CCM-101

City of Cambridge

11.
Amended Order

IN CITY COUNCIL

October 30, 1995

COUNCILLOR TRIANTAFILLOU
COUNCILLOR BORN
COUNCILLOR GALLUCCIO
VICE MAYOR RUSSELL
COUNCILLOR SULLIVAN
COUNCILLOR TOOMEY

WHEREAS: The W.R. Grace site has been designated as a Tier II hazardous waste site; and

WHEREAS: A Notice of Responsibility (NOR) was issued by DEQE (now DEP); and

WHEREAS: There exists an extensive body of information and documents pertaining to the conditions and remediations of the soil and water at the site; and

WHEREAS: A major development is now being proposed for this site; now therefore be it

ORDERED: That the City Council hold a public hearing to review and determine the status of environmental issues pertaining to this site; and be it further

ORDERED: That the City Manager and staff give the City Council a complete update on the Spengler report along with minutes of previous City Council hearings on this matter in 1987 and 1988; and be it further

ORDERED: That the City Manager arrange for an in-depth presentation at this hearing including representatives from the MBTA Carmen's Union.

In City Council October 30, 1995
Adopted by the affirmative vote of nine members.
Attest:- D. Margaret Drury, City Clerk.

A true copy; D. Margaret Drury

ATTEST:-

D. Margaret Drury
City Clerk

CCM-101

City of Cambridge

11.
Original Order

IN CITY COUNCIL

October 30, 1995

COUNCILLOR TRIANTAFILLOU

WHEREAS: The W.R. Grace site has been designated as a Tier II hazardous waste site; and

WHEREAS: A Notice of Responsibility (NOR) was issued by DEQE (now DEP); and

WHEREAS: There exists an extensive body of information and documents pertaining to the conditions and remediations of the soil and water at the site; and

WHEREAS: A major development is now being proposed for this site; now therefore be it

RESOLVED: That the City Council hold a public hearing to review and determine the status of environmental issues pertaining to this site.

Volume II: Technical Appendices and Response to Comments

Final Environmental Impact Report

EOEA #5869

ALEWIFE CENTER

Project Proponent:
Reynolds, Vickery, Messina and Griefen, Inc.

Prepared by:
Monacelli Associates, Inc.

in association with:
HMM Associates
Segal DiSarcina Associates
Haley and Aldrich, Inc.
Paladin CADD Services, Inc.
Hayden/Wegman, Inc.

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

MICHAEL S. DUKAKIS
GOVERNOR

JAMES S. HOYTE
SECRETARY

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

ON THE

DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Alewife Center
PROJECT LOCATION	: Cambridge
EOEA NUMBER	: 5869
PROJECT PROPONENT	: Gerald Hines Development
DATE NOTICED IN MONITOR	: January 12, 1987

The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the above project adequately and properly complies with the Massachusetts Environmental Policy Act (G.L., c.30, s.61-62H) and with its implementing regulations (301 CMR 11.00).

This DEIR drew a substantial number of comments, many of which called for supplemental information. In my review of this project, I have considered these comments carefully and agree that there is a need for supplemental data and alternative analysis in the area of wetland analysis. The majority of concerns raised in the comments and review of the DEIR may appropriately be covered in a Final EIR. The proponent may proceed to a Final EIR with caution to thoroughly address the fine tuning of mitigation and decrease in alteration with respect to wetland impacts and possible waivers of wetland regulations. A supplemental EIR focusing specifically on wetlands is likely to be a better tool for this purpose and I highly encourage the proponent to prepare such a document prior to filing a Final EIR. The preparation of this supplemental document would afford the proponent the opportunity to make significant advances toward a

1.1

in wetland analysis and/or mitigation. Finally, the incorporation of both pedestrian and bicycle traffic and amenities in or through the site should be presented in more detail in the FEIR. 1.6

Hazardous Materials/Subsurface conditions

The proponent has prepared an overview of existing conditions at the site. The proponent is directed to comments received on the DEIR for specific guidance on completing the FEIR. The FEIR must include a comprehensive summary of U.S. EPA findings on the site to date. While the site is not on the U.S. EPA's National Priority List (Superfund), clearly the level of contaminates at the site are of significant concern. Further, a summary of the toxicological risk assessment must be included in the FEIR. The FEIR must report on the continuing study of existing contamination cited in the DEIR. More detail regarding plans for removal and disposal of contaminated soil must be presented in the FEIR. Further, a clear discussion of how contaminated soils will be managed at non-construction areas of the site should be addressed in the FEIR. 1.10

Infrastructure

The proponent is directed to comments on the DEIR for specific guidance in the area infrastructure design and mitigation. Where mitigation may be required, specific responsibility and commitment to implementation should be reported on in the FEIR. 1.11

Flooding and Drainage

With respect to flooding and draining, I call to the proponent's attention specific comments received from the Cambridge Conservation Commission. The FEIR must address water quality in Alewife Brook and the possible NPDES permit. 1.12

Transportation

Transportation issues related to the implementation of this proposed project drew a great deal of attention. Related to this subject, the FEIR should address comments received on the DEIR. Further, the MDPW Route 2 project DEIR, which is expected to be completed this spring will undoubtedly have implications related to Alewife Center. Specifically, the MDPW is intending to propose a change in access for Whittemore Ave. The proponent should consult with the MDPW in the development of access alternatives given this potential major modification. 1.13 1.14

(1.6) TOPIC: DESIGN

COMMENT: Pedestrian and bicycle amenities should be presented in more detail.

RESPONSE: Though the design of the master plan and detailed design of these pathways will continue to evolve, a more detailed illustration of the proposed bikeway/pedestrian path system is discussed in Chapter Vc. The project proponent is also in the process of hiring a landscape architect to prepare in more detail all landscaped and pathway areas.

(1.7) TOPIC: CONTAMINATION

COMMENT: The FEIR must include a comprehensive summary of U.S. EPA findings on the site to date.

RESPONSE: See Chapter IX Governmental Agency Involvement (Page IX-16).

(1.8) TOPIC: CONTAMINATION

COMMENT: A summary of the toxicological risk assessment must be included in the FEIR.

RESPONSE: The risk assessment performed in 1985 has been determined to be incomplete by the DEQE. The DEQE has required another risk assessment be performed in its NOR issued for the site. A public review of this risk assessment will be provided prior to start of work on the site.

COMMENT: The FEIR must report on the continuing study of existing contamination cited in the DEIR.

RESPONSE: See Chapter IX Subsurface Exploration Program Section (Page IX-3) and Chemical Contamination and Analysis Section (Pages IX-12 to 14) for work completed to date. Additional sampling and analyses are underway in response to DEQE's NOR. See Chapter IX Governmental Agency Involvement (Page IX-16). The results of these programs will be reviewed by the DEQE. The DEQE will present their review and conclusions at public meetings. No work can be done at the site without compliance with the NOR.

Metropolitan Area Planning Council

110 Tremont Street Boston, Massachusetts 02108 (617)-451-2770

Serving 101 Cities & Towns in Metropolitan Boston

February 19, 1987

The Honorable James S. Hoyte, Secretary
Executive Office of Environmental Affairs
MEPA Unit
100 Cambridge Street
Boston, MA 02202

RE: Alewife Center, Cambridge (MAPC DEIR # 87-13, received December 29, 1986) EOEA #5869

Dear Secretary Hoyte:

In accordance with the provisions of Chapter 30, Section 62 of the Massachusetts General Laws, the Council has reviewed the Draft EIR for Alewife Center. We offer the following comments.

Chapter II - Project and Area Description

1. Ownership of Optioned Site - There are two references to the current use of the 2.2 acre site under option by Hines. On Page II-7, the site is said to be occupied by LeHigh Metals and Babo's restaurant; on Page III-5, the occupants are listed as Cybermation and the Music Complex. This discrepancy should be explained. 3.1

Chapter III - Description of Alternatives

2. Linear Park and Minuteman Bikeway - There are several references to these facilities. On Page III-7 the Linear Park is incorrectly referred to as the Linear Parkway and the Minuteman Bikeway is referred to as Arlington's Minuteman Bikeway. The Minuteman Bikeway is a regional facility which will run from Cambridge through Arlington and Lexington to Bedford. 3.2

3. Phasing - On Page III-9 there is a discussion of the phasing of the development through 1995. There should be some discussion of how the provision of site amenities, infrastructure and environmental improvements would be affected by changes in the real estate market which might significantly alter the completion or composition of the proposed development. 3.3

4. Housing Alternatives - The section on housing alternatives (Page III-14) is vague and inadequate. The proponent states that several existing parking lots would be "made available" for new housing. The availability of these lots does not guarantee that they will be developed for housing. The EIR should address what active steps the proponent will take to have the sites developed and whether 3.4

Chapter VI - Wetlands Resources Issues

9. Wetlands Replication - From a comparison of Figure VI.1 (Existing Pond and Wetland Area) and Figure IX.4 (Former Tanks and Lagoons Location Plan) it appears that a portion of the wetlands replication is to take place in an area where there may be contamination from previous waste disposal. The environmental/health effects of this need to be examined in sufficient detail to determine if wetlands replication in this portion of the site is feasible. 3.8

Chapter IX - Subsurface Conditions and Chemical Contamination Issues

10. Hazardous Materials and Chemical Contamination Issues - The Council is concerned about chemical contamination of the site for this development. While the project proponents have begun analysing information about conditions on the site and work has been done to clean up some areas, detailed plans to decontaminate the site completely are not included in the DEIR. 3.9

There are three areas which are contaminated to varying degrees: the soil, surface water, and groundwater. These areas present several routes of possible human exposure to toxic materials: construction workers, people working in the area when the development is complete, and people using open space areas of the site.

In order to address all these areas of contamination and potential routes of exposure, the Council would like to see a plan with details on:

a. Hazardous contaminants present at each building site, along with a plan for removing contaminated soil, and a description of where soil will be taken for disposal (e.g., on-site or off-site).

b. How contaminated soils will be handled in areas of the site where construction is not contemplated (e.g., paved areas and landscaped areas). The level of contamination in each of these areas needs to be included too.

c. Where groundwater treatment is proposed, what hazardous materials will be removed. The proponents mentioned allowing certain contaminants to volatilize as they are removed from the water. We would like to know what compounds will be vented in this manner and if there will be air emissions problems with this approach.

d. In reviewing the sampling locations, we noted that only one sediment sample and one water sample had been taken from Jerry's Pond. Since this pond and the adjacent wetlands will be disturbed then restored/replicated by the proponents and they are so close to two former process waste dumps, the Council would like to see more sediment and water samples taken to be certain the full extent of contamination is known before the wetlands are disturbed. Destruction and replication of these wetlands offer two opportunities for exposure of workers and further contamination of soil and groundwater.

smaller values occur with the build volumes. This indicates a relatively minor effect of Alewife Center at those "outlying" intersections.

(3.7) TOPIC: PEDESTRIAN PATHS AND BIKEWAYS

COMMENT: How will pedestrian paths and bikeways link with the paths designed as part of the permanent improvements to Alewife Brook Parkway?

RESPONSE: The proposed on-site pathways will link directly to these scheduled off-site pathway improvements. (See Figures Vc.4 and Vc.5.)

(3.8) TOPIC: WETLANDS

COMMENT: It appears that a portion of the wetlands replication will take place in an area where there may be contamination from previous waste disposal.

RESPONSE: There are no records or evidence of waste disposal at the site for the replacement wetlands. This area was at one time the beach for Jerry's Pond.

(3.9) TOPIC: CONTAMINATION

COMMENT: The Council would like to see a plan with details on: a)hazardous contaminants present at each building site, b)how contaminated soils will be handled in areas of the site where construction is not contemplated, c)where groundwater treatment is proposed, what hazardous materials will be removed, d)more sediment and water samples taken from Jerry's Pond, e)worker protection measures, and f)evidence of how and when the proponents have consulted with the DEQE.

RESPONSE: These items will be addressed in studies and reports required by the DEQE in their NOR to W.R. Grace. They will be completed by Haley & Aldrich and approved by DEQE in the future. See Chapter IX Governmental Agency Section (Page IX-18).

(3.10) TOPIC: CONTAMINATION

COMMENT: The Council strongly advocates removal of contaminated soil, followed by proper treatment and/or disposal depending on the level of contamination.

RESPONSE: Methods and need to remediate the contaminants present at the site will be addressed in studies prepared in response to the DEQE's NOR. Removal will be evaluated as one method of remediation for the site. The chosen method(s) will be approved by DEQE.

(3.11) TOPIC: CONTAMINATION

COMMENT: The Council is also concerned that project proponents are considering disposing of some contaminated soil by burying it under paved areas such as parking. This "disposal" method should only be used where there is a very low level of soil contamination by materials that do not migrate with groundwater.

RESPONSE: See response to comment 3.10.

7

The Commonwealth of Massachusetts

Metropolitan District Commission

20 Somerset Street, Boston 02108

RECEIVED

FEB 2 [illegible]

OFFICE OF THE SECRETARY
ENVIRONMENTAL AFFAIRS

Mr. James Hoyte, Secretary
Executive Office of Envirnmental Affairs
100 Cambridge Street
Boston, MA.

Attn; Steven Davis
Re; EOEA File #5869

Dear Secretary Hoyte;

The Metropolitan District Commission has reviewed the Draft EIR for the proposed Alewife Center Development and submits the following comments:

1) The proposed development borders Alewife Brook Parkway and adjoins MDC property on Rindge Ave. Enhancing the Parkway as a linear green corridor is a high priority of the MDC. Buildings along the Parkway should relate to and complement this corridor concept. As presented, the design concept turns in upon itself, although a strong landscape buffer is provided along the Parkway. As the plan evolves the façades on the Parkway should be re-evaluated to assure as complementary a design as possible. The landscape plans should treat the Parkway and Alewife Reservation connections as a continuous system. The Final EIR should further elaborate the development/Parkway relationship. 7.1

2) The opportunity to create a significant open space at the intersection of Rindge Ave. and Alewife Brook Parkway is an exciting one. The Plan proposes the integration of the Parkway corridor with Jerry's Pond, the MDC swimming pool and Russell Field as a continuous open system, linking regional and local parks. We strongly support this concept. 7.2

3) The proposed changes to Jerry's Pond do cause some concern because more than 5000 sq. ft. of wetland alteration is involved. State policy and state regulations actively discourage wetland alteration with such alteration considered only in the most exceptional or unique circimstances where there is an overriding public purpose. The MDC supports these policies. This instance however may warrant consideration for a waiver. Jerry's Pond is a man-made clay pit pond and therefore its size and shape is arbitrary. It is surrounded by volunteer growth and while hydrologically connected, it is vegetatively separated and isolated from any natural area. Redesigning and relandscaping the pond and its surrounding vegetation offers an opportunity to enhance its natural values and its contribution to the open space system in the Eliot tradition. Adding the pond to the public open space system is a clear public benefit. The Final EIR should explore alternative configurations to the proposed pond in order to respect the intent of the wetlands regulation to the maximum extent possible. 7.3

7.4

4) The MDC is especially concerned with improving and restoring the natural area of Alewife Reservation. The Final EIR should suggest ways of improving the landscape connections between the development site and the natural areas including Yates Pond.

5) The history of chemical contaminants at this site demands that particular attention be paid to questions of groundwater contamination, quality of dredge spoil, disposition of spoil and replacement of soils for new vegetation. The water quality of Jerry's Pond must be of sufficient quality to sustain a healthy ecosystem. The FEIR must be explicit in describing how these objectives will be accomplished.

6) The MDC will be working closely with State and City of Cambridge agencies throughout the course of this development. The MDC requires full landscape review of all work on or impacting the Reservation and the Parkway and such lands as may be acquired as public open space that will be under MDC jurisdiction.

The Project appears to offer a significant opportunity for public and private cooperation in increasing and strengthening the regional open space system in the Alewife area. We look forward to continued close coordination between the developer and public agencies in achieving this goal.

Sincerely,

William J. Geary
Commissioner

cc. R. Signore
D. O"Malley
J. Falvey
J. O'Brien

(7.4) TOPIC: LANDSCAPE CONNECTION TO ALEWIFE RESERVATION

COMMENT: FEIR should suggest ways of improving landscaping connections between Alewife Center and the natural areas of the Alewife Reservation including Yates Pond.

RESPONSE: The Alewife Center site, formerly occupied by the W.R. Grace manufacturing facility has not been in a natural state for many years. The Current Proposal suggests that Alewife Center restore the natural open spaces surrounding Jerry's Pond, make it publicly accessible once again, and provide pathways connecting it to pathways through the Alewife Reservation to the west of Alewife Center.

(7.5) TOPIC: WETLANDS

COMMENT: The water quality of Jerry's Pond must be of sufficient quality to sustain a healthy ecosystem.

RESPONSE: The Jerry's Pond wetland system is currently utilized by a number of waterfowl and songbird species. Aquatic vegetation is present within the pond and along those areas of the bank which have not been heavily disturbed. The proposed project will improve these existing conditions. The wetland will be restored as debris and litter will be removed from the water and along the banks, and vegetation planted to stabilize soils eroding into the water. The urban runoff into the pond will be improved as there will be a closed drainage system at the Alewife Center, and all stormwaters will be processed through a sedimentation chamber with an oil and grease trap. For additional details see Chapters VI and Xc.

(7.5) TOPIC: CONTAMINATION

COMMENT: Particular attention must be paid to questions of groundwater contamination, quality of dredge spoil, disposition of spoil and replacement of soils for new vegetation. The water quality of Jerry's Pond must be of sufficient quality to sustain a healthy ecosystem.

RESPONSE: These issues are being addressed as required by the NOR issued by the DEQE. See Chapter IX Governmental Agency Involvement (Page IX-16).

9

The Commonwealth of Massachusetts

Department of Environmental Quality Engineering

Metropolitan Boston - Northeast Region

5 Commonwealth Avenue
Woburn, Massachusetts 01801

S. RUSSELL SYLVA
Commissioner

February 17, 1987

RECEIVED
FEB 18 1987
OFFICE OF THE SECRETARY OF
ENVIRONMENTAL AFFAIRS

Executive Office of
Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attn: Mr. Steven Davis

Dear Mr. Davis:

The Department of Environmental Quality Engineering, Division of Solid and Hazardous Waste, is in receipt of the Draft Environmental Impact Report concerning Alewife Center in Cambridge, Massachusetts, prepared by Monacelli Associates and dated November, 1986. The Department has reviewed Chapters IX and Xf, which were prepared in association with Haley and Aldrich, Inc. and entitled "Subsurface Conditions and Chemical Contamination", and "Mitigating Measures: Subsurface Conditions and Chemical Contamination" respectively. This letter is to present the Department's comments on these chapters of the EIR.

To provide a perspective on these comments, the Department's current involvement with the W.R.Grace site should be explained. During December of 1986 and January of 1987, the Department reviewed the 1985 3-volume report prepared by Haley and Aldrich entitled "Report on Subsurface and Hydrogeological Conditions for the Alewife Center Master Plan Study". Based on that document and on additional information in the Department's files, and pursuant to M.G.L. Chapter 21E, a "Notice of Responsibility" letter was written to W.R.Grace. That letter documents information showing that a "release" of oil/hazardous material has occured at the site, outlines W.R.Grace's liabilities and responsibilities regarding assessment and remediation pursuant to Chapter 21E, and summarizes "Requisite Site Actions" that the Department deems necessary to evaluate and remediate the site. For your reference, a copy of that letter is enclosed. The following comments on the EIR are essentially a subset of the "Requisite Site Actions", focusing on the requirements that are related to the development process.

(1) In the introduction to Chapter IX, it is stated that a

toxicological assessment of the site was conducted, and "...it was determined that no actual or potential hazard to human health is presented by current or proposed conditions". The risk assessment portion of the 1985 Haley and Aldrich report did not, however, specifically address other potentially important exposures associated with development. The only exposure treated quantitatively in that document was inhalation of contaminated airborne soil particles caused by disturbing dry soil on the site during construction. Other potential contaminant transport and exposure pathways related to development include the migration of contaminated groundwater or chemical vapors into on-site buildings and the transport of contaminants into ponds and pond sediments that will be accessible to the public after development is complete. Before the Department approves the development plans, a thorough, quantitative analysis of all potential risks associated with transport and/or exposure to hazardous materials is required to demonstrate that development will not adversely impact public health or the environment in the vicinity of the site. 9.1

(2) The "Site Hydrology" section states that "Preliminary calculations indicate that the 10 ft. structure penetration below the water table may create a negligible rise in water levels immediately surrounding the structures. Groundwater levels in neighboring residential areas would not be affected by the proposed construction". To confirm that such is the case, and that development will not result in elevated contaminant levels in the neighborhood north of the site, a detailed account of the data and analysis upon which this conclusion is based must be presented before the Department approves the development plans. Since groundwater flow is the major route by which contaminants are transported off-site, it is necessary to rule out or prevent the flow of contaminated groundwater into the neighborhood. If the groundwater flow analysis indicates that contaminated ground water may migrate from the site into the the neighborhood, groundwater diversion structures or interceptors could be required. 9.2

(3) The "Chemical Contamination and Analysis" section states that "Using the existing data, estimates were made of likely human exposure under current and anticipated site conditions." Again, in the Haley and Aldrich 1985 report, specific estimates were presented only for the potential exposure pathway believed to be the most significant, that of dust inhalation during construction. The Department is requiring such estimates for all potential exposures. 9.3

(4) Also in the "Chemical Contamination and Analysis" section, it is stated that "Construction of building foun-

(9.1) TOPIC: CONTAMINATION

COMMENT: Before the Department approves the development plans, a thorough, quantitative analysis of all potential risks associated with transport and/or exposure to hazardous materials is required to demonstrate that development will not adversely impact public health or the environment in the vicinity of the site.

RESPONSE: This issue is being addressed as required by the NOR issued by the DEQE. See Chapter IX Governmental Agency Involvement (Page IX-16).

(9.2) TOPIC: CONTAMINATION

COMMENT: A detailed account of the data and analysis upon which conclusions regarding changes in groundwater flow and elevation after development are based must be presented before the Department approves the development plans. It is necessary to rule out or prevent the flow of contaminated groundwater into the neighborhood.

RESPONSE: This issue is being addressed as required by the NOR issued by the DEQE. See Chapter IX Site Hydrogeology Section (Page IX-9) for a summary of the results obtained to date. A more complete analysis will be presented in a data report required by the DEQE's NOR.

(9.3) TOPIC: CONTAMINATION

COMMENT: The Department is requiring human exposure risk estimates for all potential exposure pathways.

RESPONSE: This item is being addressed as required by the DEQE's NOR. See Chapter IX Governmental Agency Involvement (Page IX-17).

(9.4) TOPIC: CONTAMINATION

COMMENT: Specific treatment system design plans and soil removal criteria must be submitted to the Department for approval before construction is initiated.

RESPONSE: This item is being addressed as required by the DEQE's NOR. See Chapter IX Governmental Agency Involvement (Page IX-17).

11

The Commonwealth of Massachusetts

Senate

State House · Boston

SENATOR
MICHAEL J. BARRETT

February 23, 1987

Mr. James S. Hoyte, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Ma. 02202

Attn: MEPA Unit

Dear Secretary Hoyte:

In response to the Alewife Center DEIR (EOEA #5869) and its MEPA review, I would like to raise several items of concern to the North Cambridge community and to the adjoining communities of Belmont and Arlington.

Hazardous waste clean-up and neighborhood communication

The DEIR and the 1985 Haley & Aldrich report cover the planned clean-up from the technical side, and the DEQE has reviewed and plans to monitor the developer's progress. The DEIR does not address, however, the question of communication with the community surrounding the development. Due in part to publicity and litigation involving one of the co-developers, the neighborhood remains apprehensive about the clean-up process and the prospect of air-borne contaminants during construction.

It should be remembered that during MBTA construction, soil excavated from this site was used as fill in Davis Square, Somerville. When the distinctive odor of naphthalene arose, it was then too late to reassure residents that the levels of naphthalene in the air were non-toxic. The developers should take a lesson from this experience and incorporate into the final EIR a plan by which neighborhood residents can be kept fully informed, in non-technical language, throughout the progress of clean-up and construction. 11.1

Hazardous waste clean-up and long-term health effects

During MBTA excavation, it was reported that several workers had to be hospitalized after inhalation of dust. As part of its review, EOEA should review these cases and determine whether there have been any subsequent health effects. 11.2

Hazardous waste clean-up and emission testing

Measurements of the concentration of contaminants now in the soil do not provide sufficient information about the behavior of these contaminants during the excavation of the site, i.e., how much of which materials will volatilize or attach to varying size dust-particles. A monitored test (basically, digging a trench on a dry day, using standard earth-moving equipment, in an area of high concentration) could collect empirical data on emission rates that would be invaluable to any dispersion model. Because this information would be extremely useful in other sites, such an experiment could be co-sponsored by the developer and DEQE. a

Transportation: Automobile

On the question of the impact of the planned development on automobile traffic, the developers defer, appropriately, to traffic estimates already included in the Route 2-Alewife Brook Parkway DEIR/DEIS (which assumes 500,000 square feet of development at the site). After review, however, there may be changes to the Route 2 DEIR and its estimates. If that is the case, future versions of this impact report should be revised accordingly. 11.3 b

Some impacts, however, are separable from the Route 2 DEIR. Missing from the Alewife Center DEIR is any attempt to discuss the impact of construction traffic on the area, either directly or indirectly, by inducing commuters to search for routes that avoid the site, but increase the burden on the local streets of North Cambridge, Arlington, and Belmont.

Inasmuch as the trestle bridge on Alewife Parkway south of the development site has a current restriction of 5000 pounds, and will not be replaced until much of the proposed construction is complete, and Rindge Avenue--narrow, potholed, and crowded with children crossing to play areas, pool, and bus-stop--is also appropriately restricted, the final EIR should spell out how the developer plans to use the very limited alternative routes. 11.4

One of these would be seriously disruptive: trucks turning left onto Whittemore Avenue from Alewife Brook Parkway would disrupt both north and southbound traffic on the Parkway, which is already over capacity. The DEIR suggests that a traffic signal could be installed at Whittemore and coordinated with other Parkway signals. This intersection is so close to the Route 2 intersection that this remedy could actually make things worse, and the effect on Massachusetts Avenue traffic from backed-up traffic along the Parkway could be equally severe. At the least, the final EIR should analyze the impact of construction traffic, without relying on later Route 2 improvements, and should provide an adequate analysis of the impacts on the local streets of North Cambridge, Arlington, and Belmont. 11.5

16

CITY OF CAMBRIDGE
DEPARTMENT OF HEALTH AND HOSPITALS
1493 CAMBRIDGE STREET
CAMBRIDGE MASSACHUSETTS 02139
498-1349

MELVIN H CHALFEN M D
COMMISSIONER

February 18, 1987

Mr. Joseph Kellogg
Department of Community Development
51 Inman Street
Cambridge, Massachusetts 02139

Dear Mr. Kellogg,

Please find enclosed a copy of the report by Dr. Spengler's group, consultants to the City who are evaluating the Grace Site studies. We recommend that this report be used as the Commissioner of Health's response to the hazardous materials section of the Draft Environmental Impact Report on the Grace Site.

Very truly yours,

(for)
Melvin H. Chalfen, M.D.
Commissioner

16

CITY OF CAMBRIDGE
DEPARTMENT OF HEALTH AND HOSPITALS
1493 CAMBRIDGE STREET
CAMBRIDGE, MASSACHUSETTS 02139
498-1349

MELVIN H CHALFEN M D
COMMISSIONER

February 18, 1987

Mr. Joseph Kellogg
Department of Community Development
51 Inman Street
Cambridge, Massachusetts 02139

Dear Mr. Kellogg,

Please find enclosed a copy of the report by Dr. Spengler's group, consultants to the City who are evaluating the Grace Site studies. We recommend that this report be used as the Commissioner of Health's response to the hazardous materials section of the Draft Environmental Impact Report on the Grace Site.

Very truly yours,

(for)
Melvin H. Chalfen, M.D.
Commissioner

associated with other aspects of the development. Our evaluation includes a summary critique of the material presented in Monacelli Associates Inc. draft EIR and the three-volume Haley and Aldrich, Inc. Environmental Assessment report for the proposed Alewife Center Development Project (December 1985). In addition to these primary reports, we have also evaluated the following.

1. Correspondance to Don Smith (EPA) from Greta D. Reade (NUS Corp.) on June 20, 1986 providing review comments on the Haley and Aldrich report "Environmental Assessment for the Alewife Center Master Plan, W.R. Grace and Co., Cambridge, Massachusetts."
2. W.R. Grace and Co. response to comments of Greta D. Reade (NUS Corp.) dated October 27, 1986.
3. Various inter-office correspondances from the City of Cambridge summarizing highlights from project-related meetings with DEQE, the developers and their consultants, and the public.
4. Report on Long-term Chemical Monitoring Program, Alewife Center, Cambridge, Massachusetts by Haley and Aldrich, Inc. (February 1986).
5. Supplemental Soil and Groundwater Data, Draft Environmental Impact Report, Alewife Center, Cambridge, Massachusetts by Haley and Aldrich, Inc. (January 7, 1987).
6. Notice of Responsibility (based on 1985 Haley and Aldrich report), from the Massachusetts Dept. of Environmental Quality Engineering (DEQE) and transmitted to W.R. Grace and Co. on February 9, 1987.

II. SUMMARY OF FINDINGS

Based on our review, we conclude that the draft EIR and associated materials do not provide an appropriate analysis of potential health hazards

posed by this site as it currently exists, or as it will exist during construction or following completion of the proposed project. Therefore, stated claims that development of the site will present no risks to the health and safety of the public are not adequately supported. Furthermore, this draft does not adequately address the concerns voiced in the Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form, regarding hazardous materials, in that it does not summarize nor discuss the EPA evaluation of the site assessment. We recommend additional data collection and formal exposure and risk assessment studies be performed as part of the finalization of the EIR. 16.1

III. SITE ASSESSMENT EVALUATION

DEQE's recent Notice of Responsibility, prepared for the proposed development site, addresses the requisite site actions necessary for the evaluation of the potential hazards and the remedial action plans associated with the manufacturing wastes disposed within the former W.R. Grace property. We find all of DEQE's information requests, in terms of gathering additional data and conducting further assessments, quite appropriate. In this section, we discuss a number of issues similar to those raised by DEQE and additional areas of concern regarding the existing information bases, chemical contamination, site hydrogeology and surface waters, risk assessment, and mitigating measures.

III.1 Chemical Contamination: Composition, Concentrations, and Distributions

The site assessment includes an extensive data base generated from numerous samples and detailed chemical analyses of many of these. In general, the chemical analyses performed appear appropriate in light of the past

made available to the City of Cambridge, Department of Health and Hospitals. In summary, this risk assessment presents an inadequate assessment of potential exposures which might occur at this site before, during, and after construction. This makes it impossible to assess the levels to which the public might be exposed from contaminants found at the site. The document also fails to consider the potential impacts of a number of compounds found at appreciable levels in the soils or groundwater at the site.

A discussion regarding our concerns with this document follows. In the risk assessment, concentration guidelines, or threshold levels, for a number of compounds are derived. These are estimates, of the concentration in water or soil at which no significant hazard to human health is posed. The estimates, however, are not always based on appropriately conservative assumptions when considering the protection of public health. Nonetheless, sample data indicate that four contaminants at this site are found in concentrations exceeding these guidelines. In each instance these findings are said to be insignificant and that no health threat is expected. The author argues that since the guideline values incorporate a safety factor, no significant health risks are posed by concentrations that do not substantially exceed the guideline values. This ignores the rationale behind using safety factors in the first place. Safety factors attempt to account for the uncertainties involved in calculating guideline or threshold values and the existence of sensitive subgroups or individuals in the population (elderly, children, etc.)

In conclusion, we believe an appropriate risk assessment of the site has not been performed. Such an assessment should be required and will be useful in determining how this site should be developed. Specific methodologies for such an assessment should be determined in consultation with

16.6

4. Possible penetration of neighborhood basements by groundwater originating from the site, potentially carrying hazardous compounds, should receive further consideration. It would be desirable to develop a baseline data set of the current situation, that is, the current prevalence of basement flooding problems in the community durrounding the proposed development. Such a baseline might be obtained through consultation with DEQE and the City of Cambridge. Should additional groundwater work suggest movement towards peripheral communities, additional groundwater sampling, especially of shallow groundwater that might enter basements or reach surfaces, needs to be performed. 16.25

5. The possibility that sewer and utility line connections might serve as conduits for the flow of contaminated ground and surface water from the site should be addressed. 16.26

6. The possibility that construction on the site may connect shallow groundwater with deeper aquifers beneath the clay layers must be analyzed. Penetration of the natural clay barrier could result in contamination of deeper groundwater. 16.27

7. Since the site lies on a 100-year flood plain, possible impacts of flooding (and of development on flooding) on mobilization of contaminants needs consideration. 16.28

IV.3 Exposure and Risk Assessment

It is imperative that a comprehensive population-based exposure and 16.29

the predicted risks are significant and/or unacceptable, using criteria employed by EPA and other regulatory agencies such as FDA. Finally, risk estimates should also be developed and analysed for alternatives to the project, in particular, construction versus no construction scenarios.

E. Remedial Measures

It is appropriate to consider various alternatives or remedial measures that might minimize the possible health and odor impacts of the site during and after construction. Even if it is concluded that the likelihood of adverse effects is small, it is still advisable to consider certain mitigative measures to address specific health (and welfare) concerns of the public.

IV.4 Mitigating Measures and Other Recommendations

1. The project proponents should provide more extensive documentation confirming that all chemical storage containers and transfer pipes have been removed from the site or appropriately emptied. The continuing, rather high levels of acetone contamination on certain areas of the site is troubling and raises the possibility of continued acetone inputs to these areas, possibly from unidentified leaking transfer pipes or other containers still buried. 16.30

2. Contingency plans should be formulated to deal with unexpected developments during construction. Such events might include the discovery of previously unidentified chemical containers, transfer pipes, or pockets of highly contaminated soils. These plans might include 16.31

contaminant limits should be developed for the use of contaminated soils on-site. More detailed guidelines for the use of contaminated materials on-site should also be developed. Contaminated soils should be isolated, to the extent feasible, from the open environment as soon as possible after excavation. Stockpiling of contaminated soils, as suggested in the draft EIR, could lead to their mobilization through wind and water erosion. Given the high water table, contaminated soils could easily be placed into the saturated zone. The developer should be required to keep detailed records of how the contaminated excavated soils are treated or of where they are disposed of both off-site and on-site.

6. Groundwater treatment criteria and methods should be specified in greater detail. Sufficient information on the types and concentrations of contaminants in the groundwater of the region to be dewatered is available to allow for a more detailed analysis of the most suitable treatment techniques. Air or surface water discharges resulting from the proposed treatment process should be considered in the risk assessment for the site. For any treatment process, intermittent, random sampling should be done to determine the levels of compounds in air or surface water discharges. 16.35

7. Due to groundwater contamination and the high water table, special care must be taken to avoid entry of noxious chemcials into the buildings once constructed. Watersealing of the foundations may not be sufficient (just about everything waterproof that we have ever dealt with has eventually leaked). We recommend that below grade space be isolated as much as possible from higher floors in the buildings. For example, separate 16.36

RESPONSE: This will be addressed in the Hazardous Materials Management Plan to be prepared as required by the DEQE's NOR. See Chapter IX Governmental Agency Involvement (Page IX-16).

(16.22) TOPIC: CONTAMINATION

COMMENT: The directions and rates of current groundwater and surface water movement on the site must be clarified.

RESPONSE: See Chapter IX Site Hydrogeology Section (Page IX-8)

(16.23) TOPIC: CONTAMINATION

COMMENT: Groundwater modeling may be needed to investigate the effects of construction on groundwater flow patterns and rates.

RESPONSE: See Chapter IX Site Hydrogeology Section (Page IX-9)

(16.24) TOPIC: CONTAMINATION

COMMENT: Potential migration of hazardous materials from the site requires additional attention using models of pollutant transport in soil, groundwater, and surface waters.

RESPONSE: Computer modeling of pollutant transport is not warranted as no major continuing source of contamination exists on-site, and the groundwater flow system does not indicate any sensitive receptors.

(16.25) TOPIC: CONTAMINATION

COMMENT: Possible penetration of neighborhood basements by groundwater originating from the site, potentially carrying hazardous compounds, should receive further consideration. Develop baseline data on the current prevalence of basement flooding problems in the community.

RESPONSE: See Chapter IX Governmental Agency Involvement Section (Page IX-16)

(16.26) TOPIC: CONTAMINATION

COMMENT: The possibility that sewer and utility line connections might serve as conduits for the flow of contaminated ground and surface water from the site should be addressed.

RESPONSE: This is a requirement in the NOR issued by DEQE. See Chapter 9 Governmental Agency Involvement Section (Page IX-16)

(16.27) TOPIC: CONTAMINATION

COMMENT: The possibility that construction on the site may connect shallow groundwater with deeper aquifers beneath the clay layers must be analyzed.

RESPONSE: The buildings will be constructed on piles that will be driven through a thick (50'+) clay layer down to dense till. The clay will consolidate around the piles and not allow vertical groundwater movement. In addition, vertical flow gradients between the upper clay stratum and lower clay stratum should be small.

(16.28) TOPIC: CONTAMINATION

COMMENT: Possible impacts of flooding on mobilization of contaminants needs consideration.

RESPONSE: The impact of the site's contamination on the quality of the flood waters will probably be minimal before, during, and especially after development. The present surface soils consist of clean off-site soil or crushed stone. Flood water will not come in contact with contaminants. During development no flood waters will flow onto the site. After development, the worst contamination on site will have been removed or treated and placed below "clean" soil or asphalt and will not come in contact with flood water.

(16.29) TOPIC: CONTAMINATION

COMMENT: It is imperative that a comprehensive population-based exposure and risk assessment study be performed for the Alewife Center Project.

Received at the Rotunda
10/30/95

REVIEW OF THE DRAFT EIR AND RELATED ENVIRONMENTAL ASSESSMENT DOCUMENTS FOR THE PROPOSED ALEWIFE CENTER DEVELOPMENT AT THE W.R. GRACE AND CO. PROPERTY IN CAMBRIDGE, MASSACHUSETTS

*** * * DRAFT FINAL REPORT * * ***

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TABLE OF CONTENTS

I. INTRODUCTION

As part of an ongoing evaluation of the potential environmental and health implications of the proposed Alewife Development Project, the City of Cambridge has retained the services of researchers affiliated with the Energy and Environmental Policy Center (EEPC), Harvard University and with the Harvard School of Public Health (HSPH) to evaluate the draft EIR and related site assessment documents. Harvard staff involved in this effort include individuals experienced in risk assessment, toxicology, hazardous waste management, and air pollution monitoring. The review and assessments were conducted under the direction of Prof. John D. Spengler (HSPH) and managed by Dr. Haluk Ozkaynak (EEPC). Principal scientists working on the project also included Mr. Mark Smith (HSPH) and Mr. Donald J. Fingleton (EEPC).

Harvard's evaluations included the undertaking of two tasks. The first task was the general review of the recent Environmental Assessments documents and the draft EIR for the purposes of outlining a risk assessment study relevant to the proposed commercial development of the former W.R. Grace site near the Alewife Brook Parkway in Cambridge. The second task consisted of the evaluation of recent monitoring and test data and the December 1987 draft EIR prepared by the project proponents and its contractors. Our multidisciplinary review attempts to address the concerns regarding the adequacy of the measurement programs conducted to date as well as the health risk assessments performed by the project consultants.

The following comments summarize an extensive evaluation of the site assessment of the proposed Alewife Development Project. We have focused exclusively on the human and environmental health risks posed by the chemical wastes found on the site and have not considered the potential health risks

associated with other aspects of the development. Our evaluation includes a summary critique of the material presented in Monacelli Associates Inc. draft EIR and the three-volume Haley and Aldrich, Inc. Environmental Assessment report for the proposed Alewife Center Development Project (December 1985). In addition to these primary reports, we have also evaluated the following.

1. Correspondance to Don Smith (EPA) from Greta D. Reade (NUS Corp.) on June 20, 1986 providing review comments on the Haley and Aldrich report "Environmental Assessment for the Alewife Center Master Plan, W.R. Grace and Co., Cambridge, Massachusetts."
2. W.R. Grace and Co. response to comments of Greta D. Reade (NUS Corp.) dated October 27, 1986.
3. Various inter-office correspondances from the City of Cambridge summarizing highlights from project-related meetings with DEQE, the developers and their consultants, and the public.
4. Report on Long-term Chemical Monitoring Program, Alewife Center, Cambridge, Massachusetts by Haley and Aldrich, Inc. (February 1986).
5. Supplemental Soil and Groundwater Data, Draft Environmental Impact Report, Alewife Center, Cambridge, Massachusetts by Haley and Aldrich, Inc. (January 7, 1987).
6. Notice of Responsibility (based on 1985 Haley and Aldrich report), from the Massachusetts Dept. of Environmental Quality Engineering (DEQE) and transmitted to W.R. Grace and Co. on February 9, 1987.

II. SUMMARY OF FINDINGS

Based on our review, we conclude that the draft EIR and associated materials do not provide an appropriate analysis of potential health hazards

posed by this site as it currently exists, or as it will exist during construction or following completion of the proposed project. Therefore, stated claims that development of the site will present no risks to the health and safety of the public are not adequately supported. Furthermore, this draft does not adequately address the concerns voiced in the Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form, regarding hazardous materials, in that it does not summarize nor discuss the EPA evaluation of the site assessment. We recommend additional data collection and formal exposure and risk assessment studies be performed as part of the finalization of the EIR.

III. SITE ASSESSMENT EVALUATION

DEQE's recent Notice of Responsibility, prepared for the proposed development site, addresses the requisite site actions necessary for the evaluation of the potential hazards and the remedial action plans associated with the manufacturing wastes disposed within the former W.R. Grace property. We find all of DEQE's information requests, in terms of gathering additional data and conducting further assessments, quite appropriate. In this section, we discuss a number of issues similar to those raised by DEQE and additional areas of concern regarding the existing information bases, chemical contamination, site hydrogeology and surface waters, risk assessment, and mitigating measures.

III.1 Chemical Contamination: Composition, Concentrations, and Distributions

The site assessment includes an extensive data base generated from numerous samples and detailed chemical analyses of many of these. In general, the chemical analyses performed appear appropriate in light of the past

history and known chemical contamination of soils and groundwater at the site. These analyses clearly indicate the widespread occurrence of a variety of chemical contaminants, in both the groundwater and soils of the site. Unfortunately, the usefulness of much of this data is questioned because, in many instances, chemical analyses were performed on composited samples. In addition, many areas on the site were not covered in adequate detail. The most recent set of samples (i.e., Supplemental Soil and Groundwater Data, Draft EIR, Haley and Aldrich, Inc, January 7, 1987) provide a better coverage of the limited areas tested and detailed chemical analyses of non-composited samples. However, these samples still are restricted to the so-called "footprints" of the development. Although we realize that it is impractical to test all areas of the site, we believe additional sampling is needed to adequately evaluate the nature of and distribution of chemical wastes on the site. In general, we believe that it is appropriate to concentrate detailed sampling to the "footprints" of the development, but we do not believe that it is appropriate to restrict detailed sampling to only these locations. Obviously, excavation of soils and dewatering of the "footprint" areas will pose the greatest possibility of mobilizing chemical wastes from the site. However, construction is very likely to result in significant site alternations and disruptions extending beyond the "footprint" areas. These alterations could result in changes in surface water and groundwater flow as well as mobilzation of contaminated soils. Furthermore, the definition of "footprint" areas must be expanded to include utility and sewer line access routes and construction staging areas. Additional comments and specific recommendations regarding additional sampling needed are presented in Section IV.1.

III.2 Site Hydrogeology and Surface Water

The potential for water mediated migration of these chemical wastes from the site needs further evaluation. Although several groundwater flow studies have been completed, the nature of groundwater movement on the site is confusing and requires clarification. Contradictory statements appear to be made between the draft EIR, and the most recent supplementary data provided by Haley and Aldrich. The first reference indicates a northerly flow of groundwater while the second indicates the flow is radially in all directions. This appears to be in conflict with the recent experience of groundwater seepage into the MBTA tunnel. Additional information is needed to evaluate the current situation before attempting meaningful predictions of the impacts of the proposed development on groundwater flow.

Additional consideration of surface water flow also is needed, especially with respect to potential outcomes of flooding on the site which lies on the 100-year flood plain of the Alewife Brook. Impacts of construction, excavation, movement of contaminated soils on-site, and other aspects of the development project on flooding of the site and the potential for flood water mobilization of contaminants should be addressed.

Additional comments and recommendations regarding these issues are given in Sections IV.2 and IV.3.

III.3 Risk Assessment

Volume 3 of the Environmental Assessment: Proposed Alewife Center Development, cited in the draft EIR, presents what is described as a "Risk Assessment" of the health risks posed by development of this site. At best it is a qualitative risk assessment and we are critical of many aspects of this document. A report which lists detailed comments on this assessment will be

made available to the City of Cambridge, Department of Health and Hospitals. In summary, this risk assessment presents an inadequate assessment of potential exposures which might occur at this site before, during, and after construction. This makes it impossible to assess the levels to which the public might be exposed from contaminants found at the site. The document also fails to consider the potential impacts of a number of compounds found at appreciable levels in the soils or groundwater at the site.

A discussion regarding our concerns with this document follows. In the risk assessment, concentration guidelines, or threshold levels, for a number of compounds are derived. These are estimates, of the concentration in water or soil at which no significant hazard to human health is posed. The estimates, however, are not always based on appropriately conservative assumptions when considering the protection of public health. Nonetheless, sample data indicate that four contaminants at this site are found in concentrations exceeding these guidelines. In each instance these findings are said to be insignificant and that no health threat is expected. The author argues that since the guideline values incorporate a safety factor, no significant health risks are posed by concentrations that do not substantially exceed the guideline values. This ignores the rationale behind using safety factors in the first place. Safety factors attempt to account for the uncertainties involved in calculating guideline or threshold values and the existence of sensitive subgroups or individuals in the population (elderly, children, etc.)

In conclusion, we believe an appropriate risk assessment of the site has not been performed. Such an assessment should be required and will be useful in determining how this site should be developed. Specific methodologies for such an assessment should be determined in consultation with

the City of Cambridge, DEQE, and other appropriate groups. We present a number of suggestions for such a study in Section IV.3.

III.4 Mitigating Measures

A variety of mitigating measures, to minimize the potential for adverse health impacts, are proposed in the draft EIR and related documents. It is clear from these proposals that the consultants have identified many of the problems which must be dealt with at this site to insure public safety. However, in many instances, insufficient detail is presented in these documents to evaluate the adequacy of the proposed mitigating efforts. These limitations and recommendations to improve this situation are detailed in Section IV.4.

IV. RECOMMENDATIONS

IV.1 Chemical Contamination: Additional Sampling Requirements

1. The "footprints" of sewer and utility connections must be determined and detailed chemical analyses performed on soil and groundwater samples taken at intervals along these routes. At a minimum this will be needed to determine appropriate disposal alternatives for the materials excavated.

2. Construction staging areas should be specified and detailed chemical analyses performed on soil samples from these areas.

3. Additional surface and sediment samples should be collected and analyzed from Parkway Pond and Jerry's Pond. This is of particular concern if alterations to either pond are undertaken and if these alterations result in movement or mobilization of sediments.

4. Few data from long-term chemical monitoring of surface and groundwater outside the development area indicate the presence of certain volatile organic compounds, some of which are known to be toxic. Additional sampling (spatially and temporally) needs to be undertaken to be able to resolve the sources and pathways of pollutant transport to areas away from contaminated soils.

5. Any soils to be used as fill for any alternations of these ponds should be sampled and subjected to detailed chemical analyses.

6. As a test for contamination of Alewife Brook, a number of surface water samples have been collected from this waterway. However, it is likely that a number of compounds (which might derive from the W.R. Grace site), would be found preferentially bound to bottom sediments. Therefore, we suggest that sediment samples of Alewife Brook be collected and tested. Samples should include controls taken upstream of the site, a sufficient distance to insure that little or no inputs from the site could reach the sample location, and samples immediately downstream from the site.

7. To provide a measure of compounds migrating with the groundwater, it would be useful to sample leachate collected at the MBTA tunnel. The possibility that contaminated groundwater is moving off this site via the tunnel cut needs to be evaluated as well.

8. Surface and groundwater samples from the Russell field area, the site used a staging area during the MBTA station construction, will be useful to examine the potential contribution of other sources to the present soil and groundwater contamination.

9. Additional sampling of former waste lagoon areas should be done to confirm that the wastes previously stored there have, in fact, been adequately removed.

10. Additional sampling outside of the "footprint" areas and those additional locations noted above may be required to characterize the distribution of compounds on the site. As mentioned above, many of the previous samples were composities of materials from a number of locations making it

difficult to identify hotspots of contamination on the site outside of the "footprints." An appropriate sampling regime to identify any such hotspots should be developed in consultation with DEQE. Once a better understanding of groundwater movement on the site is obtained additional groundwater monitoring stations may also be needed.

11. It is very difficult to access, in a clear and comprehensible fashion, the large amount of sample data already existing for this site. It is often difficult and sometimes impossible to correlate sample numbers with sample locations. The consultants to Grace/Hines should be required to summarize this information in a clear fashion including results of previous sample analyses. Acetate overlays of sample locations and levels of contamination, color coded, would be useful. This would allow individuals reviewing the sampling data to determine distributions of compounds on site.

12. Results from other monitoring efforts in this area, in particular those conducted by the MBTA should also be obtained and presented in the EIR.

13. Air sampling for volatile organics compounds (VOCs) should be carried out both before and during the excavation phase of the project. Since it is critical to determine the location and the emission rates of the various contaminants, we recommend exploratory monitoring of VOCs in the excavation pits after a small amount of soil has been removed. Generation of spatial profiles of the concentration of compounds of interest will be helpful in developing empirical ambient emission rates for the toxic compounds that are of concern to the health of workers and

population living nearby. Monitoring plans during the construction should include collecting short-term VOC samples downwind of the site as well as real-time odor detection methods which could be used for implementing immediate work stopage and/or other actions needed to remedy the source of emissions or odor problems.

IV.2 Site Hydrogeology and Surface Waters

1. The directions and rates of current groundwater and surface water movement on the site must be clarified.

2. Groundwater modeling may be needed to investigate the effects of construction on groundwater flow patterns and rates. Should such modeling be performed it is important that model limitations, rationale for input parameters, and uncertainties be explicitly and clearly presented. Sensitivity analyses should also be included to investigate the effects of differeing sets of assumptions on outcomes. Additional consideration of surface flow patterns and rates is also needed.

3. The potential migration of hazardous materials from the site by the above routes requires additional attention. The groundwater modeling effort should be extended to include modeling of pollutant transport in soil, groundwater, and surface waters. Appropriate variables regarding pollutant migration and decay (e.g., distribution coefficients based on fractional organic carbon content, decay constants/hydrolysis rates, infiltration rates, etc.) need to be considered in such model-based evaluations.

4. Possible penetration of neighborhood basements by groundwater originating from the site, potentially carrying hazardous compounds, should receive further consideration. It would be desirable to develop a baseline data set of the current situation, that is, the current prevalence of basement flooding problems in the community durrounding the proposed development. Such a baseline might be obtained through consultation with DEQE and the City of Cambridge. Should additional groundwater work suggest movement towards peripheral communities, additional groundwater sampling, especially of shallow groundwater that might enter basements or reach surfaces, needs to be performed.

5. The possibility that sewer and utility line connections might serve as conduits for the flow of contaminated ground and surface water from the site should be addressed.

6. The possibility that construction on the site may connect shallow groundwater with deeper aquifers beneath the clay layers must be analyzed. Penetration of the natural clay barrier could result in contamination of deeper groundwater.

7. Since the site lies on a 100-year flood plain, possible impacts of flooding (and of development on flooding) on mobilization of contaminants needs consideration.

IV.3 Exposure and Risk Assessment

It is imperative that a comprehensive population-based exposure and

risk assessment study be performed for the Alewife Center Project. The information provided by an exposure and risk analysis may then be used in the regulatory process to decide upon the nature and extent of remedial actions that must be taken at this site prior to, during, and after construction to protect public health. Such a risk assessment must be performed using scientifically aceptable protocols (for example, EPA's exposure and risk assesment guidelines published in the Federal Register within the last 3 years), and should specifically address the technical issues noted in this report, in the DEQE Notice of Responsibility, and the concerns voiced by members of the community near the site. In addition, the assessment should consider the types of information and format of presentation required by or best suited to the various regulatory bodies involved (e.g., DEQE and City of Cambridge).

In the following, we provide the essential elements of an exposure and risk assessment for this commercial development. It is also important to recognize the necessity of explicitly accounting for the sources and, where possible, the magnitudes of the uncertainties associated with the exposure/risk calculations Additionally, the analysis should identify situations and potential problems that might significantly alter projected health effect estimates, and identify additional data needed.

Components of a recommended exposure and risk assessment

A. Identification of hazardous materials/source terms

1. Identification of the types of hazardous/toxic materials on the site, or potentially on the site, based on sampling and chemical tests as well as information relating to past and current uses of site.

2. Determinations of the concentrations of these compounds on the site

   a) average concentrations

   b) maximal concentrations, these may be based on extrapolations from soil to water and the converse, when samples from one media suggest higher concentrations than sampled in the other. Must use appropriate partition coefficients and site conditions.

3. Determination of distribution of compounds on the site

   a) environmental compartment contaminated

   b) areas of maximal concentration-hotspots

   c) gradients of distribution

   d) possible sources of continuing and future contamination-storage tanks, barrels, transfer pipes, etc.

   e) projected effect of development on above

   This determination should extend to the entire site not just the area to be built upon. Construction may disurb adjacent areas, may alter runoff and subsurface water flow.

4. Analysis of potential for and possible routes of migration of contaminants off the site since this is very important considering the population density of the area and its proximity to drinking water supplies. Projected effects of development on altering the migration routes and amounts of contaminants from the site.

B. Determination of health effects and risk potency terms

1. Identification of potential health effects of compounds that are either

found on the site or could be found in the future through mobilization of wastes still buried in the site

a) initially, this should extend to all compounds found or expected to be found, not just those detected at highest concentration

b) should consider carcinogenic and non-carcinogenic health effects of both acute and chronic nature

2. Determination of possible real health effects and their "seriousness" necessitates consideration of potency terms

a) potencies/exposure limits etc. used, for a site like this, should be the most conservative scientifically defensible. Sources should include reviews of EPA, DEQE, other state lists, and the literature. Limits should involve safety factors, depending upon nature of data used, 10-100x is generally considered advisable in cases where threshold of effects are known to exist.

3. For carcinogens and suspected carcinogens available EPA/CAG potencies supplemented by the NTP bioassay data should be used in developing and using cancer unit risk estimates for oral and inhalation routes. Other federal or state guidelines and standards (e.g., EPA's water quality and Massachusetts' air toxics guidelines) should also be used in selecting and applying risk/potency coefficients or limits for the chemicals studied. In these determinations distribution or range of values for source strengths and concentrations should be used in yielding worst case as well as expected or typical health impact estimates. Finally, for non-carcinogens sources and basis for choosing a certain threshold value should be explicitly and clearly stated.

C. Exposure and dose predictions

1. Consideration of all individuals and populations at risk. Exposure estimates need to be developed for construction workers, neighbors, occupants, and site users after construction, children, and others who presently may have access to the site, and non-neighboring communities which may be affected (e.g., exposed population downstream of Alewife Brook, consumers of well water that might be contaminated, recreational users of the ponds impacted, etc.). All possible exposed groups and not exclusively the major ones should be addressed. The rationale for concluding that some potentially exposed groups will not be exposed should be clearly stated and supported.

2. Consideration of all possible routes of exposure, such as ingestion, inhalation, and through dermal contact, need to be quantified. Determinations must be made about the individual factors that affect time spent in each microenvironment by different populations and age groups. Chemical-specific integrated exposure and dose estimates need to be developed using conservative assumptions about bioavailability, lung deposition, retention, and clearance by the target organs, skin absoption rates, among others. An attempt should be made to develop exposure estimates for various population groups, including sensitive individuals such as the elderly, children, and persons with pre-existing health conditions. Both ambient outdoor and indoor exposures to possible contaminants released from the site should be quantified using monitoring data and acceptable modeling methods. In particular, possible pollutant exposures in homes through airborne releases from wet basements should be evaluated.

3. At a minimum, exposure estimates for the following compounds need to be developed; naphthalene, polyaromatic hydrocarbons (PAH) and phthalates (with complete breakdown), acetone, methylene chloride, carbon disulfide, formaldehyde, cyanide, chlorobenzene, ethylbenzene, benzene, toluene, phenol, styrene, N-nitrosodiphenylamine, acenapthene, 1,1-dichloroethene, 1,1-dichloroethane, tetrachloroethylene, and all heavy metals.

4. Assuming a worst case situation, estimates of doses received by the members of the groups identified before should be determined. The extent that the construction is expected to alter the exposure patterns and dose estimates must be determined. In addition to worst case and "likely to occur" impact scenarios, sensitivity analysis involving each of the key calculation steps need to be performed.

D. Risk Projections

Based on the estimated doses and the potency factors prediction of risk estimates for (1) the maximum exposed individual, and (2) different groups of affected population. Risk projections should be presented for each exposure pathway as well as based on total exposures. Carcinogenic and non-carcinogenic risks including allergic responses and other sensitization effects should be individually treated. Because of inherent uncertainties in each step of the risk calculation, a proper error analysis including formal statistical error propagation methods should be included. The predicted health outcome probabilities should be contrasted with other non-voluntary (preferably environmental) health risks. An evaluation should be made whether

the predicted risks are significant and/or unacceptable, using criteria employed by EPA and other regulatory agencies such as FDA. Finally, risk estimates should also be developed and analysed for alternatives to the project, in particular, construction versus no construction scenarios.

E. Remedial Measures

It is appropriate to consider various alternatives or remedial measures that might minimize the possible health and odor impacts of the site during and after construction. Even if it is concluded that the likelihood of adverse effects is small, it is still advisable to consider certain mitigative measures to address specific health (and welfare) concerns of the public.

IV.4 Mitigating Measures and Other Recommendations

1. The project proponents should provide more extensive documentation confirming that all chemical storage containers and transfer pipes have been removed from the site or appropriately emptied. The continuing, rather high levels of acetone contamination on certain areas of the site is troubling and raises the possibility of continued acetone inputs to these areas, possibly from unidentified leaking transfer pipes or other containers still buried.

2. Contingency plans should be formulated to deal with unexpected developments during construction. Such events might include the discovery of previously unidentified chemical containers, transfer pipes, or pockets of highly contaminated soils. These plans might include

requirements that any such events be promptly reported to DEQE and the City of Cambridge and that construction activities cease until such time as the materials are safely removed and, if necessary, chemically analyzed.

3. Steps to protect workers during construction need to be specified in greater detail. The consultants to the proponents correctly point out that such measures area needed due to the levels of contamination at the site. They indicate that "the Contractor will be required to provide a comprehensive worker health and safety program" for the site. It would appear that sufficient information exists at this time to address this problem in greater depth. It would be desirable that additional details on the nature of any anticipated risks and possible mitigating measures be presented in the final EIR. It should be noted that measures which appear sufficient to protect worker health, for example, respiratory protective devices, often in fact do not provide adequate protection because compliance by employees during actual working conditions may be difficult or impossible. Because of this, we suggest that worker safety requirements include training/educational sessions be provided to workers to inform them of the chemical hazards at the site and to train them in proper use of any suggested safety devices or procedures. The overall worker safety program should be reviewed and approved prior to the start of construction.

4. Excavation work on the site is likely to result in the generation of significant chemical odors, which are likely to be noticable in the surrounding community. Although this possibility was correctly

identified in the site assessment documents, no mention of this is made in the draft EIR. Although it is likely that such odors will be predominantly due to the naphthalene contamination on-site, other more toxic volatile compounds may also be released, a possibility which needs additional analysis. In any case, chemical odors are likely to be strong enough to be significantly annoying to the surrounding community, and should be minimized to the extent feasible. Measures to achieve this are identified in the draft EIR but should be addressed in more detail in the final EIR. These measures include limiting the amounts of soil excavated at any one time, promptly covering excavated materials, and limiting excavation to periods of favorable weather conditions. To insure compliance, we also suggest that a mechanism be established whereby complaints from the community regarding noxious odors, dust, and other aspects of the site development can be made and officially registered and investigated.

5. Soil treatment and disposal issues need significant clarification. On-site treatment of contaminated soils is proposed with no elaboration of the approaches to be used. Should these treatment processes involve stripping of the volatile compounds from the soil, additional exposures to airborne contaminants will likely occur. This possibility is not addressed. Off-site disposal and on-site use of contaminated materials as fill are also suggested, but no criteria are presented. Also, how soils will be choosen for the various treatment/disposal options mentioned is much less supported. The determination of disposal options should be based on objective criteria such as chemical analyses of appropriate samples of the excavated materials. Maximum allowable

contaminant limits should be developed for the use of contaminated soils on-site. More detailed guidelines for the use of contaminated materials on-site should also be developed. Contaminated soils should be isolated, to the extent feasible, from the open environment as soon as possible after excavation. Stockpiling of contaminated soils, as suggested in the draft EIR, could lead to their mobilization through wind and water erosion. Given the high water table, contaminated soils could easily be placed into the saturated zone. The developer should be required to keep detailed records of how the contaminated excavated soils are treated or of where they are disposed of both off-site and on-site.

6. Groundwater treatment criteria and methods should be specified in greater detail. Sufficient information on the types and concentrations of contaminants in the groundwater of the region to be dewatered is available to allow for a more detailed analysis of the most suitable treatment techniques. Air or surface water discharges resulting from the proposed treatment process should be considered in the risk assessment for the site. For any treatment process, intermittent, random sampling should be done to determine the levels of compounds in air or surface water discharges.

7. Due to groundwater contamination and the high water table, special care must be taken to avoid entry of noxious chemcials into the buildings once constructed. Watersealing of the foundations may not be sufficient (just about everything waterproof that we have ever dealt with has eventually leaked). We recommend that below grade space be isolated as much as possible from higher floors in the buildings. For example, separate

ventilation systems should be installed. Office or other long-term work space should, if possible, not be placed on these belowgrade floors. If workers will be expected to use this space, additional ventilation may ultimately be required.

8. Should the proposed construction be undertaken in stages, where one or more buildings are occupied while excavations are done on the remaining sites, special work procedures may be needed. These might include prohibiting earth moving activities on the site at certain times of the day. Building occupants might also be advised to restrict outdoor activity at the site until construction is completed.

9. Air quality monitoring should be conducted on-site during construction. Measurements should be made in excavation pits as well as outside to monitor the levels of organics that may be toxic to humans. When concentrations are observed to exceed pre-selected "safe" levels, DEQE and the City of Cambridge health officials need to be informed immediately. In addition, appropriate control measures should be taken while those who may be affected are alerted about the situation.

TRIANTAFILLOU

37.

Proposed City Council Order:

Whereas: The W.R. Grace site has been designated as a Tier II hazardous waste site, and

Whereas: A Notice of Responsibility (NOR) was issued by DEQE (now DEP), and

Whereas: There exists an extensive body of information and documents pertaining to the conditions and remediations of the soil and water at the site, and

Whereas: A major development is now being proposed for this site,and

Therefore: Be it resolved, that the City Council hold a public hearing to review and determine the status of environmental issues pertaining to this site.

CCM-101

City of Cambridge

37.

IN CITY COUNCIL

October 23, 1995

COUNCILLOR TRIANTAFILLOU

WHEREAS: The W.R. Grace site has been designated as a Tier II hazardous waste site; and

WHEREAS: A Notice of Responsibility (NOR) was issued by DEQE (now DEP); and

WHEREAS: There exists an extensive body of information and documents pertaining to the conditions and remediations of the soil and water at the site; and

WHEREAS: A major development is now being proposed for this site; now therefore be it

RESOLVED: That the City Council hold a public hearing to review and determine the status of environmental issues pertaining to this site.

11

Consent Order #~~33~~

Councillor Triantafillou re:
Review and determine the status
of environmental issues pertaining
to the W.R. Grace site.

In City Council October 23, 1995

No Action Taken

CCM-101

City of Cambridge

11.

IN CITY COUNCIL

October 30, 1995

COUNCILLOR TRIANTAFILLOU

WHEREAS: The W.R. Grace site has been designated as a Tier II hazardous waste site; and

WHEREAS: A Notice of Responsibility (NOR) was issued by DEQE (now DEP); and

WHEREAS: There exists an extensive body of information and documents pertaining to the conditions and remediations of the soil and water at the site; and

WHEREAS: A major development is now being proposed for this site; now therefore be it

RESOLVED: That the City Council hold a public hearing to review and determine the status of environmental issues pertaining to this site.

Born, Gallucci, Russell, Sullivan
Consent Order #11 Toomey

CM-484

Councillor Triantafillou re:
Review and determine the status of environmental issues pertaining to the W.R. Grace Site.

In City Council October 30, 1995

Order Adopted as Amended