COMMONWEALTH OF MASSACHUSETTS
DIVISION OF ADMINISTRATIVE LAW APPEALS

September 13, 2006

In the Matter of	Docket No. DEP-05-805
CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS	DEP File No. 123-175 Cambridge

PARTIAL SUMMARY DECISION

Appeal by petitioner ten residents group from a wetlands superseding order of conditions, issued by the Department of Environmental Protection on March 31, 2005, allowing construction of the Cambridge Department of Public Works' proposed "CambridgePark Drive Area Drainage Project" that is intended to reduce combined sewer overflow discharges to Alewife Brook by separating sewer and stormwater lines in the Fresh Pond, Fresh Pond Parkway and the Concord Avenue Rotary area of North Cambridge, and by directing part of the stormwater flow through the Wheeler Street Drain into a 3,300 foot 4' x 8' concrete box culvert, a sediment forebay, and a 3.5-acre stormwater detention wetland to be built within the Alewife Reservation, from which water will be discharged to Little River.

Motions by Cambridge Department of Public Works for a full summary decision, and by DEP for partial summary decision, are decided thus:

On Issue 1, regarding practicable and economically equivalent alternatives to locating project components (including the detention basin) in a riverfront area, see 310 CMR 10.58(4)(c)— in particular, Alternative 4A, the petitioner group's proposal that stormwater be directed into a detention basin to be built at a privately-owned site south of the Alewife Reservation:

> Summary decision is granted in favor of Cambridge DPW. Its motion showed with competent expert affidavit support that (1) the Alternative 4A site would have to be taken via eminent domain at substantial cost, and (2) this alternative would add substantial additional construction costs, the impracticality and economic nonequivalence of Alternative 4A was not the subject of a genuine, material factual dispute. The petitioner group's opposition did not suffice to stave off summary decision because it relied upon opinion testimony regarding engineering matters and taking-related costs that is not competent.

On Issue 2, regarding stormwater discharge and compliance with DEP's Stormwater Management Standard 2:

> Issues 2(a) and (b) are determined summarily as factually undisputed: (a) the project will increase the volume of stormwater discharged to Little River; but (b) the fact that an increased volume of stormwater that will be discharged to Little River after the project is built will not violate per se the requirement of Standard 2 that stormwater management systems be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.
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> Summary decision is denied as to Issue 2(c), regarding offsite flooding. Neither of the motions showed it to be beyond genuine or material factual dispute that the project would not increase offsite flooding despite a post-construction increase in stormwater volumes discharged to Little River.

On Issue 3, regarding lost flood storage volume:

Cambridge DPW's motion for summary decision on this issue is denied as insufficiently made and supported. The motion lacks the affidavit support it needed to show that the project will not alter bordering land subject to flooding, or that it will provide sufficient compensation for lost flood storage volume if bordering land subject to flooding is altered.

On Issue 4, regarding flooding, siltation, erosion and total suspended solids control:

On Issue 4(c), Cambridge DPW and DEP are granted a summary decision limited to the portion of the divided stormwater flow that will bypass the new detention basin in Alewife Reservation and be discharged to Little River via the existing Wheeler Street Drain. Channeling this portion of the flow through an existing drainage structure is either "redevelopment" or "existing development" under the Stormwater Management Standards. Therefore, the post-construction removal of total suspended solids (TSS) from this flow must be "to the maximum extent practicable," per Stormwater Management Standard 7, as DEP asserts. The treatment of stormwater flow that enters the detention basin is subject to more stringent TSS removal requirements recited by Standard 4, however. Because the wetland detention basin and its associated project components will be built at a previously undeveloped site in Alewife Reservation, they do not comprise "redevelopment" to which Standard 7 applies. Accordingly, stormwater discharge from the detention basin and associated structures in Alewife Reservation must comply fully with Standard 4, which requires 60-80 percent TSS removal for a "constructed wetland," "extended detention pond," or "wet pond" under post-construction conditions, rather than "to the maximum extent practicable."

Summary decision is denied to both movants on Issues 4(a), (b) and (d) because on these issues, both motions are insufficiently made and supported. Without affidavit support, both motions have not shown it to be beyond genuine, material factual dispute that (1) the proposed sediment forebay from which stormwater will be discharged to the wetland detention basin will not wash out or otherwise fail during storm events, resulting in increased flooding, siltation and erosion at the detention basin's spillway, (2) the wetland detention basin will control flooding and siltation, and will not cause increased erosion at the basin's spillway, and (3) no project design modifications are needed to assure sufficient control of flooding, siltation, erosion and total suspended solids.

On Issue 5, regarding the sufficiency of siltation and erosion controls during project construction:

Cambridge DPW's motion for summary decision on this issue lacks the affidavit support it needed and is denied as insufficiently made and supported.

On Issue 6, regarding the wetland resource area status of an open section of the Wheeler Street Drain:

Summary decision is denied to both movants on this issue. Neither motion shows it to be beyond genuine or material dispute that the Wheeler Street Drain is not a stream or, thus, that its open portion cannot have associated bank. DEP's affiant opines only that if there is bank present along the open section of the Wheeler Street Drain, the project will not impair its wildlife habitat functions. Cambridge DPW's affiant states that the Drain contains only stagnant water, but it offers no supporting observations; accordingly, his affidavit does not rule out the possibility that the Wheeler Street Drain is an intermittent stream or, thus, that land abutting its open section is bank.

Richard A. Nylen, Jr., Esq. (Lynch, DeSimone & Nylen, LLP), Boston, for petitioner ten residents group.

Elizabeth A. Shaw, Esq., Assistant City Solicitor, Cambridge, for applicant Cambridge Department of Public Works.

Rebecca Cutting, Esq., Senior Counsel, Boston, for the Department of Environmental Protection.

MARK L. SILVERSTEIN, Administrative Magistrate.

Background

a.

To visualize the geographic setting of these appeals in North Cambridge, one can draw a rectangle whose northern side is a divided six-lane section of Route 2 (with Arlington to the north of it) and whose eastern side is Alewife Brook Parkway (Route 16). The Parkway's intersection with Route 2 (near the Alewife MBTA station) forms the rectangle's northeastern corner. Alewife Brook flows northeast from this corner. Little River flows into Alewife Brook at this corner from the west, through the Alewife Reservation. The reservation is public parkland managed by the Massachusetts Department of Conservation and Recreation that extends from the Route 2/Alewife Brook Parkway intersection westward to Little Pond at the Belmont town line. A line run southward from this point forms the imaginary rectangle's western side.

Following Alewife Brook Parkway southward from the Route 2 intersection, one passes the MBTA station and CambridgePark Drive, which runs westward from the station's southern side. The parkway then crosses commuter rail tracks and meets Concord Avenue near the northeast corner of the Fresh Pond Reservation, a 162-acre area including a deep pond, fed by other parts of Cambridge's reservoir system, from which water is pumped to a treatment plant for finishing as drinking water. Wheeler Street, a smaller street slightly to the west, runs northward from Concord Avenue and parallel to the parkway. A 72-inch storm drain in this street runs northward and ultimately discharges to Alewife Brook, close to where Little River meets it near the Route 2/Alewife Brook Parkway intersection. Concord Avenue and the parkway overlap for a short distance between two small traffic rotaries. Continuing south of this "Concord Avenue Rotary," the parkway (known in this location as Fresh Pond Parkway), parallels the Fresh Pond Reservation's eastern side, crosses Huron Avenue, and reaches Brattle Street. Brattle Street and Mt. Auburn Street, into which it runs slightly to the west, forms the imaginary rectangle's southern boundary.

b.

Together with the Massachusetts Water Resources Authority, applicant Cambridge Department of Public Works (Cambridge DPW) faces a court-ordered deadline for controlling the discharge of combined sewer overflows to Alewife Brook.[1] To meet this obligation, Cambridge DPW proposes separating sewer and stormwater flows in the vicinity of Fresh Pond, Fresh Pond Parkway and Concord Avenue—the "CAM 004 catchment area." The combined sewer overflow problem in this area is longstanding, and poses a serious threat to public health and to surface water quality. Currently during wet weather, stormwater flow enters the sewer system in this area directly via catchbasins along street curbs. The volume is too much for the sewer system to handle, and the surcharge of wastewater and sewage overflows out of catchbasins and manholes, flooding area roadways and overflowing into the Fresh Pond Reservation. The contaminated flow also enters street-level storm drains, passes through existing stormwater conveyances such as the Wheeler Street Drain, flows northward without attenuation or treatment, and discharges to local waterways including Little River. This scenario occurs approximately 63 times each year, generating approximately 50 million gallons of combined sewer overflow annually.[2]

The project will redirect stormwater flow from area streets into a separate conveyance system. Unburdened by the current volume of stormwater inflow, the sewer system is expected to overflow far less than it now does, meaning that most of its volume should reach its intended destination—an existing treatment facility—most of the time. However, flow separation also means that stormwater will no longer be treated along with the sewage flow (meaning the volume that

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[1]/ United States v. Metropolitan District Commission, C.A. Nos. 85-0489, 83-1614, Order (D. Mass., April 27, 2006) (Stearns, J.). Judge Stearns' Order directs that MWRA, in cooperation with Cambridge DPW, must begin construction of manhole separation within the CAM 004 catchment area, and of the proposed stormwater outfall and detention basin, by July 2007. A copy of the Order is attached as Exhibit C to DEP's Brief on the issue of "Practicable and substantially equivalent economic alternatives, dated June 15, 2006.

[2]/ See Letter, Michael Wagner, Senior Enforcement Counsel, U.S. EPA, Region 1, to Rebecca Cutting, Esq., Department of Environmental Protection, dated June 12, 2006, at 3 (attached as Exh. B to DEP's Brief on the issue of "practicable and substantially equivalent economic alternatives," dated June 15, 2006).

actually reaches the treatment facility and does not overflow onto the streets) before it is discharged to receiving waters, as is currently the case.[3]

The project is designed to provide some degree of water quality treatment and flow attenuation before the separated stormwater flow is discharged to Little River:

> A "wishbone" structure near the Concord Avenue Rotary will divide, into two separate flows, stormwater that currently flows entirely into the Wheeler Street Drain. One path, leading away from the Wheeler Street Drain, will convey part of the stormwater flow into a bending weir chamber, and then into a 3,300-foot 4' x 8' box culvert running to a sediment forebay that will discharge the flow (minus part of the sediment load) in turn to a 3.5-acre detention wetland that will be built within the Alewife Reservation. The detention wetland is designed to provide a storage volume of 10.3 acre-feet. Water detained within it will exit at the wetland's downstream end and flow to Little River via piping. The other branch of the "wishbone" will convey part of the stormwater flow to a different bending weir chamber and culvert, but this volume will bypass the forebay and detention wetland and will drain to Little River via the existing Wheeler Street Drain.

Matter of Cambridge Department of Public Works, Docket No. DEP-05-805, Decision and Order on Motion to Dismiss,12 DEPR 173, 174 (September 30, 2005).

The project will alter areas subject to protection under the Wetlands Protection Act, M.G.L. c. 131, §40,[4] including the 25-foot riverfront area associated with Little River,[5] and therefore requires a wetlands permit. According to the Department of Environmental Protection (DEP), "only a relatively small portion" of the proposed stormwater detention basin would be within riverfront area—outfall points downstream of the detention basin outlet that would also be within bordering land subject to flooding, and also a "low flow outlet."[6]

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[3]/ Of course, combined flow that escapes from the surcharged sewer system during storms, as is now the case, also receives no treatment before it reaches local waterways.

[4]/ Cambridge DPW projects that the project will alter 250 linear feet of bank, 4,236 square feet of bordering vegetated wetlands, 959 square feet of land under a water body, 291,482 square feet of bordering land subject to flooding, 10,229 square feet of isolated land subject to flooding, and 6,000 square feet of riverfront area, and will also displace 5114.5 cubic feet of flood storage. Superseding order of conditions (March 31, 2005), at 2-3.

[5]/ The riverfront area's width in all of Cambridge is 25 feet, per 310 CMR 10.58(2)(a)3.a, rather than the usual 200 feet.

[6]/Department of Environmental Protection's brief on the issue of "practicable & substantially equivalent economic alternatives," (June 15, 2006), at 7, citing plans accompanying Cambridge DPW's wetlands notice of intent for the proposed project (Plans L1-A, L-3A and L-4A, showing, respectively,

Cambridge DPW filed a notice of intent for the project with the Cambridge Conservation Commission, which issued an order of conditions allowing it on June 16, 2004. Following a request by a residents group (Richard D. Clarey and others) for review, DEP issued, on March 31, 2005, a superseding order of conditions allowing the project, and this appeal by the petitioner ten residents group followed.

The group's wetlands claims tracked objections to the project that it raised during the permit review process: the project will not meet the requirements for work in a riverfront area, will not comply with DEP's Stormwater Management Policy (resulting in adverse impact upon wetlands functions, particularly stormwater control and flood damage prevention) and will fill bordering vegetated wetlands and bank contrary to the requirements of DEP's Wetlands Protection Regulations, 310 CMR 10.00. Other claims track the group's longstanding objection to using Alewife Reservation parkland for stormwater conveyance, detention and treatment facilities.

Two of the group's twelve original claims have been withdrawn (claim 6, alleging insufficient information on the use of a tide gate and flap valves or on the effect of these devices on flooding, and claim 7, alleging excessive parkland excavation to increase compensatory flood storage capacity). Upon motion by Cambridge DPW, another claim was dismissed (claim 2, alleging project segmentation), and claims regarding work in a riverfront area and the detention basin (claims 1 and 10, respectively) were redacted to eliminate allegations regarding the project's use of and impact upon parkland, as these sought no relief available under the Wetlands Protection Act or Regulations, 310 CMR 10.00. See Decision and Order on Motion to Dismiss, 12 DEPR at 175-79.

c.

Most of the group's claims survived Cambridge DPW's motion to dismiss, among them that stormwater discharge would increase following project construction without quantity or quality

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the project's work limits, the riverfront area boundary, and outfalls to be located within the riverfront area), and notice of intent fig. 2-14 (showing the location of the "low flow outlet" and the outlets downstream of the detention basin outlet).

limitations (Claims 3 and 4). Other surviving claims asserted insufficient compensation for flood storage volume lost through the alteration of bordering land subject to flooding (claims 5, 8 and 9), the inadequacy of the proposed detention basin to prevent flooding, siltation and erosion (claim 10), inadequate erosion and siltation control during construction (claim 11), and failure to delineate an open section of the Wheeler Street Drain that the project would enclose as a wetland resource area (claim 12). Id.

Also surviving dismissal was Claim 1, in which the group asserts that Cambridge DPW did not "prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131, §40..." as DEP's riverfront area regulations require. See 310 CMR 10.58(4). The group prefers one alternative in particular—"Alternative 4A"—because it would spare the use of Alewife Reservation parkland and because the detention basin would be located further away from Little River. This alternative would require using (by permission or by taking) part of a privately-owned parking lot located south of the project site, between CambridgePark Drive and a commuter rail line, that is used currently by the commercial occupants of 100 and 120 CambridgePark Drive.[7] This alternative would divert flows from both the Wheeler Street Drain and

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[7]/ The group described the Alternative 4A site for the detention basin it proposes as being "...inside the large 12-acre surface parking lot in the CambridgePark 'Triangle' area at Alewife...," with this additional detail:

> Currently, this triangle is roughly bisected by CambridgePark Drive and includes the Alewife Red Line station and parking garage, as well as numerous office and industrial sites. In the past few years, a luxury apartment complex has been constructed adjacent to the parking lot and close to the MBTA station.
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> The lot contains about 1500 parking spaces, of which about 1,000 are currently vacant. At the peak of office occupancy in the late 1990s, the lot contained about 500 empty spaces. The lot serves two large office buildings (100 and 120 CambridgePark Drive). For about 2/3 of its perimeter, the parking lot is enclosed by a chain link fence.
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> In addition to the two office buildings and the apartment house, the abutting properties to the east are another parking lot near Alewife Brook Parkway, and the MBTA commuter rail maintenance yard and tracks to the south. An R&D building for a biotech company abuts the far western end of the parking lot.

Request for superseding order of conditions (June 30, 2004), Attachment 1: Detention Basin Alternative

the new 4' x 8' box culvert to an approximately 4.5 acre detention basin, comprising a forebay and a main basin, that would be built along the parking lot's southern boundary. Water would exit this detention basin via a weir structure and would be directed, via a one foot diameter low-flow pipe, into a piped collection system extending around the basin, from which it would then flow back to the Wheeler Street Drain for discharge to Alewife Brook.[8]

Cambridge DPW counters that it considered a similar alternative in its notice of intent for the project ("Alternative 4") and found it to be neither practicable nor substantially equivalent economically to the Alewife Reservation site. That conclusion was based primarily on the cost of acquiring the alternative site; in addition, it was not certain that the owners would be willing to sell the parking lot area and lose, as a result, a substantial number of commercial parking spaces. In addition, the alternative would add significant costs for piping stormwater from CAM 004 (the catchment area in question) to the more distant parking lot site, for adding a riprapped channel to attenuate water flows over a longer distance and prevent channel erosion, and for the additional time it would take to build these additional project components.[9]

4A Within the Parking Lot at the CambridgePark Drive 'Triangle'," prepared by Stephen H. Kaiser, Ph.D (June 28, 2004). See also Affidavit of Dr. Stephen H. Kaiser in opposition to city's motion to dismiss petitioners' request for an adjudicatory hearing, sworn-to August 10, 2005, at 10, para. 24 (describing the site as "located along the southern boundary of the parking lot, in an area generally underutilized by parking vehicles" that "covers an area of 4.5 acres..."). The City of Cambridge's Director of Assessment has identified the Alternative 4A site as part of Lot 306 (shown on Assessor's Map 267.4), also known as 180R CambridgePArk Drive. Affidavit of Robert P. Reardon in support of Cambridge Department of Public Works' motion for summary decision, sworn-to January __, 2006 (day not given), at 2, n. 6.

[8]/ See Affidavit of Dr. Stephen H. Kaiser in opposition to City's motion to dismiss petitioner's request for adjudicatory hearing, sworn-to August 10, 2005, at 10-11.

[9]/ In its wetlands permit application, Cambridge DPW estimated this additional cost to be more than 59.5 million dollars. See Notice of Intent (December 2003), Attachment A, § F.4.4, at 9-12, Table F.5 ("Alternative 4-Preliminary Estimate of Capital Cost"), at 12, and § F.4.9, at 35. Cambridge DPW's response to comments on the notice of intent also addressed this "parking lot alternative" and rejected it because "[w]hile this alternative has some attractive features, the construction cost would exceed the total cost of sewer separation and take a number of years for review and regulatory acceptance." See "City of Cambridge Department of Public Works, Response to Comments on the Notice of Intent, DEP File # 123-175, CambridgePark Drive Area Drainage Project, Cambridge, Massachusetts, June 14, 2004," included in Exhibit A to DEP's response to City of Cambridge's motion to dismiss (August 10, 2005), at 1-8.

d.

With the group's claims redacted by partial dismissal, the issues to be adjudicated were identified at the November 18, 2005 prehearing conference:

1. Project alternatives

   (a) Is Alternative 4A a "practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131, §40" that Cambridge DPW was required to consider under the riverfront regulations?

   (b) If so, did Cambridge DPW consider this alternative sufficiently?

2. Stormwater discharge

   (a) Will the project increase the volume of stormwater discharged via the outfall downstream of the proposed stormwater wetland to Little River?

   (b) If so:

      (i) Will this violate Stormwater Management Standard 2 (which requires that stormwater management systems be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates)?

      (ii) What limitations on the quantity of this stormwater discharge, if any, should be included in a final order of conditions for the project?

3. Lost flood storage volume compensation

   (a) Will the project diminish flood storage capacity by altering bordering land subject to flooding (BLSF)?

   (b) If so, does the project provide sufficient compensation for flood storage volume lost through BLSF alteration?

4. Flooding, siltation, erosion and total suspended solids control

   (a) Will the proposed sediment forebay from which stormwater will be discharged to the wetland detention basin be washed out, or will it otherwise fail, during storm events, resulting in increased flooding, siltation and erosion at the detention basin's spillway?

   (b) Will the wetland detention basin (i) be inadequate, or will it fail, to control flooding and siltation, or (ii) cause increased erosion at the basin's spillway?

   (c) In dividing stormwater flow into two separate flows, one of which will bypass the detention basin and drain to Little River via the existing Wheeler Street Drain, will

the project fail to remove 80 percent of the average annual load (post-development) of total suspended solids from stormwater discharged from the project site?

(d) If the answer to (a), (b) or (c) is in any respect "yes," what project design modification(s), if any, should be required to assure sufficient control of flooding, siltation, erosion and total suspended solids, or must the project be denied?

5. Siltation and erosion controls during construction

(a) Will the siltation and erosion controls proposed for use during project construction allow untreated water and sediments to leave the project site and enter Little River?

(b) If so, what additional or different siltation and erosion controls should be required during project construction?

6. Wetland identification-Wheeler Street Drain

(a) Is the open section of the Wheeler Street Drain (the section that the proposed project will enclose), or any part of it, a bank or other type of wetland resource area within which work is subject to regulation under M.G.L. c. 131, §40 and 310 CMR 10.00?

(b) If this section of the Wheeler Street Drain or any part of it is a bank:

(i) Is this bank significant to the protection of wildlife habitat?

(ii) Will the project alter more than 10 percent or 50 feet, whichever is less, of the length of bank that is significant to the protection of wildlife habitat?

e.

Following the prehearing conference, Cambridge DPW moved for a full summary decision, asserting that none of the identified issues was the subject of a genuine or material factual dispute. Cambridge DPW's motion was supported by affidavits, particularly as to project alternatives (Issue 1), by a professional engineer and Ph.D. in environmental systems engineering who performed hydrological and hydraulic modeling for the project and the alternatives (Dr. Williams C. Pisano), a professional engineer, registered sanitary engineer, licensed site professional and project consultant (Vincent W. Spada), and Cambridge's Director of Assessment (Robert P. Reardon), who is also a real estate appraiser.

DEP moved for a partial summary decision on Issue 2 (regarding stormwater management standards compliance) and on Issue 6 (whether the open channel portion of the Wheeler Street Drain

qualifies as "bank" and, if so, whether the project would affect its significance to wildlife habitat or alter more bank than the regulations allow). Its motion was supported by affidavits from a registered professional engineer who serves as DEP's section chief for the municipal services section in the Bureau of Resource Protection at DEP's Northeast Regional Office (Kevin Brander), the Regional Wetlands Coordinator for DEP's Wetlands Program (Thomas Maguire), and a senior environmental analyst with DEP's Wetlands and Waterways Program (Rachel Freed).

The group opposes both motions, arguing that every one of the identified issues is the subject of a genuine and material factual dispute. The opposition is supported by affidavit—two, actually, from the same witness, Dr. Stephen H. Kaiser, a member of the petitioner group, who describes himself as an "independent citizen engineer" with degrees in mechanical engineering and experience in civil engineering, but who does not claim to be a registered professional engineer.[10]

Briefings related to the motions continued through early July, 2006. In addition, DEP moved, on July 12, 2006, to strike portions of the most recent of the two Kaiser Affidavits concerning project alternatives (Issue 1), particularly Alternative 4A. These include opinions regarding land use planning and land valuation that Dr. Kaiser cannot give, according to DEP, because he lacks the requisite expert qualification. Cambridge DPW joins in the motion.

Discussion

I begin with summary decision's ground rules. An appeal may be resolved by summary decision when it presents no genuine or material factual issue. A party moving for summary decision must show, with competent evidence, that there are no genuine or material factual issues to be adjudicated and that it is entitled to a final decision in its favor as a matter of law. Matter of Papp,

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[10]/ One affidavit, comprising 34 pages and 75 separately-numbered paragraphs, was filed earlier in opposition to Cambridge DPW's motion to dismiss. Affidavit of Dr. Stephen H. Kaiser in opposition to City's motion to dismiss petitioner's request for adjudicatory hearing, sworn-to August 10, 2005. The more recent affidavit, prepared in response to the summary decision motions, comprises 41 pages and 88 separately numbered paragraphs. Affidavit of Stephen H. Kaiser in support of petitioner's opposition to motions for summary decision, sworn-to February 13, 2006.

Docket No. DEP-05-066, Recommended Final Decision, 12 DEPR 210, 212 (November 8, 2005), adopted by Final Decision (December 27, 2005); Matter of Casagrande, Docket No. 2003-020, Recommended Final Decision, 11 DEPR 115, 116 (May 7, 2004), adopted by Final Decision, 11 DEPR 114 (June 7, 2004); Matter of Brown, Docket No. 98-036, Final Decision, 6 DEPR 6, 7 (January 5, 1999). This evidence may include admissions in the record. It may also include an affidavit that (1) is made on personal knowledge, (2) shows affirmatively that its author (the affiant) is competent to testify about the matters that his affidavit relates, and (3) presents facts that would be admissible in the Massachusetts courts. Papp, 12 DEPR at 212; see also Matter of Building Center, Inc., Docket No. 2002-230, Recommended Final Decision, 11 DEPR 43, 46 (March 19, 2004), adopted by Final Decision, 11 DEPR 124 (June 10, 2004). If the motion is sufficiently made and supported, the focus shifts to the sufficiency of the opposition, which must show with competent evidence that there exists a genuine and material factual dispute barring summary decision. Papp, 21 DEPR at 212; Matter of The Gallagher Group, Inc., Docket No. 2003-019, Recommended Final Decision, 12 DEPR 63, 64 (May 2, 2005), adopted by Final Decision (July 8, 2005).

The competence and admissibility requirements play a determinative role here, particularly as to Issue 1 (regarding project alternatives). They underscore summary decision's evidentiary formality, in contrast with more relaxed evidentiary standards that generally apply in administrative proceedings. The focus is upon what the courts have allowed or would allow under evidentiary rules, rather than upon what an administrative tribunal might otherwise allow as potentially "helpful" during a hearing. To the extent that metaphors are useful, summary decision could be described as among the worst times to attempt "pushing the envelope" of admissibility, whether as to expert qualification or otherwise. Since the summary decision standard is "admissible in Massachusetts courts," a party seeking or opposing summary decision whose affidavits or other evidence is challenged as inadmissible must show that the courts have admitted what is challenged or something analogous to it.

Because Cambridge DPW moves for summary decision on each of the identified issues, I

move sequentially through the issues and focus upon its motion primarily, turning to DEP's motion when it joins Cambridge DPW in seeking an issue's summary decision. As to each issue the analysis is the same: (1) is the motion sufficiently made and supported, and does it show the absence of any genuine, material factual issue barring the issue's summary decision and the movant's entitlement to summary decision as a matter of law; and, if so, (2) is the group's opposition sufficiently made and supported, and does it identify a genuine and material dispute that cannot be decided summarily?

1. Issue 1: Substantial and Economically Equivalent Alternatives (Alternative 4A)

With competent affidavit support, Cambridge DPW's motion shows it to be beyond genuine or material dispute that Alternative 4A is not a "practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131, §40," as 310 CMR 10.58(4) requires. The group's opposition, in contrast, is based upon engineering and valuation opinions offered by a witness who is not qualified to give them, and does not show with competent, admissible evidence, thus, that this issue is genuinely and materially disputed. Accordingly, I grant summary decision on Issue 1 in favor of Cambridge DPW.

a. "Practicability" and "substantial economic equivalency"

DEP's riverfront regulations (a part of its Wetlands Protection Regulations) provide that:

> An alternative is practicable and substantially equivalent economically if it is available and capable of being done after taking into consideration costs, existing technology, proposed use and logistics, in light of overall project purposes.

310 CMR 10.58(4)(c)1. The regulations explain that:

> The scope of alternatives under consideration shall be commensurate with the type and size of the project. The issuing authority shall presume that alternatives beyond the scope described below are not practicable and therefore need not be considered. The issuing authority or another party may overcome the presumption by demonstrating the practicability of a wider range of alternatives, based on cost, and whether the cost is reasonable or prohibitive to the owner; existing technology; proposed use; and logistics in light of the overall project purpose.

310 CMR 10.58(4)(c)2. In addition:

> The purpose of evaluating project alternatives is to locate activities so that impacts to the riverfront area are avoided to the extent practicable. Projects within the scope of alternatives must be evaluated to determine whether any are practicable. As much of a project as feasible shall be sited outside the riverfront area. If siting of a project entirely outside the riverfront area is not practicable, the alternatives shall be evaluated to locate the project as far as possible from the river.

310 CMR 10.58(4)(c)3.

Although Cambridge DPW is the project applicant here, the project at issue is a component of the Massachusetts Water Resources Authority's long-term plan for controlling combined sewer overflows to Alewife Brook and Little River,[11] and will be built under a schedule ordered by a federal district court in an action brought against MWRA (see above, at 4). For "activities conducted by district, county, state or federal government entities," a category that includes the project at issue because MWRA is one of the entities "conducting" it:

> [a]lternatives extend to any sites which can reasonably be obtained within the appropriate region of the state...[t]he area to be considered is the service area within the governmental unit boundary or jurisdictional authority, or the municipality if there is no defined service area, consistent with the project purpose.

310 CMR 10.58(4)(c)2.d.

The regulations list four factors to be examined in determining whether an alternative meets the "practicability" and "substantial economic equivalency" tests:

(1) "Costs, and whether such costs are reasonable or prohibitive to the owner." 310 CMR 10.58(4)(c)1.a. The regulation explains that "[c]ost includes expenditures for a project within the riverfront area, such as land acquisition, site preparation, design, construction, landscaping, and transaction expenses" but "does not include anticipated profits after the project purpose is achieved or expenditures to achieve the project purpose prior to receiving an Order [of conditions] with the

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[11]/ Notice of intent, letter of transmittal to the Cambridge Conservation Commission dated December 1, 2003, at 1, first para.

exception of land acquisition costs incurred prior to August 7, 1996." Id.[12]

(2) "Existing technology," including "best available measures (i.e., the most up-to-date technology or the best designs, measures, or engineering practices that have been developed and are commercially available)." 310 CMR 10.58(4)(c)1.b.

(3) "The proposed use," which "is related to the concept of project purpose." 310 CMR 10.58(4)(c)1.c. The regulation explains that:

> [p]racticable and substantially equivalent economic alternatives include alternatives which are economically viable for the proposed use from the perspective of site location, project configuration within a site, and the scope of the project. In the context of publicly financed projects, the proposed use includes consideration of legitimate governmental purposes (*e.g.*, protection of health and safety, providing economic development opportunities, or similar public purposes.).

(4) "Logistics," which "refers to the presence or absence of physical or legal constraints." 310 CMR 10.58(4)(c)1.d. The regulation explains that:

> Physical characteristics of a site may influence its development. Legal barriers include

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[12]/ 310 CMR 10.58(4)(c)1.a goes on to state, relative to the cost factor, that:

> In taking costs into account, the issuing authority shall be guided by these principles:
>
> i. The cost of an alternative must be reasonable for the project purpose, and cannot be prohibitive.
>
> ii. Higher or lower costs taken alone will not determine whether an alternative is practicable. An alternative for proposed work in the riverfront area must be a practicable and substantially equivalent economic alternative (i.e., will achieve the proposed use and project purpose from an economic perspective).
>
> iii. In considering the costs to the owner, the evaluation should focus on the financial capability reasonably expected from the type of owner (e.g., individual homeowner, residential developer, small business owner, large commercial or industrial developer) rather than the personal or corporate financial status of that particular owner. Applicants should not submit, nor should issuing authorities request, financial information of a confidential nature, such as income tax records or bank statements.
>
> iv. Issuing authorities may require documentation of costs, but may also base their determinations on descriptions of alternatives, knowledge of alternative sites, information provided by qualified professionals, comparisons to costs normally associated with similar projects, or other evidence. Any documentation of costs should be limited to that required for a determination of whether the costs are reasonable or prohibitive.

> circumstances where a project cannot meet other applicable requirements to obtain the necessary permits at an alternative site. An alternative site is not practicable if special legislation or changes to municipal zoning would be required to achieve the proposed use or project purpose. An alternative is not practicable if the applicant is unable to obtain the consent of the owner of an alternative site for access for the purpose of obtaining the information required by the Notice of Intent or of allowing the issuing authority to conduct a site visit.

The project alternatives issue (Issue 1) focuses upon a single alternative, Alternative 4A (described above, at 7-8), that would route stormwater from the Fresh Pond/Fresh Pond Parkway/Concord Avenue Rotary area to a detention structure to be built at a privately-owned parcel south of Alewife Reservation, rather than at the Reservation site that Cambridge DPW proposes. The summary decision motions and opposing papers show that three of the alternatives factors are unquestionably relevant in determining whether Alternative 4A meets the practicability and substantial equivalency test.

One is "costs," especially land acquisition costs, because the Alternative 4A site is privately owned and would have to be purchased or taken to use it as the site of the detention facility that the group proposes, while no such costs are associated with using Alewife Reservation as Cambridge DPW proposes.

Another relevant factor is "proposed use," which focuses upon the project's public financing, the underlying public health protection purpose, and (to the extent that the analysis need go that far) the constraints of the court order directing combined sewer overflow control to protect Alewife Brook.

"Logistics," the third relevant factor, makes relevant such legal constraints as whether the Alternative 4A site owner consents to its use as the project site and, if not, what it would cost to take the site by eminent domain,[13] and route stormwater through the site for detention prior to releasing

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[13]/ The authority of the City of Cambridge to take the Alternative 4A site is an unchallenged assumption underlying Alternative 4A's alleged practicability. There is no need to question this assumption here because Issue 1 resolves summarily on other grounds. If it did not, the group would have had to show that Cambridge DPW, or more accurately the City of Cambridge, had the authority to take the Alternative 4A site for this alternative to be practicable under 310 CMR 10.58(4)(c)1.d.

Cambridge has authority to take by eminent domain under M.G.L. c. 79, at the request of any

it for discharge downstream.

The "existing technology/best available measures" factor is not material to Issue 1 because the dispute over "practicability and substantial equivalency" concerns alternative project locations (the Alternative 4A site versus the Alewife Reservation site) rather than competing means of conveying and treating stormwater at the site of choice. Moreover, the choice of sites is not based upon the choice of stormwater treatment technology, as a detention basin would be used to treat stormwater at both the Alternative 4A site and the Alewife Reservation site.[14]

In moving for summary decision on the project alternatives issue, thus, it was the movant's burden to show that based upon costs, proposed use and logistics, it is beyond genuine dispute that

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municipal department and with the approval of Cambridge's City Manager and City Council, "any land within its limits for any municipal purpose," see M.G.L. c. 43, §30 and M.G.L. c. 40, §14, or for any "public purpose." See Sellors v. Town of Concord, 329 Mass. 259, 261, 107 N.E. 784, 785 (1952). A taking of the Alternative 4A site would be for a "municipal purpose" if the city would itself take, hold and use this land. To the extent that the taking could be regarded as being for the benefit of another public entity—the MWRA on account of the related federal court proceeding (see above, at 4)—there is a possibility that the taking would not meet the "municipal purpose" test and would have to qualify, instead, as being for a "public purpose." See Ballantine v. Town of Falmouth, 1 Mass. App. 47, 294 N.E.2d 524, 530 (1973), affirmed, 363 Mass. 760, 298 N.E.2d 695 (1973).

There is no evidence in the group's opposing papers (or elsewhere in the record) that a taking of Alternative 4A would meet either test. The group faced an adverse summary decision of Alternative 4A's impracticability as a matter of law, thus, even if its opposing affidavits presented competent opinion showing that Alternative 4A's practicability and substantial economic equivalency was the subject of a genuine and material factual dispute.

[14]/ The group argues that Cambridge DPW's detention basin design for the Alewife Reservation site does not include "best available technology such as spillways and armored weirs, to assure stability of basin operation and prevent washout and other structural or maintenance problems." Petitioner's response to Department's reply brief (July 3, 2006), at 7. Even if the argument is assumed to have merit, it would be addressed by adding an appropriate permit condition requiring spillways and armored weirs at the Alewife Reservation site rather than by acquiring the Alternative 4A site and relocating the detention basin to it. The group does not contend that technology such as spillways and armored weirs cannot be implemented at the Alewife Reservation site, and in addition, the group concedes that "Alternative 4A includes no unusual or new technology..." Id.; see also Affidavit of Affidavit of Stephen H. Kaiser in support of petitioner's opposition to motions for summary decision, sworn-to February 13, 2006, at 16, para. 39, at which the group's sole witness states that "[t]he primary difference in the design" (between Alternative 4A and the project as Cambridge DPW proposes it) "is the location of the basin, not its function to provide for flood storage, peak flow attenuation and detention/treatment of stormwater...The only design difference is in the structural nature of the weirs..." All of this underscores that the dispute over Alternative 4A's practicability and substantial equivalency with the Alewife reservation site does not turn on which alternative implements best available technology or best available measures. Accordingly, the group's technology-related assertions do not raise a factual issue regarding the "existing technology/best available measures" factor that is material to the choice of project site alternatives.

Alternative 4A is not practicable or substantially equivalent economically to what Cambridge DPW proposes.

b. Evidence supporting Cambridge DPW's motion

In seeking summary decision on Claim 1, Cambridge DPW asserts, first, that the unavailability of the Alternative 4A site for the project is an admitted fact. In a November 2005 letter to the Cambridge City Manager, Dr. Stephen H. Kaiser, a member of the group and its sole affiant in opposing summary decision member, conceded that the site's manager (Spaulding & Slye) was opposed to this use because its commercial tenants would lose valuable parking spaces as a result.[15] Unless that position changes, the City of Cambridge would need to take, and pay just compensation for, the Alternative 4A site. For this reason alone, Cambridge DPW argues next, it is beyond genuine dispute that Alternative 4A is substantially more costly than using the Alewife Reservation project site, which requires no taking-related compensation payment.[16] This is not, however, the only undisputed element of Alternative 4A's substantial additional cost. Cambridge DPW contends that piping stormwater from the upper section of the Wheeler Street Drain to the Alternative 4A site for detention and settling, and then back again to the lower section of the Wheeler Street Drain, would add millions of dollars of additional construction costs to the project, not only in terms of additional piping and protecting the stormwater conveyance from erosion, but also in terms of additional construction time.

Cambridge offers affidavit support for these arguments from three experts.

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[15]/ Letter, Dr. Stephen H. Kaiser to Richard Rossi, Deputy City Manager, dated November 21, 2005, attached as Exh. B to the Affidavit of Elizabeth A. Shaw, Esq. in support of Cambridge DPW's motion for summary decision, sworn-to January 26, 2006.

[16]/ The regulations do not state whether an alternative can be "substantially equivalent economically" if, unlike the applicant's proposed work site in a riverfront area, the alternative must be acquired by eminent domain, with payment of just compensation for the taking. I am unaware of any decision addressing this issue. I do not reach it here because summary decision on the alternatives issue is based upon the opposition's insufficiency (for lack of competent expert opinion on the "practicability" and "substantial equivalency" of Alternative 4A), which makes academic the broader question of whether a "taking alternative" can meet the substantial equivalency test.

(1) The Pisano Affidavit. Dr. William C. Pisano is a licensed professional engineer in Massachusetts, Michigan and Ohio and holds a Ph.D. in environmental systems engineering (Harvard University, 1973), Master of Science degrees in environmental engineering (Harvard University, 1971) and civil engineering (University of Arizona, 1964), and a Bachelor's Degree in civil engineering (Santa Clara University, 1962).[17] He has 35 years of experience in the design and application of combined sewer overflow (CSO)-related technology in projects addressing wet weather sewer system control, CSO storage and treatment facilities and system improvement, stormwater management, and water quality control, design and modeling.[18] Dr. Pisano is the vice president of Montgomery Watson Harza (MWH), which is providing technical direction services to Cambridge DPW regarding sewer separation design, combined sewer overflow, best management practices and floatables control relative to the project at issue here.[19] He supervised, reviewed and interpreted the hydrological and hydraulic modeling for the CambridgePark Area Drainage Project, including its development and calibration and the interpretation of modeling data output.[20] He also supervised the hydraulic design aspects of the project's sewerage and stormwater improvements.[21]

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[17]/ Id. at 4-5. Affidavit of William C. Pisano, Ph.D., P.E. dated "January __ 2006" (Pisano Aff.), at 4-5, paras. 10-11. With the affidavit sworn-to and signed, the omission of the day on which the affidavit was signed in January 2006 is a remediable omission and is therefore not significant, provided that Cambridge DPW files a corrected affidavit supplying the missing date. See Matter of O'Brien, Trustee, Scenic Heights Realty Trust, Docket No. 38-098, Final Decision, 4 DEPR 130, 135 (September 9, 1997), reconsideration denied, 4 DEPR 180 (October 23, 1997).

[18]/Dr. Pisano asserts a "specialized knowledge"of hydrologic and hydraulic analyses, including wet weather flow routing, gained through both academic training and field experience. Pisano Aff., at 2, para. 6. The latter includes the design or design supervision of over 200 surface and subsurface stormwater detention and retention facilities within the eastern United States ranging in capacity from 10,000 to nine million gallons, the design supervision of wet weather storage and treatment projects totaling 1.5 billion gallons per day design capacity, and the supervision of hydraulic design work, including both hydraulic computer modeling and physical modeling, of the Nut Island Headworks in Boston Harbor, part of the MWRA's Boston Harbor cleanup program. Id., at 2-3, para. 7. Dr. Pisano's other relevant professional experience includes the authoring and presentation of over 130 technical papers on urban runoff, flooding and pollution control. Id., at 3, para.. 8.

[19]/ Pisano Aff., at 1, para. 2.

[20]/Id., at 3-4, para. 9.

[21]/Id., at 4-5, para. 10.

It is his opinion that Alternative 4A's location is not hydrologically feasible and that its design, as the group proposes it, would not comport with sound engineering practices and would be logistically impractical. Even with an added pumping station that he believes is necessary for Alternative 4A to work without generating flooding within the surrounding area, there would be, in his opinion, neither adequate attenuation of peak flow directed back toward Alewife Brook during storms, nor sufficient flooding protection for areas upstream of the Alternative 4A site.

Dr. Pisano selected a modeling program known as "Hydroworks" for the 10 and 25-year storm events; using it, he and his staff at MHW conducted a hydrological/hydraulic analysis of Alternative 4A that assumed the location of the detention basin and forebay at the Alternative 4A site and its configuration as the group proposed, and the same topography and characteristics as the detention basin and forebay would have at the Alewife Reservation site.[22] Based upon the results of this analysis and his professional experience, Dr. Pisano concluded that Alternative 4A would require additional construction well beyond what utilizing the Alewife Reservation site would require, and would pose flooding and erosion hazards to areas surrounding the Alternative 4A site and to areas upstream and downstream of it. Specifically:

> (i) the detention wetland could not be located feasibly at the Alternative 4A site because the available storage volume and site configuration would be inadequate, at that location, "to provide the required peak flow attenuation to Alewife Brook while minimizing upstream problems";
>
> (ii) to correct these deficiencies, additional land would have to be acquired;
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> (iii) the proposed alignment of the detention system at the Alternative 4A site appeared to be "in direct conflict" with the Sherman Street Drain, a shallow drain that served as the main outlet for a different catchment area (CAM 401, an area parallel to the commuter rail tracks south of Alewife Reservation); more than 1700 feet of this drain would have to be rerouted if Alternative 4A were implemented, and this realignment would generate, in turn, an additional conflict with a combined sewer crossing (the 48" Rindge Avenue sewer, which crosses Alewife Brook Parkway at CambridgePark Drive), and therefore approximately 480 feet of this combined sewer would have to be rerouted as well;
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> (iv) constructing Alternative 4A would require installing an additional 2200 feet of large diameter shallow pipes, the installation of which would be "extremely disruptive";

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[22]/ Id., at 6, para. 13.

(v) in contrast with the overflow system that Cambridge DPW proposed, which consisted of "vegetated channels to collect and convey excess flows to the Little River," Alternative 4A would require "an elaborate underground collection system around the full perimeter of the facility to convey excess flows to the Wheeler Street Drain;" in turn, this would make the footprint of the detention system at the Alternative 4A site larger than the footprint of the Alewife Reservation detention system;[23]

(vi) because the detention system and the berm at the Alternative 4A site would lie almost entirely within the 100-year floodplain, it would be necessary to construct at least 20 acre-feet of compensatory floodplain storage to a depth of 6-8 feet;[24]

(vii) Alternative 4A "will result in substantially increased flooding upstream in the collection system" during the 10 and 25-year design storms; and

(viii) to protect nearby commercial establishments from overtopping and uncontrolled flooding during the 10 and 35-year design storms, Alternative 4A would require a "substantial berm system constructed above existing ground surface enclosing the entire facility approximately 1-3 feet in height," and higher than that to protect nearby commercial properties against flooding during storms of greater magnitude than the 25-year event.[25]

Even with a berm in place, it would be necessary, in Dr. Pisano's opinion, to construct a pumping system to return stormwater to the Wheeler Street Drain sufficiently (in terms of volume and time) to prevent the flooding of areas adjacent to the Alternative 4A site.[26] However, the berm and the pumping would essentially move the impacts of stormwater discharge conveyed to the Alternative 4A site, including increases in peak velocities and volumes, further downstream, resulting in post-construction peak velocities at the Wheeler Street Drain (where water is discharged to Alewife Brook) "far in excess of the 10-year pre-project conditions," as well as increased erosion in the area of the discharge and street flooding in the surrounding area.[27]

(2) The Spada Affidavit. Vincent W. Spada is a registered Massachusetts professional engineer, registered sanitary engineer, and licensed site professional. In additional to working on the Cambridge DPW project as a consultant, he has 29 years of experience in civil and

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[23]/ Id., at 9, para. 17.

[24]/ Id., at 8. para. 16.

[25]/ Id., at 6-8, para. 14.

[26]/ Id., at 9, para. 16a.

[27]/ Id., at 8-9. para. 16.

environmental engineering, including wastewater and storm water management.[28] He has Master of Science and Bachelor of Science degrees in civil engineering, both from Northeastern University (1983 and 1975, respectively). His affidavit describes the Wheeler Street Drain and the design of the proposed stormwater treatment system. Based upon his experience as an engineer, including construction and engineering cost estimating on numerous projects, Spada estimates that if the construction of Alternative 4A required a pumping station under the circumstances projected by Dr. Pisano, the pumping station alone would cost between $28,000,000 and $30,000,000.[29]

(3) The Reardon Affidavit. Robert P. Reardon, the Director of Assessment for the City of Cambridge, is a Massachusetts real estate appraiser, licensed public insurance adjuster for all classes of real estate, and licensed Massachusetts real estate broker. His affidavit analyzes the cost of taking a fee simple interest in the 4.5-acre property that Alternative 4A would utilize.

Reardon set out "to determine an estimate of fair market value in relation to the current real estate market in the City of Cambridge and to project any damages that would be incurred to future development due to a fee simple taking;"[30] in addition, he also considered "an easement value in regard to the existing office buildings and the required parking to support them."[31] It is his opinion that this cost would range between $8,578,900 (assuming that the taking results in no external

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[28]/ Affidavit of Vincent W. Spada, P.E., in support of Cambridge Department of Public Works' motion for summary decision, sworn-to January 25, 2006 (Spada Aff.), at 1-2, paras. 1-7.

[29]/ Id., at 4, para. 12.

[30]/ An owner whose land is taken by eminent domain is entitled to recover the fair market value of the land at the time of the taking. See Newton Girl Scout Council, Inc. v. Massachusetts Turnpike Authority, 335 Mass. 189, 138 N.E.2d 769, 773 (1957). Fair market value is "the highest price which a hypothetical willing buyer would pay to a hypothetical willing seller in an assumed free and open market," Tigar v. Mystic River Bridge Authority, 329 Mass. 514, 109 N.E.2d 148, 150 (1953), citing Epstein v. Boston Housing Authority, 317 Mass. 297, 58 N.E.2d 135, 137 (1944), in view of all of the purposes to which the land was naturally adapted. See Kinney v. Commonwealth, 332 Mass. 568, 126 N.E.2d 365, 368 (1955).

[31]/ Affidavit of Robert P. Reardon in support of Cambridge Department of Public Works' motion for summary decision, sworn-to January __ 2006 (day not given) (Reardon Aff.), at 2, para. 5. Reardon applied definitions of "market value fee simple absolute ownership," "damage value" and "easement value" set forth in Appraisal of Real Estate, 11th ed. (American Institute of Real Estate Appraisers, 1996). Id.

damages, including diminishment of future development value on the untaken portion of the lot) and $13,591,000 if such damages are factored into the taking cost.[32] This opinion was based upon the following analysis:

A. Cost of Taking the Alternative 4A Site (if no damage to remainder of lot)

(1) Purchase price. The Alternative 4A site, located on lot 306, was included in the December 17, 2001 purchase of four lots, two of them undeveloped (including lot 306) and two improved with office buildings, for a total of $97,346,340.[33]

(2) Area taken and remaining for development. As lot 306's area is 7.13 acres, taking 4.5 acres of it (196,020 square feet) would leave 2.63 acres (114,563 square feet) for development.[34]

(3) Allowable uses under zoning are multi-family dwelling, institutional, office, laboratory and first floor retail.[35]

(4) Floor-Area ratio (FAR). This is the ratio of above-ground floor area of a building (as described by the building code) to the area of the lot on which it stands.[36] The allowable FARs for lot 306 are 1.5/2 (for an "Office 2" use) and 1.75/2.0 (for a "Planned Unit District 5" use).[37]

(4) The highest and best use of lot 306 is for commercial development, since (a) residential development, both rental and condominium, along CambridgePark Drive and on nearby Rindge Avenue, as well as the number of residential units under construction or in the pipeline for development in Cambridge (3,000), suggested that

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[32]/ M.G.L. c. 79, §12 defines just compensation as the value of the land before an order of taking is recorded, and if only part of a parcel of land is taken, "there shall be included damages for all injury to the part not taken caused by the taking or by the public improvement for which the taking is made..." Even if an easement is taken rather than fee title, the owner "is entitled to compensation for the decrease in value of the land encumbered by the easement as well as the decrease in value of the other land on the lots, or the 'remaining land.'" Portland Natural Gas Transmission System, Maritimes & Northeast Pipeline, L.L.C. v. 19.2 Acres of Land, 318 F.3d 279 (1st Cir. 2003).

[33]/ Reardon Aff., at 3, para. 6b.

[34]/ Id., at 3, para. 6c.

[35]/ Id., at 4, para. 6d.

[36]/ Reardon Aff., at 5, n.11.

[37]/ Id., at 3-4, para. 6d. At lot 306 the allowed uses are the same, whether classified as "Office 2" or as "Planned Unit Development 5," but most of the applicable dimensional requirements differ significantly (e.g., 5,000 square feet is the minimum lot size, and 50 linear feet the minimum lot frontage, for an Office 2 use, compared with a minimum lot size of 25,000 square feet and 0 linear feet of lot frontage for a Planned Unit Development 5 use). Id., at 4, para. 6d.

the city may be reaching the saturation point for absorbing residential development, (b) the commercial market was starting to improve following several years of decline, and conditions favored this trend—there was, for example, no new commercial construction underway, and current commercial vacancies were being absorbed; and (c) in the foreseeable future, there will be a demand for both new office space and new research and development rental space.[38]

(5) Value of taking a fee simple interest (with no damages) = $8,578,900. In determining this value for taking 4.5 acres of lot 306, Reardon (a) assumed that the taking would not result in damages (meaning that the remaining 2.63 acres not taken would suffer no loss in value[39]), (b) used the Floor-Area Ratio (FAR) method of valuation, the method "that is most prevalent among developers," (c) applied the maximum FAR that zoning allowed for commercial use at lot 306, which was 1.75/2.00 for a Planned Area 5 use, and (d) applied, within the sales value range of $22.61 to $165.96 per square foot for commercial development, a value at the lower end of this range of $25.00 per square foot because the Alternative 4A site was located at the rear of lot 306. The value of taking a fee simple interest was thus $8,578,900, calculated by multiplying the area of the Alternative 4A site (190,020 square feet) by the assumed commercial development value of $25.00 per square foot.[40]

B. Additional Cost of Damage to Remainder of Lot

Damage value = $5,012,100. In determining this value, Reardon assumed that because the taking for Alternative 4A would bisect lot 306 longitudinally, "the narrow remaining lot would probably could not support the design of a modern building acceptable under current zoning requirements and industry standards."[41] The taking-related damage to the remainder of parcel 306 was therefore assumed to be a full loss of its highest and best use (commercial development, as was assumed in computing the cost of taking the 4.5 acres) at a maximum allowable FAR (1.75, the same value used in calculating the taking cost) and a value of $25.00 per square foot (the same sales value he used in computing the cost of taking 4.50 acres for Alternative 4A). Multiplying the area of lot 306 remaining after the taking (114,563 square feet) by the selected FAR value (1.75) yields a potential building area of 200,485 square feet. Multiplying this area by $25.00 per square foot results in a value of $5,012,100.[42]

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[38]/ Id., at 4-5, para. 6e.

[39]/ See Reardon Aff. at 2, n. 7

[40]/ Reardon Aff., at 5-6, para. 6g.

[41]/ Id., at 6, para. 2(A).

[42]/ Id.

(C) Estimate of Damage Valuation (assuming damage to the remainder of the lot)

Taking cost ($8,578,900) plus damages cost ($5,012,100) = $13,591,000.[43]

c. Sufficiency of Cambridge DPW's motion as to Issue 1

Cambridge DPW showed sufficiently that Issue 1 is not the subject of a genuine and material factual dispute. Each of its affiants is qualified by education, professional licensing and experience to present the opinions he offers; in addition, the factual basis for the opinions is disclosed fully, and the opinions reflect familiarity with the project and with Alternative 4A. Each affidavit presents competent expert opinion on engineering and land valuation matters that are material to determining that Alternative 4A is not "practicable and substantially equivalent economically" to what Cambridge DPW proposes. As to both the "costs" and "logistics" factors, it is undisputed the Alternative 4A site is not available for use unless it is taken, and the cost of taking the site alone would be substantial, particularly because the taking, like the project itself, would have to be publicly funded. Nor is Alternative 4A equivalent in terms of "proposed use." The testimony shows that constructing the detention basin at the Alternative 4A site would also change the project design by adding significant lengths of additional piping and requiring substantial berm construction, with or

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43/ Reardon discussed, and rejected, two other possible approaches to valuing damages for the taking. One was to establish the value of development opportunity that a taking would cause the landowner to incur. If this approach is used, the four lots purchased together in December 2001, including lot 306 (from which the Alternative 4A site would be taken) would be considered as a whole. These had a combined developable area of 1,250,000 square feet. Buildings at two of these lots (125 and 150 CambridgePark Drive) occupied 432,080 square feet; the remaining area that could be developed with buildings was, potentially, 817,920 square feet (including the areas of lot 306 and the other undeveloped lot). The taking of 4.5 acres at lot 306 would leave the remainder of that lot unbuildable and useful only for parking. The remaining vacant parcel, whose area was 122,251 square feet, could not accommodate 817,920 square feet of building, either physically or legally at the maximum FAR that zoning allowed. Reardon believed that quantifying this loss of development potential would produce a damages value "substantially more" than what he computed based upon values for takings and damages at lot 306 alone. Reardon Aff., at 7-8, para. 6(g)1(C).

Another approach was to estimate damages based upon a loss, at lot 306, of "structured parking to support all of the present and future buildings" that the owner anticipated at the four lots purchased in December 2001. Reardon anticipated that this approach, too, would generate a higher figure for taking-related damages. Id.

without a costly pumping facility, to prevent flooding in the detention basin area, none of which will be necessary if the detention basin is built in Alewife Reservation.

d. The group's opposing evidence as to Issue 1

Because Cambridge DPW showed Issue 1 to be unburdened by a genuine, material factual dispute, the group was required to make a contrary showing with competent and admissible evidence in order to stave off Issue 1's summary disposition.

Affidavit support for the group's opposition to summary decision on Issue 1 is furnished by a single witness, group member Dr. Stephen H. Kaiser. Dr. Kaiser describes himself as "an independent citizen engineer who provides consulting services to private citizen groups on construction and maintenance projects affecting the public interest."[44] He holds a Doctorate of Philosophy degree in mechanical engineering from the Massachusetts Institute of Technology "with a specialty in Design and Controls" (1971), and B.S. and M.S. degrees in mechanical engineering, also from MIT. He was employed as "Principal Civil Engineer" at both the (former) Metropolitan District Commission, from 1970 to 1974, and at the MEPA Unit of the Executive Office of Environmental Affairs, from 1975-1984.[45] Both of Dr. Kaiser's affidavits state that he was "a citizen engineer advocate on the design of the Central Artery ("Big Dig")...." [46] In addition, he worked as a "Traffic Engineer for Community Groups" and as a "Flooding and Hydrology Engineer for Community Groups."[47] His experience in matters of civil engineering includes reviewing mall

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[44]/ Affidavit of Stephen H. Kaiser in support of petitioner's opposition to motions for summary decision, sworn-to February 13, 2006 (Kaiser Aff. II), at 3, para. 6; Affidavit of Dr. Stephen H. Kaiser in opposition to City's motion to dismiss petitioner's request for adjudicatory hearing, sworn-to August 10, 2005 (Kaiser Aff. I), at 2, para. 4.

[45]/ Kaiser Aff. II, at 1, para. 1; Kaiser Aff. I, at 1, para. 1.

[46]/ Kaiser Aff. II, at 2, para. 4; Kaiser Aff. I, at 2, para. 3.

[47]/ Resume of Stephen H. Kaiser, attached as Exhibit A to Kaiser Aff. I.

and office development projects in Cambridge as a "principal civil engineer" with the MEPA Unit,[48] proposing alternative traffic and public transit plans as a citizen activist,[49] monitoring the construction of Interstate Highway 90 between Leominster and Worcester and its watershed impacts at the request of U.S. EPA,[50] and "analyzing development, transportation and flooding in the Alewife area" since 1970.[51]

In neither his resume nor his affidavits does Dr. Kaiser state that he is a registered professional engineer in Massachusetts or in any other state.[52] Dr. Kaiser claims to practice no profession other than that of an engineer, and the group does not offer him as an expert in any other capacity.

In designing Alternative 4A, Dr. Kaiser "intentionally sought to duplicate the intended function of the proposed (detention) basin at its new parking lot location, while assuring structural integrity in the design of the weirs and spillways."[53] Although this alternative and Cambridge DPW's proposal both "allow for significant detention" of stormwater, Alternative 4A "eliminates the 'wishbone' design whereby surcharged flows are released directly to Alewife Brook through the bending weir" (referring to the branch that would allow part of the stormwater volume conveyed by the Wheeler Street Drain to bypass the detention basin (see above, at 5) and channels the entire flow,

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[48]/ Kaiser Aff. II, at 1, para. 2; Kaiser Aff. I, at 1, para. 2.

[49]/ Kaiser Aff. II, at 2, paras 4-5.

[50]/ Kaiser Aff. II, at 3, para. 7; Kaiser Aff. I, at 2, para. 5.

[51]/ Kaiser Aff. II, at 4, paras. 8-9; Kaiser Aff. I, at 3-4, para. 7.

[52]/ The September 30, 2005 Decision and Order on Motion to Dismiss described Dr. Kaiser, perhaps too glibly, as a "civil and mechanical engineer." 12 DEPR at 175. The description did no more than repeat Dr. Kaiser's self-characterization. It was not intended to be a ruling on Dr. Kaiser's expert qualification. No such ruling was necessary because the decision on the motion to dismiss did not turn on matters of expertise, and Dr. Kaiser's affidavit functioned solely as a detailed explanation of the group's claims, as the decision stated. Id.

[53]/ Kaiser Aff. II, at 16, para. 39, last sentence.

instead, into a detention basin at the Alternative 4A site.[54]

Dr. Kaiser opined that "[t]he design of Alternative 4A follows sound engineering policies, superior to the City's proposal for an 'overflow system of vegetated channels to collect and convey excess flows to the Little River'," because, among other things, "[t]he weirs and spillways of Alternative 4A would be protected from overtopping erosion by the use of structural weirs and stabilized protective 'armoring' of the weirs and spillways."[55] In his opinion, Alternative 4A was a practicable and feasible alternative, from an engineering perspective, to Cambridge DPW's proposal,[56] for these reasons:

> (a) Alternative 4A would provide sufficient storage volume, compensatory storage and peak flow attenuation so that there would be neither upstream flooding nor flooding downstream of the detention basin at the parking lot,[57] and in contrast, Cambridge DPW's design would increase downstream flooding at Alewife Brook because it provided no compensatory flood storage associated with the detention basin in Alewife Reservation;[58]
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> (b) Existing utilities in the area such as the Rindge Street sewer would not have to be relocated, as Dr. Pisano asserted (see above, at 19), and no land acquisition other than the parking lot would be necessary; nor would it be necessary to realign the Sherman Street Drain because the system Dr. Kaiser proposed would abut it but would not intrude into it, and therefore there would be no need to realign 480 feet of combined sewer to accommodate Dr. Pisano's projected Sherman Street Drain relocation;[59]
>
> (c) Dr. Pisano projected incorrectly that the drainage basin at the parking lot would require the installation of 2,200 feet of large diameter pipes, because the basin would be built adjacent to the Wheeler Street Drain and would modify only approximately 200 feet of it;[60]
>
> (d) A structural wall "about 2 feet high would be needed around the parking lot basin to separate and protect the land uses," the parking lot would continue to flood "as it does today

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[54]/ Id., at 16, para. 39, fourth and fifth sentences.

[55]/ Id., at 21, para. 39(n).

[56]/ Id., at 21, para. 39(l).

[57]/ Id., at 17, para. 39(a).

[58]/ Id., at 12-13, para. 31, and at 18, para. 39(e). Dr. Kaiser determined that 28 acre-feet of compensatory flood storage was required to prevent flooding resulting from the conveyance of stormwater from the Wheeler Street Drain to Alewife Brook. Id.

[59]/ Id., at 17, para. 39(b)-(c).

[60]/ Id., at 18, para. 39(d).

with no change," and there would only be increased flooding downstream if Cambridge DPW's plan was implemented without providing 28 acre-feet of compensatory flood storage as Dr. Kaiser recommended;[61]

(e) Although 90% of the parking lot was within the 100-year floodplain, it was entirely outside the 50-year floodplain, and construction of a detention basin in the parking lot would create new flood storage capacity and leave over seven acre-feet of storage available during a 100-year flood; in addition, it would not be necessary to construct at least 20 acre-feet of compensatory floodplain storage to a depth of 6-8 feet at the Alternative 4A site as Dr. Pisano projected (see above, at 19) if 28 acre-feet of compensatory flood storage were constructed downstream;[62]

(f) Alternative 4A would not require a pumping station for existing flows, and a protective berm or wall would suffice;[63]

(g) As gravity flow would suffice to convey water from the detention basin at the Alternative 4A site to the lower portion of the Wheeler Street Drain, the "elaborate underground collection system" that by Dr. Pisano projected (see above, at 19) was unnecessary;[64] and

(h) The Alternative 4A site was "logistically superior" to the Alewife Reservation site because the Reservation site was "in a riverfront basin which is susceptible to site flooding in a one-year storm during construction and to a 5-year flood after completion." [65]

Dr. Kaiser also contested the values, assumptions and methodology that Reardon used in projecting the cost of taking the Alternative 4A site. In his opinion:

(a) Contrary to Reardon's assertion that a fee taking of the Alternative 4A site would be necessary, Alternative 4A required only the taking of an easement at lot 306, "similar" to Cambridge DPW's agreement with the Department of Conservation and Recreation for the use of Alewife Reservation land;[66]

(b) Reardon overstated the development potential of the four parcels purchased in December 2001 (including lot 306). He failed to take into account, or to weigh sufficiently, (i) a sewer easement limiting the development potential of one of them (180R CambridgePark Drive) and, thus, its value,[67] (ii) development penalties imposed by the Cambridge Zoning

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[61]/ Id., at 18-19, para. 39(f), and at 20, para. 39(i)..

[62]/ Id., at 19-20, para. 39(h).

[63]/ Id., at 20-21, para. 39(j).

[64]/ Id., at 21, para. 39(k).

[65]/ Id., at 21, para. 39(m).

[66]/Kaiser Aff. II, at 23, para. 43.

[67]/ Id., at 23, para. 43, and at 25, para. 46.

Ordinance for excessive parking,[68] which reduced development potential to 362,266 square feet, well below Reardon's figure of 817,920 square feet;[69] and (iii) the 2001 sale price of the "parking lot parcel" (parcel 180R, one of the four undeveloped parcels purchased in 2001);[70] and

(c) Reardon overvalued the 4.5 acre Alternative 4A site (lot 306) by overstating its development potential. Lot 306 was originally part of a larger developable area that included not only the four parcels sold in 2001 but also a fifth parcel sold to another purchaser (100 CambridgePark Drive). These five parcels were previously part of a planned unit development approved in 1981. Lot 4A's development potential should have been evaluated in the context of the five-parcel planned unit development area of which it was originally a part, rather than in the context of the four parcels including lot 306 that were sold in 2001.[71]

Based upon these asserted deficiencies, it was Dr. Kaiser's opinion that even if the Alternative 4A site was valued at $25 per square foot (Reardon's figure), multiplying that value by 105,600 square feet (29 percent of 362,366 square feet, the area of the lots purchased in 2001 that he asserts is actually developable after deducting zoning-based square footage penalties for excessive parking), the value of taking a fee interest in the Alternative 4A site was $2,639,994, rather than $8,578,900 as Reardon determined, and $1,319,997 if only an easement interest was taken.[72]

Based upon his cost computations, "engineering knowledge," "personal observation of flooding events at Alewife Brook during five major flood events during the period 1996-2005," and "experience proposing practical alternatives for public construction projects," it was Dr. Kaiser's

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[68]/ Id., at 23-25, paras. 44-46. Dr. Kaiser asserts that Cambridge Zoning Ordinance 6.31.3 requires a deduction from developable area of the gross floor area associated with allowed parking (e.g., 300 gross square feet per space for an Office 2 use). It is not clear from Dr. Kaiser's affidavit whether parking in excess of the number of spaces allowed under applicable zoning has occurred on lot 306 (where Alternative 4A would be sited), or on lot 180R, the other undeveloped lot that was one of the four purchased together in December 2001, or on both. The ambiguity is of no consequence because the competence of Dr. Kaiser's opinion testimony does not depend upon its resolution.

[69]/ Id., at 25, para. 46.

[70]/ Id., at 24-25, para. 45.

[71]/ Id., at 25-26, paras. 47-48. The outcome here makes it unnecessary to determine whether his valuation approach is legally sound. Nonetheless, I note that Dr. Kaiser's analysis reflects what fair market value was or should have been if the parcels had become a planned unit development, as originally intended. This approach appears to be inconsistent with the rule that fair market value is not the value that the land might have had under circumstances different from those that exist at the time of the taking. See Kinney v. Commonwealth, 332 Mass. 568, 126 N.E.2d 365, 368 (1955).

[72]/ Id., at 26, para. 48.

opinion that Alternative 4A was "a reasonable, practicable and economically equivalent alternative to the location of a detention basin in the riverfront area of Little River."[73]

e. Is the group's opposition competent?

i.

Dr. Kaiser's opinions concern engineering and site valuation. As these opinions require the application of special knowledge, they fall into the realm of expert testimony. To show that genuine and material factual issues bar summary decision on Issue 1, Dr. Kaiser's opinions must first meet the summary decision standard of competence and court admissibility, and to cross this threshold, Dr. Kaiser must be qualified to present these opinions as an expert. That is problematic, notwithstanding Dr. Kaiser's knowledge and experience. Massachusetts regulates the practice of engineering and real estate appraisal, the two subject areas in which Dr. Kaiser offers opinion testimony, and Dr. Kaiser is licensed in neither field.

Generally, expert qualification depends not upon the application of a rigid evidentiary rule but, instead, upon evidence that the witness has special knowledge gleaned through skill, experience, education, training and familiarity with the specific subject to which his or her testimony pertains. See, e.g., Keville v. McKeever, 42 Mass. App. Ct. 140, 675 N.E.2d 417 (1997), review denied, 424 Mass. 1107, 678 N.E.2d 1333 (1997); Cronin v. McCarthy, 22 Mass. App. Ct. 448, 494 N.E.2d 411 (1986), review denied, 398 Mass. 1104, 498 N.E.2d 124 (1986); see also Matter of Massachusetts Water Resources Authority, Docket No. DEP-04-734, Decision and Order on Motions re Prefiled Testimony, 11 DEPR 251 (December 10, 2004) (witness qualified, over objection, as expert naturalist).

Whether crafted by Massachusetts courts or by courts of other jurisdictions, expert witness qualification decisions recite essentially the same list of sources from which expertise may be derived. Professional licensing is noticeably absent from this list. Unlike skill, experience, training

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[73]/ Id., at 41, para. 88.

and familiarity with the subject at hand, professional licensing is not a consistent prerequisite for expert testimony in every field; nor can it be if the state neither regulates a particular area of expertise (e.g. through licensing requirements) nor provides specialty certification in that area. A classic example of this occurs frequently in wetlands permit appeals such as this one. Massachusetts neither regulates the practice of wetland science nor offers wetland scientist certification, and opinions on matters of wetland science, including the classification and delineation of wetland resource areas, are given regularly by persons whose special knowledge is often based in whole or part upon both field experience and experience in administering the Wetlands Protection Act. Professional licensing in disciplines related to wetlands science (e.g., professional engineering), or professional status such as wetland scientist certification by a private professional organization, may enhance the credibility of a witness and the weight accorded to his or her wetland-related opinions. In addition, the absence of corroborating testimony by a registered professional engineer or other professional may leave a party without sufficient evidence supporting a technical claim, such as the alleged location of a wetland boundary at a particular elevation. See, e.g., Matter of O'Brien, Trustee, Scenic Heights Realty Trust, Docket No. 95-100, Final Decision, 4 DEPR 130, 140 (September 9, 1997), reconsideration denied, 4 DEPR 180 (October 23, 1997). Nonetheless, a witness with special knowledge needs neither professional status nor professional licensing to give an opinion regarding a matter of wetlands science.

More caution is in order when opinion testimony is offered on matters that are within the scope of state-licensed professional practice. In those cases, professional licensing may be a foundational prerequisite for offering opinion testimony in the first place, no matter how much special knowledge the witness has. State statutes that reveal a strong public interest in regulating professional practice affecting public health and safety (such as medicine or engineering) are persuasive of this approach, all the more so when they define the practice of the regulated profession in question broadly enough to encompass the proffering of expert opinion.

There is scant caselaw on opinion testimony by unlicensed persons regarding matters that are

generally handled by licensed professionals, whether in the context of trials or summary decision, and (as best as I can determine), none of this caselaw was generated by the Massachusetts courts. The question may arise rarely because parties to litigated matters tend to seek the most qualified experts they can obtain. Thus, for example, plaintiffs and defendants alike turn generally to licensed physicians, particularly board-certified specialists, for expert opinion regarding the cause of injury or death and the applicable standard of medical care, rather than to witnesses who, though medically knowledgeable, are not licensed to practice medicine. Similarly, in litigation arising out of structural failure or materials failure, the parties tend to retain registered professional engineers with experience in this subject to furnish opinion testimony regarding causation, preferably with special knowledge of the particular type of failure at issue.

The few court decisions on point, generated almost exclusively in medical malpractice cases, emphasize that where the subject matter of expert opinion falls within the ambit of licensed professional practice, licensing is not a question of weight, credibility or even expert qualification; instead, it is a foundational requirement that must be met before a court can decide as a discretionary matter whether the witness may state the opinion as an expert. See, e.g., Dolan v. Galuzzo, 77 Ill.2d 279, 285, 396 N.E.2d 13 (Ill. Sup. Ct. 1979) (in order to testify as an expert on the standard of care in a given medical specialty or "school of medicine," the witness must be licensed in that area of medicine, and if that is established, it lies within the court's discretion to determine if the witness is qualified to testify as an expert regarding the appropriate standard of care); see also Jones v. O'Young, 154 Ill.2d 39, 43, 607 N.E.2d 224 (Ill. Sup. Ct. 1992)(similar holding, adding that licensing is a foundational requirement that must be met before the court can exercise its discretion to determine whether the witness in question is qualified and competent to state his opinion regarding the standard of care that applies in a medical malpractice case).[74]

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[74]/ Out-of-state decisions such as these do not show, of course, whether the Massachusetts courts would allow opinion testimony by unlicensed persons on matters that are generally handled by licensed professionals. A Massachusetts court reviewing similar testimony upon a summary judgment motion made under Mass. R. Civ. P. Rule 56 might find the Illinois decisions persuasive nonetheless, for several reasons: there is no Massachusetts authority stating a different rule; the mere absence of Massachusetts

ii.

It is clear from his resume and affidavits that Dr. Kaiser offers opinion testimony on engineering matters as an engineer—a civil engineer, mechanical engineer, "independent citizen engineer," "traffic engineer," "flooding and hydrology engineer," or some combination of these—although not as a registered professional engineer, and the record contains no evidence that Dr. Kaiser is licensed to practice engineering in Massachusetts or in any other state. In terms of expert qualification, the first question this raises is whether in Massachusetts a witness can testify as an engineer without being registered to practice engineering.

The Commonwealth regulates professions and occupations extensively, see M.G.L. c. 112, among them "professional engineers" and land surveyors, whose respective practices are regulated jointly at M.G.L. c. 112, §§81D-T. The statute defines "professional engineer" as:

> a person who, by reason of his special knowledge of the mathematical and physical sciences and the principles and methods of engineering analysis and design acquired by professional education and practical experience, is qualified to practice engineering, as attested by his registration as a professional engineer....[75]

M.G.L. c. 112, §81D (emphasis added).

"Practice of engineering" is defined by the statute as:

> any professional service or creative work requiring engineering education, training and experience and the application of special knowledge of the mathematical, physical and engineering sciences to such professional services or creative work as consultation, investigation, evaluation, planning, design and supervision of construction for the purpose of assuring compliance with specifications and design, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works or projects, but it shall not include the practice of architecture, as defined in section sixty A, except that a registered professional engineer may do such architectural work as is incidental to his work, nor shall it include the practice of land surveying, except that a registered professional engineer qualified in the branch of civil engineering may perform land surveying incidental

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caselaw on point does not show that such opinion testimony, though rejected by Illinois courts, would be found competent by Massachusetts judges; and, as well, the Illinois decisions were not decided upon grounds that are peculiar to that state's practice or that are clearly in conflict with Massachusetts law.

[75]/ The only exception recited by this definition is that registration as a professional engineer does not qualify a person to practice as an engineer licensed under M.G.L. c. 146, which relates to the inspection and testing of boilers, compressed air tanks, ammonia compressors, and refrigerator and air conditioning systems, and to the licensing of nuclear power plant operators and engineers, boiler inspectors, steam fire engineers, firemen or operators of hoisting equipment, and pipefitters.

> to his engineering work for locating or relocating any of the fixed works embraced within the practice of civil engineering excluding property line determination.
>
> A person shall be construed to practice or to offer to practice engineering who practices any branch of the profession of engineering; or who, by verbal claim, sign, advertisement, letterhead, card, or in any other way represents himself to be a professional engineer, or through the use of some other title implies that he is a professional engineer; or who holds himself out as able to perform, or who does perform any engineering service or work or any other professional service designated by the practitioner or recognized by educational authorities as engineering. The practice of engineering shall not include work ordinarily performed by persons who operate, maintain or install machinery or equipment.

Id. (emphasis added). Recognizing that the practice of other professionals overlaps to a degree with the practice of engineering, M.G.L. c. 112, §81R specifies that section 81 is not to be construed "to prevent or to affect" the "practice of any other legally recognized profession" (emphasis added), including the practice of architecture, engineering or land surveying in the Commonwealth by United States government officers and employees, or the practice of landscape architects, city planners and regional planners (subject to limitations that are not relevant here), and engineering work and services performed by employees of the Massachusetts Bay Transportation Authority as part of their employment and for the Authority's benefit. Absent any authority to the contrary thus far, section 81R appears to furnish a safe haven for non-engineers practicing a "legally recognized profession" whose work treads incidentally into engineering territory, including non-engineer wetland scientists and state and municipal wetland regulatory staff. M.G.L. c. 112, §81R creates no such shelter, on the other hand, for persons whose profession is not "legally recognized."

Professional engineers as the statute defines them—and it does so in the broadest terms—must pass a registration examination and be registered in order to practice their profession in the Commonwealth. See M.G.L. c. 112, §81E. The examination, registration and regulation of professional engineers and engineering is carried out by the Board of Registration of Professional Engineers and of Land Surveyors, a state agency. Id. Underscoring that these requirements apply to all types of engineers no matter how they title themselves or which engineering specialties they practice, the statute provides that:

> The board, for the purpose of registration of professional engineers, shall recognize all the fundamental branches of engineering which shall include, without limiting the generality

> thereof by specific enumeration, the following fields:—aeronautical, chemical, civil, electrical, heating and ventilating, and air conditioning, industrial, mechanical, metallurgical, mining, safety, fire protection, sanitary and structural.

Id.

The statute makes it a crime to practice engineering in the Commonwealth without being registered. M.G.L. c. 112, §81T. The Attorney General has interpreted the statute as precluding a person who is not registered as the statute requires from representing himself to be an engineer without including the adjective "professional" in this title, or from representing himself to be an engineer without the qualifications required under the statute. Op.Atty.Gen., Aug. 12, 1965, at 77.

It is not the point of this discussion to suggest that the witness has done anything contrary to the registration statute. I go no further than to determine whether, in view of the licensing statute and the public policy it expresses, a Massachusetts court would be more likely than not to find Dr. Kaiser's engineering opinions competent and therefore admissible, even though he is not a registered professional engineer. In making this determination, I note the apparent absence of Massachusetts decisions holding that a nonregistered engineer may give opinion testimony regarding engineering matters or determining that such testimony suffices to defeat summary decision. There is nothing in the plain language of M.G.L. c. 112, §81 that encourages any such holding.

With no assertion or evidence that he is a registered professional engineer or that he qualifies for any of the registration exceptions that M.G.L. c. 112, §81 recites, I conclude that Dr. Kaiser cannot testify as an engineer. To the extent that his opinions are given as those of an engineer, I conclude, absent any authority to the contrary, that these opinions are neither competent nor admissible in Massachusetts courts.[76] Accordingly, Dr. Kaiser's engineering opinions do not meet

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[76]/ This conclusion is not at variance with Matter of Walden Woods, Docket No. DEP-04-363/364, Ruling on Motion to Dismiss and Ruling Allowing Petitioners to Supplement the Record (March 30, 2005). The challenge in that case was to cross-specialty opinion testimony by a registered engineer rather than to the competence of engineering opinion by a non-engineer witness. The witness in question was a chemical engineer from whom the Walden Woods petitioners intended to elicit opinion testimony regarding what the applicant characterized as civil engineering matters, including fluid flow. The applicant objected to this testimony as practice beyond the witness's registered engineering specialty, allegedly in violation of M.G.L. c. 112, §81T and the regulations of the Board of Registration of Professional Engineers and Land Surveyors, 250 CMR 3.00. The petitioners argued persuasively,

the summary decision standard of competence and court admissibility in this forum.

iii.

As a matter of fairness, I consider whether Dr. Kaiser's opinions on engineering-related matters can be given in some capacity other than that of a registered professional engineer without running afoul of M.G.L. c. 112, §81. This might be feasible if Dr. Kaiser practiced a "legally recognized profession," and if his opinions were given clearly as those of a non-engineer professional whose work overlapped engineering practice incidentally. Although there appear to be no published decisions or opinions by the Board of Registration of Professional Engineers and of Land Surveyors on point, at least one professional engineering society—the National Society of Professional Engineers (NSPE)—has suggested how such testimony could be found competent without circumventing state law regulating the practice of engineering. NSPE recognizes that a technical expert who is not a registered professional engineer can present opinion testimony on an engineering-related matter, subject to two qualifications: first, state engineering registration laws must not prohibit an unlicensed person "from performing services as an expert," and second, the witness must demonstrate "a minimum level of competence as required by the engineering registration laws," a prerequisite that is readily met when the technical expert is a registered professional engineer in a different state.[77] These qualifications assure that engineering-related

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however, that fluid flow was a "significant topic" in the fields of civil, chemical and mechanical engineering and that practitioners of these engineering specialties applied identical, or similar, equations in addressing fluid flow, all of which were derived from the same fundamental source (the Bernoulli equation). DALA Administrative Magistrate Francis X. Nee held that the witness was therefore competent and could express an opinion regarding water flow issues. Id., at 2. It was for others (such as the Board) to resolve questions regarding the allowable scope of cross-specialty engineering practice under the registration statute and regulations. Id.

[77]/ National Society of Professional Engineers Board of Ethical Review, Case 90-3: "Expert Testimony in State Where Not Registered" (undated), http:www.niee.org/cases/case90-3.htm, at 3. The opinion addresses whether it is ethical for an engineer licensed in three states to offer forensic engineering testimony (including opinions on accident causation) in a fourth state in which he is not licensed. The question was answered in the affirmative: no law in the fourth state prevented an unlicensed person from functioning as an expert as to engineering-related matters, and registration as an engineer in the other states established professional competence in the field of engineering. The opinion notes that lack of licensing may be explored on cross-examination, meaning by implication that it remains potentially relevant to witness credibility and to the weight that the testimony should be given,

testimony by a non-engineer technical expert comports with a state's engineering registration laws, which "are intended to promote and protect the public health and safety [and to] serve as a legal bench mark for engineers to demonstrate their professional competence in the field of engineering."

There is no need to determine whether the NSPE standard for engineering opinion by non-engineer technical experts, or some other standard, should apply here, however, because Dr. Kaiser has not shown that he is a technical expert who practices a "legally recognized profession" other than engineering. His resume and affidavits describe his work only as engineering and his profession solely as that of an engineer, but as he is not a registered professional engineer, he cannot testify as an engineer or as any type of expert that suggests registered engineer status, and M.G.L. c. 112, §81 leaves no room for recognizing non-registered engineering as a legally recognized profession. Dr. Kaiser offers no alternative non-engineering field in which he could be qualified as an expert. Accordingly, the exceptions furnished by M.G.L. c. 112, §81R to statutory engineering registration requirements are of no avail to Dr. Kaiser and furnish no basis for finding him competent to offer expert opinion on engineering matters as a practicing non-engineer professional.

iv.

I consider whether Dr. Kaiser can offer his land valuation-related opinion testimony in some other capacity. The question would be resolved quickly in the affirmative if Dr. Kaiser was a real estate appraiser, but that is not the case. Per M.G.L. c. 112, §§173-195, real estate appraisers must be certified by the Board of Registration of Real Estate Appraisers, created by M.G.L. c. 13, §92. As is true of engineering, one cannot claim to be a real estate appraiser in Massachusetts unless one is a registered real estate appraiser.[78]

Dr. Kaiser does not claim to be a real estate appraiser, however. Although Massachusetts

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even if it does not undermine competency.

[78]/ Per M.G.L. c. 112, §194, "[a]ny person acting or purporting to act as a state-certified general real estate appraiser, state-certified residential real estate appraiser or state-licensed real estate appraiser without first obtaining a certificate or license to practice under this chapter shall be guilty of a misdemeanor...."

restricts the work of performing formal property appraisals or valuations, and preparing certified reports on appraisals or valuations, to registered appraisers, it does not define a "practice" of appraising. Nor does the registration statute specifically prohibit persons not certified as appraisers from giving non-formal estimates of value, although these estimates should not mislead the public into believing that they meet the statutory standards for certified appraisals or certified appraisal reports. See M.G.L. c. 112, §173 (definitions of "appraisal" and "certified appraisal or certified appraisal report").[79]

The Massachusetts courts allow testimony as to the value of real estate (and of other types of property, such as business interests, as well) by witnesses other than professional appraisers and other experts. The admission of nonexpert value testimony "is a matter of sound judicial discretion upon establishment of a proper foundation of competency." Liacos, Handbook of Massachusetts Evidence (6th ed.), §7.13, at 427.

For summary decision purposes, this rule is hardly instructive of what the courts would find persuasive of competency to give an opinion of property value. Who the courts have actually found qualified to give an opinion as to real property value is more helpful here. In most of the reported Massachusetts cases on point, it has been the landowner. The owner may state an opinion of the property's value based upon either a presumed familiarity with the property or a demonstrated familiarity with the property's uses and characteristics and/or demonstrated experience dealing with

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[79]/ M.G.L. c. 112, §173 defines "appraisal" and "real estate appraisal" as:

> a written analysis, opinion or conclusion prepared by a real estate appraiser relating to the nature, quality, value or utility of specified interests in, or aspects of, identified real estate. An appraisal may be classified as a valuation or an analysis, or both. A valuation is an estimate of the value of real estate or real property. An analysis is a study of real estate or real property other than estimating value.

The statute defines "certified appraisal or certified appraisal report" as:

> a written appraisal or report of a written appraisal given or signed and certified as such by a state-certified general real estate appraiser, state-certified residential real estate appraiser or state-licensed real estate appraiser. When identifying an appraisal or appraisal report as certified, the real estate appraiser shall indicate the type of certification or license held by such appraiser. A certified appraisal or appraisal report shall be deemed to represent to the public that it meets the appraisal standards defined in this chapter.

the property or with similar property on the open market. See, e.g., CBI Partners Ltd. Partnership v. Town of Chatham, 41 Mass. App. Ct. 923, 671 N.E.2d 523, 525-26 (1996) (upholding trial court's ruling in an eminent domain proceeding that the property owner, who also bought and sold real estate, could give an opinion of the property's value and state the grounds for the opinion). Even if the court finds the owner's value opinion to be competent and allows it, however, it is not considered to be the opinion of an expert, and instead the witness is considered to have demonstrated the special knowledge he is expected or presumed to have as an owner. Id.; 671 N.E.2d at 526, n. 4;[80] see also McCormick v. Travelers Indemnity Co., 22 Mass. App. Ct. 636, 496 N.E.2d 174, 175 (1986) (in a homeowner's action to recover under a windstorm policy for damage to her home during a blizzard, the trial court properly allowed the homeowner to state the value of her home prior to the blizzard "based upon her years of residency and employment" in the town, "her acquaintanceship with her neighbors and her conversations with them just prior to the blizzard concerning selling her property, and her knowledge of other property sales and listed prices of real estate in her neighborhood.").

If the number of published decisions on the subject is indicative, the instances in which Massachusetts courts have allowed land value testimony by a nonexpert, non-owner witness have been few and far between. In one, a property owner whose residentially-zoned land was taken by a housing authority was allowed to present testimony by a builder and developer on the land's value

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[80]/ Liacos suggests that the presumption is historical. "At one time," the treatise states, "it was thought that an owner was presumed to have sufficient familiarity with his property to testify to its value," but it was "clear, however, that an owner, like any other witness, must be particularly familiar with the property to testify to its value." Id.; 6th ed., §7.13, at 427. The more recent CBI Partners decision suggests, in contrast, that the presumption lives on and that the owner continues to enjoy its evidentiary benefit. Assuming that is the case, the presumption alone could sustain the trial court's discretionary allowance of the owner's value opinion testimony if the owner's knowledge was not challenged by another party, if the record included no evidence that the owner lacked familiarity with the property, and (most important, because allowing the opinion is discretionary) if the court were satisfied to probe credibility no further on its own.

Therefore, although the owner, like any other nonexpert witness, must have sufficient familiarity with the property to testify as to its value, the owner enjoys a presumption of this knowledge that other nonexpert witnesses do not. In the summary decision context, this means that a value witness who is not the owner has no presumed knowledge sufficient to sustain a value opinion. His affidavit must demonstrate this knowledge affirmatively, and his failure to do so leaves no residue of presumed knowledge that alone could show his opinion regarding property value to be competent.

and on the likelihood of rezoning, which was relevant to valuation. The witness had constructed 172 apartment units and over 200 single family homes in the same town; in addition, he was "personally involved with land sales for multi-family use" in the town, and had served for 13 years as the town's part-time building inspector, a position that required him to rule on zoning matters and attend planning board meetings. Standish Management, Inc. v. Randolph Housing Authority, 26 Mass. App. Ct. 901, 522 N.E.2d 987 (1988) (allowance of opinion testimony upheld as proper exercise of trial court's discretion to determine expert witness qualification); see also Agoos Leather Cos., Inc. v. American & Foreign Insurance Co., 342 Mass. 603, 174 N.E.2d 652, 654 (1961) (in an action by a tanning company to recover upon fire insurance policies for the loss of its tanning factory buildings as the result of a fire, the trial court properly allowed the company's president and general superintendent to express an opinion as to the buildings' value before the fire, since the witness had been engaged in the tanning business for 40 years, was familiar with the buildings in question and with "what had been done to them" for the preceding 20 years, had been involved in the purchase of a tannery in a nearby town, and "knew the plant and was also a tannery expert.").

v.

Dr. Kaiser's familiarity with the Alternative 4A site is based upon his experience at EOEA's MEPA Unit reviewing and scoping large projects in North Cambridge "and as a private citizen or citizen engineer advocating for alternatives to proposed projects,"[81] rather than upon any experience in buying, selling or developing land, or in quantifying the value of land based upon generally accepted valuation methodology. Dr. Kaiser claims no such experience, whether gleaned during his employment at the MEPA Unit or otherwise. I have found no decisions allowing land valuation opinion testimony by a citizen advocate or activist. If a Massachusetts court has allowed such opinion testimony, it was part of the group's evidentiary burden in opposing summary decision on Issue 1 to bring the relevant decision to my attention.

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[81]/ Kaiser Aff. II, at 28, para. 55.

It is theoretically possible that a Massachusetts court might allow such testimony, but that possibility is not enough to show that land value testimony by a non-owner, nonexpert witness such as Dr. Kaiser is now admissible in the courts, or even that it would be admissible if offered. What the decisions indicate is that the known universe of non-owner, nonexpert witnesses who may offer a land value opinion in the Massachusetts courts is inhabited by persons who are involved directly in the use of land as buyers, sellers, builders, developers or building inspection—experience that assures a reliable familiarity with both land and its valuation.

Dr. Kaiser's background and experience do not place him among the types of non-owner, nonexpert witnesses allowed—thus far, at least—to offer an opinion about land value. If there is an argument to be made for expanding the universe of witnesses who may give a land value opinion, it must be made in and resolved by the courts. As things now stand, however, I cannot conclude that Dr. Kaiser's value-related testimony is admissible in the Massachusetts courts or that a Massachusetts court would allow it. The testimony does not furnish competent evidence, thus, that Alternative 4A's economic equivalence is the subject of a genuine or material factual dispute.

f. Conclusion-Issue 1

Because Dr. Kaiser's engineering and value-related opinions are not competent and the group offered no affidavit from another witness, the opinion testimony of Cambridge DPW's three expert witnesses that Alternative 4A is not "practicable or substantially equivalent economically" to what Cambridge DPW proposes is "unmet by countervailing materials." See Kourouvacilis v. General Motors Corp., 410 Mass. 706, 575 N.E.2d 734, 740 (1991). Although this does not necessarily negate the group's claims, it demonstrates sufficiently for summary decision purposes that the group has "no reasonable expectation of proving an essential element" of its case regarding the alleged practicability and substantial equivalency of Alternative 4A. Id.; 575 N.E.2d at 740-41. It suffices to show that Issue 1 is unburdened by a genuine or material factual dispute and that it should be

decided summarily in Cambridge DPW's favor.[82]

2. Issue 2: Stormwater Discharge

a.

Issue 2(a) asks whether the project will increase the volume of stormwater discharged to Little River via the outfall downstream of the proposed stormwater wetland. If it will do so, two additional issues come into play: Issues 2(b): will this violate the requirement of DEP Stormwater Management Standard 2 that stormwater management systems be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates; and Issue 2(c): what limitations on the quantity of this stormwater discharge, if any, should be included in a final order of conditions for the project?

In moving for summary decision on Issue 2, Cambridge DPW asserts that the project is "redevelopment" under DEP's Stormwater Management Standard 7, because it would "redevelo[p] an existing drainage system currently handling combined flows of sanitary wastewater and stormwater by separating the system into two components, one handling only sanitary wastewater and one handling only stormwater," in order to "to reduce the discharge of untreated sewage to Little River/Alewife Brook."[83] Although it acknowledges DEP's position that the project comprises an

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[82]/ With Issue 1 decided summarily in Cambridge DPW's favor, there is no need to decide DEP's motion for summary decision on that issue .

[83]/ Cambridge DPW's memorandum in support of its motion for summary decision (January 27, 2006), at 13. Stormwater Management Standard 7 states:

> Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.

In a section entitled "Explanation of Standards," the Stormwater Management Policy states as to Standard 7 that "redevelopment projects" are defined as either the "[m]aintenance and improvement of existing roadways..." or as "[d]evelopment, rehabilitation, expansion, and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area." It goes on to state that "[c]omponents of redevelopment projects which include development of previously undeveloped sites do not fall under Standard 7."

"existing discharge," Cambridge DPW argues that whether classified as an existing discharge or as redevelopment, the project must comply with DEP's Stormwater Management Standard 7, which requires that a redevelopment project meet all nine of the Stormwater Management Standards "to the maximum extent practicable." Its non-material difference with Cambridge DPW over project classification as redevelopment or existing development aside,[84] DEP agrees with Cambridge DPW that this is the applicable standard.[85]

One of the standards that must be met to the maximum extent practicable is Stormwater Management Standard 2, which requires that stormwater management systems be designed so that post-development discharge rates do not exceed pre-development peak discharge rates. That the project will meet this standard is demonstrated, Cambridge DPW argues, by several uncontested facts: the Wheeler Street Drain currently lacks sufficient capacity to convey unseparated sewage and stormwater flows through it during storms, and there is no control of peak discharge rates; after the project is built, only stormwater will flow through this drain and the 4' x 8' box culvert; and the discharge rate of this flow will be controlled by the stormwater wetland. It offers no affidavit support for this argument and instead refers to data, tables and calculations in the notice of intent filed in support of the wetlands permit application.[86] Cambridge DPW also relies upon the group's failure to claim affirmatively or argue that post-construction peak discharge rates will exceed pre-construction discharge rates or even that the project fails to comply with Stormwater Management

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[84]/ Project classification under the Stormwater Management Standards would be material if DEP classified the project as "new development." If the project was indeed new development, it would have to comply fully with Stormwater Management Standards 1-6, 8 and 9, rather than with the less stringent "maximum extent practicable" standard. See Matter of DeMoulas Supermarkets, Inc., Docket No. 2003-051, Recommended Final Decision, 11 DEPR 84, 86-87 (April 28, 2004), adopted by Final Decision (June 10, 2004).

[85]/ Affidavit of Thomas Maguire, sworn-to January 27, 2006 (filed in support of DEP's motion for summary decision), at 3, para. 11.

[86]/ Cambridge DPW's memorandum in support of its motion for summary decision (January 27, 2006), at 15.

Standard 2.[87]

DEP agrees that the volume of stormwater discharged to Little River will increase as a consequence of separating stormwater from sewage,[88] but it argues that Stormwater Management Standard 2 does not require post-construction stormwater volume to be less than or equal to pre-construction stormwater volume, and focuses instead on pre- and post-construction discharge rates.[89] It also contends that the project will meet the maximum extent practicable" standard and that Cambridge DPW has made "all reasonable efforts" to insure that the project will do so.[90] However, DEP's motion, too, offers no affidavit showing that the project is designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates, as Stormwater Management Standard 2 requires.

b.

Issue 2(a) can be decided summarily: the project will increase the volume of stormwater discharged to Little River. In addition, because Stormwater Management Standard 2 addresses pre- and post-construction peak discharge rates and not volumes, Issue 2(b) can also be decided summarily as a matter of law, in this way: the discharge of an increased volume of stormwater to Little River after the project is built will not violate per se the requirement that stormwater management systems be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

These outcomes seemingly make immaterial the question of permit limitations on the quantity (meaning the volume) of stormwater discharge that Issue 2(c) poses. However, the Stormwater Management Standards state that "[t]o meet Standard 2...[t]he 100-year 24-hour storm event must be

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[87]/ Id. at 16.

[88]/ Id., at 2, para. 10.

[89]/ Id., at 3, para. 14.

[90]/ See Memorandum in support of DEP's motion for summary decision (January 27, 2006), at 7-9.

evaluated to demonstrate that there will not be increased flooding impacts offsite."[91] The Standards do not state that "increased flooding impacts" are, or are to be analyzed as, a function of increased discharge rates alone. Other DEP guidance makes clear that the agency views flooding as a function of both peak discharge rates and storm runoff volumes. See Stormwater Management, Vol. I: Stormwater Policy Handbook (DEP, 1997), "Introduction: New Directions in Stormwater Management," at ii-iii ("The Standards address both water quality (pollutants) and water quantity (flood control)...," and are "designed to meet the stormwater management requirements under various regulatory programs, and...[r]educe or prevent flooding by managing the peak discharge and volumes of runoff..."). Moreover, per DEP's regulations, a wetlands permit may limit both the quality and quantity of stormwater discharge from a point source when the discharge point is within a wetland resource area or within the buffer zone, and when this is necessary to protect wetlands interests identified in M.G.L. c. 131, §40. 310 CMR 10.05(6)(b), second para.[92]

Accordingly, although a post-construction increase in stormwater discharge volume does not per se violate Standard 2's requirement regarding pre- and post-construction peak discharge rates, the increased runoff volume is material to reducing or preventing flooding, an objective of both the Stormwater Management Standards and of the Wetlands Protection Regulations. Permit limitations on the quantity of stormwater discharge are also material to this objective if increased runoff volume will increase flooding impacts offsite and appropriate conditions can mitigate this impact.

In moving for summary decision on Issue 2(c), then, Cambridge DPW and DEP were each required to show, as beyond genuine and material factual dispute, that the project would not increase offsite flooding despite a post-construction increase in stormwater volumes discharged to Little River. On this issue, Cambridge DPW's motion offers no affidavit support and depends entirely, instead, upon the wetlands permit application materials that DEP reviewed. The motion therefore "merely

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[91]/ Stormwater Management Standards: "Explanation of Standards, Post-Development Peak Discharge Rates (Standard 2)," at 5.

[92]/ The conditions limiting stormwater quality and quantity must also be consistent with 310 CMR 10.03(4)'s presumption concerning point source discharges. Id.

reiterates the historical basis" for the group's appeal (and its request for a superseding order of conditions as well), which does not suffice to show that Issue 2(c) is unburdened by a genuine or material factual dispute. See Matter of Flynn, Trustee, Long Pasture Realty Trust, Memorandum and Order on Motions to Lift Stay and for Summary Decision, at 5 (September 13, 1995). DEP's motion fares no better on this point as it, too, includes no affidavit showing that the absence of offsite flooding despite a post-construction increase in stormwater volumes discharged to Little River is beyond genuine or factual dispute.

Because neither motion was sufficiently made and supported as to Issue 2(c), the group needed no response to stave off this issue's summary disposition. On this issue, the motions are simply denied as insufficiently made and supported. It is therefore of no legal consequence to this decision that the group's opposition regarding offsite flooding, which depends upon Dr. Kaiser's affidavits, would not have passed the competence threshold for the same reasons that they failed to do so regarding Issue 1.

3. Issue 3: Lost flood storage volume compensation

Issue 3 concerns the adequacy of compensation for lost flood storage volume in bordering land subject to flooding. The issue comprises two elements: (a) whether the project will diminish flood storage capacity by altering bordering land subject to flooding, and if that is the case, (b) whether the project provides sufficient compensation for flood storage volume that will be lost through BLSF alteration.

Cambridge DPW alone moves for summary decision on Issue 3. It does so without affidavit support: none of the three expert affidavits accompanying the motion address this issue. Cambridge DPW relies entirely upon calculations and discussion in the notice of intent to show, as beyond genuine dispute, that the project will provide full compensatory flood storage for flood storage volume in bordering land subject to flooding that will be lost through excavation, filling and regrading, and that there will be neither a decrease in flood storage capacity nor an increase in

flooding following construction.[93] It also argues that the group's claims to the contrary have been "speculative and unsupported by analysis."[94]

As with Issue 2(c), this reiteration of the permit record does not suffice to show that Issue 3 is unburdened by a genuine, material factual dispute. The motion for summary decision on Issue 3 is denied as insufficiently made and supported.

4. Issue 4: Flooding, siltation, erosion and total suspended solids control
Issue 5: Siltation and erosion control

a.

Both Cambridge DPW and DEP move for summary decision on Issue 4. One element of this issue invokes Stormwater Management Standard 4. Issue 4(c) asks whether, in dividing stormwater flow into two separate flows, one of which will bypass the detention basin and drain to Little River via the existing Wheeler Street Drain, the project will fail to remove 80 percent of the average annual load (post-development) of total suspended solids (TSS) from stormwater discharged from the project site, as Standard 4 requires. The movants posit Issue 4(c) as appropriate for summary decision as a matter of law because Standard 4 applies to new development only, and accordingly the less-stringent standard that must be met is removal of pollutant loads to the "maximum extent practicable."[95]

Cambridge DPW and DEP assert correctly that the project effects, overall, a reconfiguration of existing stormwater discharges and does not itself generate a new discharge of stormwater. It is also true that channeling part of the stormwater flow through the existing Wheeler Street Drain and discharging it to Little River is not new construction and comprises "redevelopment" or "existing development" under the Stormwater Management Standards. The post-construction removal of total suspended solids from this flow must be "to the maximum extent practicable," therefore, per

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[93]/Cambridge DPW's memorandum in support of its motion for summary decision (January 27, 2006), at 16-18.

[94]/ Id. at 18.

[95]/ Memorandum in support of DEP's motion for summary decision (January 27, 2006), at 9.

Stormwater Management Standard 7. As to this portion of the stormwater flow, then, the movants are entitled to a summary decision on Issue 4(c).

However, the treatment of stormwater flow that enters the detention basin is subject to more stringent TSS removal requirements recited by Standard 4. Because the wetland detention basin and its associated project components will be built at a previously undeveloped site in Alewife Reservation, they do not comprise "redevelopment" to which Standard 7 applies. Accordingly, stormwater discharge from the detention basin and associated structures in Alewife Reservation must comply fully with Standard 4, which requires 60-80 percent TSS removal for a "constructed wetland," "extended detention pond," or "wet pond" under post-construction conditions, rather than "to the maximum extent practicable." Summary decision on Issue 4(c) does not extend, consequently, to the portion of stormwater flow that will be channeled into the new detention basin.

b.

The motions fail on the remaining elements of Issue 4. With no affidavit support, neither motion shows it to be beyond genuine, material factual dispute that (1) the proposed sediment forebay from which stormwater will be discharged to the wetland detention basin will not wash out or otherwise fail during storm events, resulting in increased flooding, siltation and erosion at the detention basin's spillway, see Issue 4(a), (2) the wetland detention basin will control flooding and siltation, and will not cause increased erosion at the basin's spillway, see Issue 4(b), and (3) no project design modifications are needed to assure sufficient control of flooding, siltation, erosion and total suspended solids, see Issue 4(d).

Lack of affidavit support also results in the denial of summary decision in Cambridge DPW's favor, based upon motion insufficiency, on Issue 5, which addresses the adequacy of siltation and erosion controls during project construction.

5. Issue 6 (Wetlands identification-Wheeler Street Drain

a.

The Wheeler Street Drain currently conveys combined stormwater and sewage overflows northward to Little River without flow attenuation or treatment. It is mostly an enclosed drainage culvert, but a small section slightly more than 1,000 feet south of Little River is open.

Cambridge DPW's response to public comments during the permit review process included a brief history of the Wheeler Street Drain: "Alewife Brook once flowed from Fresh Pond along the Wheeler Street corridor;" the "natural outlet of Fresh Pond that fed Alewife Brook" was cut off by a dam built by a water works company in 1873; "the stream still existed in 1908 when the Metropolitan District Commission rerouted the Alewife Brook into a narrow concrete culvert from Fresh Pond to near Route 2" and the MDC built the Wheeler Street Drain in 1950 and modified a section of it near the MBTA rotary garage in the 1970s; "[a]lthough it was shown on USGS maps as the Alewife Brook for many years, it has effectively been only a drainage channel since 1908 and no longer appears on USGS quad maps of the area;" and "[t]he last segment still called the Alewife Brook connects to Little River in front of the garage, but even that is a straight, man-made channel whose present configuration dates from the construction of the Alewife T station."[96]

In the same response to public comments on the project, Cambridge DPW took the position that the Wheeler Street Drain was a "drainage channel" and had been since the MDC culverted it in 1908, and that the open section was part of the "channel segment" or "engineered drainage system" built in 1908; accordingly, in its view, the Drain was not one of the water bodies listed at 310 CMR 10.02 that a bank can abut and confine, such as a stream, and the 20-foot exposed section of the Drain was not bank as DEP defined this type of wetland resource area at 310 CMR 10.54(2).[97] This opinion

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[96]/ City of Cambridge Department of Public Works, Response to Comments on the Notice of Intent, DEP File # 123-175, CambridgePark Drive Drainage Area Project, Cambridge, Massachusetts (June 14, 2005), at 1-15—1-16.

[97]/ Id.

was "based, in part, on the fact that the old Alewife Brook was no longer recognized as a stream by the USGS at least as far back as the 1991 USGS quad map, mapping that predates the T station," and in addition, on the fact that water "does not flow continuously" in the Wheeler Street Drain...."[98]

Following project construction, the open section will be enclosed,[99] and stormwater from the Concord Rotary area that is not diverted to the proposed box culvert, sediment forebay and detention wetland will flow to Little River via the Wheeler Street Drain. The group claims that enclosing the open section of the Wheeler Street Drain will eliminate bank.[100] Issue 6 asks first whether that section or any part of it is bank or another type of wetland resource area within which work is subject to regulation under the Wetlands Protection Act or Regulations. If that is the case, Issue 6 then asks whether the bank is significant to the protection of wildlife habitat, and whether the project will alter more than 10 percent or 50 feet, whichever is less, of the length of bank that is significant to the protection of wildlife habitat.

b.

The Wetlands Protection Regulations define bank as:

> the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland.
>
> A Bank may be partially or totally vegetated, or it may be comprised of exposed soil, gravel, or stone.

310 CMR 10.54(2)(a).

The Regulations do not define "water body." However, 310 CMR 10.02(1) provides that any

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[98]/ Id., at 1-16.

[99]/ See Cambridge DPW's motion to dismiss for lack of jurisdiction (July 25, 2005), at 8.

[100]/ In its request for adjudicatory hearing, the group described the "open channel section of old Alewife Brook also known as the Wheeler Street Drain" and claimed that (1) "[t]he easterly bank of this open channel clearly shows wetlands vegetation" and performs "flood relief functions," and (2) "[a]n otherwise isolated section of the 1982 FEMA floodplain map shows the 100-year flood plain overlapping with the location of the open channel section." Notice of claim for adjudicatory hearing (April 14, 2005), at 6, Claim 12.

of the areas it lists, including bank, is subject to protection under M.G.L. c. 131, §40 if it borders on "the ocean, any estuary, any creek, any river, any stream, any pond or any lake." All of these are "water bodies," as that term is commonly used and understood. They comprise the universe of "water bodies" that a bank can abut and confine. That the Wheeler Street Drain confines or passes water does not make any part of the abutting land surface a bank. For there to be bank present along it, the Wheeler Street Drain must qualify as one of the water bodies listed at 310 CMR 10.02(1). Conversely, to show that the absence of bank is not genuinely or materially disputed, it must be shown to be beyond dispute as well that the Wheeler Street Drain does not qualify as one of the listed water bodies. Both DEP and Cambridge DPW argue this to be the case in moving for summary decision on Issue 6, for the reasons given in the latter's response to public comments (see above, at 48).

In addition to the public comment response, which is not enough to sustain the summary decision (see above, at 47), DEP offers the affidavit of Rachel Freed, an Environmental Analyst IV with extensive wetland identification and delineation experience. Freed reviewed the project before DEP issued its superseding order of conditions, including the "submittals, documents and the site."[101] In the course of conducting this review, she asked Cambridge DPW to respond to comments and questions that the group raised (through Dr. Kaiser), among other things by stating whether the project involved culverting the open channel of Wheeler Street Drain/Alewife Brook and, if so, what wetlands alterations were involved and what wetland replication or restoration was proposed.[102] After reviewing Cambridge DPW's response, Freed concluded "that the proposed culverting of the open channel did not trigger the provisions of 310 CMR 10.54 either because the work did not exceed the regulatory threshold of fifty (50) feet or 10% whichever is less," citing 310 CMR 10.54(4)(a)5.[103] The

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[101]/ Affidavit of Rachel Freed, sworn-to January 24, 2006, at 2, para. 4.

[102]/ Id., at 2, paras. 5-6, and attached letter, Rachel Freed to Cambridge DPW, dated December 10, 2004.

[103]/ Id., at 2, para. 7.

cited regulation specifies that work on a bank must not impair its ability to provide important wildlife habitat functions.[104]

Freed does not state affirmatively that no bank is present along any part of the Wheeler Street Drain, however, and nowhere in her affidavit does she discuss whether the Drain is one of the water bodies listed at 31 CMR 10.02(1)(a). Freed states, instead, that if the Wheeler Street Drain's open channel has associated bank, the project will not impair its ability to provide wildlife habitat. As she does not state the factual basis for this opinion, the affidavit does not show it to be beyond genuine, material dispute that the project will not impair the bank's ability to provide wildlife habitat, if there is in fact any bank present. Because the affidavit is ambiguous about the presence of bank, it also fails to show sufficiently that the absence of bank is beyond genuine, material dispute.

Cambridge DPW relies upon the Affidavit of Vincent Spada, a professional engineer who has managed the project for its engineering consultant (see above, at 20). Spada states that:

> (i) The Wheeler Street Drain is a 2400 foot-long man-made drainage pipe whose purpose is to convey combined sewer overflow and storm drainage from several drainage areas, including CAM 004, and discharge it to Little River and Alewife Brook;
>
> (2) Only a small part of the Wheeler Street Drain, located approximately 1100 feet upstream (north) of the point of discharge to Little River and Alewife Brook, is open channel, which is used for maintenance access and water surcharge relief to reduce upstream flooding;
>
> (3) This open portion of the Wheeler Street Drain does not abut tidal waters, coastal storm waters, an estuary, a creek, a river, a stream, a pond or a lake, and it contains only stagnant water; and
>
> (4) The FEMA floodplain around the open section of the Wheeler Street Drain is not isolated, and does not contain ¼ acre-feet of flood water storage volume.[105]

Spada's opinion regarding the absence of tidal waters and estuaries goes without saying, as

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[104]/ Where a bank is "composed of concrete, asphalt or other artificial impervious material," as are the Wheeler Street Drain's banks in significant part on account of its culverting, and the proposed work would alter the bank, the bank is presumed to be significant to the wetlands interests of flood control and storm damage prevention. See 310 CMR 10.54(1), para. 1, and 310 CMR 10.54(3). If this presumption is not overcome, proposed work on a bank must not impair the bank's physical stability, the water carrying capacity of the existing channel within the bank, ground water and surface water quality, the bank's capacity to provide breeding habitat, escape cover and food for fisheries, or the bank's capacity to provide important wildlife habitat functions. 310 CMR 10.54(4)(a).

[105]/ Spada Aff., at 3-4, paras. 9-11.

there is (and never has been) any assertion that saline waters are present anywhere in North Cambridge, let alone at the site in question. The absence of supporting facts on this non-material point is therefore of no consequence. Missing factual support is consequential, however, with respect to the remainder of Spada's opinions, which concern matters that are material to Issue 6.

Spada's opinion regarding the floodplain and confined flood water storage volume—possibly intended to show that there is no isolated land subject to flooding along the open portion of the Wheeler Street Drain—is not supported by observations and calculations. It does not suffice, therefore, to show that the absence of any wetland resource area along this open portion is beyond genuine, material dispute.

The conclusory nature of Spada's opinion regarding the absence of a stream is also problematic. While the area's geography rules out the presence of tidal waters and coastal storm waters, it most definitely does not rule out the presence of a nontidal stream. The history recited in Cambridge DPW's response to public comments reveals that the Wheeler Street Drain was built by culverting a stream that flowed from Little Pond northward to Alewife Brook. The opinion that the Wheeler Street Drain does not qualify as a stream is a legal conclusion that required factual support, consequently.

A discussion of the regulatory definition of stream would have been helpful,[106] as would have been a more detailed explanation of why Spada found the definitional characteristics of a stream to be absent. True, Spada describes the water within the Wheeler Street Drain as "stagnant," which suggests that there is no body of water "running" (meaning "flowing") at least part of the year and that there is, accordingly, no perennial stream present. However, Spada does not state when he observed

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[106]/ 310 CMR 10.04 defines "stream" as:

> a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into or out of an Area Subject to Protection under M.G.L. c. 131, §40. A portion of a stream may flow through a culvert or beneath a bridge. Such a body of running water which does not flow throughout the year (*i.e.*, which is intermittent) is a stream except for that portion upgradient of all bogs, swamps, wet meadows and marshes.

water in the Wheeler Street Drain to be stagnant, and without any observational evidence, his affidavit does not rule out intermittent flow in the Wheeler Street Drain. In addition, Spada does not state whether stream culverting in 1908 and subsequent modifications of the Wheeler Street Drain eliminated all inflow to the Drain from Fresh Pond, or whether water continues to flow into the Drain from wetland resource areas in the Fresh Pond Reservation. For these reasons, the Spada Affidavit does not show it to be beyond genuine, material dispute that the Wheeler Street Drain cannot meet the regulatory definition of stream, or, thus, that its open section does not abut a water body listed at 310 CMR 10.02.

Disposition

Summary decision is granted in favor of Cambridge DPW on Issue 1, regarding project alternatives. There remains nothing further to adjudicate here regarding that issue, including the "practicability" and "substantial economic equivalency" of Alternative 4A or the Alternative 4A site for purposes of 310 CMR 10.58(4), or the group's claim related to it (claim 1).

Issues 2(a) and (b) are determined summarily as factually undisputed: (a) the project will increase the volume of stormwater discharged to Little River; but (b) an increased volume of stormwater discharge to Little River after the project is built swill not violate per se the requirement of Standard 2 that stormwater management systems be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

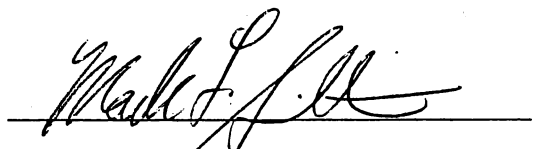
Summary decision is denied as to Issue 2(c) (whether the project will increase offsite flooding despite a post-construction increase in stormwater volumes discharged to Little River), and as to Issue 3 (regarding lost flood storage volume).

On Issue 4(c), Cambridge DPW and DEP are granted a summary decision limited to the portion of the divided stormwater flow that will bypass the new detention basin in Alewife Reservation and be discharged to Little River via the existing Wheeler Street Drain. The post-construction removal of total suspended solids (TSS) from this flow must be "to the maximum extent

practicable," per Stormwater Management Standard 7. Summary decision does not extend to the stormwater flow that will be routed to the wetland detention basin in Alewife Reservation, however. Because this basin and its associated project components will be built at a previously undeveloped site, they do not comprise "redevelopment" to which Standard 7 applies. Accordingly, stormwater discharge from the detention basin and associated structures in Alewife Reservation must comply fully with Standard 4, which requires 60-80 percent TSS removal for a "constructed wetland," "extended detention pond," or "wet pond" under post-construction conditions, rather than "to the maximum extent practicable."

Summary decision is denied to both movants on Issues 4(a) (whether the proposed sediment forebay from which stormwater will be discharged to the wetland detention basin will not wash out or otherwise fail during storm events, resulting in increased flooding, siltation and erosion at the detention basin's spillway), 4(b) (whether the wetland detention basin will control flooding and siltation, and will not cause increased erosion at the basin's spillway), and 4(d) (whether no project design modifications are needed to assure sufficient control of flooding, siltation, erosion and total suspended solids).

Summary decision also is denied as to Issue 5 (regarding the sufficiency of siltation and erosion controls during project construction) and as to Issue 6 (regarding the presence of bank or other wetland resource area abutting the open section of the Wheeler Street Drain).



Mark L. Silverstein
Administrative Magistrate

SERVICE LIST

Attorney or Representative	Representing
Richard A. Nylen, Jr., Esq. Lynch, DeSimone & Nylen, LLP 12 Post Office Square Boston, MA 02109	Ten Residents Group (Richard Clarey, Stephen H. Kaiser et al.) (petitioner)
Nancy E. Glowa, Esq. Elizabeth A. Shaw, Esq. Office of the City Solicitor City of Cambridge City Hall 795 Massachusetts Ave. Cambridge, MA 02139	City of Cambridge Dept. of Public Works (applicant)
H. Rebecca Cutting, Esq. Department of Environmental Protection Office of General Counsel 1 Winter St., 3rd fl. Boston, Ma 02108	Department of Environmental Protection (respondent)
Chairperson Cambridge Conservation Comm'n 344 Broadway Cambridge, MA 02139	Cambridge Conservation Commission
Frank Hartig, Esq. Assistant General Counsel Dept. of Conservation and Recreation 251 Causeway St. Boston, MA 02114	Dept. of Conservation and Recreation (owner)

cc:

Rachel Freed
DEP Northeast Regional Office
205A Lowell St.
Wilmington, MA 01887-

CAMBRIDGE DPW
DEP-05-805