

COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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THE OFFICE OF APPEALS AND DISPUTE RESOLUTION

November 28, 2023

In the Matter of
Martin Burke and
Melmar Properties, LLC

OADR Docket No. WET-2021-031
DEP File No. 206-0802
Lowell, MA

RECOMMENDED FINAL DECISION

INTRODUCTION

Martin Burke and Melmar Properties, LLC (“Petitioners”) filed this appeal with the Office of Appeals and Dispute Resolution (“OADR”)¹ concerning the construction of a single-family house and appurtenances thereto (the “proposed Project”) on real property at 4 Tamarack Street, Lowell, Massachusetts (“the Property”). The Petitioners challenge a Superseding Order of Conditions (“SOC”) issued by the Department denying approval of the proposed Project. The denial overturned the Order of Conditions (“OOC”) issued by the Lowell Conservation Commission (“LCC”) that approved the proposed Project. The SOC was issued pursuant to the Massachusetts Wetlands Protection Act (“MWPA”), G.L. c. 131 § 40, and the Wetlands Regulations, 310 CMR 10.00.

¹ OADR is an independent, neutral, quasi-judicial office within the Massachusetts Department of Environmental Protection (“MassDEP” or “the Department”) responsible for advising MassDEP’s Commissioner in the adjudication of such an appeal. The Commissioner is the final decision-maker in the appeal unless she designates another final decision-maker in the appeal pursuant to 310 CMR 1.01(14)(b).

After thoroughly reviewing the administrative record, including the recorded Evidentiary Adjudicatory Hearing (“Hearing”) conducted by the prior Presiding Officer,² I recommend that the Department’s Commissioner issue a Final Decision affirming the SOC denial.

I issued a Tentative Decision in this matter subject to the provisions of 310 CMR 1.01(14)(a).³ The Parties had seven business days from the date of the Tentative Decision to file comments with OADR for my consideration, that either support or oppose my recommendation to MassDEP’s Commissioner as set forth above. The Department filed comments on November 3, 2023 supporting the Tentative Decision. The Petitioners did not file any comments and as result have waived any right to object to the findings and decision contained therein. On November 15, 2023 I informed the Parties that in absence of any objection, I would proceed to prepare a Recommended Final Decision consistent with the Tentative Decision for review and approval by MassDEP’s Commissioner pursuant to 310 CMR 1.01(14)(b).⁴

² The prior Presiding Officer who conducted the Hearing is no longer available. Accordingly, pursuant to 310 CMR 1.01(14)(c), I was assigned to be the substitute Presiding Officer in this appeal to review the administrative record and to draft a Tentative Recommended Final Decision.

³ 310 CMR 1.01(14)(a) provides: “Every tentative decision shall be in writing and shall contain a statement of the reasons, including a determination of every issue of fact or law necessary to the decision. The parties shall have seven [business] days from the receipt of the tentative decision to file objections to the decision and supporting arguments with [MassDEP’s OADR].”

⁴ Long-standing OADR practice, as approved by previous Final Decisions in appeals, is that Tentative Recommended Final Decisions are submitted to the parties, objections are received and considered by the Presiding Officer, and then a Recommended Final Decision is issued to MassDEP’s Commissioner, the Final Decision-Maker in the appeal. See Matter of Stephen D. Peabody, 2011 MA ENV LEXIS 39, OADR Docket No. WET-2008-063, Final Decision (Apr. 12, 2011), 2011 MA ENV LEXIS 39, *6 n. 3 (Kimmell, Comm'r) (“Following receipt of the parties’ responses to the tentative decision, the Presiding Officer may issue a Recommended Final Decision (‘RFD’) for the Commissioner’s review, or the Commissioner may issue a Final Decision.”); see also Matter of Michael Carrigan, OADR Docket No. WET-2021-027, Final Decision (May 21, 2023), 2023 MA ENV LEXIS 22, *6 (Giorlandino, Chief Presiding Officer) (“The Presiding Officer issued her Recommended Final Decision after thoroughly reviewing the Parties’ respective responses to her Tentative Decision, including the Petitioners’ objections to her findings in the Tentative Decision.”)

WITNESSES⁵

The evidence in the administrative record includes the Department's basic records and the pre-filed, sworn written testimony and exhibits submitted by witnesses on behalf of the Parties. The witnesses below were available for cross-examination at the Hearing.⁶

For the Applicant/Petitioners:

1. Jeffrey Brem, P.E.: Mr. Brem is a principal of Meisner Brem Corporation and has been a Registered Professional Engineer licensed in Massachusetts and other states for over 28 years. Mr. Brem testified that he has filed over 200 Notices of Intent in various municipalities of the Commonwealth during the last 30+ years. Mr. Brem served as the chief engineer for the proposed Project. Mr. Brem is qualified as an engineering expert.

For the Department:

1. Gary Bogue: Mr. Bogue has worked for MassDEP since 1985 in several different programs and has been a Wetlands Analyst with MassDEP's Wetlands Program since 2006. Mr. Bogue is responsible for drafting Superseding Orders of Conditions, conducting wetlands site visits, reviewing delineations and soil data, reviewing hydrologic calculations and construction plans and applying the MWWPA, Wetlands Regulations and Stormwater Policy. In addition to multiple wetlands specific trainings, he has a BA and MS in Biology. He is qualified as an expert witness.

2. David Hilgeman, P.E.: Mr. Hilgeman is an Engineer, registered in Kentucky. Mr. Hilgeman received a Bachelor of Science in Civil Engineering and a Master of Science in

⁵ Throughout this Tentative Recommended Final Decision, the witnesses' Pre-Filed Direct Testimony is referred to as "[Witness] PFT, ¶ X" and Pre-Filed Rebuttal Testimony will be referred to as "[Witness] PFR, ¶ X." Exhibits to testimony are referred to as "[Witness] Ex. X."

⁶ Throughout this Tentative Recommended Final Decision, the witnesses' cross examination testimony at the Hearing is referred to as "[Witness], time of recording."

Civil (Environmental) Engineering from the University of Memphis. Mr. Hilgeman has worked for MassDEP as a Senior Environmental Engineer since 2021. His responsibilities include reviewing projects for variance permitting associated with hydrology, hydraulics, stormwater, and ecological resources. Prior to joining MassDEP he was a Civil Engineer with the U.S. Army Corps of Engineers in hydraulics and hydrology specializing in wetland/stream restoration, flood and impact assessment, and hydraulic design. Mr. Hilgeman worked with EnSafe, Inc., where he focused on a variety of environmental, ecological, and engineering disciplines. He served in multiple roles as an Engineer-In-Training, a licensed Engineer and a project Supervisor. Mr. Hilgeman is a professional competent to evaluate the boundary of Bordering Land Subject to Flooding consistent with 310 CMR 10.57(2)(a)3.⁷ He is qualified as an expert witness.

BACKGROUND

The Property

The Property is an undeveloped 7,087 square foot lot located at the end of Tamarack Street, 4 Tamarack Street, in Lowell Massachusetts. Brem PFT, ¶ 13; Bogue PFT, ¶ 4, 13. The topography of the Property is flat with a grade elevation of approximately 100 feet. Brem PFT, ¶ 16; Bogue PFT, ¶ 13. The Parties agree that the entire Property is located within the FEMA AE 100-year flood zone of the Merrimack River with a base flood elevation (“BFE”) of 104 feet

⁷ 310 CMR 10.57(2)(a)3 provides: “The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm. Said boundary shall be that determined by reference to the most recently available flood profile data prepared for the community within which the work is proposed under the National Flood Insurance Program (NFIP, currently administered by the Federal Emergency Management Agency, successor to the U.S. Department of Housing and Urban Development). Said boundary, so determined, shall be presumed accurate. This presumption is rebuttable and may be overcome only by credible evidence from a registered professional engineer or other professional competent in such matters.” While Mr. Hilgeman is a professional competent pursuant to this provision and testified regarding the boundary of the BLSF, the boundary itself is not disputed in this appeal.

(Map 25017C0138E, effective June 4, 2010).⁸ SOC Cover letter, page 1; Brem PFT, ¶ 18; Bogue PFT, ¶ 13; Hilgeman PFT, ¶ 7; Brem Ex. 6A, Lowell GIS showing Flood Plain; MassDEP Chalk 1.⁹ A portion of Black Brook (the “Brook”), about 400 feet south of the Property, is enclosed in a piped conveyance. Brem PFT, ¶ 18. Mr. Hilgeman testified that during his October 22, 2021 site visit he observed the pipe submerged and in a deteriorated condition, with flow going into and around the pipe. Hilgeman, 1:35-50-1:37:52.¹⁰ The Brook crosses Princeton Boulevard and then flows in a northeasterly direction through private properties and Pratt Avenue and Baldwin Street, discharging on the easterly side of Baldwin Street. Brem PFT, ¶ 18; Brem Ex. 5.

The Proposed Project

The proposed Project includes the construction of a single-family house, driveway, decks, walkways, landscaping, associated drainage and utilities, and a paved extension of Tamarack Street. SOC Cover letter, page 1; Bogue PFT, ¶ 4. The Applicant proposes to extend Tamarack Street by 140 feet to provide frontage for the proposed house. Brem PFT, ¶ 15. The proposed Project will result in the loss of flood storage within the regulated wetlands resource area of Bordering Land Subject to Flooding (“BLSF”). Brem PFT, ¶ 21; Bogue PFT, ¶ 13; Hilgeman

⁸ Mr. Hilgeman testified that the most recent map shows the maximum 100-year floodplain Elevation is 102.5 feet North American Vertical Datum of 1988 (NAVD 88). However, the Parties agree that this appeal relies on the 2010 map available at the time of the application. Hilgeman PFT, ¶ 7; Brem PFR, ¶17.

⁹ MassDEP’s Chalk 1, like Brem Ex. 6A, was created from the Lowell GIS and FEMA base map, but shows a larger area of the Black Brook floodplain than is shown on Brem Ex. 6A. It was used during the cross examination of Mr. Brem and Mr. Hilgeman relative to the location of the Brook and flooding dynamics. At the Hearing, the prior Presiding Officer explained that MassDEP’s Chalk 1 would remain in the administrative record, absent a valid basis to exclude it and directed MassDEP’s counsel to circulate it after Hearing, which she did. The Petitioners filed no objection to it and referred to it during cross-examination. It is part of the administrative record. Presiding Officer, 15:17-16:49; Brem, 18:10-18:51; Brem, 1:08:26-1:12:30; Hilgeman, 1:38:40-1:41:15.

¹⁰ Mr. Hilgeman also testified that there were no flood waters at the surface at the time of his site visit. Hilgeman, 1:36:30.

PFT, ¶ 8.¹¹ The Applicant proposes to use underground storage vaults under the house and a rain garden to provide 720 cubic feet of compensatory flood storage. Id.¹² The plan of record is a plan set entitled “Roadway Extension and NOI Site Plan, 4 Tamarack Street,” signed and stamped by Jeffrey Brem, revision dated January 6, 2021. SOC cover letter, page 1; Brem Ex. 2, Record Plan. Attached hereto as an Addendum.

There is no dispute that the proposed Project results in a loss of flood storage volume for which Compensatory Storage must be provided. The Parties dispute the meaning of “unrestricted hydraulic connection,” the use of a rain garden as both flood storage and treatment of stormwater discharge, the volume of flood storage lost, and Compensatory Storage provided.

House foundation:

The proposed Project includes four one-way flood vents in the house foundation at incremental elevations from 102 feet to elevation 104 feet to allow flood waters to flow into, but not through, the basement. Brem Ex. 2, page 3 of 4, Profile View, Section B-B (which shows two vents); Brem PFT, ¶ 22.c; Bogue PFT, ¶ 15; Brem, 38:07. Mr. Brem testified that these vents¹³ use specially designed pins to allow flood waters to flow into the basement and not out while keeping the basement secure from animals, pets or intruders. Id. Mr. Brem testified that

¹¹ Mr. Brem testified that the house footprint will result in 504 cubic feet of lost BLSF, which Mr. Bogue testified is incorrectly calculated. Brem PFT, ¶ 21; Bogue PFT, ¶ 21. Mr. Brem testified that some minor cuts and fills associated with the roadway extension will result in lost BLSF of 160 cubic feet. Brem PFT, ¶ 21. The record does not provide any calculation for lost BLSF resulting from construction of the rain garden.

¹² Mr. Brem testified that the rain garden would provide 320 cubic feet of Compensatory Storage and each underground storage vault would provide 200 cubic feet of Compensatory Storage. Brem PFT, ¶ 22.e

¹³ Smart Vent, Model 1540-520. Brem PFT, ¶ 22.c. Smart Vents as shown on Brem Ex. 2 are 8 inches by 16 inches and the design would “[U]se 4 or more “Smart Vent” foundation flood vents (www.smartvent.com) as shown, or open cell steel bar barrier with a loose piece of Styrofoam or equal to be installed in opening in foundation to allow flood waters to flow through foundation without causing damage.” Brem Ex. 2, page 2 of 4, Vent Detail. Note however, that Mr. Brem testified that these vents have “a clear opening of 4” in width x 16” in length.” Brem PFT, ¶ 30. See also Brem Ex. 7, Computation of Time to Enter Gooseneck Orifice and Smart Vents which states that smart vent width is actually 5”.

these vents are certified by “ICE-ES”¹⁴ and are FEMA compliant¹⁵ for use in areas that are susceptible to flood waters. Brem PFT, ¶ 22.c. A pipe drain in the floor of the basement would funnel the flood waters into two inter-connected underground 1,500-gallon vaults. Brem Ex. 2, page 3 of 4, Profile View Section B-B; Brem PFT, ¶ 22.d; Bogue PFT, ¶ 15. A 2-foot diameter hole would be cored into the bottom of each vault to allow stored water to infiltrate into the ground. Brem PFT, ¶ 22.g; Bogue PFT, ¶ 15. To prevent backflow into the vaults, a Tideflex one-way check valve would be installed into the overflow pipe of the second vault. Brem PFT, ¶ 22.g; Bogue PFT, ¶ 15. An overflow pipe from the second vault would connect to a proposed catch basin that would discharge to an existing catch basin located in Tamarack Road that connects to the municipal stormwater drainage system and eventually discharges into the Brook. SOC cover letter, page 2; Brem Ex. 2, page 3 of 4, Profile View, Section B-B; Brem PFT, ¶ 22.g; Bogue PFT, ¶ 15. Mr. Brem testified that the volume of flood waters would be retained and detained in the vaults to empty long after the storm subsides. Brem PFR, ¶¶4, 15.

Rain garden:

The proposed Project design includes a rain garden along the right side of the proposed house. Brem Ex. 2, page 2 of 4, Proposed Site Plan & Road Extension Detail. The rain garden would include a bioretention area 3 feet below grade designed with a goose neck piped inlet, a 6-inch diameter riser pipe with an opening at elevation 101 feet for the discharge of overflow from the rain garden into the first vault in the basement foundation. Brem Ex. 2, page 3 of 4, Rain Garden Detail; Brem PFT, ¶ 22.b; Bogue PFT, ¶ 15. The rain garden is intended to serve as both

¹⁴ “ICC-ES” is an organization that performs technical evaluations of building products, materials and systems for building code compliance. Presumably Mr. Brem’s reference to “ICE-ES” is a typographical error as no organization was identified in a web-search of this acronym. The referenced Smart Vent Model is listed on ICC-ES website as being compliant with certain international building codes but does not reference the MWPA or the Wetlands Regulations. <https://icc-es.org/report-listing/esr-2074/>.

¹⁵ Mr. Brem’s testimony provides no FEMA documentation or reference to support this contention, nor any demonstration that such “FEMA compliance” would result in compliance with the MWPA and the Wetlands Regulations.

a stormwater best management practice (“BMP”) draining stormwater to a Cultec subsurface infiltration system and to provide Compensatory Storage for lost flood storage volume. Brem PFT, ¶ 22.b; Bogue PFT, ¶ 15.

Procedural Background

The Applicant’s Notice of Intent (“NOI”) was approved by the LCC on September 20, 2020. Brem PFT, ¶¶ 8-9; Bogue PFT, ¶¶ 4-5. The resulting OOC approved the alteration of approximately 1,992 square feet of BLSF and the filling of 664 cubic feet of BLSF to be mitigated by 720 cubic feet of Compensatory Storage. Bogue PFT, ¶ 5.

MassDEP intervened in the OOC, appealing the LCC’s decision on September 28, 2020, having determined that the OOC did not comply with the regulations at 310 CMR 10.57(4) for work within BLSF.¹⁶ MassDEP Notice of Appeal, September 28, 2020. Brem PFT, ¶ 10; Bogue PFT, ¶ 10. MassDEP conducted a site visit on November 6, 2020, that was attended by Mr. Bogue, the Applicant’s representative, a representative of the LCC and a representative from the Lowell Wastewater Plant. Bogue PFT, ¶ 12. Those present walked the site and discussed the proposed Project and the issues related to the appeal. *Id.* At the site visit, Mr. Bogue informed the attendees that the project design did not meet the performance standards for 310 CMR 10.57(4) for BLSF. Bogue PFT, ¶ 14. Thereafter, Mr. Brem, the Applicant’s engineer, submitted two new plans, which Mr. Bogue testified did not meet the performance standards for BLSF. *Id.*

Specifically, it is MassDEP’s opinion that utilizing flood vents in the foundation walls of the proposed house, two underground vaults, and a stormwater rain garden failed to meet the Wetlands Regulations’ performance standard for Compensatory Storage. MassDEP concluded that the proposed Project did not ensure that flood waters would flow in an equivalent manner to

¹⁶ 310 CMR 10.05(7)(a)6. and (b) Provides that the Department may initiate an appeal of a commission decision to issue an Order of Conditions and to request the issuance of a Superseding Order of Conditions.

provide an “unrestricted hydraulic connection” to the waterway and would not provide Compensatory Storage for the volume of water at each elevation. Bogue PFT, ¶ 10.

The Applicant filed a timely appeal of the SOC denial and on September 2, 2021, the prior Presiding Officer conducted a Pre-Hearing Conference with the Parties at which the issue for adjudication was established.¹⁷ After Mr. Bogue’s PFT was filed on behalf of the Department, the Applicant filed a Motion to Suppress Gary Bogue’s Exhibit 2¹⁸ which was followed by MassDEP’s Opposition. On December 1, 2021, the prior Presiding Officer ruled that he had reviewed the motions and denied the Motion to Suppress. In his ruling, he stated that he would “consider the Applicant’s arguments and other testimony or evidence when assessing the evidentiary weight of the exhibit and related testimony after the adjudicatory hearing in the Recommended Final Decision.”¹⁹ Thereafter, a Hearing was conducted on January 18, 2022.

ISSUE FOR RESOLUTION IN THE APPEAL

1. Whether the Applicant’s project to build a single-family residence complies with the performance standards for Bordering Land Subject to Flooding, 310 CMR 10.57(4)(a)?

STATUTORY & REGULATORY FRAMEWORK

The MWPA and the Wetlands Regulations “do not prohibit development in wetlands areas[,] [but rather,] ‘create[e] a procedure requiring the [D]epartment to condition activities in certain [wetlands] areas so as to protect [the MWPA’s] statutory mandate.’” In the Matter of

¹⁷ At the Pre-Hearing Conference, the Petitioners withdrew their Motion for Summary Decision based upon their concession that MassDEP’s appeal of the OOC approving the proposed Project was timely. See, Pre-Hearing Conference Report and Order.

¹⁸ Bogue Ex. 2 is a MassDEP presentation titled, “Bordering Lands Subject to Flooding: How to Determine Their Extent and Meet Performance Standards,” presented by Thomas Maguire, MassDEP Wetlands Program at the MACC Fall Conference October 2017.

¹⁹ The prior Presiding Officer reiterated this statement at the Hearing, noting that “In the end, when I issue my recommended final decision, I decide how much weight to give that specific document.” Presiding Officer, 44:12.

Kristen Kazokas, OADR Docket No. WET-2017-022, Recommended Final Decision (August 29, 2018), 2018 MA ENV LEXIS 67, *9, adopted by Final Decision (September 18, 2019), 2019 MA ENV LEXIS 93, citing Ten Local Citizen Group v. New England Wind, LLC, 457 Mass. 222, 224 (2010). The purpose of the MWPA and the Wetlands Regulations is to protect wetlands and to regulate activities affecting wetlands areas in a manner that promotes the following eight statutory interests: (1) protection of public and private water supply; (2) protection of ground water supply; (3) flood control; (4) storm damage prevention; (5) prevention of pollution; (6) protection of land containing shellfish; (7) protection of fisheries; and (8) protection of wildlife habitat. G.L. c. 131, § 40; 310 CMR 10.01(2); Kristen Kazokas at *9, citing New England Wind, 457 Mass. at 224, n.6.

BLSF is “an area which floods from a rise in a bordering waterway or water body. Such areas are likely to be significant to flood control and storm damage protection.” 310 CMR 10.57(1)(a)1. BLSF provides a “temporary storage area for flood water which has overtopped the bank of the main channel of a creek, river or stream or the basin of a pond or lake. During periods of peak run-off, flood waters are both retained (i.e., slowly released through evaporation and percolation) and detained (slowly released through surface discharge) by [BLSF].” 310 CMR 10.57(1)(a)2. Building in BLSF areas leads to “incremental filling [which] causes increases in the extent and level of flooding by eliminating flood storage volume or by restricting flows, thereby causing increases in damage to public and private properties.” 310 CMR 10.57(1)(a)2.

The Wetlands Regulations establish performance standards for Compensatory Storage for projects proposed within BLSF provide as follows:

310 CMR 10.57(4)(a): Bordering Land Subject to Flooding

1. Compensatory Storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to

Flooding, when in the judgement of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.

Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displayed by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream or creek. (Emphasis supplied.)

PETITIONERS' BURDEN OF PROOF

As the party challenging the Department's issuance of the SOC, the Petitioners had the burden of proof in this de novo appeal, to produce credible evidence from a competent source to support its positions.²⁰ Specifically, the Petitioners were required to present "credible evidence from a competent source in support of each claim of factual error [made against the Department], including any relevant expert report(s), plan(s), or photograph(s)." 310 CMR 10.05(7)(j)3.c. "A 'competent source' is a witness who has sufficient expertise to render testimony on the technical issues on appeal." In the Matter of City of Pittsfield Airport Commission, OADR Docket No. 2010-041, Recommended Final Decision (August 11, 2010), 2010 MA ENV LEXIS 89, *36-37, adopted by Final Decision (August 19, 2010), 2010 MA ENV LEXIS 31. Whether the witness has such expertise depends "[on] whether the witness has sufficient education, training, experience and familiarity with the subject matter of the testimony." Commonwealth v. Cheromcka, 66 Mass. App. Ct. 771, 786 (2006) (internal quotations omitted). See, e.g., In the Matter of Carulli, Docket No. 2005-214, Recommended Final Decision (August 10, 2006) (dismissing claims regarding flood control, wetlands replication, and vernal pools for failure to provide supporting evidence from competent source), adopted by Final Decision (October 25, 2006); In the Matter of Indian Summer Trust, Docket No. 2001-142, Recommended Final

²⁰ See 310 CMR 10.03(2); 310 CMR 10.05(7)(j)2.b.iv; 310 CMR 10.05(7)(j)2.b.v; 310 CMR 10.05(7)(j)3.a; 310 CMR 10.05(7)(j)3.b.

Decision (May 4, 2004) (insufficient evidence from competent source showing that interests under MWPA were not protected), adopted by Final Decision (June 23, 2004); In the Matter of Robert Siegrist, Docket No. 2002-132, Recommended Final Decision (April 30, 2003) (insufficient evidence from competent source to show wetlands delineation was incorrect and work was not properly conditioned), adopted by Final Decision (May 9, 2003).

STANDARD OF REVIEW

My review of the evidence presented is de novo, meaning that my review is anew, irrespective of any prior determination of the Department in issuing the SOC. See Kristen Kazokas at *29. “Hence, if during the pendency of an administrative appeal, ‘[the Department] becomes convinced’ based on a different legal interpretation of applicable regulatory standards, new evidence, or error in its prior determination, ‘that the interests of [MWPA] require it to take a different position from one that it had adopted previously [in issuing the SOC],’ the Department is authorized to, and should change its position.” In the Matter of Algonquin Gas Transmission, LLC, OADR Docket No. WET-2016-025, Recommended Final Decision (October 16, 2019), 2019 MA ENV LEXIS 106, *15, adopted by Final Decision, (October 24, 2019), 2019 MA ENV LEXIS 104. Additionally, as the Presiding Officer responsible for adjudicating this appeal “[I am] not bound by MassDEP’s prior orders or statements [in the case], and instead [I am] responsible . . . for independently adjudicating [the] appeal[l] and [issuing a Recommended Final Decision] to MassDEP’s Commissioner that is consistent with and in the best interest of the [MWPA, the Wetlands] Regulations, and MassDEP’s policies and practices.” In the Matter of Francis P. and Debra A. Zarette, Trustees of Farm View Realty Trust, OADR Docket No. WET 2016-030, Recommended Final Decision (February 20, 2018), 2018 MA ENV LEXIS 7, *16, adopted by Final Decision (March 1, 2018), 2018 MA ENV LEXIS 6.

The relevancy, admissibility, and weight of the evidence presented at the Hearing are

governed by G.L. c. 30A, § 11(2) and 310 CMR 1.01(13)(h)(1). Under G.L. c. 30A, § 11(2):

[u]nless otherwise provided by any law, agencies need not observe the rules of evidence observed by courts, but shall observe the rules of privilege recognized by law. Evidence may be admitted and given probative effect only if it is the kind of evidence on which reasonable persons are accustomed to rely in the conduct of serious affairs. Agencies may exclude unduly repetitious evidence, whether offered on direct examination or cross-examination of witnesses.

Under 310 CMR 1.01(13)(h), “[t]he weight to be attached to any evidence in the record . . . rests within the sound discretion of the Presiding Officer. . . .” See In the Matter of Sawmill Development Corporation, OADR Docket No. 2014-016, Recommended Final Decision (June 26, 2015), 2015 MA ENV LEXIS 63, at *84 (petitioners’ expert testimony “that pharmaceuticals, toxins, and other potentially hazardous material would be discharged from effluent generated by . . . proposed [privately owned wastewater treatment facility] . . . was speculative in nature and not reliable”), adopted by Final Decision (July 7, 2015), 2015 MA ENV LEXIS 62.

DISCUSSION

The protection of wetlands resource areas including BLSF is increasingly important as the climate of Massachusetts changes.²¹ “Throughout the northeastern United States, spring is arriving earlier and bringing more precipitation, heavy rainstorms are more frequent, and summers are hotter and drier.”²² “Flooding is part of the natural cycle of a balanced environment. However, severe flood events can result in substantial damage, particularly where human development has interfered with natural flood-related problems.”²³ “Climate Change is

²¹ See In the Matter of FTO Realty Trust, OADR Docket No. WET-2015-024RM, Recommended Final Decision (October 19, 2018), 2018 MA ENV LEXIS 65, *64, adopted by Final Decision (October 29, 2018), 2018 MA ENV LEXIS 64 (“FTO Realty”).

²² “What Climate Change Means For Massachusetts,” USEPA 430-F-16-023, <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-ma.pdf>.

²³ Massachusetts State Hazard Mitigation and Climate Adaptation Plan, September 2018, at 4-29, <https://www.mass.gov/files/documents/2018/09/17/SHMCAP-September2018-Chapter4.pdf>.

expected to exacerbate the risk of inland flooding events by altering the intensity, duration, extent and frequency of extreme precipitation.”²⁴ Flood control is one of the interests of the MWPA and the Wetlands Regulations identify BLSF as areas “likely to be significant to flood control and storm damage prevention.” 310 CMR 10.57(1)(a)1. “Over time, incremental filling of these areas causes increases in the extent and level of flooding by eliminating flood storage volume or by restricting flows, thereby causing increases in damage to public and private properties.” 310 CMR 10.57(1)(a)2 (emphasis supplied).

Compensatory Storage must be provided for the proposed Project because it is located within BLSF, and the Compensatory Storage must have an “unrestricted hydraulic connection” to the Brook to ensure that flood waters will flow freely in an equivalent manner post construction. 310 CMR 10.57(4)(a)1; SOC Cover Letter, page 2. The regulatory performance standard requires that Compensatory Storage must be incrementally equal to the theoretical volume of flood waters at each elevation up to the 100-year flood elevation. MassDEP’s experts, Mr. Bogue and Mr. Hilgeman, testified that the proposed system of vents, pipes and underground vaults that are depicted in Brem Ex. 2, would constrict the flow of flood waters, changing the flow rate and resulting in hydraulic restrictions. As a result, MassDEP’s experts concluded that the proposed design does not provide an “unrestricted hydraulic connection” to the waterway and that it would not ensure that flood waters would flow freely in an equivalent manner post-construction. Bogue PFT, ¶¶ 19-20; Hilgeman PFT, ¶¶ 8-11, 13.

Mr. Bogue also testified that the Petitioners miscalculated the required volume of needed Compensatory Storage. Mr. Bogue contends that the Compensatory Storage calculation should have included the volume of the foundation wall and the volume enclosed within the foundation.

²⁴Recommendations of the Climate Chief, October 25, 2023, at 66, <https://www.mass.gov/doc/recommendations-of-the-climate-chief-october-25-2023/download>.

Bogue PFT, ¶ 21. He also testified that any storage space in the rain garden is likely to be occupied by stormwater and unavailable for flood storage. Bogue PFT, ¶ 18. If unavailable for flood storage, it cannot be counted as Compensatory Storage.

The Petitioners do not dispute that Compensatory Storage is required but assert that the proposed Project meets the performance standard of “unrestricted hydraulic connection” to the same waterway. The Petitioners contend that the flow rate of flood waters is not relevant and that because flood waters can flow into and through the vents, pipes and storage vaults, flow is unrestricted. Brem PFT, ¶¶ 26-33. Alternatively, the Petitioners contend that flood waters need only flow from the Compensatory Storage to the water body. Brem PFR, ¶ 3. The Petitioners also contend that the lost volume is correctly calculated to be 664 cubic feet and that the proposed Compensatory Storage of 720 cubic feet exceeds the required replacement ratio. Brem PFT, ¶ 21.

As further discussed below, the Petitioners have failed to demonstrate that the proposed vents, pipes and storage vaults allow flood waters to flow freely in an equivalent manner post-construction. The proposed Project results in flow restrictions and therefore does not satisfy the regulatory performance standard for construction within BLSF. The volume of lost flood storage is also miscalculated. I therefore recommend that MassDEP’s Commissioner issue a Final Decision affirming the SOC denying the proposed Project.

1. The Proposed Project does not meet the performance standards for construction within a BLSF.

a. Unrestricted Hydraulic Connection to Brook

The regulations at 310 CMR 10.57(4)(a) provide that “compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body.” The phrase “unrestricted hydraulic connection” is undefined and the Petitioners contend that MassDEP has no “official written policy or even official unwritten guidance” interpreting the phrase. This

contention, however, overlooks adjudicatory decisions and other guidance documents that discuss application of the “unrestricted hydraulic connection” requirement for Compensatory Storage which are the best source of evidence for meaning.²⁵ As explained in FTO Realty,²⁶ MassDEP interprets this phrase:

to mean a connection to the same waterbody at all elevation increments that does not hydraulically impede or constrict the movement of flood waters. Maguire PFT, page 7.²⁷ This definition is consistent with the plain meaning of restriction, which is “confined; limited,” and the definition of unrestricted, which is “not restricted or limited in any way” (Emphasis supplied.)

Id. at *66 (footnotes omitted). The decision also notes:

Typically, compensatory areas are designed close to the river as a simple depression or excavated area (open void), with no barriers to water flowing in or out on any side. This enables the water to flow through, unimpeded, without any hydraulic restriction. (Emphasis supplied.)

Id. at *72.

The FTO Realty decision is consistent with the holding in an earlier decision, In the Matter of M.G. Hall Company, OADR Docket No. WET-2012-023, Recommended Final Decision (May 7, 2013), 2013 MA ENV LEXIS 105, *30-31, adopted by Final Decision

²⁵ “[T]he Department’s own documents, such as decisions and guidance documents, would be the best evidence of its policy or practice.” In the Matter of Cohasset Heights, Ltd., Docket No. 97-170, 1998 MA ENV LEXIS 819, *18, Ruling on Applicant’s Witnesses and Proposed Testimony.

²⁶ FTO Realty concluded that the proposal would restrict the hydraulic connection to the River where the single-family residence would be built on top of 4-5 feet of fill with a retaining wall that would narrow the opening between the Compensatory Storage area and the River to 21 feet.

²⁷ The expert witness for the Department in FTO Realty was Thomas Maguire, the author of Bogue Ex. 2.

(March 19, 2014) (“M.G. Hall”),²⁸ which explained, “[t]he requirement that Compensatory Storage must have an unrestricted hydraulic connection to, and be within the same reach of, the waterway ensures that flood flows will pass freely in an equivalent manner post-construction.” (Emphasis supplied.)

The Petitioners assert that an older adjudicatory decision, In the Matter of Burkhard Corp., Docket 98-086, Final Decision (June 16, 1999), 1999 MA ENV LEXIS 746 (“Burkhard”), supports their contention that the proposed vents, storage vaults and pipes provide the necessary “unrestricted hydraulic connection.” Burkhard allowed construction of an 800 cubic foot “flood storage vault” under the corner of a building, connected to the flood plain by three 36-inch concrete pipes placed within the newly excavated areas and concluded that the design would allow flood waters to pass unimpeded in and out of the vault. Id. at *7. M.G. Hall acknowledged that Burkhard allowed engineered storage where the decision concluded that the flow of flood waters would not be impeded by the design. M.G. Hall at *36.²⁹ In the present case, the proposed design directs flood waters through multiple vents, pipes, and storage components, each of which is a separate restriction. None of these components are equivalent to the elements that were approved in Burkhard. The importance of maintaining unrestricted flow that was applied in Burkhard, remains as critical now, 24 years later.³⁰ Here, the proposed design changes the velocity of flood waters flowing from what it

²⁸ M.G. Hall affirmed the project denial where the Compensatory Storage calculation excluded the porosity of stone bedding and where the design used a stormwater management structure to provide Compensatory Storage and to control Stormwater discharges.

²⁹ “Although the calculation of fill and compensatory storage typically assumes a filled volume and an empty volume of new storage excavated from the ground, the Department has allowed engineered storage where flow floods will be unimpeded. . . . [T]he Department’s SOC apparently allowed the space within the 36-inch corrugated metal pipes as either flood storage that was not ‘lost’ or as compensatory storage where the pipes will be placed within newly excavated areas.” M.G. Hall at *36.

³⁰ See Footnotes 21-24.

would be absent the proposed Project and would store flood waters for infiltration instead of allowing it to flow in an equivalent manner.³¹

Other MassDEP guidance and interpretation of unrestricted hydraulic connection is found in a power point presentation titled, “Bordering Lands Subject to Flooding: How to Determine Their Extent and Meet Performance Standards” presented in Mr. Bogue’s testimony. Bogue Ex. 2. The document indicates that it was presented by a MassDEP employee, Thomas Maguire, at the Fall Conference of the Massachusetts Association of Conservation Commissions (“MACC”)³² in October 2017. The presentation is available on MassDEP’s website and is an official MassDEP document that provides guidance on how MassDEP applies this regulatory performance standard.³³ This BLSF presentation shows examples of different “cut and fill” designs that are and are not compliant with the performance standard, showing those typically used close to the river. Bogue Ex. 2, pages 37-38.³⁴ It also identifies restrictive design elements including pipes and flood vents in buildings. Bogue Ex. 2, page 40.

The Petitioners’ objection to the BLSF presentation in Bogue Ex. 2 as a statement of interpretation or policy is not persuasive.³⁵ The Petitioners contend that Bogue Ex. 2 should be

³¹ “The prohibition on restriction of flows ensures that proposed work will not be located in such a way that would raise flood elevation or increase flow velocities, for example, by narrowing the width, decreasing the depth, or isolating portions of the BLSF.” M.G. Hall at *51.

³² MACC is a non-profit 501(c)(3) organization founded in 1961 that provides environmental education, training and assistance to Massachusetts conservation commissioners who administer the MWPA in their communities. <https://www.maccweb.org/>.

³³ Guidance and policies for the implementation of MWPA and Wetlands Regulations are located on MassDEP’s website. The search results for the phrase “unrestricted hydraulic connection” includes a link to this presentation at: https://www.mass.gov/doc/bordering-lands-subject-to-flooding-how-to-determine-their-extent-and-meet-performance/download?_ga=2.180725607.1986776229.1695302630-1239754622.1651494571&_gl=1*176s2t7*_ga*MTIzOTc1NDYyMi4xNjUxNDk0NTcx*_ga_MCLPEGW7WM*MTY5NTMyMDE3MC4xMS4wLjE2OTUzMjAxNzcuMC4wLjA.

³⁴ See also FTO Realty at *72: “Typically, compensatory areas are designed close to the river as a simple depression or excavated area (open void), with no barriers to water flowing in or out on any side. This enables the water to flow through, unimpeded, without any hydraulic restriction.”

³⁵ Mr. Brem cross-examined Mr. Bogue regarding the existence of a “policy” interpreting “unrestricted hydraulic connection,” and Mr. Bogue testified that Bogue Ex. 2 was “guidance” and not “policy.” Bogue, 2:26:56. However,

given little or no weight because Mr. Maguire was not a witness and therefore was not available for cross examination. Pet. Closing Brief, page 7. However, it was not necessary for Mr. Maguire to testify regarding the content of the exhibit. Mr. Bogue, as an expert for the Department, is qualified to apply the guidance therein, which he applied consistently with the final adjudicatory decisions in FTO Realty, M.G. Hall and Burkhard.³⁶ Nor does the fact that Mr. Bogue did not attend the 2017 presentation by Mr. Maguire diminish the weight of the exhibit or disqualify Mr. Bogue from testifying regarding his understanding of it. Bogue, 2:18:47.

I am guided by long standing legal principles established by the Massachusetts Supreme Judicial Court governing enforcement of mandatory and discretionary duties of state agencies. Specifically, “[a]dministrative agencies must abide by their internally promulgated policies.”³⁷ “[T]he Department's own documents, such as decisions and guidance documents, would be the best evidence of its policy or practice.” In the Matter of Cohasset Heights, Ltd., Docket No. 97-170, 1998 MA ENV LEXIS 819, *18. Further, MassDEP has discretion to interpret the regulatory language, which it has done consistently over time. As long as the interpretation is not arbitrary and capricious such that it constitutes an abuse of the agency’s discretion, it should be upheld.³⁸

labeling an agency interpretation as either “policy” or “guidance” does not affect its relevance. See also Brem PFR, ¶ 12.

³⁶ Mr. Brem also asserts that Bogue Ex. 2 is only a portion of the presentation. Brem, 2:19:07. However, the exhibit appears complete and includes pages 1-44, and page 44 includes the notation “END.”

³⁷ Biogen IDEC MA, Inc. v. Treasurer & Receiver General, 454 Mass. 174, 186 (2009) (State Treasurer was bound by his predecessor Treasurer’s policy).

³⁸ Frawley v. Police Commissioner of Cambridge, 473 Mass. 716, 728 (2016); Garrity v. Conservation Commission of Hingham, 462 Mass. 779, 792 (2012); Sierra Club v. Commissioner of Department of Environmental Management, 439 Mass. 738, 748-49 (2003); Forsyth Sch. for Dental Hygienists v. Board of Registration in Dentistry, 404 Mass. 211, 217 (1989).

Together these final adjudicatory decisions and the BLSF presentation documented in Bogue Ex. 2 interpreting the regulation and performance standard detail a long standing, consistent interpretation of this performance standard.³⁹ The final adjudicatory decisions emphasize that flood waters must be allowed to continue to flow freely post-construction, in an equivalent manner and the guidance in Bogue Ex. 2 presents options for achieving that performance standard.⁴⁰

b. Restrictive Components of the Project Design

The record indicates that there are currently no restrictions to flood waters entering and exiting the Property during floods. Brem PFT, ¶ 16; Bogue PFT, ¶ 13; Hilgeman PFT, ¶ 9.⁴¹ As a result, any construction on the Property must allow for the temporary storage of flood waters and an unrestricted hydraulic connection to allow flood waters to flow to the Brook. 310 CMR 10.57(4)(a).

i. Smart vents in house foundation create hydraulic restriction of flood waters.

The proposed design would direct the flow of flood waters through smart vents shown on Brem Ex. 2 as four openings in the basement foundation. Brem PFT, ¶¶ 27, 30. While Mr.

³⁹ The Applicant attempts to distinguish M.G. Hall and FTO Realty based on the particular details of the unacceptable compensatory flood storage design in each case. However, as MassDEP notes in its Closing Brief, many of the specific technical details in FTO Realty are directly relevant, including the finding that “if flood waters fill up the compensatory area, additional flood waters will be impeded from passing into or through the area, creating another hydraulic restriction into the area and causing further deflection of the waters to the surrounding area.” See MassDEP Closing Brief, page 5, citing FTO Realty at *73.

⁴⁰ In his rebuttal testimony, Mr. Brem also contends that MassDEP misinterpreted the grammar of, “Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body.” 310 CMR 10.57(4)(a). Brem PFR, ¶ 3. His interpretation is unpersuasive as it gives no meaning to the term “unrestricted” which the Department has consistently interpreted to mean that flood waters must “flow freely and unimpeded” and “in an equivalent manner, post-construction.” M.G. Hall at *30-31; FTO Realty at *66; Burkhard at *7; Bogue Ex. 2, page 40. See also Craft Beer Guild, LLC. V. Alcoholic Beverages Control Commission, 481 Mass. 506, 525 (2019) (agency regulations should not be interpreted so as to lead to “absurd consequences.”).

⁴¹ Mr. Brem testified that there are other restrictions in the floodway, including the approximately 400 feet of culverted Brook. Brem PFT, ¶31; Brem PFR, ¶¶7-9. Mr. Hilgeman acknowledged the restrictions but testified that existing downstream restrictions do not allow the creation of new restrictions on the Property. Hilgeman PFR, ¶ 14.

Brem contends that smart vents are certified for this use and approved by other entities, he does not provide any demonstration that the use of smart vents complies with the MWPA or the Wetlands Regulations. Nor is his testimony consistent with respect to the size of these openings.⁴² MassDEP's experts testified that smart vents create contractions and frictions that are not present under the existing flow conditions. Hilgeman PFT, ¶¶ 9, 19. Whether 4, 5 or 8 inches wide, the smart vents limit how much flow per unit time can enter the flood storage. Bogue PFT, ¶ 20. Smart vents, similar to storm sewer grates and culverts, result in hydraulic restrictions and are less resilient to potential blockage than the open floodplain conditions that currently exist on the Property. Hilgeman PFT, ¶ 9. Unlike the current open flood plain conditions, smart vents are susceptible to clogging by floating debris during storm events. Id.

The Petitioners contend that flood waters would flow into the multiple orifices and apertures in a “timely fashion” and therefore is unrestricted but Mr. Brem’s testimony regarding timing and the behavior of flood waters in the vicinity of the Property lacked credibility.⁴³ Brem PFT, ¶¶ 25-26; Brem, 36:09-36:50. Mr. Brem testified that “time” is the only factor that could be deemed “restrictive” but that by his calculations flood waters would flow in a “timely fashion” into the proposed orifices and apertures. Brem PFT, ¶¶ 25-26, 30, 31.⁴⁴

However, Mr. Brem testified that he did not conduct any studies of floods in the area, and so his conclusion that flood waters would flow through his design in a “timely fashion” cannot be compared with the existing conditions. Brem, 10:43-11:40. His testimony on timely flow of

⁴² See footnote 13.

⁴³ Specifically, Mr. Brem testified that it would take 12.1 minutes for water to enter the system at Elevation 101.0 and 2.0 minutes for water to enter the system at Elevations 102.0 and 103.5. Brem PFT, ¶¶ 29-30; Brem Ex. 7, Computation of Time to Enter Gooseneck Orifice and Smart Vents.

⁴⁴ Mr. Hilgeman testified that Mr. Brem’s computation is misleading because it does not consider tail water (i.e. water located below the weir) when basement flood waters recede out of the basement, nor does it consider friction properties required to calculate flow through the smart vent. Hilgeman PFT, ¶ 13.

flood waters is based on speculation and is conflicting. First, Mr. Brem testified that the flooding of the Brook “will commence near Baldwin Street. The flood waters will overtop the banks, overtop Baldwin Street and then begin to spread horizontally to flood the neighborhood to the limits shown on Exhibit. 5.” Brem PFT, ¶ 22.a. However, later in his rebuttal testimony, Mr. Brem stated that when the Brook flood waters rise, “[t]his will be happening both downstream at the Baldwin Street pipe outlet and nearby the subject site at the Princeton Street pipe inlet.” Brem PFR, ¶ 8. On cross-examination, Mr. Brem acknowledged that flood waters could be flowing from upstream of the site. Brem, 38:32-39:40. He also testified that “these flood waters will take many, many hours to rise, almost assuredly more like multiple days.” Brem PFT, ¶ 31.⁴⁵ On cross-examination, however, Mr. Brem admitted that flood waters can rise quickly from intense precipitation in urban areas, including flash floods. Brem, 1:02:58-1:07:18.

Petitioners also contend that the rate of flow is irrelevant as long as flood waters can flow into the vents. Brem, 36:09-36:50. This contention, however, disregards the term “unrestricted.” Under existing conditions at the Property, flood waters can enter and exit the Property during floods without any restrictions. Hilgeman PFT, ¶ 9. The designed flow through the smart vents creates contractions and friction not present under the existing flow conditions. Id. The restriction of flow into smart vents results in an increase in velocity, allowing water to flow in and out but not at the same rate as the Property’s existing conditions. Hilgeman PFT, ¶ 10.⁴⁶ A preponderance of the evidence demonstrates that smart vents create restrictions that prevent flow from passing freely in an equivalent manner post-construction.

ii. The inlet pipe to the storage vaults, the storage vaults themselves and the outlet pipe create a hydraulic restriction of flood waters flow.

⁴⁵ Mr. Hilgeman stated that this prediction appeared to be for a scenario in which the Merrimack River backwater was the main source of flooding and cited other scenarios that would cause much quicker flood waters rise. Hilgeman PFT, ¶¶ 15-16.

⁴⁶ Flow = velocity * area. A decreased area results in an increased velocity. Hilgeman PFT, ¶ 10.

After flood waters enter the basement through the smart vents, the proposed design directs flood waters through a 6-inch pipe to storage vaults creating another set of hydraulic restrictions. Hilgeman PFT, ¶ 11; Bogue PFT, ¶ 19. The Tideflex one-way valve also acts with the outlet pipe to restrict the rate of flow out of the storage vaults. Hilgeman PFT, ¶ 18. Flood waters cannot flow into and out of the storage vaults at the same rate at each elevation increment up to and including the 100-year flood elevation. Hilgeman PFT, ¶ 18; Bogue PFT, ¶ 19. In fact, Mr. Brem testified that stormwater would be stored in the vaults for eventual discharge and could empty long after the storm subsides. Brem PFR, ¶¶ 4, 15.⁴⁷

Mr. Bogue testified that placing flood waters into a confined structure is a hydraulic restriction. Bogue PFT, ¶ 19. Mr. Bogue testified convincingly that the storage vaults would essentially function as subsurface infiltration systems analogous to a stormwater subsurface infiltration BMP. Bogue PFT, ¶ 23. Both vaults would have a 2-foot diameter hole cored into the bottom to allow any residual water that was not discharged into the city drainage system to infiltrate into the ground. Bogue PFT, ¶ 23; Brem PFT, ¶ 22.g. The Stormwater Handbook requires site specific data be collected for any infiltration systems to determine the rate of infiltration and that none of these criteria were investigated by the Petitioners. Bogue PFT, ¶ 23.⁴⁸ Mr. Bogue testified that flood waters carry heavy loads of suspended sediments, so without pretreatment the infiltration capacity would quickly be reduced and eventually clogged up. Id. If there is not sufficient depth to the water table or the water table is higher than the outlet hole,

⁴⁷ Mr. Brem testified that the storage vaults “are simply a relief mechanism to allow for the vaults to empty long after the storm subsides so the volume is available for the next 100-year storm event with time to drain almost no factor at all since the probability of another similar storm is measured in years.” Brem PFR, ¶ 15. However, Mr. Brem did not provide any testimony supporting his probability assumption. Further, “[t]he 100-year storm has a one percent chance of occurring in any year, but can occur at any time and may be followed by additional rainfall.” M.G.Hall, at *41.

⁴⁸ Specifically, he testified that it would be necessary to determine site-specific soils data, infiltration rates, pretreatment prior to infiltration and depth to the water table. Bogue PFT, ¶ 23.

the system would not drain as proposed. He contends that as a result, stormwater BMPs, including vaults and rain gardens, should not be used for Compensatory Storage. Id.⁴⁹ This position is consistent with M.G. Hall.⁵⁰

As discussed above, in an effort to get around the restrictions entering the design, Mr. Brem first testified that as long as flood waters can enter Compensatory Storage through orifices and apertures in a “timely fashion,” the hydraulic connection between the flood waters and the storage cannot not be considered “restrictive.” Brem PFT, ¶¶ 25-26.⁵¹ Later, however, Mr. Brem testified that the phrase “unrestricted hydraulic connection to the same waterway” should be read to mean an unrestricted connection, from the Compensatory Storage to the water body, without reference to flood waters entering the Compensatory Storage. Brem PFR, ¶¶ 2-11; Brem, 36:09-36:50. This second contention is also unsupported. There is nothing in the regulatory language, prior final adjudicatory decisions or other Department guidance in the record to suggests that the evaluation of “unrestricted hydraulic connection” to the relevant water body should exclude flood waters flowing into Compensatory Storage. That flood waters must be able to “flow freely post-construction, in an equivalent manner” is consistent with MassDEP’s position that Compensatory Storage design must consider the rate of water entering and exiting

⁴⁹ By contrast, Mr. Brem contends that MassDEP’s interpretation is incorrect and an abuse of discretion because the Department treats pilings as having a de minimis impact on flood waters flow and allows their use in BLSF. Mr. Brem testified that pilings are fill and would need to be mitigated, even for a de minimis impact. Brem, 1:00:56-1:02:11. On cross-examination Mr. Bogue testified that pilings are distinguishable from storage vaults because pilings displace a small volume of space and are not “restrictive,” allowing unrestricted flow of flood waters around them to/in the floodway. Mr. Bogue testified that as such, it is reasonable that pilings would be considered a de minimis amount of filling in a flood plain and MassDEP would have allowed that for a single-family house. He estimated that house pilings would reduce flood storage capacity by 10 cubic feet, in contrast to the 700 or more cubic feet lost in this case, with multiple restrictions in the proposed design. Mr. Bogue testified that pilings would allow unrestricted hydraulic connection to the rest of the flood waters. Bogue, 2:47:40-2:48:58. Mr. Bogue testified that a determination of de minimis impact is an exercise of agency discretion. Bogue, 2:51:20-2:51:51. Regarding agency discretion, see also footnote 38.

⁵⁰ “The Department’s guidance states that compensatory storage is ““a separate volume from that required for peak rate attenuation under Standard No. 2 of the stormwater policy.”” M.G. Hall at *40.

⁵¹ However, as Mr. Hilgeman testified, forcing flood waters to flow through the vents and pipes changes the velocity of flood waters. Hilgeman PFT, ¶ 10.

the Compensatory Storage. See Hilgeman PFT, ¶ 10. A preponderance of the evidence demonstrates that the storage vaults and associated pipes create restrictions that prevent flood waters from flowing freely in an equivalent manner post-construction.

iii. The Rain Garden creates hydraulic restrictions of flood waters.

The rain garden is designed to be dug down to Elevation 99. Brem PFT, ¶ 22.b. However, during rainfall events, the volume and elevation available for Compensatory Flood storage is likely to be occupied by stormwater. Bogue PFT, ¶ 18.a. The design allows stormwater to sheet flow from the Tamarack Street extension and surrounding area into the rain garden that would flow into the beehive grate that drains into the cultec infiltration system. The riser pipe in the rain garden has an inlet opening at Elevation 101 feet and drains flood waters into the underground storage vaults. The beehive grate, the riser pipe and the storage vaults each represent a restriction. Bogue PFT, ¶ 18.b. Further, the Parties agree that the rain garden, by design, is a depression like a puddle. Brem PFR, ¶ 13; Bogue PFT, ¶ 18.c. However, Mr. Bogue also testified that water will be retained in that puddle and cannot flow back to the Brook, and by definition is a hydraulic restriction. Bogue PFT, ¶ 18.c. Mr. Bogue further testified that the intent of the regulation is to allow flood waters to flow overland, be temporarily stored, and to flow back to the waterway unimpeded and unrestricted. Bogue PFT, ¶ 18.c. A preponderance of the evidence demonstrates that the rain garden creates restrictions that prevent flood waters from passing freely in an equivalent manner post construction.

3. Compensatory Storage Volume

The Wetlands Regulations at 310 CMR 10.57(4)(a)1 provide in relevant part:

1. Compensatory Storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgement of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows. (Emphasis supplied.)

The Compensatory Storage calculation method was considered in M.G. Hall. “The traditional way of calculating compensatory storage is to determine the volume of proposed fill at each elevation and expect an applicant to excavate and remove an equivalent volume for storage to compensate for the filled area. The excavated volume must be greater than the filled volume, at each elevation of the floodplain up to the 100-year floodplain elevation, to provide incremental flood storage.” M.G. Hall at *30. The decision in M.G. Hall rejected the Petitioners’ contention and concluded that (1) the voids between stones in fill do not provide comparable Compensatory Storage; Id. at *38-*39; (2) that the rain garden does not double as Compensatory Storage; Id. at *40-42; and (3) that use of BLSF for stormwater management involves loss of flood storage volume that requires Compensatory Storage. Id.

a. House foundation

Mr. Bogue testified on behalf of MassDEP that the Petitioners’ method of calculating lost flood storage volume to include only the foundation wall is incorrect. Bogue PFT, ¶ 21. Mr. Bogue testified that the correct method for calculating the volume enclosed by the entire foundation includes the volume of the foundation walls and the space inside the basement. Bogue PFT, ¶ 22.⁵² Mr. Brem testified that he calculated the volume by multiplying the length of the wall by its thickness and then multiplying this area by the height of the 100-year flood. Brem PFT, ¶ 21. Mr. Brem also asserts that “air within the foundation” is not lost and is therefore not part of the calculation. Brem PFR, ¶ 14. The Department’s approach of comparing the volume of fill and the volume of new storage without considering voids is consistent with the Wetlands Regulations, which also focus on volume without reference to

⁵² 301 CMR 10.57(4)(a) provides in relevant part, “Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. . . .”

voids, and is consistent with its long history of implementing this performance standard.

M.G.Hall at *38-39.

Consequently, I am not persuaded by the Petitioners' argument that only the basement walls should be included when calculating Compensatory Storage volume of the foundation. The inside of the basement, like the voids between stones in M.G. Hall, must be included in the volume calculation for Compensatory Storage.

b. Rain Garden

M.G. Hall considered the issue of stormwater management structures and Compensatory Storage and concluded that any use of BLSF for a stormwater management structure, including a wet retention basin, is lost and must be compensated. M.G. Hall at *40-*42.

“Under the regulations, however, the volume of provided for compensatory storage where fill is proposed in BLSF must be available to accept flood water flow at any time. Compensatory storage cannot be allocated to other uses on the grounds that the 100-year storm has not yet peaked or has already subsided. In addition, the compensatory storage must be available at each increment. If stormwater occupies the lower elevation, compensatory storage is not available at that level.” Id. at *41-42. (emphasis supplied).

Here, the rain garden stormwater storage capacity is a separate volume that cannot be used as Compensatory Storage and must be counted as storage “lost to fill.” M.G. Hall at *40. While Mr. Brem is correct that single family homes are not required to have stormwater controls,⁵³ if Petitioners choose to use one then it will fill with stormwater, leaving it unavailable for Compensatory Storage. Consistent with M.G. Hall, MassDEP’s expert, Mr. Bogue, testified that during rain fall, the storage capacity (volume and elevation available) of the rain garden is designed to be occupied by stormwater. Bogue PFT, ¶ 18.a.⁵⁴ This

⁵³ Massachusetts Stormwater Handbook, Volume 1, Chapter 1, pages 2-3; Brem PFR, ¶ 13.

⁵⁴ This volume would include stormwater from the Tamarack Street extension and the surrounding area which is designed to flow into the rain garden such that it could fill the available volume up to Elevation 100 feet. Bogue PFT, ¶ 18b.

stormwater storage space cannot serve a dual purpose of Compensatory Storage. Bogue PFT, ¶ 19; see also M.G. Hall, supra. As such, the 320 cubic feet associated with the rain garden cannot be counted as Compensatory Storage and must be considered lost flood storage space that must be compensated. A preponderance of the evidence demonstrates that the storage capacity is not correctly calculated.

CONCLUSION

A preponderance of the evidence presented at the Hearing shows that the Petitioners have failed to demonstrate that the proposed vents, pipes, and storage vaults allow flood waters flow to pass freely in an equivalent manner post-construction. The proposed Project results in restrictions of flood water flows and therefore does not satisfy the regulatory performance standard for construction with BLSF and the design has miscalculated the lost flood storage space. As a result, I recommend that the Department's Commissioner issue a Final Decision affirming the SOC denying the proposed Project.

Date: November 28, 2023



Margaret R. Stolfa
Presiding Officer

NOTICE - RECOMMENDED FINAL DECISION

This decision is a Recommended Final Decision of the Presiding Officer. It has been transmitted to the Commissioner for her Final Decision in this matter. This decision is therefore not a Final Decision subject to reconsideration under 310 CMR 1.01(14)(d), and may not be appealed to Superior Court pursuant to M.G.L. c. 30A. The Commissioner's Final Decision is subject to rights of reconsideration and court appeal and will contain a notice to that effect.

Because this matter has now been transmitted to the Commissioner, no party shall file a motion to renew or reargue this Recommended Final Decision or any part of it, and no party shall communicate with the Commissioner's office regarding this decision unless the Commissioner, in her sole discretion, directs otherwise.

SERVICE LIST

In the Matter of:

**Martin Burke and Melmar
Properties, LLC**

Docket No. WET-2021-031

**File No. 206-0802
Lowell, MA**

Representative

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DEPARTMENT

In the Matter of Martin Burke and Melmar Properties, LLC, OADR Docket No. WET 2021-031

Recommended Final Decision

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