and
- Water Management Act Permit #9P2-3-18-229.03 for Salem Country Club.

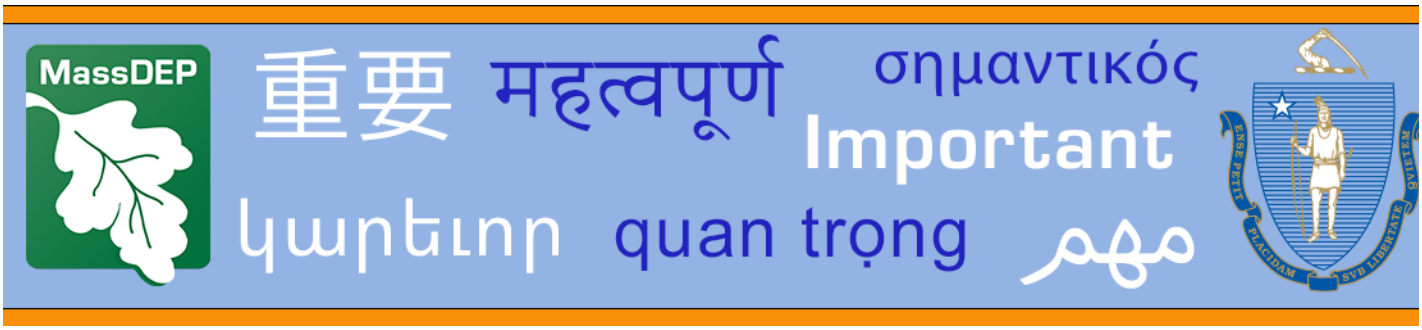
If you have any questions concerning this permit, please contact Julie Butler at Julie.Butler@mass.gov.

Sincerely,

Duane LeVangie
Water Management Program
Bureau of Water Resource

ecc: Mike Kapareiko, Weston & Sampson
Julia Blatt and Sarah Bower, Mass Rivers Alliance
Jill Fama, Arboretum Condominiums Property Manager
Travis and Susan Smith of 6 Country Club Rd, Peabody
George Simmons of Country Club Rd, Peabody

mass.gov.sharepoint.com\:W:\DWPArchive\NERO\Peabody-Salem CC-9P231822903-WMA Final Permit-2023-9-7



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

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繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

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如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmantal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគប្បីតួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu immediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telifoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다.
본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود.
اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice *(Direktor für Umweltgerechtigkeit in Massachusetts)* unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
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Findings of Fact in Support of
Water Management Permit #9P2-3-18-229.03
Salem Country Club

The Department of Environmental Protection ("MassDEP" or "the Department") has completed its review of the Salem Country Club ("the Club") Water Management Act (WMA) permit application. This review was conducted in regard to the permit for the Club to withdraw water from the North Coastal Basin. The Department hereby issues Water Management Permit #9P2-3-18-229.03 (the "Permit") in accordance with the Water Management Act (M.G.L. c. 21G) and the regulations promulgated thereunder at 310 CMR 36.00. The Department makes the following Findings of Fact in support of the attached Permit and includes herewith its reasons for issuing the Permit and for the conditions of approval imposed, as required by M.G.L. c. 21G, § 11, and 310 CMR 36.00. The Permit is being issued since such action is necessary for the promotion of the purposes of M.G.L. c. 21G. The Department may modify, suspend or terminate the Permit, after notice and hearing, for violations of its conditions, of M.G.L. c. 21G, or of regulations adopted or orders issued by the Department, and when deemed necessary for the promotion of the purposes of the Water Management Act.

Withdrawal Description and History

Salem Country Club operates an 18-hole golf course on an approximately 406-acre property in Peabody, Massachusetts. In December 1988, the Club was issued WMA Registration #3-18-229.01 to withdraw 0.1 million gallons per day (MGD) of water from the North Coastal Basin to irrigate the course over a 150-day season. The Club's current irrigation sources consist of surface water withdrawn from its Irrigation Pond (WMA Source ID WM3873-01S) and a lined, manmade holding pond, and groundwater withdrawn from its Tubular Wellfield (WMA Source ID WM3873-01G). Historically, pumped groundwater from the Tubular Wellfield has been used to maintain the pond stage in both the Irrigation Pond and holding pond. The discharge piping from the Tubular Wellfield is equipped with valving to allow for pumped groundwater to be discharged into either pond. Irrigation water for the golf course is withdrawn directly from the Irrigation Pond by the irrigation pumping system. Stored groundwater from the holding pond was historically used to provide supplemental water to the Irrigation Pond during summer months using gravity transfer piping.

In recent years, the groundwater withdrawn from the Tubular Wellfield has reportedly contained elevated salt concentrations, resulting in pumping system corrosion and damaged turfgrass. Also, the liner on the holding pond is past its life expectancy; it has developed a large leak and

the Club plans to discontinue its use. In 2021, the Club conducted an exploratory drilling program to evaluate the feasibility of withdrawing groundwater from the bedrock aquifer. The drilling program resulted in the installation of bedrock well EWP-2, which produced an initial air-lift yield of approximately 200 gallons per minute (gpm). The Club's WMA permit application proposed to operate EWP-2 as a supplemental irrigation source. No additional withdrawal volume was requested.

Shortly after submitting its WMA permit application in April of 2022, the Club published a public notice of the application. On May 25, 2022, MassDEP published a similar public notice in the Environmental Monitor and also distributed the notice to WMA registrants and permittees in the North Coastal Basin. A 30-day public comment period followed the publication of each notice. MassDEP received three comment letters from the property manager and residents of the Arboretum Condominiums, a 190-unit townhouse community that abuts the Club. The Arboretum property has a bedrock irrigation well. The comments expressed concern over potential impacts that the EWP-2 withdrawals might have on their ability to use their irrigation well.

On July 27, 2022, the Department sent the Club an Order to Complete that outlined additional information necessary for the Department to complete its review of the permit application. The Club responded to the Order to Complete on October 14, 2022.

The Club filed an Environmental Notification Form (ENF) with MEPA on September 12, 2022, and received an ENF Certificate from the Secretary of the Executive Office of Energy and Environmental Affairs on October 11, 2022, which required a Draft Environmental Investigation Report (DEIR). No comments were received during the ENF public comment period aside from the Department's summary of the Club's WMA permit application. The DEIR was filed on December 14, 2022 and received a Final EIR Certificate from the Secretary of the Executive Office of Energy and Environmental Affairs on March 17, 2023 (note that the Secretary determined the Draft EIR could serve as the Final EIR because it sufficiently addressed MEPA requirements). No comments were received during the DEIR public comment period aside from the Department's summary of the Club's WMA permit application status.

The Water Management Act (M.G.L. c. 21G)

The WMA requires the Department to issue permits that balance a variety of factors including without limitation:

- Impact of the withdrawal on other water sources;
- Water available within the safe yield of the water source;
- Reasonable protection of existing water uses, land values, investments and enterprises;
- Proposed use of the water and other existing or projected uses of water from the water source;
- Municipal and Massachusetts Water Resources Commission (WRC) water resource management plans;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

Water Management Regulation Revisions

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf) was released.

On November 7, 2014, the Department adopted revised Water Management Regulations at 310 CMR 36.00 that incorporate elements of the SWMI framework and the Water Conservation Standards adopted by the Massachusetts WRC. The regulations reflect a carefully developed balance to protect the health of Massachusetts' water bodies while meeting the needs of businesses and communities for water.

Without limitation, the Department has incorporated the following into Water Management permitting:

- Safe yield determinations for the major river basins based on a new methodology developed through SWMI (see description that follows);
- Environmental protections developed through SWMI, including without limitation;
    - protection for coldwater fish resources;
    - minimization of withdrawal impacts in areas stressed by groundwater use;
    - mitigation of the impacts of increasing withdrawals; and
- The special permit conditions in each Water Management Act permit.

Safe Yield in the North Coastal Basin

This permit is being issued under the Safe Yield methodology adopted by the Department on November 7, 2014, and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the Safe Yield calculation for the North Coastal Basin is 25.5 MGD, and total registered and permitted withdrawals are 21.93 MGD. As noted above this permit does not allocate any additional volumes above those already registered to the Club. The maximum withdrawals that are authorized in this permit, and all other permits currently under review by the Department within the North Coastal Basin, will be within the Safe Yield and conditioned as outlined in the regulations. Withdrawal authorizations are further limited by other factors, such as the impact to local resources, water quality constraints, pumping rate limits placed on individual sources, and the regulatory requirement that permit holders demonstrate a need for the water, which for public water systems is done through Water Needs Forecasts prepared by the Department of Conservation and Recreation.

Findings of Fact for Special Permit Conditions

The following Findings of Fact for the special conditions included in the Permit generally describe the rationale and background for each special condition in the Permit. This Findings of Fact also explain any changes to special conditions from prior permits, when applicable. This summary of permit special conditions is not intended to, and should not be construed as,

modifying any of the permit special conditions. In the event of any ambiguity between this summary and the actual permit conditions, the permit language shall control.

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume, authorizes use of groundwater source EWP-2 but does not authorize any increase in volume above the 14.9 million gallons per year (MGY), or an average of 0.10 MGD over a 150-day season, plus the permitting threshold volume of 0.1 MGD over a 150-day season, which was previously authorized to the Club in WMA Registration #3-18-229.01. With the exception of one year (2015), the Club has reported withdrawals in compliance with the authorized annual average withdrawal volume throughout its WMA registration record.

The Club's WMA permit application described the planned operation of its three withdrawal sources (EWP-2, Tubular Wellfield, and Irrigation Pond) as follows: all withdrawals from both the Tubular Wellfield and EWP-2 will discharge into the Irrigation Pond, and the Irrigation Pond withdrawals will be applied to the golf course.

The 10-year withdrawal history provided in Form WMA-D1 of the permit application indicated that the groundwater withdrawal is greater than the pond withdrawal in some years, and in other years the pond withdrawal is greater. Accordingly, the Permit defines the Club's total annual withdrawal as either the Irrigation Pond withdrawal or the sum of the groundwater withdrawals (Tubular Wellfield plus EWP-2), whichever is larger each year. The larger of those two volumes should be reported in Section C of the WMA Annual Report Form.

The permit application specified a 240-day irrigation season, whereas the Club's WMA registration indicates a 150-day irrigation season. Although the seasonal period specified in the Permit may differ from that of the registration to more accurately reflect the period of operation, the Club's total annual withdrawal volume cannot exceed the volume authorized in the registration and the permitting threshold volume. The Club's WMA registration authorizes a total annual volume of 14.9 MGY, plus the threshold volume of 0.1 MGD during the seasonal period specified in the registration (150 days) per 310 CMR 36.16(1)(b), for a total volume of 29.9 MGY.

Special Condition 2, Maximum Authorized Daily Withdrawal Volume, reflects the authorized volume of withdrawal expressed as a daily rate for the source included in the Permit. The Permit authorizes a maximum daily withdrawal volume of 0.28 MGD from EWP-2. This was the final rate of the 10-day pumping test that was conducted for the WMA permit application.

In its April 2022 OTC, the Department inquired about future use of the holding pond. Given that the pond now leaks, it would need to be included in the Permit as a permitted source if the Club intended to continue its use. In the Club's OTC response, the Club reported that none of the groundwater withdrawn from the Tubular Wellfield or EWP-2 would be discharged to the holding pond.

Special Condition 3, Seasonal Demand Management Plan for WMA Permitted Golf Courses (SDMP), is intended to address the necessary minimums of acceptable demand management required as dry conditions begin to impact our environment from May through September. Of particular importance in developing the SDMP and in evaluating its effect on the golf course's irrigation, is the recognition of nonessential outside water uses. MassDEP considers the irrigation of tees and greens as essential uses, but fairways and roughs less so.

The SDMP outlines the Best Management Practices (BMPs) that the Club shall follow throughout its operating season to conserve water to the extent feasible (Table 4). In addition, the SDMP reduces water use between May 1st and September 30th when the Secretary of the Executive Office of Energy and Environmental Affairs declares a Drought Level 1 ("Mild") or higher (Level 2-Significant, Level 3-Critical, or Level 4-Emergency) for the region in which the golf course is located. The Club shall be responsible for tracking Massachusetts' Drought status and recording when drought-triggered restrictions are implemented.

The SDMP also requires water use reductions when streamflow falls below a designated low-flow value at an assigned, real-time U.S. Geologic Survey (USGS) stream gage from May 1st through September 30th. Reductions shall commence when the streamflow falls below the low-flow value for three consecutive days. The streamflow-triggered response actions shall be consistent with the drought-triggered response actions at a Drought Level 1 (Mild). Once implemented, the restrictions shall remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven consecutive days. The low-flow statistic being applied, referred to as the 7-day low flow, is the median value of the annual 7-day low flows for the period of record for the assigned gage. The Club has been assigned USGS stream gage: # 01102345, Saugus River at Ironworks at Saugus, MA. The 7-day low flow at this site is 1.4 cubic feet per second (cfs). The Club shall be responsible for tracking streamflow and recording when streamflow-triggered reductions are implemented. Should the reliability of flow measurement at this gage be so impaired as to question its accuracy, the Club may request MassDEP's review and approval to transfer to another gage to trigger restrictions. MassDEP reserves the right to require use of a different gage.

The SDMP provides two options for water use reduction in table format. The Acres Table requires the identification of the number of acres of irrigated turf and the percent reductions in acreage corresponding to worsening drought. The Time Table requires the identification of irrigation reductions based on changes to the timing of irrigation cycles.

The Club's October 14, 2022 OTC response specified the Time Table reduction approach. This approach is incorporated into the Permit and is shown in Table 5. Table 6 provides instructions for tracking drought declarations and streamflow.

Within 14 days of implementing water use reductions for the first time in a calendar year, the Club shall notify the Department by submitting the MassDEP Notification of Water Use Reductions Form for Golf Courses (https://www.mass.gov/files/documents/2018/10/25/restrict-golfcourse.pdf).

Mitigation of Impacts for Withdrawals that Exceed Baseline, requires mitigation, where feasible, of withdrawals over a baseline volume. Baseline withdrawal means the volume of water withdrawn during calendar year 2005 plus 5%, or the average annual volume withdrawn from 2003 through 2005 plus 5%, whichever is greater, provided that:

(a) baseline cannot be less than a permittee's registered volume;
(b) baseline cannot be greater than the permittee's authorized volume for 2005; and
(c) if, during the period from 2003 to 2005, the permittee's withdrawals from the water source were interrupted due to contamination of the source or construction of a treatment plant, the Department will use best available data to establish a baseline volume from the water source.

The baseline withdrawal volume for the Club is its registered volume. Because the Permit does not authorize any additional volume above this baseline volume, mitigation is not a requirement of the Permit. If the baseline volume is exceeded in the future, the Club will need to mitigate the additional volume and may need to apply for a new permit for the increased withdrawal.

Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins, requires permittees with permitted groundwater sources in subbasins[1] with net groundwater depletion (NGD) of 25% or more in August to minimize their withdrawal impacts on those subbasins to the greatest extent feasible. The Club's two groundwater sources are located in Subbasin 21023, which has an August NGD of 7.1%; therefore, minimization is not a requirement of the Permit.

Coldwater Fish Resource Protection was incorporated into the Water Management Regulations in November 2014. Coldwater Fish Resource Protection is not a condition of this permit because the Club's withdrawals do not impact any waters that MA Division of Fisheries and Wildlife has identified as supporting coldwater fish at this time.

Response to Comments on the WMA Permit Application

The Department received three letters during the WMA Permit Application public comment period. All three letters were from members of the Arboretum Condominium Association (Arboretum). Arboretum is adjacent to the Club property and has a bedrock irrigation well approximately ½ mile east of EWP-2. The comment letters expressed concern that EWP-2's withdrawals could potentially impact the use of Arboretum's irrigation well. Based on the drawdown observed in bedrock monitoring wells during the Club's December 2021 pumping test, and a lack of certainty of the fracture connectivity between the two wells, the Department determined that an assessment of potential impacts to the Arboretum's private well was warranted.

The Department worked with the Club and Arboretum to plan a 5-day operational test of EWP-2 that included monitoring the water level in the Arboretum well. Attachment A outlines the test and reporting requirements. In accordance with Attachment A, the Club performed antecedent monitoring beginning March 13th and conducted the test March 27th through April 1st of 2023. The Club submitted a summary of the test and test results to Arboretum on May 18, 2023 (Attachment B) and also provided raw water-level and pumping rate data to the Department. The results indicated no discernable pumping-induced drawdown in the Arboretum well during the 5-day test. Based on these results, the Department determined that no further monitoring of the Arboretum well is warranted.

[1] Subbasins used for WMA permitting are the 1,395 subbasins delineated by the U.S. Geological Survey (USGS) in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins* (Weiskel *et al.*, 2010, USGS SIR 2009-5272). The Water Management Regulations, 310 CMR 36.03, define August net groundwater depletion (NGD) to mean the unimpeded median flow for August minus 2000-2004 groundwater withdrawals plus 2000-2004 groundwater returns described by the USGS in Weiskel *et al*., 2010. A subbasin is groundwater depleted if it has an August NGD greater than 25%.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

WATER WITHDRAWAL PERMIT
M.G.L. c. 21G

This issuance of Permit #9P2-3-18-229.03 is approved pursuant to the Massachusetts Water Management Act (WMA) for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property.

PERMIT NUMBER: 9P2-3-18-229.03 **RIVER BASIN:** North Coastal

PERMITTEE: Salem Country Club
133 Forest Street
Peabody, MA 01960

ISSUANCE DATE: September 7, 2023

EXPIRATION DATE: December 6, 2034

TYPE AND NUMBER OF WITHDRAWAL POINTS:
Groundwater: 1
Surface Water: 0

USE: Golf Course Irrigation

DAYS OF OPERATION: 240

LOCATIONS:

Table 1. Permitted Withdrawal Point Identification

Source Well Name	Source Code	Latitude	Longitude	Location
EWP-2	WM3873-02G	42.53296	-70.96398	Forest St, Peabody

SPECIAL CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This permit authorizes the use of groundwater source EWP-2 but does not authorize any increase in volume above the 14.9 million gallons per year (MGY), or an average of 0.10 million gallons per day (MGD) over a 150-day season, previously authorized to Salem Country Club ("the Club") in Registration #3-18-229.01, as shown in Table 2.

Although the seasonal period specified in the Permit (240 days) differs from that of the registration to more accurately reflect the period of operation, the Club's total annual withdrawal volume shall not exceed the volume authorized in the registration and the permitting threshold volume. The Club's WMA registration authorizes a total annual volume of 14.9 MGY, plus the threshold volume of 0.1 MGD during the seasonal period specified in the registration (150 days) per 310 CMR 36.16(1)(b), for a total volume of 29.9 MGY.

In Section C of the WMA Annual Report Form (ARF), the Club shall report its total annual withdrawal as either the annual withdrawal from its Irrigation Pond or the sum of the annual withdrawals from its two groundwater sources (Tubular Wellfield + EWP-2), whichever is greater.

Table 2. Maximum Authorized Annual Average Withdrawal Volume

Permit Periods	Total Raw Water Withdrawal Volumes			
	Permit Daily Average (MGD)	**Permit** Total Annual (MGY)	**Permit + Registration** Daily Average (MGD)	**Permit + Registration** Total Annual (MGY)
9/7/2023 to 12/6/2029	0	0	0.1*	14.9
12/7/2029 to 12/6/2034	0	0	0.1*	14.9

*Over a 150-day operational season, per WMA Registration #3-18-229.01

2. Maximum Authorized Daily Withdrawal Volume

Daily withdrawals from EWP-2 are not to exceed the approved maximum daily volume listed in Table 3 without specific advance written approval from the Department. The Club shall report its maximum daily withdrawal volume annually in its ARF.

Table 3. Maximum Daily Withdrawal Rate

Well Name	PWS Source ID Code	Maximum Daily Rate (MGD)
EWP-2	WM3873-02G	0.28

3. Seasonal Demand Management Plan (SDMP) for WMA Permitted Golf Courses

The Club shall follow the water conservation best management practices (BMPs) in Table 4 throughout its irrigation season each year. In addition, MNC shall reduce water use from

May 1st through September 30th as outlined in Table 5 and in the instructions for tracking streamflow and drought declarations in Table 6. At a minimum, reductions shall commence when the Secretary of the Office of Energy and Environmental Affairs declares a Drought Level 1 ("Mild") or higher (Level 2-Significant, Level 3-Critical, or Level 4-Emergency) for the Northeast Drought Region, or when streamflow falls below a designated low-flow value at an assigned, real-time U.S. Geologic Survey (USGS) stream gage from May 1st through September 30th. Reductions shall commence when the streamflow falls below the low-flow value for three consecutive days. The streamflow-triggered response actions shall be consistent with the drought-triggered response actions at a Drought Level 1 (Mild). Once implemented, the restrictions shall remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven consecutive days. The low-flow statistic being applied is referred to as the 7-day low flow. The Club has been assigned USGS stream gage: # 01102345, Saugus River at Ironworks at Saugus, MA. The 7-day low flow at this site is 1.4 cubic feet per second (cfs). Should the reliability of flow measurement at this gage be so impaired as to question its accuracy, the Club may request MassDEP's review and approval to transfer to another gage to trigger restrictions. MassDEP reserves the right to require use of a different gage.

The Club shall be responsible for tracking Massachusetts' Drought declaration status and USGS-reported streamflow (Table 6), and recording when drought-triggered or streamflow-triggered irrigation reductions are implemented. Within 14 days of implementing water use reductions for the first time in a calendar year, the Club shall notify the Department by submitting the MassDEP Notification of Water Use Reductions Form for Golf Courses (https://www.mass.gov/files/documents/2018/10/25/restrict-golfcourse.pdf). Nothing in this permit shall prevent the Club from implementing irrigation reductions that are more stringent than those set forth in this permit.

Table 4. Required Water Conservation BMPs

1. Water use is 100% metered.
2. Source meters are calibrated annually.
3. Implementation of an irrigation system inspection and maintenance program that includes leak detection and repair, sprinkler head maintenance and replacement on a weekly basis.
4. Irrigation system is operated in the early morning or evening hours, when evaporation is lowest.
5. Irrigation uniformity is improved through evaluation of design criteria such as nozzle size, spacing, scheduling coefficient and pressure selection.
6. Use of soil sensors and/or soil samples to monitor soil moisture.
7. Use of a weather app or an onsite weather station combined with an automated sprinkler system governed by atmospheric conditions.
8. Use of a computerized irrigation management system equipped with flow management to increase irrigation efficiency.
9. Use of rain shutoff switches on new and existing irrigation systems.
10. Use of low water-use turf grass, where applicable.
11. Raising turf height during dry weather and drought conditions.
12. Regular aeration of turf to increase the percolation of water into the soil.
13. Reduction of irrigation rates in secondary rough areas and, where possible, elimination of irrigation in non-play areas.
14. Use of mulch materials in planting beds to improve water-holding capacity.

15. Use of environmentally safe wetting agents to improve water infiltration and minimize evaporation.
16. Employee training in water conservation and management.
17. Use of low-pressure alarms on water pumps and variable-speed drives.
18. Reuse of wastewater and/or stormwater for irrigation.

Table 5. Irrigations Reductions Required in Salem Country Club's SDMP

Massachusetts Drought Levels	Irrigated Tees & Greens		Irrigated Fairways		Irrigated Roughs		Irrigated Landscape & Ornamentals	
	Percent	Time (min.)	Percent	Time (min.)	Percent	Time (min.)	Percent	Time (min.)
Normal	Full cycle	20	Full cycle	15	Full cycle	15	100%	0
Mild Drought or WMA Permit Trigger is reached	Full cycle	20	80%*	12	50%*	7.5	0%***	0
Significant Drought	Full cycle	20	60%*	9	0%	0		0
Critical Drought	Full cycle	20	40%*	6	0%	0		0
Emergency	TBD**	TBD**	0%	0	0%	0	0%	0

*Irrigation shall not occur between the hours of 9 am and 5pm except that hand watering of hot spots may occur at any time.
**TBD: Mitigation Actions to be determined by Governor's Proclamation
*** Courses whose core business includes a special event venue may continue to irrigate gardens, flowers, and ornamental plants by means of hand-held hose or drip irrigation during a Mild, Significant, or Critical Drought.

Table 6. Instructions for Accessing U.S. Geologic Survey Streamflow and Massachusetts Drought Advisory Website Information

Streamflow information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts streamflow in real time, *i.e.*, the most recent, usually quarter-hourly, reading made at each USGS stream gage.

Irrigation reductions are implemented when the mean daily streamflow falls below the designated trigger. The mean daily flow is not calculated until after midnight each day when the USGS computes the hourly data into a mean daily streamflow. As a result, permittees must use the mean daily streamflow from the preceding day when tracking streamflows.

Mean daily streamflow gage readings are available at the USGS NWIS Web Interface at http://waterdata.usgs.gov/ma/nwis/current/?type=flow.

- Scroll down to # 01102345, Saugus River at Ironworks at Saugus, MA.
- Click on the gage number.
- Under "SAUGUS RIVER AT IRONWORKS AT SAUGUS, MA" click "Legacy real-time page."

- Scroll down to "Provisional Data Subject to Revision – Available data for this site" and click on the drop-down menu.
- Click on "Time-series: Daily data" and hit GO.
- Scroll down to the "Available Parameters" box. Within the box, be sure "Discharge (mean)" is checked, then, under "Output Format" click "Table" and hit GO.
- Scroll down to the "Daily Mean Discharge, cubic feet per second" table and find the current date on the table.
- Compare the cubic feet per second (cfs) measurement shown on the table to the the 7-day low flow trigger for water-use reductions (**1.4 cfs**).

Drought information is available at the Massachusetts Department of Conservation and Recreation (DCR) Drought Status Website at https://www.mass.gov/guides/drought-management-in-massachusetts#-current-status-

- The color-coded map displays the seven drought regions in Massachusetts. Irrigation reductions are implemented when a Drought Level 1, 2, 3 or 4 is announced in your region through the DCR website.

GENERAL PERMIT CONDITIONS (applicable to all Permittees)

No withdrawal in excess of 100,000 gallons per day over the registered volume (if any) shall be made following the expiration of this permit, unless before that date the Department has received a renewal permit application pursuant to and in compliance with 310 CMR 36.00.

1. **Duty to Comply** The Permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.
2. **Operation and Maintenance** The Permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.
3. **Entry and Inspections** The Permittee or the Permittee's agent shall allow personnel or authorized agents or employees of MassDEP to enter and examine any property, inspect and monitor the withdrawal, and inspect and copy any relevant records, for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.
4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by MassDEP pursuant to M.G.L. c. 21G, §§ 15-17, 310 CMR 36.00, M.G.L. c. 111, § 160, or any other enabling authority.
5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until MassDEP approves such transfer in writing, pursuant to a transfer application on forms provided by MassDEP requesting such approval and received by MassDEP at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.
6. **Duty to Report** The Permittee shall submit annually, on a form provided by MassDEP, a certified statement of the withdrawal. Such report is to be received by MassDEP by the date

specified by MassDEP. Such report must be mailed or hand delivered to the address specified on the report form.

7. **Duty to Maintain Records** The Permittee shall be responsible for maintaining withdrawal records as specified by this permit.
8. **Metering** Withdrawal points shall be metered. Meters shall be calibrated annually. Meter shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.
9. **Amendment, Suspension or Termination** The Department may amend, suspend or terminate this permit in accordance with M.G.L. c. 21G or 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

Any person aggrieved by this decision may request an adjudicatory hearing on this Permit by timely filing a Notice of Claim for an Adjudicatory Appeal ("Notice of Claim") in accordance with 310 CMR 36.37 and 310 CMR 1.01 within twenty-one (21) days of receipt of this Permit. The Notice of Claim shall state specifically, clearly and concisely the facts that are grounds for the appeal, the relief sought, and any additional information required by applicable law or regulation. A copy of this Permit shall be included with a Notice of Claim. No request for an appeal of this Permit shall be validly filed unless a copy of the request is sent at the same time by certified mail, or delivered by hand, to the local water resources management official in the community in which the withdrawal point is located; and for any person appealing this decision, who is not the permit applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to the Department.

The Notice of Claim and supporting documentation must be sent by certified mail or hand delivered to:

Case Administrator
Office of Appeals and Dispute Resolution
Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

In addition, the Department's fee transmittal form, together with a valid check made payable to the Commonwealth of Massachusetts in the amount of $100 for the appeal filing fee, if required, must be mailed to:

Commonwealth of Massachusetts Lock Box
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The Notice of Claim may be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city, town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, along with the hearing request, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Duane LeVangie

9/7/2023

Duane LeVangie
Water Management Program
Bureau of Water Resources

Date

ATTACHMENT A

EWP-2 MARCH-APRIL 2023 TEST REQUIREMENTS

March 10, 2023

Requirements of the March-April 2023 EWP-2 Operational Test
Salem Country Club, Peabody, MA

Data shall be collected as follows**:**

1. Deploy a pressure transducer in EWP-2 (pumping well), RW-6 (ambient well), and the Arboretum irrigation well.
2. Pre-test monitoring duration at the Arboretum irrigation well: 2 weeks
3. EWP-2 pumping test duration: 5 days
4. Minimum recording frequency of transducers: hourly for all three wells during the active test, and hourly for the Arboretum well for the entire monitoring period
5. Constant rate of test: 194 gpm (0.28 mgd), the final rate of the December 2021 test
6. Minimum pumping rate log frequency: every two hours via a flow meter similar to the one used in the Dec 2021 test, which took automated readings. Please be advised that pumping rate changes may require an extension of the test.
7. Minimum transducer data download frequency:
   a. Pre-test: approx. ½-way (1 week) into the pre-test period, and just prior to pumping
   b. During test: daily
   c. Post-test: retrieve (and download) the transducer at least 2 days after the test
   d. Data should be reviewed after each download for QA/QC purposes
8. If using unvented transducers: deploy a barometric logger to allow for barometric compensation. Downloads should follow the transducer schedule noted above.
9. Minimum manual water-level measurement frequency in the Arboretum well, EWP-2 and RW-6:
   a. Pre-test: at time of transducer deployment and downloads (3 times total)
   b. During test: once/day.
   c. Post-test: at time of transducer retrieval

Please notify DEP if the EWP-2 withdrawals cannot be discharged to the irrigation pond or on the golf course. If needed, please consult the local Conservation Commission to obtain permission to discharge to the same area as in the December 2021 test.

ATTACHMENT B

EWP-2 MARCH-APRIL 2023 TEST SUMMARY

5 Centennial Drive, Peabody, MA 01960 (HQ)
Tel: 978.532.1900

May 18, 2023

Jill Fama, CMCA
Regional Property Manager
Arboretum Condominium Trust
5 Summit Street
Peabody, MA 01960

Re: **Arboretum Condominium**
Irrigation Well Monitoring Program Results
Peabody, MA 01960

Dear Ms. Fama:

Weston & Sampson Engineers, Inc. (Weston & Sampson) conducted a water-level monitoring program to further evaluate the potential for pumping-induced impact in the Arboretum Irrigation Well during operation of the new bedrock irrigation well (EWP-2) located on the Salem Country Club (the Club) property. The new bedrock irrigation well identified as EWP-2 was drilled in November 2020. In December 2021, Weston & Sampson conducted a 10-day pumping test on EWP-2 to support a Water Management Act (WMA) permit application from the Massachusetts Department of Environmental Protection (MassDEP).

During the Massachusetts Environmental Policy Act (MEPA) public notification process, the Arboretum Condominium commented that they had concerns about potential impacts to their irrigation well, which is located approximately 2,500 feet to the east of EWP-2. To support the approval of the WMA permit, MassDEP required the Club to complete an additional pumping test and monitoring program to assess potential pumping-induced impact to the Arboretum Irrigation Well. MassDEP prepared a monitoring plan that specified the timing of the program, duration of antecedent, pumping and post-test monitoring periods, the duration of required operation for EWP-2 and the groundwater monitoring locations. This letter summarizes the monitoring procedures and results for your well.

PROCEDURES

Pumping Test Procedures

Prior to the start of the monitoring program, Epping Well and Pump (Epping) reinstalled the totalizing flow meter in addition to lifting the pump in EWP-2 to allow for water-level access. The Club reinstalled the temporary discharge piping for EWP-2, which was routed approximately 1,000 feet downgradient (west) from EWP-2 and discharged into the Irrigation Pond.

The pumping test was conducted by operating the submersible pump set within EWP-2 for a period of five consecutive days at average pumping rates exceeding the instantaneous pumping rate that the MassDEP WMA permit will be issued for. The submersible well pump was operated by connection to the existing onsite power supply. The pumping rate was recorded every minute throughout the duration of the test using the automated flow meter mounted inline with the EWP-2 discharge pipe and manually recorded twice per day by Weston & Sampson staff. Water levels were measured in EWP-2, RW-6 (Ambient Well) and the Arboretum Well using a depth-calibrated electric tape and pressure transducer/data loggers (PTDL) that were programmed to measure and record water levels at one-minute intervals. During the pumping test period, Weston & Sampson manually measured water levels at each monitoring location twice per day to confirm the measurements recorded by the PTDL's. All

monitoring equipment that was used in the Arboretum well was disinfected with a bleach/water solution prior to installation.

Arboretum and Ambient Well Monitoring Procedures

Between March 13 and April 5, 2023 (23 days), water levels were measured in the Arboretum Well and RW-6 using both manual and automated measurement methods. Manual measurements were made by lowering a depth-calibrated electric tape into the wells until the water surface was encountered. Contact with the water completes a simple electrical circuit, allowing for precise measurement of the depth-to-water (DTW). A PTDL was installed in the Arboretum Well and RW-6 and programmed to automatically measure and record DTW at one-minute intervals throughout the monitoring period. Both the electric tape and PTDL were disinfected prior to installation in the Arboretum well.

MONITORING PROGRAM RESULTS

The manual and PTDL water-level data for the Arboretum and Ambient (RW-6) Wells were used to create the attached hydrographs depicting the DTW measured in the wells in feet below the top of well casing (ft btoc) plotted against the date and time. The hydrograph also shows the EWP-2 pumping test period, pumping rate and the precipitation that occurred during the monitoring period.

Pumping Test Results

The Club's new irrigation well (EWP-2) was operated continuously for 5.01 days or 120.17 hours at an average pumping rate exceeding the permitted withdrawal rate being requested from MassDEP. The pumping water level in EWP-2 stabilized prior to shutdown of the pumping test documenting that the aquifer had achieved a steady-state pumping condition.

Arboretum Monitoring Results

The pre-test (3/13/23 to 3/27/23) static water level measured in the Arboretum well was relatively stable ranging from 21.02 to 22.42 ft btoc. The water level recovered (increased) slightly during the beginning of the antecedent monitoring period in response to more than 2 inches of precipitation between March 13 and 14, 2022. By March 17, 2022, the water level resumed a slight recessional trend that continued throughout the monitoring period. The slight recessional trend continued throughout the pumping test and post-test periods, with a maximum static water level of 22.21 ft btoc measured during the test.

During the monitoring period there were no apparent drawdown cycles (lowering of the water level) attributed to the operation of the pump in the Arboretum well, confirming that the pump was not operated during the monitoring program. No discernable drawdown (pumping-induced impact) associated with the operation of EWP-2 is evident in the hydrograph for the Arboretum Well.

The hydrograph shows that operation of EWP-2 did not impact the water level in Arboretum Well. This conclusion is supported by the consistent slight recessional trend throughout the pre-test, test and early post-test monitoring periods, the absence of additional water-level drawdown during the pumping test period, and the absence of recovery of the static-water level immediately following the test period.

Ambient Well (RW-6) Monitoring Results

The pre-test static water level measured in Ambient Well (RW-6) ranged from 21.80 to 23.06 ft btoc. Consistent with the water-level record for the Arboretum Well, the water level in RW-6 recovered (increased) in response to March 13 and 14 precipitation events. By March 24, the static water level in RW-6 established a stable trend (no apparent slope) prior to the start of the EWP-2 pumping test. Except for vary minor fluctuations associated with precipitation recharge, the water level in RW-6 remained

stable throughout the pumping test and post-test periods, with a maximum static water level of 22.38 ft btoc measured during the test.

No discernable drawdown associated with the operation of EWP-2 is evident in the hydrograph for RW-6, confirming that RW-6 is outside of the area-of-influence for EWP-2 and suitable for use as an Ambient Well. This conclusion is supported by the consistent stable static-water level throughout the pre-test, test and early post-test monitoring periods, the absence of additional water-level drawdown during the pumping test period, and the absence of recovery of the static-water level immediately following the test period.

CONCLUSIONS

The hydrographs show that continuous operation of EWP-2 at an average pumping rate exceeding the requested MassDEP withdrawal rate did not impact the water level in the Arboretum or RW-6. This conclusion is supported by the consistent stable static-water level trends throughout the pre-test, test and post-test monitoring periods, the absence of water-level drawdown during the EWP-2 pumping test period, and the absence of water-level recovery immediately following the test period.

The monitoring results serve as direct evidence that long-term operation of EWP-2 will not impact the operation of Arboretum irrigation well. This conclusion is further supported by the separating distance between EWP-2 and the Arboretum Well and the fact that the Arboretum Well was not previously impacted during 2022 irrigation season when the Club was conditionally approved by MassDEP to operate EWP-2 for irrigation purposes.

Based on these findings, no further monitoring of the Arboretum Well is recommended or warranted.

If you have any questions regarding the monitoring results, please contact Michael Kapareiko directly at 959-777-5821.

Sincerely,
WESTON & SAMPSON ENGINEERS, INC.

Corey Hedges
Hydrogeologist III

Kevin MacKinnon, PG, PHg
Senior Technical Leader, Water Resources

Michael V. Kapareiko, PG, LEP
Team Leader - Hydrogeology

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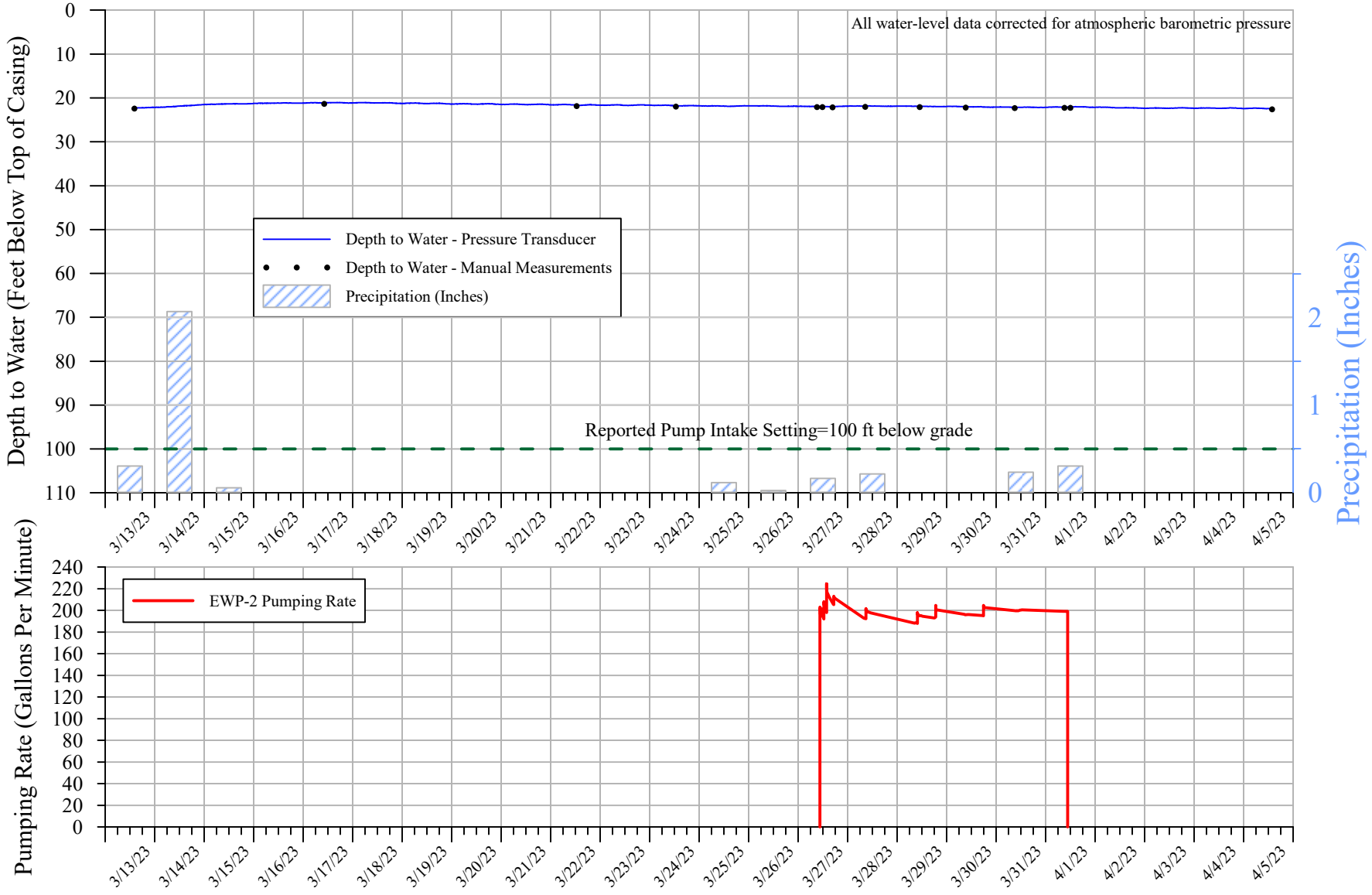
HYDROGRAPHS

SALEM COUNTRY CLUB
PEABODY, MASSACHUSETTS

Arboretum Well

Hydrograph of Water-Level Measurements Made in the Arboretum Well During Pumping Test Program Conducted on Well EWP-2, March 27 through April 1, 2023



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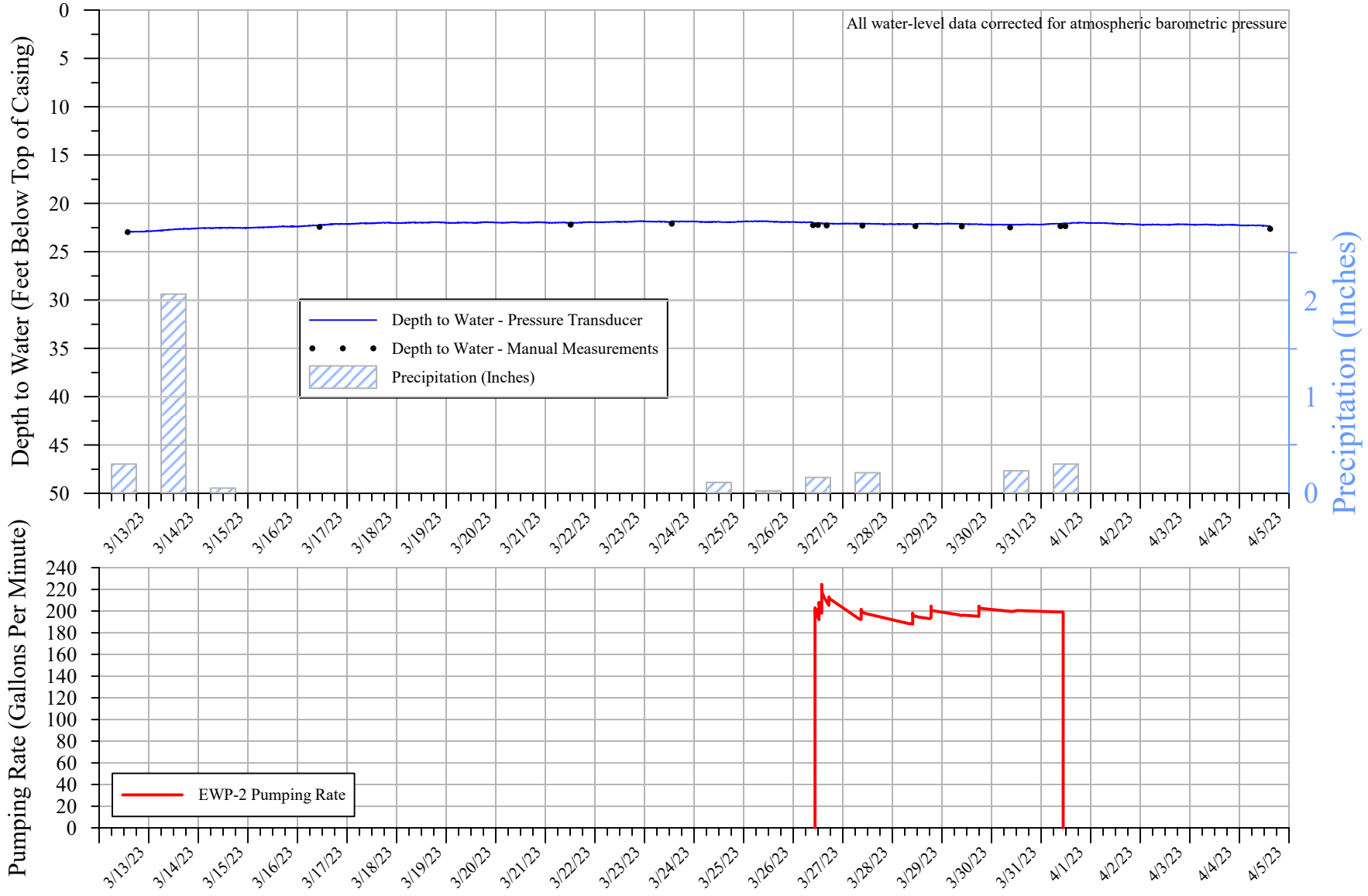
Weston & Sampson

SALEM COUNTRY CLUB
PEABODY, MASSACHUSETTS

RW-6

Hydrograph of Water-Level Measurements Made in Well RW-6 During Pumping Test Program Conducted on Well EWP-2, March 27 through April 1, 2023



Weston & Sampson