Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

February 27, 2018

Sacconnesset Golf Society LLC, dba TGC
Attn: Charles T. Passios, COO
PO Box 2020
Falmouth, MA 02556

Town: Falmouth
WMA Permit #: Permit 9P4-4-22-096.03
Program: Water Management Act
Action: Final Permit Renewal

Dear Mr. Passios:

Please find the following attached:

- Findings of Fact in Support of the renewal of Permit #9P4-4-22-096.03; and
- Final Water Management Act Permit #9P4-4-22-096.03 for Sacconnesset Golf Society LLC, dba TGC.

If you have any questions concerning this letter, please contact Julie Butler at (617) 292-5552 or Julie.Butler@state.ma.us.

Sincerely,

Rebecca Weidman
Division of Watershed Management
Bureau of Water Resources

eCC: Stoyan Muhov, TGC Superintendent
Tom Cambareri, Cape Cod Commission
Kelly Cardoza, Avalon Consulting Group

Y:DWPArchive\SERO\2018\Falmouth-TGC 9P442209603-WMA Final Permit Renewal-2018-02-27

Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751

Communication For Non-English Speaking Parties

310 CMR 1.03(5)(a)

1 English:
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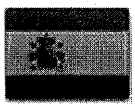

2 Español (Spanish):
Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.

3 Português (Portuguese):
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4(a) 中國（傳統）(Chinese (Traditional):
本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。

4(b) 中国（简体中文）(Chinese (Simplified):
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5 Ayisyen (franse kreyòl) (Haitian) (French Creole):
Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.

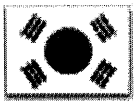
6 Việt (Vietnamese):
Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.

7 ប្រទេសកម្ពុជា (Kmer (Cambodian):
ឯកសារនេះគឺមានសារៈសំខាន់និងត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែ ឯកសារនេះសូមទំនាក់ទំនងឆ្មេតជានាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។

8 Kriolu Kabuverdianu (Cape Verdean):
Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.

9 Русский язык (Russian):
Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.

10 العربية (Arabic):
هذه الوثيقة الهامة وينبغي أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في MassDEP على أرقام الهواتف المدرجة أدناه.



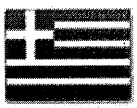
11 한국어 (Korean):
이 문서는 중요하고 즉시 번역해야합니다. 당신이 번역이 문서가 필요하면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.

12 հայերեն (Armenian):
Այս փաստաթուղթը շատ կարեւոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորեւ.

13 فارسی (Farsi (Persian):
این سند مهم است و باید فورا ترجمه شده است.
اگر شما نیاز به این سند ترجمه شده، لطفا با ما تماس تنوع مدیر MassDEP در شماره تلفن های ذکر شده در زیر.

14 Français (French):
Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

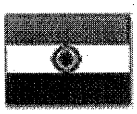
15 Deutsch (German):
Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.



16 Ελληνική (Greek):
Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.

17 Italiano (Italian):
Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.

18 Język Polski (Polish):
Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.



19 हिन्दी (Hindi):
यह दस्तावेज महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Findings of Fact in Support of
Water Management Permit #9P4-4-22-096.03
Town of Falmouth

The Department of Environmental Protection ("MassDEP" or "the Department") has completed its review of the Sacconnesset Golf Society LLC, dba TGC Water Management Act (WMA) permit renewal application. This review was conducted in regard to the permit for the Sacconnesset Golf Society LLC, dba TGC ("TGC") to withdraw water from the Cape Cod Basin. The Department hereby issues the Water Management Permit #9P4-4-22-096.03 (the "Permit") in accordance with the Water Management Act (M.G.L. 21G). 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, s. 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.

The Department adopted revised Water Management Regulations at 310 CMR 36.00 on November 7, 2014, (described in greater detail below). Since that time, the Department has been working closely with each Water Management Act (WMA) permittee to fully consider all aspects of their individual situations and ensure thoughtful and implementable permits.

Withdrawal Description and History

On July 22, 2004, in response to the application for a permit to withdraw water from the Cape Cod Basin for the New Falmouth Golf, LLC, The Golf Club at Cape Cod, the Department approved the application in accordance with M.G.L. 21 G. On October 24, 2016, in response to the application to transfer the Water Management Permit from New Falmouth Golf, LLC to the Sacconnesset Golf Society LLC (dba TGC), the Department approved the transfer.

TGC is authorized to withdraw from the Cape Cod Basin a total of 0.13 million gallons per day (MGD) over a 214-day season (April – October), or 27.60 million gallons per year (MGY). The system operates one groundwater source, known as Irrigation Well 1-12-86, which delivers water to a manmade lined pond on the golf course. Water is removed from this lined pond and distributed across the course via the irrigation system. A second manmade lined pond on the course is fed via rainfall and is not used for irrigation. This Permit does not authorize an increase in water withdrawal volume, nor does it add a new withdrawal source.

The Permit Extensions

TGC's permit was initially issued on July 22, 2004 and was originally set to expire on November 30, 2010. Because the expiration dates for all Water Management permits were extended for four years by Chapter 240 of the Acts of 2010 and as amended by the Chapter 238 of the Acts of 2012, collectively known as the Permit Extension Act, the Department accepted a renewal application from TGC dated August 31, 2010. The Department published notice of the permit renewal application in the Environmental Monitor on September 22, 2010. No comments were received.

In addition, in a letter of September 25, 2015, the Department informed TGC that the Department would need additional time before making a determination on the application in order to ensure that all permit renewal applicants in the Cape Cod Basin fully understood the new Water Management Regulations (discussed below), and to give proper consideration to all permit renewal applications within the basin. Pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7), TGC's permit continued in force and effect until the Department issued this final decision on the permit renewal application. The expiration date for all permits going forward in the Cape Cod Basin will be November 30, 2030, in order to restore the staggered permitting schedule set forth in the regulations.

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. For water sources where an estimate of natural annualized streamflow is not applicable because the water source is groundwater-driven, the Safe Yield is determined through estimates of groundwater recharge during drought conditions. For more information on the Safe Yield methodology, go to the November 28, 2012 SWMI Framework Summary and Appendices;
- 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 Cape Cod Basin

This permit is being issued in accordance with the Safe Yield methodology adopted by the Department on November 7, 2014, in the Regulations at 310 CMR 36.13. As of the date of issuance of this permit, the Safe Yield calculation for the Cape Cod Basin is 266.0 million gallons per day (MGD), and total registered and permitted withdrawals are 51.9 MGD. The maximum withdrawals that are authorized in this permit, and all other permits currently under review by the Department within the Cape Cod Basin, will be within the Safe Yield and conditioned in accordance with the regulations. Withdrawal authorizations may be further limited by other factors, such as the impact to local resources, water quality constraints, pumping rate limits placed on individual wells and surface water supplies, 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
Special Condition 1 authorizes an annual average withdrawal volume of 27.60 million gallons per year (MGY) of water, or 0.13 million gallons per day (MGD) over 214 days annually from its groundwater source (Irrigation Well 1-12-86) in the Cape Cod Basin. TGC has not reported a total withdrawal volume in exceedance of 27.60 MGY since it began reporting in 2005. TGC will continue to report its withdrawals from the permitted well in the WMA Annual Report Forms.

Special Condition 2, Maximum Daily Withdrawal Volume
Special Condition 2 authorizes a maximum daily withdrawal volume of 0.54 MGD from TGC's permitted well. The reported maximum daily volumes in TGC's Annual Report Forms have never exceeded this volume.

Special Condition 3, Water Conservation Requirements
A Water Conservation Plan was included as a condition of the original permit. Per the Department's request, TGC updated the plan to include all of its current best management practices. (Attachment A). TGC shall continue to implement water conservation measures in accordance with its Water Conservation Plan.

Special Condition 4, Chapter 30, Section 61 Findings
The Environmental Impact Report for TGC (formerly known as The Golf Club at Cape Cod), EOEA #11997, was carefully considered prior to issuing the 2004 permit. The Department has required the applicant to use all feasible means or measures to avoid or minimize adverse environmental impacts. Measures that the Department deems necessary to mitigate or prevent harm to the environment are included in the conditions of this permit. The Department made its permitting decision under applicable law on a balancing, where appropriate, of environmental and socioeconomic objectives, as mandated by 301 CMR 11.00.

Special Condition 5, Seasonal Demand Management Plan
Consistent with good water conservation practices, permitted golf courses will be required to implement a drought-triggered Seasonal Demand Management Plan (SDMP) as a condition of their Water Management Permit. The SDMP, at a minimum, restricts nonessential outdoor water use between May 1st and September 30th when the Massachusetts Drought Management Task Force declares a drought level of "Advisory" or higher ("Watch, Warning or Emergency") for the region in which the golf course is located.

The SDMP shall also be implemented at times when groundwater levels at a USGS monitoring well fall below a groundwater trigger for 60 consecutive days. The monthly trigger levels are the period of record's monthly 25th percentile depth to water levels in a local well, as determined and published by the USGS. Restrictions could start on May 1, so monitoring of the well shall begin on March 1 of each year. Once implemented, the restrictions shall remain in place until the daily value of the groundwater levels at the assigned USGS monitoring well have recovered to less than the trigger for 30 consecutive days (when the water table elevation has risen above the trigger level).

TGC has been assigned the following USGS monitoring well: # 414129070361401 – MA-BHW 198 Bourne, MA. The monthly groundwater trigger values are shown in Table 4 of the Permit. Should the reliability of the groundwater measurements at this well be so impaired as to question its accuracy, the Permittee may request The Department's review and approval to transfer to another well to trigger restrictions. The Department reserves the right to require use of a different well.

TGC shall be responsible for tracking the Massachusetts Drought Management Task Force drought declarations and recording when drought-triggered restrictions are implemented. TGC shall also be responsible for tracking groundwater levels and recording when groundwater-triggered restrictions are implemented. See the groundwater- and drought-tracking instructions (Attachment B) for guidance.

The 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 your SDMP and in evaluating its effect on your golf course's irrigation, is the recognition of nonessential outdoor water uses. The Department considers the irrigation of tees and greens as essential uses, but fairways and roughs less so.

Section C of the SDMP provides two options for water use reduction in table format. The Acres Table requires that you identify the number of acres you irrigate for tees and greens, fairways, roughs, landscaping and ornamentals, along with a percent reduction per unit area with worsening drought. The Time Table requires that you identify irrigation reductions based on changes to the timing of irrigation cycles. TGC submitted an SDMP dated July 8, 2015 that included the Time Table reduction approach shown in Table 5. This approach has been incorporated into the Permit.

Special Condition 6, Water Withdrawals that Exceed Baseline Withdrawal Volumes
The renewed permit includes a condition that requires mitigation of withdrawals over a baseline volume, if feasible, if future withdrawals exceed the assigned 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 calculated baseline withdrawal volume for TGC is 24.41 MGY or 0.12 MGD, which is the 2005 withdrawal volume plus 5%. Over its 12-year permitting history, TGC's water use exceeded 24.41 MGY three times, in 2007, 2010, and 2016.

Because TGC's authorized volume exceeds its baseline volume, a mitigation plan is required. Mitigation options were discussed when the Department met with TGC on November 21, 2016 and in follow-up correspondence in March 2016. It was decided that component recognition within the Audubon Cooperative Sanctuary Program (ACSP) would be the most suitable form of mitigation. TGC is required to obtain recognition in the Environmental Planning and Water Conservation components. Additionally, TGC shall obtain recognition in the Wildlife and Habitat Management, Chemical Use Reduction and Safety, or Water Quality Management component.

TGC shall obtain the ACSP component recognitions within six (6) years. Once the ACSP recognitions are obtained, TGC shall renew the recognitions every three years through the life of the Permit. TGC will submit proof of 1) its Audubon International membership payment with its Annual Report Form each year; 2) recognition in the three components within three years of permit issuance; and 3) the recognitions every three years thereafter.

Per TGC's request, the Department may consider an alternate certification to satisfy TGC's mitigation requirement if a suitable alternative becomes available. This Permit would be modified only if the Department finds the alternate certification to be acceptable.

Note that the ACSP recognition is a form of indirect mitigation. TGC and the Department discussed direct mitigation during the November 21, 2016 meeting; however, direct mitigation opportunities are not available to TGC because there is no surface water on site and all stormwater is currently infiltrated.

A **Public Health Commitment** in the original permit required that an EDB (ethylene dibromide) and CCL_4 (carbon tetrachloride) analysis be conducted on the withdrawal water at the start of the irrigation season each year due to its proximity to a contaminant plume (known as the Fuel Spill-29 plume) migrating from the Joint Base Cape Cod. It further required that copies of the analytical data be submitted to the Department by June 30 of each year. On June 27, 2016, TGC submitted a request to the

Department to eliminate this annual monitoring requirement from the Permit. TGC's irrigation well samples were consistently non-detect for the two contaminants of concern since sampling began in 2005.

Based on its review of the sampling results, the Department approves the request to eliminate the monitoring condition from the permit. The Fuel Spill-29 plume located upgradient from the irrigation well has been remediated by the U.S. Air Force, and contamination above regulatory standards is not currently detected in any of the monitoring wells for this plume.

The Department also consulted with two agencies whose input prompted the permit condition: the Cape Cod Commission and the Department of Public Health. In its September 6, 2001 Development of Regional Impact Decision, the Cape Cod Commission required TGC to seek a DPH recommendation for ensuring public health protection related to the application of irrigation water. In 2004, DPH recommended that the irrigation well water be sampled for EDB and CCL_4. Both agencies supported the discontinuation of the monitoring requirement.

Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins, requires permittees with permitted groundwater sources in subbasins[1] with net groundwater depletion of 25% or more during August to minimize their withdrawal impacts on those subbasins to the greatest extent feasible.

Because the TGC's permitted sources are located where August net depletion has not been established, minimization measures are not required.

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 TGC's withdrawals do not impact any waters that MA Division of Fisheries and Wildlife has identified as supporting coldwater fish at this time.

[1] Subbasins used for WMA permitting are the 1,395 subbasins delineated by the U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins* (Weiskel *et al.*, 2010, USGS SIR 2009-5272).

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

WATER WITHDRAWAL PERMIT
MGL c 21G

This issuance of Permit #9P-4-22-096.03 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: 9P-4-22-096.03 **RIVER BASIN:** Cape Cod

PERMITTEE: Sacconnesset Golf Society LLC, dba TGC
PO Box 2020, 132 Falmouth Woods Road
Falmouth, Massachusetts 02556

ISSUANCE DATE: February 27, 2018

EXPIRATION DATE: November 30, 2030

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

USE: Golf course irrigation – TGC

DAYS OF OPERATION: 214 (April – October)

LOCATION:

Table 1. Withdrawal Point Identification

Source	Latitude	Longitude	Location
Irrigation Well 1-12-86	41° 37' 41" N	70° 35' 35" W	132 Falmouth Woods Road

SPECIAL CONDITIONS

1. **Maximum Authorized Annual Average Withdrawal Volume**

This Permit authorizes TGC to withdraw 27.60 million gallons per year (MGY) of water, or 0.13 million gallons per day (MGD) over 214 days annually from its groundwater source (Irrigation Well 1-12-86) in the Cape Cod Basin. TGC shall report its withdrawals from the permitted well in the WMA Annual Report Forms.

Table 2. Maximum Authorized Annual Average Withdrawal Volumes per Permit Period

	Permit	
Permit Periods	Daily Average (MGD)	Total Annual (MGY)
2/27/2018 to 11/30/2020	0.13	27.60
12/1/2020 to 11/30/2025	0.13	27.60
12/1/2025 to 11/30/2030	0.13	27.60

2. **Maximum Authorized Daily Withdrawal Volume**

Withdrawals from TGC's permitted source are not to exceed the approved maximum daily rate listed in Table 3 without advance written approval from the Department.

Table 3. Maximum Authorized Daily Withdrawal Volume

Source	Maximum Daily Rate
Irrigation Well 1-12-86	0.54 MGD

3. **Water Conservation Requirements**

TGC's updated Water Conservation Plan is included as a condition of the renewed permit (Attachment A). TGC shall continue to implement water conservation measures in accordance with its Water Conservation Plan.

4. **Chapter 30, Section 61 Findings**

The Environmental Impact Report for TGC (formerly known as The Golf Club at Cape Cod), EOEA #11997, was carefully considered prior to issuing the 2004 permit. The Department has required the applicant to use all feasible means or measures to avoid or minimize adverse environmental impacts. Measures that the Department deems necessary to mitigate or prevent harm to the environment are included in the conditions of this permit. The Department made its permitting decision under applicable law on a balancing, where appropriate, of environmental and socioeconomic objectives, as mandated by 301 CMR 11.00.

5. Seasonal Demand Management Plan

TGC shall limit nonessential outdoor water use from May 1st through September 30th as outlined in the Seasonal Demand Management Plan (SDMP) and in the instructions for tracking groundwater levels and drought declarations (Attachment B). At a minimum, reductions shall commence when the Massachusetts Drought Management Task Force declares a drought level of "Advisory" or higher ("Watch, Warning or Emergency") for the Cape Cod & Islands Region, or when groundwater levels fall below the groundwater triggers for 60 consecutive days. The groundwater-triggered response actions shall follow the drought-triggered response actions at the Advisory level.

Once implemented, the groundwater-triggered reductions shall remain in place until the daily value of the groundwater levels at the assigned USGS monitoring well have recovered to less than the trigger for 30 consecutive days (when the water table elevation has risen above the trigger level). TGC has been assigned the following USGS monitoring well: # 414129070361401 – MA-BHW 198 Bourne, MA. The groundwater trigger values are shown in Table 4 and are the monthly 25th percentile depth-to-water levels for the period of record, as determined and published by the USGS. Should the reliability of the groundwater measurements at this well be so impaired as to question their accuracy, the Permittee may request the Department's review and approval to transfer to another well to trigger restrictions. The Department reserves the right to require use of a different well.

TGC shall be responsible for tracking the Massachusetts Drought Management Task Force drought declarations and recording when drought-triggered restrictions are implemented. TGC shall also be responsible for tracking groundwater levels and recording when groundwater-triggered restrictions are implemented. See the attached groundwater- and drought-tracking instructions for guidance. Nothing in this permit shall prevent the Permittee from implementing water use restrictions that are more restrictive than those set forth in this permit.

Table 4. Groundwater trigger levels for MA-BHW 198 Bourne, MA

Groundwater-Level Triggers (feet below ground surface)						
March	April	May	June	July	August	Sept
33.29	32.98	32.74	33.08	33.66	34.02	34.32

Table 5. Irrigation Time Reduction in TGC's SDMP

Massachusetts Drought Levels	Irrigating Less Volume as Drought Severity Increases Reduced Minutes in Irrigation Cycles						
Action Levels	Irrigated Tees & Greens	Irrigated Fairways		Irrigated Roughs		Irrigated Landscape & Ornamentals	
	Percent	Percent	Time (min)	Percent	Time (min)	Percent	Time (min)
Normal	100% (Full Cycle)	100%	15	100%	10	100%	20
Advisory †^	100%	80%	12	50%	5	*	XXX
Watch †	100%	60%	9	*	XXX	*	XXX
Warning †	100%	40%	6	*	XXX	*	XXX
Emergency **	TBD	TBD	TBD	*	XXX	*	XXX

† Nonessential outdoor irrigation use shall not occur between the hours of 9 am and 5 pm, except that hand-watering of hot spots may occur at any time

^Advisory-level reductions should also be implemented when the assigned groundwater trigger is hit.

* No irrigation allowed.

** Mitigation actions to be determined by the Governor's Emergency Proclamation.

6. Mitigation Plan

TGC's authorized withdrawal volume (27.60 MGY) exceeds its baseline volume (24.41 MGY) by 0.015 MGD. In order to mitigate this volume, TGC shall obtain recognition in three components of the Audubon Cooperative Sanctuary Program. The components shall include Environmental Planning, Water Conservation, and one of the following: Wildlife and Habitat Management, Chemical Use Reduction and Safety, or Water Quality Management.

TGC shall obtain the ACSP component recognitions within six (6) years of permit issuance. Once the ACSP recognitions are obtained, TGC shall renew the recognitions every three years through the life of the Permit. TGC will submit proof of 1) its Audubon International membership payment with its Annual Report Form each year; 2) recognition in the three ACSP components within three years of permit issuance; and 3) the recognitions every three years thereafter.

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 water 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 the Department to enter and examine any property over which Permittee has authority, title or control, 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 the Department pursuant to M.G.L. c. 21G, §§ 15-17, M.G.L. c. 150, § 111, or any other enabling authority.

5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until the Department approves such transfer in writing, pursuant to a transfer application on forms provided by the Department requesting such approval and received by the Department 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 36.33.

6. **Duty to Report** The Permittee shall submit annually, on a form provided by the Department, a certified statement of the withdrawal. Such report is to be received by the Department by the date specified by the Department. Such report must be submitted as specified on the report form.

7. **Duty to Maintain Records** The Permittee shall be responsible for maintaining withdrawal and all other records as specified by this permit.

8. **Metering** Withdrawal points shall be metered. Meters shall be calibrated annually. Meters shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.

9. **Right to Amend, Suspend or Terminate** The Department may amend, suspend or terminate the permit in accordance with M.G.L. c. 21G and 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of the Department. Any person aggrieved by this decision may request an adjudicatory hearing as described herein and in accordance with the procedures described at 310 CMR 36.37. Any such request must be made in writing, by certified mail or hand delivered and received by the Department within twenty-one (21) days of the date of receipt of this permit. The hearing request, including proof of payment of the filing fee, must be mailed to:

Case Administrator
MassDEP Office of Appeals and Dispute Resolution
One Winter Street
Boston, MA 02108

No request for an appeal of this permit shall be validly filed unless a copy of the request is sent 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 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.

CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of the Department is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of his permit.

FILING FEE AND ADDRESS

The Department's fee transmittal form, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of $100 must be mailed to:

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

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

EXEMPTIONS

The filing fee is not required if the appellant is a municipality (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

The Department may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of the Department that the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.

Duane LeVangt for
Rebecca Weidman, Director
Division of Watershed Management
Boston Office

2/27/2018
Date

ATTACHMENT A

TGC WATER CONSERVATION PROGRAM

Employee Awareness Program

TGC is owned by Sacconnesset Golf Society LLC, which strives to manage the golf course at the highest possible standards through good communications with its employees and the managers of the golf course.

It is the golf course superintendent's ultimate responsibility to ensure that these standards are met on a daily basis and that all the employees are thoroughly familiar with maintenance operating plans developed for TGC.

Irrigation System Water Conservation

Irrigation System Operation

Distribution of irrigation water for the golf course has been designed for maximum flexibility and efficiency. The system will provide the operators with the tools needed to achieve optimum distribution uniformity and turf health while conforming to the strictest level of environmental responsibility and water conservation.

Control of the system will be provided by a state of the art, PC-based central computer and satellite communications network. The central computer will be located in the Golf Course Management Center office and will have the ability to communicate with stand alone computer satellites on the golf course via hard wire and/or radio communication. Solid state timing will provide precise run times managed by the central program drivers. Reference evapotranspiration figures will be computed daily by an on-site weather station, and refined by the crop coefficient for the turfgrass varieties planted on the golf course. Information from the weather station will be integrated with data collected from other remote wind and rain sensors on the golf course by the central control computer. This information enables the central controller to pause or cancel irrigation cycles when climatic conditions preclude the need for irrigation, or prevent its efficient application.

The computer programs will be able to identify specific areas of the golf course and its conditions when implementing shut downs by communicating to the various satellite computers on the golf course. The central computer also has a pump log-monitoring program that includes flow management. The pump log program downloads information about the operation and status of the pumping station, while the flow manager communicates to the pumps how they will run under the scheduled irrigation program. This information exchange protects the equipment from uncontrolled operation while operating the pump station at its optimum level for flow distribution and energy conservation.

The pump station will be a fully automatic, variable frequency drive (VFD) unit, controlled by a programmable logic controller, equipped with modem communication to the central irrigation computer. The VFD matches pump motor speed and power usage to the continually varying demands of system flow. The pump station controls include safety circuits, which, among other functions will retire the operation of the pumps in the event of a main line pipe failure. This safety feature prevents substantial quantities of water from flowing to waste and avoiding significant erosion damage in the event of pipe failure.

Distribution of the irrigation water from the pump station onto the golf course is by an extensive network of PVC piping that carries the water through large main lines to feeder lines around the property. The water will be distributed by individually controlled low-pressure sprinklers, which lower pump horsepower requirements thus reducing power usage over shorter operational run times. Low-pressure sprinklers also minimize aerosol drift of water beyond the intended target turf areas irrigating only the in-play areas of the golf course. All sprinklers will be short radius units spaced at close intervals. This arrangement produces the highest distribution uniformity, which equates to the most efficient use of water. This close spacing is also critical for distribution in potentially windy sites. Sprinkler heads with individual control and short radius throw, allow site-specific application of irrigation based on computed moisture needs. The implementation of these types of sprinkler equipment avoids the waste of water that could come from large radius heads run in multiple blocks.

During grow-in, irrigation will be applied to all areas of disturbance for the purpose of establishing vegetation for stabilization and turf establishment. After grow-in is complete, the portion of the irrigation system that is located in the areas to be naturalized will be shut down. The system in these areas is only essential for germination and is only needed on a limited basis for proper naturalization of native species. As these sections of the system are shut down, borders of the natural resource areas will be lined with part circle sprinkler heads (either

during construction or adapted after grow-in) enabling the operator to further refine the distribution of irrigation water to the playing surfaces only.

Irrigation Practices

The following is a list of common practices that will be integrated into the decision process used by the Golf Course Superintendent when determining the daily irrigation application on the golf course. Each of these is important to the overall goal of water conservation.

- Observation – staff is trained to monitor soil moisture conditions as well as turf stress conditions
- ET calculations
- Weather trends
- Timing – typical irrigation applications are made from 9:00 pm to 5:00 am during the calmer wind conditions and out of the heat of the day
- Hand watering – during the day to combat localized dry spot (LDS) which avoids over watering at night to alleviate LDS
- Hand syringing – to cool hot areas during the day, not using overhead irrigation
- Dew removal by dragging surfaces to return moisture to the plants and avoid disease conditions
- Use of surfactants and wetting agents to alleviate surface tension of the soils to limit water loss
- Cultural practices such as regular aeration
- Use of drought-tolerant grasses and shrubs
- Use of soil sensors and/or soil samples to monitor soil moisture
- Lining irrigation ponds with impervious material
- Use of mulch materials in planting beds to improve water-holding capacity
- Limited ornamental watering
- Raising turf height during dry weather

Long-term management of the system also supports water conservation by managing the infrastructure of the system and includes:

- Leak detection monitoring both by staff
- Sprinkler head monitoring and adjustment
- Wear & tear parts management

- Periodic control system upgrades
- Pump station maintenance and repair
- Flow meter monitoring and record keeping
- Cross training of employees in maintenance and monitoring

Irrigation System Maintenance

The irrigation system will be checked on a continuous basis for proper orientation and leaks. The superintendent or designated technician currently traverses the property each morning to identify leaks, distribution abnormalities, or problems with irrigation operation.

Corrective action measures for problems include; improper sprinkler head adjustment, clogged or leaking heads, pipes and fittings, or removal of obstacles including plant material, which obstruct the trajectory of the spray stream, are made immediately. The goal of this process is to repair leaks and to realign sprinklers so that pavement areas are not watered.

Potable Water Conservation

All employees at TGC will be made aware of the need for water conservation. Potable water use will be carefully monitored to reduce water use wherever possible.

The following is a list of common practices that will be adopted by employees within the clubhouse and maintenance facilities with regard to potable water use:

- Observation – staff will be trained to report leaking or dripping faucets (indoors and outdoors), toilets, pipes, etc. to maintenance staff.
- Infrastructure – staff will be trained to know where water shutoffs are located within their work area. If a pipe break occurs, staff will shut off the appropriate valve or call maintenance staff immediately to do so.
- When showering or using sinks, don't leave faucets running.

ATTACHMENT B

Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Information

Groundwater level information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts groundwater levels in real time, i.e., the most recent, usually hourly, water level measured and recorded at each USGS monitoring well.

Seasonal Li mits on Nonessential Outdoor Water Use are implemented when the daily mean depth to water level exceeds the designated trigger for 60 consecutive days (*i.e.*, when the depth to water becomes larger than the trigger value as the water table elevation declines). The daily water level is compared to the trigger for that month. **To determine if restrictions must be implemented on May 1 it is necessary to monitor the daily water level in March and April.**

Mean daily groundwater level readings are available at the USGS NWIS Web Interface at http://waterdata.usgs.gov/ma/nwis/current/?type=gw&group_key=county_cd

- Scroll down to 414129070361401 – MA-BHW 198 Bourne, MA, MA.
- Click on the station number.
- On the pull-down menu "Available data for this site" choose "Daily data".
- Under "Available Parameters" click on "72019 Water level, depth L".
- Under "Output format" click on "Table" and enter the number of days of records (the default is 7 days; entering 60 will give you the past 60 days of data) and hit "GO".
- The table provides the "Daily Mean Depth to water level, feet below land surface" for the most recent number of days chosen.
- Compare each day's value to its month's trigger value (25^{th} percentile) in your permit. Outdoor water use restrictions must be implemented when the daily depth to water has been at or below (i.e. a greater value than) the trigger values for 60 consecutive days.

Drought Advisory information is available at the Massachusetts Department of Conservation and Recreation (DCR) Drought Status Website at http://www.mass.gov/eea/agencies/dcr/water-res-protection/water-data-tracking/drought-status.html

- The color coded map displays the six drought regions in Massachusetts. Restrictions are implemented when a Drought Advisory, Watch, Warning or Emergency is announced in your region through the DCR website.