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

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

September 16, 2020

Dartmouth Select Board
Dartmouth Town Hall
400 Slocum Road
Dartmouth, MA 02747

RE: Dartmouth – BRP/WMA
Dartmouth Department of Public Works
PWS ID #4072000
Water Management Act
Permit Amendment
Permit #9P2424072.01

Dear Board Members,

Attached please find:

- FINAL Findings of Fact in support of the amendment of Permit #9P2424072.01, and
- FINAL amended WMA Permit #9P2424072.01 for the Dartmouth Department of Public Works.

The signature on this cover letter indicates formal issuance of the attached documents. If you have any questions regarding this information, please contact Jen D'Urso at (617) 654-6591 or via e-mail at jen.durso@state.ma.us.

Sincerely,

Duane LeVangie
Chief, Water Management Act Program
Bureau of Resource Protection

Y:\DWP Archive\SERO\2020\Dartmouth-4072000- WMA FINAL Permit Amendment 9P2424072.01 2020-09-16

Ecc: Senator Mark C. Montigny
Representative Christopher M. Markey
David Hickox, Dartmouth Department of Public Works
Steven M. Sullivan, Superintendent, Dartmouth Water and Sewer Dept.
Dartmouth Conservation Commission
Maura Callahan, Callahan Consulting
Doug DeNatale, AECOM
Patti Kellogg, MassDEP SERO
Charles Shurtleff, MassDEP SERO
Courtney Rainey, MassDEP
Eileen Feeney, Massachusetts Division of Marine Fisheries
Anne Carrol, DCR OWR
Jen Pederson, MWWA

Julia Blatt, MA Rivers Alliance
Buzzards Bay Coalition, Board of Directors
Ann and Richard Ibara
Jim Costa
Teresa Hamm

Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751 TTY# MassRelay Service 1-800-439-2370.
http://www.mass.gov/eea/agencies/massdep/service/justice/ (Version 3.30.15)

1 English:
This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.

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):
Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.

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):
本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与MassDEP的多样性总监联系。

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):
ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះសូមទំនាក់ទំនងឆ្នោតជានាយក 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 PMassDE 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 PMassDE 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.

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Findings of Fact in Support of FINAL Permit Amendment
Water Management Permit #9P2424072.01
Dartmouth Department of Public Works

The Department of Environmental Protection (the Department or MassDEP) makes the following Findings of Fact in support of the attached Amended Water Management Permit #9P2424072.01, and includes herewith its reasons for issuing the Amended Permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this amended permit is in response to a water withdrawal permit amendment application by the Dartmouth Department of Public Works, (Dartmouth) for the purpose of public water supply.

Dartmouth operates thirteen (13) permitted sources in the Buzzards Bay Basin. Dartmouth was issued its initial Buzzards Bay Basin Water Management Permit on June 5, 1992. In July of 2012, Dartmouth applied to MassDEP for a permit amendment to add the Panelli Well #3 and Panelli wellfield to its WMA permit. In October of 2013, a new permit was issued adding those wells. The modifications to the permit included changing Dartmouth's unaccounted for water (UAW) performance standard from 15% to 10% and the residential gallons per capita day (RGPCD) performance standard from 80 gallons per day (gpd) to 65 gpd and adding the requirement to implement seasonal limits on nonessential outdoor water use based on streamflow in the Paskamanset River.

Dartmouth submitted a Water Management Act (WMA) permit amendment application for withdrawals from the proposed new Violetta Wells (TW 91-17 and TW 97-17) on September 26, 2019. Dartmouth filed an Environmental Notification Form (ENF) for the proposed new Violetta Wells and received a Certificate from the Executive Office of Energy and Environmental Affairs (EEA) on December 6, 2019 and the project received New Source Approval from DEP's Drinking Water Program in a letter dated January 30, 2020. MassDEP issued an Order to Complete to Dartmouth on January 28, 2020, and Dartmouth responded in part on March 24, 2020. The proposed two new wells (at test well sites TW 91-17 and TW 97-17) would replace Dartmouth's existing Violetta Wells (V-1, V-2, and V-3). Dartmouth is currently registered for 1.16 million gallons per day (mgd) with a permit that includes an additional allocation of 2.11 mgd, for a total authorized average daily withdrawal volume of 3.27 mgd. Dartmouth is not requesting an increase in their system-wide authorized withdrawal volumes with this amendment but instead is seeking to replace three existing wells with two new sources that move the location of the withdrawal points and restore the daily maximum capacity from the original three individual sources to the two new sources.

Of the original Violetta wells, V-1 is registered, and V-2 and V-3 are permitted sources. The wells were approved for the following rates: V-1 for 0.432 mgd; and V2 and V-3 for a combined 0.60 mgd. The combined maximum daily capacity for the three original Violetta wells is 1.03 mgd. These wells have lost capacity due primarily to high levels of iron and manganese and consequent well clogging. Despite frequent cleaning, Dartmouth has been unable to permanently restore the original well capacities. As a result, Dartmouth is now seeking to restore the combined 1.03 mgd maximum daily approval rate from all three wells with two new wells: TW 91-

17, which will have a maximum daily capacity of 0.658 mgd, and TW 97-17, which will have a maximum daily capacity of 0.369 mgd.

The attached amended permit will supersede WMA Permit # 9P2424072.01 issued to Dartmouth on October 10, 2013. The only changes made to the 2013 permit are related to the addition of the two new groundwater sources and associated monitoring requirements. Dartmouth's permit along with all those other filing permit renewal applications in the Buzzards Bay Basin are anticipated to be renewed by MassDEP beginning in 2021. The renewed permit will address all additional regulatory requirements applicable to Dartmouth for outdoor water use restrictions, minimization, mitigation, and coldwater fishery resources.

Safe Yield in the Buzzards Bay 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 for the Buzzards Bay Basin is 148.4 million gallons per day (MGD), and total registered and permitted withdrawals are 83.70 MGD. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by the Department within the Buzzards Bay Basin, will be within the safe yield and may be further conditioned as outlined in the regulations. Also note that this permit amendment is not allocating any increase in withdrawal volumes, so the permitting decision is not changing the currently allocated volumes in the basin identified above.

Findings of Fact for Permit Conditions in Dartmouth's Water Management Act Permit

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 amended permit. 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

Table 1 summarizes Dartmouth's WMA Authorizations:

TABLE 1: Dartmouth Department of Public Works WMA Authorizations	
WMA Authorization	**Volume Authorized**
WMA Permit #9P2424072.01	2.11 MGD (770.15 MGY)
WMA Registration #42407201	1.16 MGD (423.40 MGY)
Total WMA Authorization	3.27 MGD (1193.55 MGY)

Dartmouth may withdraw an annual average daily volume of 3.27 MGD from the Buzzards Bay Basin. In 2018, Dartmouth's average daily withdrawal from the Buzzards Bay Basin was 2.51 MGD. In addition, Dartmouth purchased an additional average volume of 0.31 MGD from New Bedford, bringing their total average daily use to 2.82 MGD. However, Dartmouth's total authorization, regardless of source, is limited to 3.27 MGD. Please note, Dartmouth's system-wide authorized volume will be reviewed when the other Buzzards Bay Basin permits are renewed, likely in 2021. The 3.27 MGD volume will be reviewed as part of that renewal process and may be revised based on the Department of Conservation and Recreation's Office of Water Resources (DCR) Water Need Forecasts (WNF) issued in August 2015. If Dartmouth needs to withdraw more than 3.27 MGD from their own sources, it will require Dartmouth applying for a new permit. If Dartmouth needs to withdraw and purchase more than 3.27 MGD, it will require a permit amendment and new DCR WNF.

Special Condition 2, Maximum Daily Withdrawals from Groundwater Withdrawal Points, reflects the MassDEP-approved Zone II maximum daily pumping rate for each of Dartmouth's permitted wells based on prolonged pumping tests. Withdrawals in excess of these maximum daily rates require approval from the Department. As noted above, the proposed two new wells (TW 91-17 and TW 97-17) would replace Dartmouth's existing Violetta Wells (V-1, V-2, and V-3). The wells were approved for the following rates: V-1 for 0.432 MGD; V2 and V-3 for a combined 0.60 MGD. This permit is increasing the maximum daily approval rate from the V-1 site through TW 91-17 and by adding a second well (TW 97-17) to restore the combined maximum daily capacity to the 1.03 mgd currently allocated from the three existing Violetta wells. The approved rate of TW 91-17 is 457 Gallons per Minute (GPM) and the approved rate for TW 97-17 is 256 GPM, for a combined yield of 1.03 MGD.

Special Condition 3, Zone II Delineation requirements for the two new wells (TW 91-17 and TW 97-17) were approved in the Pumping Test Approval letter dated January 30, 2020. Within six months of the issuance date of this amended permit, Dartmouth shall revise its watershed protection map to include the MassDEP-approved Zone IIs for these wells. All other Zone IIs are up to date.

Special Condition 4, Wellhead Protection requirements maintain that prior to the two new wells (TW 91-17 and TW 97-17) being placed in service, Dartmouth must implement appropriate wellhead protection zoning or non-zoning controls within the approved Zone IIs as stipulated in 310 CMR 22.21(2). Wellhead protection requirements for all other wells have been met and are up to date as of the issuance of this permit.

Special Condition 5, Groundwater Monitoring, requires Dartmouth to conduct groundwater monitoring at the locations identified from March 1 through September 30 each year. This data will be used to evaluate the impact of the wells on the surrounding area. The results of the monitoring shall be submitted annually with Dartmouth's Annual Statistical Report.

Special Condition 6, Residential Gallons per Capita Day (RGPCD) has not changed from the prior permit. Dartmouth's permit requires compliance with the RGPCD standard of 65 gpd by December 31, 2015. From 2015 to 2018, Dartmouth met the RGPCD requirement every year with the exception of 2017, when it was 66.

Special Condition 7, Performance Standard for Unaccounted for Water (UAW) has not changed from the prior permit. Dartmouth's permit requires compliance with the 10% performance standard by December 31, 2015. From 2015 to 2018, Dartmouth met the UAW requirement every year with the exception of 2016, when it was 12%.

Special Condition 8, Seasonal Limits on Nonessential Outdoor Water Use, has not changed from the prior permit, and is based upon the permittee's Residential Gallons per Capita Day (RGPCD) for the preceding year, and will be implemented according to either: 1) calendar triggered restrictions; or 2) streamflow triggered restrictions.

1. **Calendar triggered restrictions:** Restrictions shall be implemented from May 1st through September 30th. Many public water suppliers will find this option easier to implement and enforce than the streamflow triggered approach.

2. **Streamflow triggered restrictions:** Restrictions shall be implemented at those times when streamflow falls below designated flow triggers measured at an assigned, web-based, real-time U.S. Geologic Survey (USGS) stream gage from May 1st through September 30th. At a minimum, restrictions shall commence when streamflow falls below the trigger for three consecutive days. 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.

If Dartmouth selects the streamflow approach, it has been assigned the USGS stream gage #1105933 – Paskamanset River near South Dartmouth, MA. The June ABF estimated using SYE is 1.20 cubic feet per second per square mile (cfsm) and the August ABF value is 0.41 cfsm. These cfsm units translate to the Paskamanset River gage streamflow triggers of 32 cubic feet per second (cfs) for May and June, and 11 cfs for July, August and September.

Should the reliability of flow measurement at the Paskamanset River gage be so impaired as to question its accuracy, the Permittee 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.

Drought triggered restrictions are incorporated into the seasonal limits on outdoor water use as outlined in this Special Condition. Times of low streamflow and drought do not always coincide, but both low streamflow and drought conditions can have adverse effects on water supplies, natural resources and aquatic life. Please note that many communities impose drought-based outdoor water use restrictions before the Massachusetts Drought Management Task Force declares a Drought Advisory because drought conditions can begin to impact local water supplies before a regional advisory is declared.

Special Condition 9, Streamflow Threshold – from June 1 through September 14 of each year, should streamflow of the Paskamansett River fall to 5.0 cfs or below Dartmouth shall cease the operation of Wells E-1, E-2, F-1 and F-2. To allow flexibility in operating the system and to meet peak demand, if an emergency necessitates the shutdown of Well D at any time when Wells E-1 and E-2 are shut down, then Well D's maximum daily rate of 0.5 MGD may be transferred to E-1 and E-2, either separately or combined.

Special Condition 10, Streamflow and Wetlands Monitoring – requires Dartmouth to conduct streamflow monitoring of the Paskamanset River and wetlands monitoring at plots adjacent to the Panelli Well #3 and Panelli Wellfield.

Special Condition 11, General Water Conservation Requirements, has not changed from the prior permit, and incorporates the Water Conservation Standards for the Commonwealth of Massachusetts adopted by the Water Resources Commission in July 2006.

Special Condition 12 Reporting Requirements, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Special Condition 13 General Permit Requirements, contains conditions that pertain to all permittees.

Public Comments

Notice of Dartmouth's draft permit being available for public comment was published in the MA Environmental Monitor on June 10, 2020 and June 24, 2020. The comment period ran from June 10 to July 17, 2020. Comments were received from the following: Ann and Richard Ibara, Teresa Hamm, Jim Costa, and the Massachusetts Division of Marine Fisheries. Comments fell into the following categories:

1. To make a valid determination regarding the impacts of increased pumping on Cedar Dell Lake, Dartmouth should be required to conduct a comprehensive study, across seasons, on the effect of the total combined water withdrawal from the Panelli and Violetta wells on the lake's water levels.
2. Changing groundwater divides provided by the town during different reviews creates uncertainty. This uncertainty leads to additional concerns about the validity of the work being provided and on the withdrawal impacts on Cedar Dell Lake.
3. MassDEP needs to establish a combined limit for cumulative withdrawals from the Violetta and Panelli well fields.
4. There needs to be enough water flow in the Paskamansett River for migration, spawning and protection of juvenile habitat to allow diadromous/catadromous resources (alewife, blueback herring, rainbow smelt, tomcod and American eel) to continue to utilize this river during any time of the year.

Response to Comments

A condition of the amended permit is a requirement that Dartmouth conduct groundwater monitoring near the two new Violetta Wells and at Cedar Dell Lake. (See Appendix D.) Dartmouth is also required to conduct wetlands monitoring at plots adjacent to the Panelli Well #3 and Panelli Wellfield. (See Appendix C.) The additional monitoring will provide information on the impact of the Panelli and Violetta Wells on the water levels in Cedar Dell Lake, inform whether a combined limit from these sources is necessary or whether other operational controls are appropriate.

Dartmouth's permit will also be reviewed as part of the permit renewal process that all Buzzard's Bay permits will undergo in 2021. At that time Dartmouth will be required to address the minimization and mitigation requirements that were added to the Water Management Act regulations (310 CMR 36.00) in 2014. In particular, the minimization condition will require that Dartmouth submit a plan to minimize the impacts of their withdrawals to the greatest extent feasible including by use of any feasible alternative sources or interconnections.

Adjustments to the drainage divide were made after AECOM installed observation wells along Old Westport Road in 2019. The change in the groundwater divide is based upon different "snapshots" in time and data. While the groundwater divide provides a helpful understanding of the groundwater flow in the area, the approved Zone IIs for the Panelli wells (September 25, 2012, Approval of Pump Test Report from MassDEP) and Violetta wells (January 30, 2020, Approval of Pump Test Report from MassDEP) are the most reliable rendering of the flow of groundwater in the area under pumping conditions. The delineation of Zone IIs are based upon a more comprehensive set of data, and the Department generally considers Zone IIs to be more reliable when evaluating well impacts.

The amended permit will continue to include the condition that requires that from June 1 through September 14 of each year, should streamflow in the Paskamansett River fall to 5.0 cfs or below Dartmouth shall cease the operation of Wells E-1, E-2, F-1 and F-2. These restrictions will continue to address the cumulative impacts of withdrawals the Paskamansett River for fish activity year-round.

Based on comments received, changes were made to Appendix D of the permit (Groundwater Monitoring) regarding DP-6. MassDEP has added a requirement that DP-6 be either replaced with a screened well, or a mechanism to prevent silting be added to the existing DP-6. In addition, specifics regarding the regular cleaning of surveying of DP-6 were added.

The Department has determined that these additional monitoring conditions, future new permit conditions, and the well-shut offs, are sufficiently protective to move forward with the permit at this time.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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Charles D. Baker
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Secretary

Martin Suuberg
Commissioner

FINAL WATER WITHDRAWAL PERMIT AMENDMENT
Permit #9P2424072.01
Town of Dartmouth

This amendment of Permit #9P2424072.01 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 amended permit conveys no right in or to any property.

PERMIT NUMBER: #9P2424072.01 **RIVER BASIN**: Buzzards Bay

PERMITTEE: Town of Dartmouth
Dartmouth Town Hall
400 Slocum Road
Dartmouth, MA 02747

EFFECTIVE DATE: September 16, 2020
EXPIRATION DATE: May 31, 2015[1]

TYPE AND NUMBER OF WITHDRAWAL POINTS: Groundwater: 13 Surface Water: 0
USE: Public Water Supply **DAYS OF OPERATION**: 365

AUTHORIZED WITHDRAWAL POINTS:

Table 1: Authorized Withdrawal Points

Well Name	PWS Source ID Code	Well Name	PWS Source ID Code
Well D	4072000-06G	Well F-2	4072000-12G
Violetta #3**	4072000-07G	Panelli #1	4072000-13G
Violetta #2**	4072000-08G	Panelli #2	4072000-14G
Well E-1	4072000-09G	Panelli #3	4072000-15G
Well E-2	4072000-10G	Panelli Wellfield	4072000-16G
Well F-1	4072000-11G	Well TW-91-17	*
Well TW-97-17	*		

[1] The original expiration date for this permit was May 31, 2011. In 2010 this permit was extended for 2 years, to May 31, 2013, by Section 173 of Chapter 240 of the Acts of 2010, the Permit Extension Act. In 2012 the Permit Extension Act was amended by Chapter 238 of the Acts of 2012 and this permit was extended an additional 2 years to May 31, 2015. This permit will remain effect until the Department issues a decision on the permit renewal application.

*PWS source codes will be assigned by DEP Drinking Water Program when the wells go on-line.
** Violetta #2 and #3 are permitted but not operational, and have not been officially decommissioned at this time. Violetta #1 is registered, operational, and will be decommissioned when Well TW 91-17 is operational.

1. Maximum Authorized Annual Average Withdrawal

This permit authorizes the Town of Dartmouth to withdraw water from the Buzzards Bay Basin at the rate described in Table 2 below. The permitted volumes are expressed both as an average daily withdrawal rate (million gallons per day or MGD), and as a total annual withdrawal volume (million gallons per year or MGY) for each permit period outlined. The Department of Environmental Protection (MassDEP) will use the raw water withdrawal volume from all authorized withdrawal points to assess compliance with the registered and permitted withdrawal rates.

Table 2: Buzzards Bay Authorized Withdrawal Rates

Permit Periods	Total Raw Water Withdrawal Volumes		Total Raw Water Withdrawal Volumes		Total Raw Water Withdrawal Volumes	
	Permit		Registration		Permit + Registration	
	Daily Average (MGD)	Total Annual(MGY)	Daily Average (MGD)	Total Annual(MGY)	Daily Average (MGD)	Total Annual(MGY)
9/14/2020 to 5/31/2015[2]	2.11	770.15	1.16	423.40	3.27	1193.55

* The original expiration date for this permit was May 31, 2011. In 2010 the permit was extended for 2 years, to May 31, 2013, by Section 173 of Chapter 240 of the Acts of 2010, the Permit Extension Act. In 2012 the Permit Extension Act was amended by Chapter 238 of the Acts of 2012 and this permit was extended an additional 2 years to May 31, 2015. Pursuant to M.G.L. c. 30A Section 13, and 310 CMR 36.18(7), your current permit will continue in force and effect until the Department issues a decision on your renewal application.

2. Maximum Daily Withdrawals from Groundwater Withdrawal Points

Withdrawals from permitted groundwater sources are not to exceed the approved maximum daily rates listed in Table 3 below without advance written approval from the Department.

Table 3: Maximum Daily Withdrawal Rates from Authorized Groundwater Withdrawal Points

Well Name	PWS Source ID Code	Maximum Daily Rate (MGD) for Individual Wells	Maximum Daily Rate (MGD) for Well Combinations
Violetta #3**	4072000-07G	--	Combined not to
Violetta #2**	4072000-08G	--	exceed 0.60
Well D	4072000-06G	0.50	All 3 combined
Well E-1	4072000-09G	0.72	not to
Well E-2	4072000-10G	1.01	exceed 1.73
Well F-1	4072000-11G	0.58	--
Well F-2	4072000-12G	0.48	--

[2] The original expiration date for this permit was May 31, 2011. In 2010 this permit was extended for 2 years, to May 31, 2013, by Section 173 of Chapter 240 of the Acts of 2010, the Permit Extension Act. In 2012 the Permit Extension Act was amended by Chapter 238 of the Acts of 2012 and this permit was extended an additional 2 years to May 31, 2015. This permit will remain effect until the Department issues a decision on the permit renewal application.

Panelli #1	4072000-13G	--	Combined not to
Panelli #2	4072000-14G	--	exceed 0.864
Panelli #3	4072000-15G	0.096	--
Panelli Wellfield	4072000-16G	0.336	--
Well TW-91-17	*	0.658	
Well TW-97-17	*	0.369	

*PWS source codes will be assigned by DEP Drinking Water Program when the wells go on-line.
** Violetta #2 and #3 are permitted and not operational, but have not been officially decommissioned at this time. Violetta #1 is registered, operational, and will be decommissioned when Well TW 91-17 is operational.

3. Zone II Delineation

Within six months of issuance of this permit, Dartmouth shall revise it watershed protection map to include the DEP-approved Zone IIs for all of its wells.

4. Wellhead and Surface Water Protection

Prior to the two new wells (TW 91-17 and TW 97-17) being placed in service, Dartmouth must implement appropriate wellhead protection zoning and non-zoning controls within the approved Zone IIs as stipulated in 310 CMR 22.21(2). Wellhead protection requirements for all other wells have been met and are up to date as of the issuance of this permit.

5. Groundwater Monitoring

Dartmouth is required to conduct groundwater monitoring near the two new Violetta Wells as outlined in Appendix D.

6. Performance Standard for Residential Gallons Per Capita Day Water Use

Dartmouth's Performance Standard for Residential Gallons Per Capita Day (RGPCD) is 65 gallons. Dartmouth shall be in compliance with the Performance Standard by December 31, 2015. Dartmouth shall report its RGPCD water use annually in its Annual Statistical Report (ASR).

Dartmouth shall report its RGPCD and the calculation used to derive that figure as part of its ASR including, without limitation, the source of the data used to establish the service population and the year in which this data was developed. See Appendix A for additional information on the requirements if the Performance Standard for RGPCD is not met.

7. Performance Standard for Unaccounted for Water

Dartmouth's Performance Standard for Unaccounted for Water (UAW) is 10% of overall water withdrawal. Dartmouth shall be in compliance with the Performance Standard by December 31, 2015. Dartmouth shall report its UAW annually in its Annual Statistical Report (ASR).

Dartmouth shall report its UAW and the calculation used to derive that figure as part of its ASR. UAW is defined as the difference between water pumped or purchased and water that is metered or confidently estimated. UAW shall include, without limitation, water that cannot be accounted for due to meter problems, unauthorized hydrant openings, unavoidable leakage, recoverable leakage, illegal connections, stand pipe overflows, and fire protection where it cannot be confidently estimated. The need for water main flushing and the use of water in construction or meter calibration shall be metered or estimated as appropriate to

assist in determining actual demand. Volumes flushed to waste shall be reported on Town of Dartmouth's ASR. See Appendix B for additional information on requirements if the Performance Standard for UAW is not met.

8. Seasonal Limits on Nonessential Outdoor Water Use

Dartmouth shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th as outlined in Table 4 below.

Dartmouth shall be responsible for tracking steamflow gages and drought advisories and recording and reporting when restrictions are implemented if triggered restrictions are implemented. See Table 5: *Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Website Information.* Dartmouth shall also document compliance with the seasonal limits on nonessential outdoor water use annually in its Annual Statistical Report (ASR), and indicate whether it anticipates implementing calendar triggered restrictions or USGS monitoring well triggered restrictions during the next year.

Restricted Nonessential Outdoor Water Uses

Nonessential outdoor water uses that are subject to mandatory restrictions include**:**

- irrigation of lawns via sprinklers or automatic irrigation systems;
- filling swimming pools;
- washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement or cement.

The following uses may be allowed, before 9 am and after 5 pm, when mandatory restrictions are in place:

- irrigation to establish a new lawn and new plantings during the months of May and September;
- irrigation of public parks and recreational fields by means of automatic sprinklers outside the hours of 9 am to 5 pm;
- irrigation of gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation systems; and
- irrigation of lawns by means of a hand-held hose.

Water uses NOT subject to mandatory restrictions are those required:

- for health or safety reasons;
- by regulation;
- for the production of food and fiber;
- for the maintenance of livestock; or
- to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees, greens, and limited fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

Public Notice of Seasonal Nonessential Outdoor Water Use Restrictions

Dartmouth shall notify its customers of the restrictions, including a detailed description of the restrictions and penalties for violating the restrictions. Notice that restrictions have been put in place shall be filed each year with the Department within 14 days of the restriction's effective date. Filing shall be in writing on the form "Notification of Water Use Restrictions" available on MassDEP website.

Table 4: Seasonal Limits on Nonessential Outdoor Water Use
May 1 to September 30

Dartmouth meeting the 65 RGPCD standard for the preceding year (as reported in the ASR and accepted by MassDEP) must implement either:
1. Calendar Triggered Restrictions from May 1st through September 30th **No nonessential outdoor water use from 9 am - 5 pm**
2. Streamflow Triggered Restrictions from May 1st through September 30th **No nonessential outdoor water use from 9 am - 5 pm whenever:** **a) Streamflow at the assigned USGS local stream gage #1105933 – Paskamanset River near South Dartmouth, MA falls below the following designated flow triggers for three (3) consecutive days:** • **May 1st through June 30th: 32 cfs (based on minimum flows that are protective of habitat for fish spawning during the spring bioperiod), and** • **July 1st through September 30th: 11 cfs (based on minimum flows that are protective of habitat for fish rearing and growth during the summer bioperiod).** **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 (7) consecutive days; or** **b) A Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.**
Dartmouth NOT meeting the 65 RGPCD standard for the preceding year (as reported in the ASR and accepted by MassDEP) must implement either:
1. Calendar Triggered Restrictions from May 1st through September 30th **a) Nonessential outdoor water use is allowed TWO DAYS per week before 9 am and after 5 pm; and** **b) Nonessential outdoor water use is allowed ONE DAY per week whenever A Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.**
2. Streamflow Triggered Restrictions from May 1st through September 30th **Nonessential outdoor water use is allowed ONE DAY per week before 9 a.m. and after 5 p.m. whenever:** **a) Streamflow at the assigned USGS local stream gage #1105933 – Paskamanset River near South Dartmouth, MA falls below the following designated flow triggers for three (3) consecutive days:** • **May 1st through June 30th: 32 cfs (based on minimum flows that are protective of habitat for fish spawning during the spring bioperiod), and** • **July 1st through September 30th: 11 cfs (based on minimum flows that are protective of habitat for fish rearing and growth during the summer bioperiod).** **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 (7) consecutive days; or** **b) A Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.**
Instructions for Accessing Streamflow and Drought Advisory Website Information

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

Seasonal Limits on Nonessential Outdoor Water Use 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, Dartmouth 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 #1105933 – Paskamanset River near South Dartmouth, MA.**
- **Click on the gage number.**
- **Scroll down to "Provisional Date 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 "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 cfs shown under Streamflow Triggered Restrictions above.**

Drought Advisory information is available at the Massachusetts Department of Conservation and Recreation (DCR) Drought Status Website at http://www.mass.gov/dcr/waterSupply/rainfall/drought.htm.

- **Under "Drought Status Reports", click on "drought map" on the right-hand side of the page. The color coded map displays the six drought regions in Massachusetts. Restrictions are implemented when a Drought Advisory, Watch, Warning or Emergency is announced through the DCR website.**

Nothing in the permit shall prevent Permittee from implementing water use restrictions that are more stringent than those set forth in this permit.

9. Streamflow Threshold

From June 1 through September 14 of each year, should streamflow of the Paskamansett River fall to 5.0 cfs or below Dartmouth shall cease the operation of Wells E-1, E-2, F-1 and F-2. To allow flexibility in operating the system and to meet peak demand, if an emergency necessitates the shutdown of Well D at any time when Wells E-1 and E-2 are shut down, then Well D's maximum daily rate of 0.5 MGD may be transferred to E-1 and E-2, either separately or combined.

10. Streamflow and Wetlands Monitoring

Dartmouth is required to conduct streamflow monitoring of the Paskamanset River and wetlands monitoring at plots adjacent to the Panelli Well #3 and Panelli Wellfield. Please see Appendix C.

11. Water Conservation Requirements

At a minimum, Dartmouth shall implement the following conservation measures in Table 6. The Department recognizes that Dartmouth is currently implementing a number of these requirements. Compliance with the water conservation requirements shall be reported to the Department upon request, unless otherwise noted below.

Table 6: Minimum Water Conservation Requirements
System Water Audits and Leak Detection
1. At a minimum, conduct a full leak detection survey every three years. The first full leak detection survey shall be completed no later than 3 years from the date of last documented leak detection survey.
2. Perform a leak detection survey of those sections of the distribution system that have not been surveyed within the last year whenever the percentage of unaccounted for water increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, Permittee shall submit to MassDEP a report detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3. Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
4. Permittee shall have repair reports available for inspection by MassDEP. Permittee shall establish a schedule for repairing leaks that is at least as stringent as the following: • Leaks of 15 gallons per minute or more shall be repaired as soon as possible but not later than one month after leak detection.* • Leaks of less than 15 gallons per minute, but greater than 5 gallons per minute, shall be repaired as soon as possible but not later than two months after leak detection.* • Leaks of 5 gallons per minute or less shall be repaired as soon as possible but not later than six months after leak detection, except that hydrant leaks of one gallon or less per minute shall be repaired as soon as possible.* • Leaks shall be repaired in accordance with the priority schedule including leaks up to the property line, curb stop or service meter, as applicable. • Have water use regulations in place that require property owners to expeditiously repair leaks on their property. The following exceptions can be considered: • Repair of leakage detected during winter months can be delayed until weather conditions become favorable for conducting repairs;* and • Leaks in freeway, arterial or collector roadways may be coordinated with other scheduled projects being performed on the roadway.** *Reference: MWRA regulations 360 CMR 12.09 **Mass Highway or local regulations may regulate the timing of tearing up pavement on roads to repair leaks.
Metering
1. Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.

Table 6: Minimum Water Conservation Requirements
2. Ensure that the system is 100% metered, including all water use at municipal facilities (schools, school athletic fields, etc.).
3. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards. AWWA References: AWWA Manual M22 – Sizing Water Service Lines and Meters AWWA Manual M6 – Water Meters, or as amended
4. Permittee shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by your customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections.
5. Ensure placement of sufficient funds in the annual water budget to calibrate, repair, or replace meters as necessary.
Pricing
1. Implement a water revenue structure that includes the full cost of operating the water supply system in compliance with state and federal requirements by the next 5-year review. Evaluate revenues every three to five years and adjust rates as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into the revenue structure. AWWA References for Additional Information on Pricing: AWWA Manual 1- Principals of Water Rates, Fees and Charges 2. AWWA Manual 29- Fundamentals of Water Utility Financing
3. Permittee reports using an increasing block rate structure and shall continue to do so.
Residential and Public Sector Conservation
1. Permittee shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.
2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3. Municipal buildings • By January 1, 2015 submit to MassDEP a status report detailing which municipally owned public buildings in Dartmouth's service area have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets) and which of those buildings have yet to be retrofitted, along with a schedule to complete the retrofitting by January 1, 2016. • On or before January 1, 2016, Dartmouth shall ensure that all municipally owned public buildings in the service area are retrofitted. 4. Note municipally owned public buildings that may be scheduled for rehab or demolition after the January 1, 2016 deadline for completing the retrofits, may with MassDEP's approval, be exempted from this condition based on the schedule of work. Status report required above should identify those buildings and schedule for repairs/demolition.
Industrial and Commercial Water Conservation
1. Permittee shall review the use records for its industrial, commercial and institutional water users and develop an inventory of the largest water users. Permittee shall develop and implement an outreach program designed to inform and (where appropriate) work with its largest industrial, commercial and institutional water users on ways to reduce their water use. Such outreach plans can include, but are

Table 6: Minimum Water Conservation Requirements
not limited to: information on water audits, meter sizing, water reuse, low-flow plumbing fixtures, mandatory outdoor water use restrictions, suggestions for contacting trade associations for process specific information on water use reductions, and information on contacting the Executive Office of Environmental Affairs Office of Technical Assistance for Toxics Use Reduction (OTA) which offers a range of assistance and information to help facilities improve water use efficiency and reduce wastewater discharge. OTA can be contacted at (617) 626-1060 or at www.mass.gov/envir/ota.
2. Upon request by MassDEP, Permittee shall report on industrial, commercial and institutional water conservation including the results of its review of water use records for industrial, commercial and institutional water users, the inventory of the largest water users, copies of any outreach materials distributed to industrial, commercial and institutional water users, and to the extent practical, a summary of water use reductions or savings that have resulted. Upon receipt of this report, MassDEP will take whatever action it deems appropriate to promote the interests of the Water Management Act, including without limitation requiring Permittee to take additional actions to reduce industrial, commercial and institutional water use.
Lawn and Landscape
1. Review Permittee's water use restriction bylaw to determine if it provides authority to implement and enforce water use restrictions required by the Special Condition, "Seasonal Limits on Nonessential Outdoor Water Use". If it does not, adopt a water use restriction bylaw, ordinance or regulation by May 1, 2011, to implement the new restrictions.
Public Education and Outreach
1. Develop and implement a Water Conservation Education Plan. Permittee's Water Conservation Education Plan shall be designed to educate Permittee's water customers of ways to conserve water. Without limitation, Permittee's plan may include the following actions: • Annual work sheets, included in water bills or under separate cover, to enable customers to track water use and conservation efforts and estimate the dollar savings; • Public space advertising/media stories on successes (and failures); • Conservation information centers perhaps run jointly with electric or gas company; • Speakers for community organizations; • Partner with garden clubs, or other private and non-profit organizations, to promote efficient water use; • Provide information on water-wise landscaping, gardening, efficient irrigation and lawn care practice; • Public service announcements; radio/T.V./audio-visual presentations; • Joint advertising with hardware stores to promote conservation devices; • Water conservation workshops for the general public • Use of civic and professional organization resources; • Special events such as Conservation Fairs; • Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and • Make multilingual materials available as needed. o References and additional information available through the USEPA Water Sense Program at http://www.epa.gov/watersense.

Table 6: Minimum Water Conservation Requirements
1. Upon request of MassDEP, Permittee shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

12. Reporting Requirements

Dartmouth shall report annually as required by completing the electronic Annual Statistical Report (eASR) for public water suppliers, and shall provide other reporting as specified in the Special Conditions above.

13. General Permit Conditions (applicable to all Permittees)

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, 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

This permit is a decision of MassDEP. Any person aggrieved by this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail and received by MassDEP within twenty-one (21) days of the date of receipt of this permit.

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 MassDEP.

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 MassDEP 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 hearing request, 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

MassDEP may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of MassDEP 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 LeVangie

9/16/2020

Duane LeVangie
Chief, Water Management Act Program
Bureau of Water Resources

Date

Appendix A – Functional Equivalence with the 65 Residential Gallons Per Capita Day Performance Standard

I. . Compliance Plan Requirement

If Town of Dartmouth fails to document compliance with the RGPCD Performance Standard in its 2015 ASR, or in any ASR thereafter, then Town of Dartmouth must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall:

a. meet the requirement set forth below in Section II;
b. include measures to be implemented to meet the performance standard); and
c. include the schedule for implementing such measures.

The filing of an RGPCD Plan shall not constitute a return to compliance, nor shall it affect MassDEP's authority to take action in response to the permittee's failure to meet the performance standard.

If an RGPCD Plan is required, the permittee must:

a. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD Plan annually at the time it files its ASR; and
b. continue to implement the RGPCD Plan until it complies with the performance standard and such compliance is documented in the permittee's ASR for the calendar year in which the standard is met.

II. Contents of an RGPCD Plan

A permittee that does not meet the 65 RGPCD performance standard within 2 years, has the choice to file an RGPCD Plan containing measures that the permittee believes will be sufficient to bring the system into compliance with the performance standard (Individual RGPCD Plan) or may adopt the MassDEP RGPCD Functional Equivalence Plan that includes mandated Best Management Practices (BMPs).

A permittee that has been unable to meet the 65 RGPCD performance standard within 5 years must implement the MassDEP RGPCD Functional Equivalence Plan to be considered functionally equivalent with the performance standard.

At a minimum, all RGPCD Compliance Plans must include a detailed:

a. description of the actions taken during the prior calendar year to meet the performance standard;
b. analysis of the cause of the failure to meet the performance standard;
c. description and schedule of the actions that will be taken to meet the performance standard; and
d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the performance standard.

RGPCD Plans may be amended to revise the actions that will be taken to meet the performance standard.

Individual RGPCD Plan

Individual RGPCD Plan will document a plan to adopt and implement measures tailored to the specific needs of the water supply system that the permittee believes will be sufficient to bring the system into compliance with the performance standard within three years.

At a minimum, all Individual RGPCD Plans for failure to meet the RGPCD performance standard must include implementation of at least one of the following residential conservation programs:

a. a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
b. a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets); or
c. the adoption and enforcement of an ordinance, bylaw or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems.

If the permittee is already implementing one or more of these programs, it must include in its Individual RGPCD Plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

Without limitation, the Individual RGPCD Plan for failure to meet the RGPCD performance standard may include any of the actions set forth in the MassDEP RGPCD Functional Equivalence Plan below.

MassDEP RGPCD Functional Equivalence Plan

In order to be considered functionally equivalent with the RGPCD performance standard, the permittee must adopt and implement the MassDEP RGPCD Functional Equivalence Plan that requires all the following residential conservation programs:

a. a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
b. a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets);
c. the adoption and enforcement of an ordinance, bylaw or regulation to require the installation of soil moisture sensors or similar climate related control technology on all automatic irrigation systems;
d. the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
e. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction include water saving devices and low water use appliances; and
f. the implementation of monthly or quarterly billing.

Hardship

A permittee may present an analysis of the cost effectiveness of implementing certain conservation measures included in the MassDEP RGPCD Functional Equivalence Plan and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits. Suppliers will be able to present:

a. Reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard;
b. Alternative specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP RGPCD Functional Equivalence Plan; and
c. When applicable, an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship.

Appendix B – Functional Equivalence with the 10% Unaccounted for Water (UAW) Performance Standard

I. Compliance Plan Requirement

If Town of Dartmouth fails to document compliance with the UAW Performance Standard in its 2015 ASR, or in any ASR thereafter, then Town of Dartmouth must file with that ASR an Unaccounted for Water Compliance Plan (UAW Plan) which shall:

a. meet the requirements set forth below in Section II;
b. include measures to be implemented to meet the performance standard; and
c. include the schedule for implementing such measures.

The filing of a UAW Plan shall not constitute a return to compliance, nor shall if affect MassDEP's authority to take action in response to the permittee's failure to meet the performance standard.

If a UAW Plan is required, the permittee must:

a. submit information and supporting documentation sufficient to demonstrate compliance with its UAW Plan annually at the time it files its ASR; and
b. continue to implement the UAW Plan until it complies with the performance standard and such compliance is documented in the permittee's ASR for the calendar year in which the standard is met.

II. Contents of a UAW Compliance Plan

A permittee that does not meet the 10% UAW performance standard within 2 years, has the choice to file a UAW Plan containing measures that the permittee believes will be sufficient to bring the system into compliance with the performance standard (Individual UAW Plan) or may adopt the MassDEP UAW Functional Equivalence Plan that includes mandated Best Management Practices (BMPs).

A permittee that has been unable to meet the 10% UAW performance standard within 5 years must implement the MassDEP UAW Functional Equivalence Plan to be considered functionally equivalent with the performance standard.

At a minimum, all UAW plans must include a detailed:

a. description of the actions taken during the prior calendar year to meet the applicable performance standard;
b. analysis of the cause of the failure to meet the performance standard;
c. description and schedule of the actions that will be taken to meet the performance standard; and
d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the performance standard.

UAW plans may be amended to revise the actions that will be taken to meet the performance standard.

Individual UAW Compliance Plan

Individual UAW Plan will document a plan to adopt and implement measures tailored to the specific needs of the water supply system that the permittee believes will be sufficient to bring the system into compliance with the performance standard within three years. Individual UAW compliance plans may include any of the actions set forth in the MassDEP UAW Functional Equivalence Plan compliance plan below.

MassDEP UAW Functional Equivalence Plan

In order to be considered functionally equivalent with the UAW performance standard, the permittee must adopt and implement the MassDEP UAW Functional Equivalence Plan that, at a minimum, requires all the following measures:

a. within one year of filing the MassDEP UAW Functional Equivalence Plan, complete a water audit and leak detection survey of the entire system and submit completed audit and survey to MassDEP; within one year of completing the audit and leak detection survey, conduct sufficient repairs to reduce by 75% (by water volume) all leaks detected in the survey;
within one year of completing such repairs, conduct additional repairs of leaks detected in the survey as may be necessary to reduce permittee's UAW to 10% or the minimum level possible;
b. if UAW remains above 10%, repeat the steps outlined in paragraph a.;
c. implementation of a program that ensures the inspection and evaluation of all water meters and, as appropriate, the repair, replacement and calibration of water meters in accordance with the following schedule:
    Large Meters (2" or greater) - within one year of filing the MassDEP UAW Functional Equivalence Plan
    Medium Meters (1" or greater and less than 2") - within two years of filing the MassDEP UAW Functional Equivalence Plan
    Small Meters (less than 1") - within three years of filing the MassDEP UAW Functional Equivalence Plan;
d. implementation of monthly or quarterly billing within three years of fling the MassDEP UAW Functional Equivalence Plan; and
e. within one year of filing the MassDEP UAW Functional Equivalence Plan, implementation of a water pricing structure that achieves sufficient revenues to pay the full cost of operating the system including, without limitation, the costs of repairs under paragraph a., the costs of meter repairs, replacements and calibrations under paragraph c., the costs of employees and equipment, and ongoing maintenance and capital costs.

Hardship

A permittee may present an analysis of the cost effectiveness of implementing certain conservation measures included in the MassDEP UAW Functional Equivalence Plan and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits. Suppliers will be able to present:

a. Reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard;
b. Alternative specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP UAW Functional Equivalence Plan; and
c. When applicable, an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship.

Appendix C – Streamflow and Wetlands Monitoring

Dartmouth shall conduct the following streamflow and wetlands monitoring are required by Special Condition 9 of WMA Permit 9P2424072.01.

Streamflow Monitoring

From June 1 through September 14, Dartmouth shall access the USGS on-line streamflow data on a daily basis to determine if the mean daily flow in the Paskamanset River has met the 5.0 cfs threshold for ceasing operation of Wells E-1, E-2, F-1 and F-2. The mean daily streamflow gage readings for the Paskamanset River are available at the USGS NWIS Web Interface at:

http://waterdata.usgs.gov/ma/nwis/uv/?site_no=01105933&PARAmeter_cd=00065,00060

- Scroll down to "Provisional Date 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 "Daily Mean Discharge, cubic feet per second" table and find the current date on the table.

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, Dartmouth must use the mean daily streamflow from the preceding day when tracking streamflows.

At least twice weekly from June 1 through September 14 Dartmouth shall take a reading at the staff gage located at the Russells Mills Road bridge and compare this reading to the reading from the USGS gage. If the two readings are found to differ by more than 0.03 ft the USGS will be notified of the problem and necessary corrections shall be made to ensure consistent readings between the two gages.

Should the USGS gage become disabled, Dartmouth shall notify the Department and shall take daily readings at the staff gage at Russells Mills Road bridge to determine streamflow.

Monitoring reports shall be submitted annually by January 31 of the following year to MassDEP. Reports shall include the following data collected from June 1 through September 14:

- mean daily streamflow from the USGS Paskamanset River gage;
- twice weekly staff gage readings;
- any differences noted between the staff gage and USGS gage and actions taken to correct the difference;
- dates of shut down of Wells E-1, E-2, F-1 and F-2;
- any use of Well E-1 and/or E-2 necessitated by the shutdown of Well D.

Wetlands Monitoring

Types of Monitoring

- Water Level Monitoring
- Vegetative Monitoring

Monitoring Locations

- Existing monitoring deep wells DP-4 and DP-6;
- One shallow well (18" deep) at DP-4, to be designated as DP-4A , and one at DP-6, to be designated as DP-6A;
- One wetlands vegetative plot at DP-4, Plot A, and one at DP-6, Plot B.

Water Level Monitoring

- Monitor groundwater levels DP-4, DP-4A, DP-6 and DP-6A starting in fall of 2013 prior to installation of the Panelli Well #3 and Panelli Wellfield.
- Water level monitoring shall be conducted annually April to October, with readings of each monitoring well to be taken every two weeks.
- The height above ground level of each monitoring well shall be measured at the beginning and end of each monitoring season to determine if shifting of the wells has occurred. If shifting of the wells has occurred, Dartmouth shall reset the wells to ensure consistent readings from year to year.

Vegetative Monitoring

- Vegetative monitoring of Plot A and Plot B shall occur during the spring of 2013, 2015 and 2020.
- Results of the vegetative monitoring shall be reported using Section 1 of the *Bordering Vegetated Wetland Delineation Field Data Form* which can be found at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/bordering-vegetated-wetland-delineation-manual.html

Reporting

Monitoring reports shall be submitted annually by January 31 of the following year to MassDEP and the Dartmouth Conservation Commission. Reports shall include the following data collected from April through September:

- rainfall data;
- record of average daily pumping of Panelli Well #3 and the Panelli Wellfield;
- water level readings from the four monitoring wells;
- height of the monitoring wells taken at the beginning and end of each monitoring season and any action taken to reset the wells;
- vegetative data (for years 2013, 2015 and 2020 only).

Appendix D –Groundwater Monitoring

Dartmouth shall conduct the following groundwater monitoring as required by Special Condition 5 of WMA Permit 9P2424072.01.

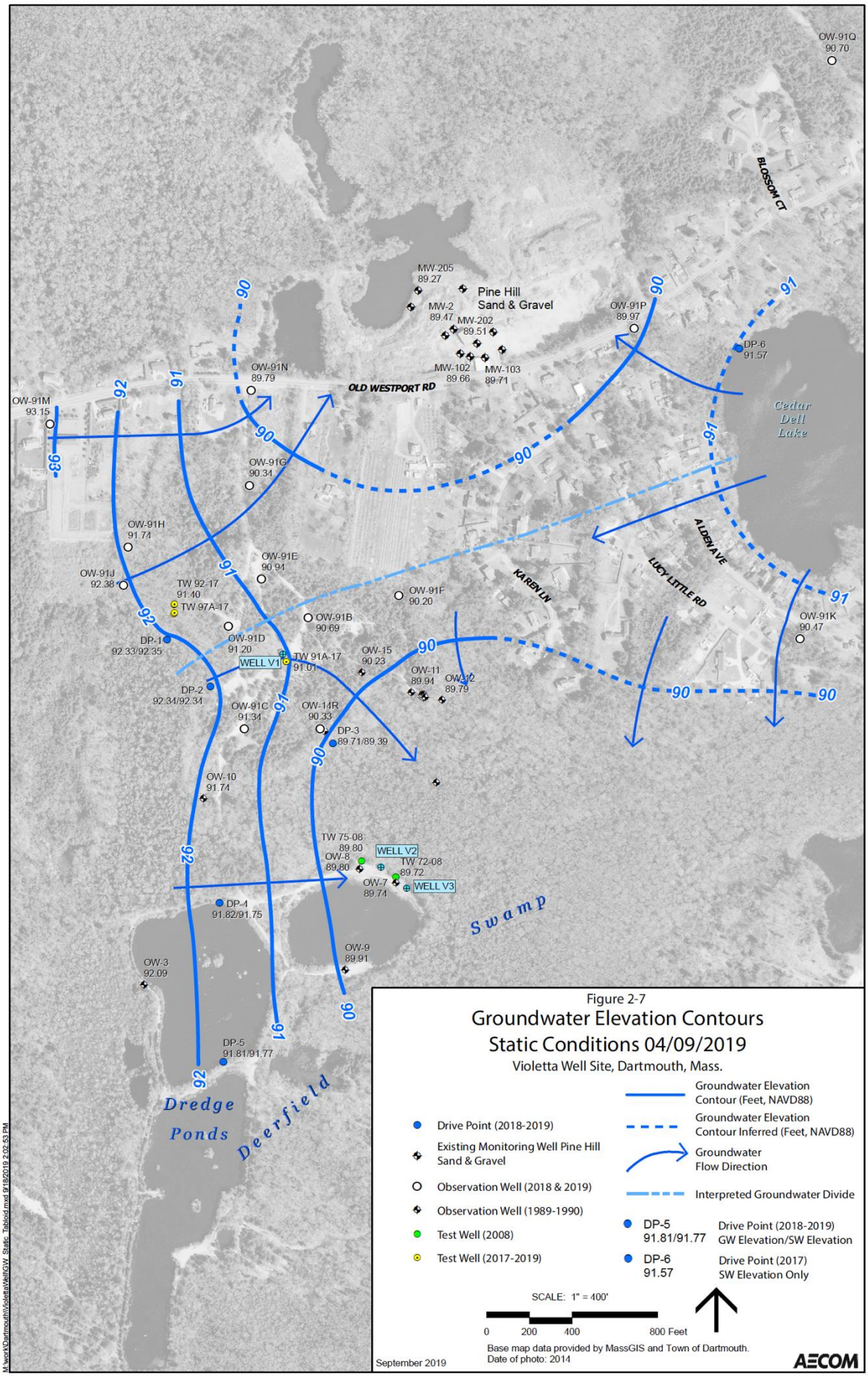
Dartmouth shall collect the following data twice a week from March 1st through September 30th annually:

- Groundwater levels from observation wells OW 91K, OW 91P and OW 91Q (shown on Figure 2-7 of the NSA Report, attached).
- Staff gauge readings in Cedar Dell Lake (at the site of DP-6, shown on Figure 2-7 of the NSA Report).
- The DP-6 staff gage should be replaced with a screened well to prevent silting. If well DP-6 is redeveloped, a mechanism to prevent silting must be added. DP-6 shall be cleaned as needed to obtain accurate readings and surveyed each spring.

Dartmouth will also track and record daily precipitation and ambient groundwater level data each year from March 1st through September 30th from the following sources:

- Precipitation data from the National Weather Station at the New Bedford Regional Airport (KEWB), located at latitude $41^0$68’ and latitude $70^0$96’
- Ambient groundwater levels at USGS Well MA-LKW 14 located 30 feet west of parking lot and about 300 feet north of State Route 105 at closed Lakeville State Hospital at latitude $41^0$52’28” and longitude $70^0$55’46”

The data will be submitted each year with Dartmouth’s Annual Statistical Report and will be evaluated during the next review of Dartmouth’s Water Management Permit.


OW-91Q
90.70
BLOSSOM CT
MW-205
89.27
Pine Hill
Sand & Gravel
MW-2
89.47
MW-202
89.51
OW-91P
89.97
DP-6
91.57
MW-102
89.66
MW-103
89.71
OW-91N
89.79
OLD WESTPORT RD
OW-91M
93.15
Cedar
Dell
Lake
OW-91G
90.34
OW-91H
91.74
ALDEN AVE
OW-91E
90.94
OW-91J
92.38
KAREN LN
LUCY LITTLE RD
TW 92-17
91.40
TW 97A-17
OW-91F
90.20
OW-91K
90.47
OW-91B
90.69
DP-1
92.33/92.35
OW-91D
91.20
WELL V1
TW 91A-17
91.01
OW-15
90.23
OW-11
89.94
OW-12
89.79
DP-2
92.34/92.34
OW-91C
91.34
OW-14R
90.33
DP-3
89.71/89.39
OW-10
91.74
TW 75-08
89.80
WELL V2
OW-8
89.80
TW 72-08
89.72
OW-7
89.74
WELL V3
DP-4
91.82/91.75
Swamp
OW-9
89.91
OW-3
92.09
DP-5
91.81/91.77
Dredge
Ponds
Deerfield
Figure 2-7
Groundwater Elevation Contours
Static Conditions 04/09/2019
Violetta Well Site, Dartmouth, Mass.
Drive Point (2018-2019)
Existing Monitoring Well Pine Hill Sand & Gravel
Observation Well (2018 & 2019)
Observation Well (1989-1990)
Test Well (2008)
Test Well (2017-2019)
Groundwater Elevation Contour (Feet, NAVD88)
Groundwater Elevation Contour Inferred (Feet, NAVD88)
Groundwater Flow Direction
Interpreted Groundwater Divide
DP-5 91.81/91.77 Drive Point (2018-2019) GW Elevation/SW Elevation
DP-6 91.57 Drive Point (2017) SW Elevation Only
SCALE: 1" = 400'
0 200 400 800 Feet
Base map data provided by MassGIS and Town of Dartmouth.
Date of photo: 2014
September 2019
AECOM
M:\work\Dartmouth\Violetta\Well\GW_Static_Tabloid.mxd 9/16/2019 2:02:53 PM