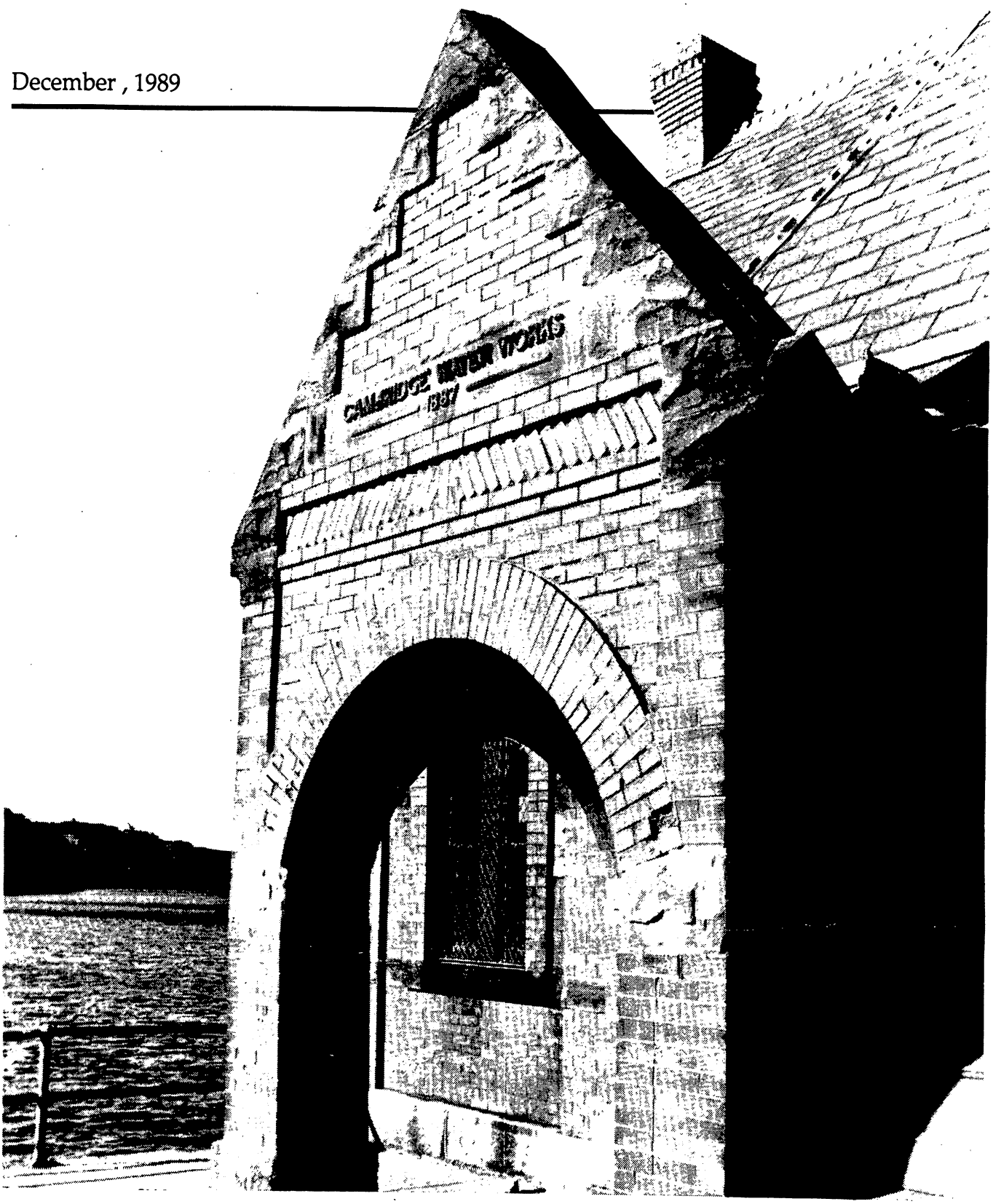
December , 1989



Cambridge Reservoir Watershed Protection Plan

Volume 2. Appendices ,Maps

Prepared for the Massachusetts Water Resources Authority and Cambridge Water Board

MAPC
Metropolitan Area Planning Council
60 Temple Place
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CAMBRIDGE RESERVOIR WATERSHED PROTECTION PLAN

Volume 2 Appendices and Maps

December 1989

Prepared by
Metropolitan Area Planning Council

Prepared for
Massachusetts Water Resources Authority

and

Cambridge Water Department

Contract No. 5008

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VOLUME 2 APPENDICES AND MAPS

LIST OF MAPS

Note: One set of hand-colored and a set of reproducable mylar maps at scale of 1:25,000 have been prepared for this report. The Appendix contains a set of reduced copies of the maps.

Appendix A
Lexington Hazardous Waste Handlers
Listed Under RCRA 1989
(Within Cambridge Reservoir Watershed)

Name Address	Activity Type	Waste Codes*
Bomar Service Center Inc. Rte. 128 North (between 2 and 2A)	Generator 100-999 kg	
Collaborative Research Inc. 128 Spring Street	Generator 100-999 kg	U002,U003,U044,U080 U108,U117,U154,U196 U220
Commonwealth of Mass. Maintenance Site Rte. 2A	Generator 100-999 kg	D001,D007,D008,F002 F003,F005,U080,U159 U220,U239
EISAI Research Institute of Boston 128 Spring Street	Generator 100-999 kg	D001,D003,D005,D007 D009
Ernie's Auto Body 443 R Lincoln Street	Generator 100-999 kg	D001,F003,F005
Five Forks Shell Station 286 Lincoln Street	Generator 100-999 kg	D001
Grace, W.R. & Co. 55 Hayden Avenue	Generator 1000 kg+	D001,D002,D003,F001 F003,F005,P090,U002, U007,U008,U009,U028 U056,U078,U092,U112 U113,U115,U122,U147 U154,U159,U165,U213 U220,U223,U226,U239
Grace, W.R.& Company Research Division 128 Spring Street	Generator 100-999 kg	F003
Honeywell Electro Optics Center 2 Forbes Road Middlesex	Generator 1000 kg+	D001,F002,F003,F005 P015,U002,U134,U151 U154,U159,U226,U228 U239
Hyperion Catalysts International 128 Spring Street	Generator 0-99 kg	D007,F002,F003,F005
Lawless Chrysler Plymouth 443 Lincoln Street	Generator 100-999 kg	D001,F003,F005

*See Appendix B for waste codes

Appendix A (continued)

Address (Lexington)	Activity Type	Waste Codes*
McLaughlin, James M. Inc. 973 Concord Turnpike	Generator 100-999 kg	
Minuteman Reg. Voc. Tech. School District 758 Marrett Road	Generator 100-999 kg	D001,F003,F005
Minuteman Tool Repair Inc. 12 Bicentennial Drive	Generator 100-999 kg	D001
Raytheon Co. Research Division 141 Spring Street	Generator 1000 kg+	D000,D001,D002,D003 F001,F003,F005,F007 F008,F009,P098,P101 P104,U002,U003,U004 U019,U037,U044,U057 U112,U117,U122,U134 U151,U154,U159,U188 U194,U196,U213,U219 U220,U226,U228,U239

*See Appendix B for Waste Codes Summary

Lincoln Hazardous Waste Handlers
Listed Under RCRA 1989
(Within Cambridge Reservoir Watershed)

Name Address	Activity Type	Waste Codes*
Joey's Auto Repair Lincoln Road	Generator 100-999 kg	
Lincoln D.P.W. 30 Lewis Street	Generator 100-999 kg	

*See Appendix B for Waste Codes Summary

Weston Hazardous Waste Handlers
Listed Under RCRA 1989
(Within Cambridge Reservoir Watershed)

Name Address	Activity Type	Waste Codes *
Central Tailoring Co. Inc. 399 Boston Post Road	Generator 100-999 kg Market or Burn Hazardous Waste Fuel	F002
MA Broken Stone Co. 133 Boston Post Road	Market or Burn Hazardous Waste Fuel	
Weston Amoco Inc. 88 Boston Post Road	Generator 100-999 kg	D001, D008, F002, F004
Weston Golf Club 275 Meadowbrook Road	Generator 100-999 kg	D001

*See Appendix B for Waste Codes Summary

Waltham Hazardous Waste Handlers
Listed Under RCRA 1989
(Within Cambridge Reservoir Watershed)

Name Address	Activity Type	Waste Codes*
Adams Russell Co. Inc. 1370 Main Street	Generator 100-999 kg	D002, F001, U140
Bergeron Co. Inc. 1474 Main Street	Generator 100-999 kg	F001
Boyle Lewis Inc. 358 Second Avenue	Generator 100-999 kg	
Brinter Corp. General Connector Div. 45 Fourth Avenue	Generator 100-99 kg	F001
CTI Cryogenics 266 Second Avenue	Generator 1000 kg+	D000, D001, D002, D004 D009, F001, F002, F017 U002, U080, U226, U154
Cambex Corp. 360 Second Avenue	Generator 100-999 kg	F001
Centerless Grinding Co. 25 Jones Road	Generator 100-999 kg	D001
Central Machine of Waltham Inc. 40 Jones Road	Generator 100-999 kg	D001
Claudes Service Station 1420 Main Street	Generator 100-999 kg	D001
Coca Cola Bottling Co. of New England 80 Second Avenue	Generator 100-999 kg	
Collaborative Research Inc. 1365 Main Street	Generator 100-999 kg	P043, P098, U002, U003 U007, U012, U019, U031 U044, U077, U080, U103 U108, U112, U117, U119 U133, U136, U140, U147 U151, U154, U163, U188 U196, U213, U220, U246

*See Appendix B for waste codes

Appendix A (continued)

Address (Waltham)	Activity Type	Waste Codes*
Daymark Corp. 301 Second Avenue	Generator 100-999 kg	F002, F003
Dick A.B. 130 Third Avenue	Generator 100-999 kg	D001
EG & G International Inc. 139 Bear Hill Road	Generator 100-999 kg	
EG & G Publications Media Center 20 Fox Road	Generator 100-999 kg	D011
Eastern Reproduction 1250 Main Street	Generator 1000 kg+	D002,F001,F006,F007 F008
Exxon Co. USA Waltham Terminal 50 Jones Road	Generator 1000 kg+	D000, D001
FW Derbyshire Inc. 265 Bear Hill Road	Generator 100-999 kg	D001, U220
Foster Miller Inc. 350 Second Avenue	Generator 100-999 kg	F003, F005, P106 U154, U220, U226
GTE Labs Inc. 40 Sylvan Road	Generator 1000 kg+	D000, D001, D002, D003 F001, F002, F003, F004 F005, P003, P005, P015 P018, P019, P022, P023 P030, P031, P032, P053 P055, P076, P078, P087 P097, P098, P101, P105 P106, P107, P115, P119 P120, U001, U002, U003 U004, U006, U007, U009 U013, U018, U019, U020 U021, U029, U031, U037 U043, U044, U047, U056 U057, U068, U069, U074 U076, U077, U080, U081 U091, U107, U108, U112 U115, U117, U122, U123 U124, U127, U128, U133 U134, U135, U138, U140 U144, U145, U147, U149 U151, U154, U161, U162 U165, U169, U188, U190 U196, U197, U201, U203 U204, U208, U209, U210 U211, U213, U216, U217 U218, U219, U220, U226 U228, U231, U235, U239

*See Appendix B for waste codes

Appendix A (continued)

Address	Activity Type	Waste Codes*
Hewlett Packard Waltham Division 175 Wyman Street F017	Generator 1000 kg+	D000, D001, D002, D003 F001, F002, F003, F005 F006, F007, F008, F009
Honeywell Bull 200 Smith Street	Generator 100-999 kg	D001
Hospital Electronics, Inc. 580 Winter Street	Generator 1000 kg+	
IPL Systems Inc. 360 Second Avenue	Generator 100-999 kg	D000, D001, D003, F001 U226
Inspex Inc. 40 Bear Hill Road	Generator 100-999 kg	F001, F003
Kloss Video Corp. 42 Fourth Avenue	Generator 100-999 kg	D001, D002, F001
Kronos Inc. 62 Fourth Avenue	Generator 100-999 kg	D001
MA Com Omni Spectra 140 Fourth Avenue	Generator 1000 kg+	F001, F007, F008, F009 P029, P030, P106
MA Com Omni Spectra Inc. 84 Fourth Avenue	Generator 100-999 kg	F001
Mobil Solar Energy Corp. 16 Hickory Drive	Generator 1000 kg+	D002, F001, F003
Polaroid Corp. 103 Fourth Avenue D01[illegible]	Generator 100-999 kg	D000, D001, D002, D003 F001, D007, D008, D009
Polaroid Corp. 1265 Main Street	Generator 1000 kg+ Transporter Incinerator	D000, D001, D002, D003 F001, F002, F003, F005 D011, U003, U080, U122 U188
Polaroid Corp. 868 Winter Street	Generator 1000 kg+	D000, D002, F001
Richmond Screw Anchor Co. Inc. 288 Second Avenue	Generator 1000 kgt	D001, F017
TGM Detectors Inc. 160 Bear Hill Road	Generator 100-999 kg	D001, D002, F003
TM Servicenter 1033 Trapelo Road	Generator 100-999 kg	F002

*See Appendix B for waste codes

Appendix A (continued)

Address (Waltham)	Activity Type	Waste Codes*
TRW Customer Service Div. 290 Second Avenue	Generator 100-999 kg	D001, F002
Thermo Jarrell Ash Corp. 590 Lincoln Street	Generator 100-999 kg	D001, F001
Thermo Electron Corp. 101 First Avenue	Generator 100-999 kg	
Thermo Electron Corp. 125 Second Avenue	Generator 0-99 kg	
Thermo Electron Corp. 74 West Street	Generator 100-999 kg	
Thermo Electron Corp. 85 First Avenue	Generator 100-999 kg	
Thermo Electron Corp. 45 First Avenue	Generator 100-999 kg	
Thornton Associates Inc. 1432 Main Street	Generator 100-999 kg	F001
Totten Pond Shell Inc. 511 Totten Pond Road	Generator 100-999 kg	D001
Waltham Chemical Pump Corp. 1396 Main Street	Generator 100-999 kg	D001, D008
Whittaker Yardney Power Systems 520 Winter Street	Generator 100-999 kg	D000, D001, D002, D003 F001, U002, U032, U080 U134, U144, U151, U154 U155, U159
Woodside Corp. 305 Weston Street	Generator 100-999 kg	D001, F002, F004

*See Appendix B for Waste Codes Summary

APPENDIX B
RCRA Waste Code Definitions

The Resource Conservation and Recovery Act (RCRA) requires EPA to identify hazardous wastes that pose a hazard to human health and the environment, if improperly managed, and to regulate these wastes by licensing generators and handlers of these materials. The Agency has established regulatory levels of hazardous wastes based on their potential to contaminate drinking water wells if the wastes are released into the environment. Chemicals generated or handled in the Cambridge Reservoir Watershed area are listed below.

Code	Description
D001	A solid waste that exhibits the characteristics of ignitability, but is not listed as a hazardous waste below.
D002	A solid waste that exhibits the characteristics of corrosivity, but is not listed a a hazardous waste below.
D003	A solid waste that exhibits the characteristcs of reactivity, but is not as a hazardous waste below.
D004	Arsenic
D005	Barium
D007	Chromium
D008	Lead
D009	Mercury
D011	Silver
F001	The following spent halogenated solvents used in degreasing: Tetrachlorethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons, all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho--dichlorobenzene, trichlorofluoromethane, and

Codes	Descriptions
	1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of thsoe solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	The following spent non-halogenated solvents or any combination thereof: cresols and cresylic acid, and nitorbenzene; and the still bottoms from the recovery of these solvents.
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbone disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents lised in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.
F007	Spent cyanide plating bath solutions from electroplating operations.
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.

APPENDIX B Definitions continued....

Codes	Description
P003	Acrolein
P005	Allyl alcohol
P015	Beryllium dust or Beryllium
P018	Brucine (C.A.N.*:Strychnidin -10-one,2,3,-dimethoxy-)
P022	Carbon Disulfide
P023	Acetaldehyde, chloro
P029	Copper Cyanide
P030	Cyanides (soluble cyanide salts), not otherwise specified
P031	Cyanogen (C.A.N.:Ethanedinitrile)
P043	Diisoproylfluorophosphate (DFP) (C.A.N.:Phosphoro-fluoridic acid, bis (1-methylethyl) ester
P076	Nitric Oxide (C.A.N.:Nitrogen Oxide NO)
P078	Nitrogen dioxide (C.A.N.:Nitrogen Oxide NO2)
P087	Osmium Tetroxide (C.A.N.:Osmium oxide O_sO_4,(T-4)-
P097	Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phenyl]O,O-dimethyl ester
P098	Potassium Cyanide
P101	Ethyl cyanide (C.A.N.:Propaneaitrile)
P104	Silver cyanide (C.A.N.:Silver cyanide AgCN)
P105	Sodium azide
P106	Sodium cyanide (C.A.N.:Sodium cyanide Na(CN)
P107	Strontium sulfide (C.A.N.:Strontium sulfide SrS
P115	Thallium (1) sulfate
P119	Ammonium vanadate (C.A.N.:Vanadic acid ammonium salt)
P120	Vanadium pentoxide (C.A.N.:Vanadium oxide V205)
U001	Acetaldehyde (I)
U002	Acetone (I)
U003	Acetonitrile (I, T)
U004	Acetophenone (C.A.N.: Ethanone, 1-phenyl-)
U006	Acetyl chloride (C,R,T.)
U007	Acrylamide (C.A.N.: 2-Propenamide)
U008	Acrylic acid (I)
U009	Acrylonitrile (C.A.N.: 2-Propenenitrile)
U012	Aniline (I,T) (C.A.N.: Benzenamine)
U013	Ethyl ester 2 propenoic acid
U018	Benz [a] anthracene
U019	Benzene (I,T
U020	Benzenesulfonic acid chloride (C,R) (C.A.N.: Benzenesulfonyl chloride (C,R)

APPEMDIX B Definitions continued...

CODES	DESCRIPTIONS
U021	Benzidine (C.A.N.: [1,1 -Biphenyl] - 4,4 - diamine)
U028	1,2 - Benzenedicarboxylic acid, bis (2-ethyl hexyl) ester
U029	Methane, bromo -
U031	n-Butyl alcohol (1) (C.A.N.: 1 - Butanol (1))
U032	Calcium chromate (C.A.N.: Chromic acid H2Cr:04, calcium salt)
U037	Chlorobenzene (C.A.N.: Benzene, chloro)
U043	Ethene, chloro
U044	Chloroform or Trichloromethene
U112	Ethyl ester acetic acid or Ethyl acetate
U122	Formaldehyde
U134	Hydrofluoric acid or Hydrogen fluoride
U151	Mercury
U154	Methanol or Methyl alcohol
U159	2-Butonone or Methyl ethyl ketone (MEK)
U165	Napthalene
U169	Nitrobenzene
U210	Tetrachloroethene and Tetrachloroethylene
U220	Methylbenzene or Tolulene
U226	Methylchloroform or 1,1,1-trichloroethane
U239	Dimethylbenzene or Xylene
U047	beta-Chloronaphthalene (C.A.N.: Naphthalene, 2-chloro-)
U056	Benzene, hexahydro - (1) (Cyclohexane (1))
U057	Cyclohexanone (1)
U068	Methylene Bromide (C.A.N.:Methane, dibromo)
U069	Dibutyl phthalate (C.A.N.:1,2-Bezenedicarboxylic acid, dibutyl ester)
U074	1,4-Dichloro-2-butene (C.A.N.:2-Butene, 1,4-dichloro-)
U076	Ethylidene dichloride (C.A.N.:Ethane, 1,1-dichloro-)
U077	Ethylene dichloride (C.A.N.:Ethane, 1,2-dichloro-)
U078	1,1-Dichloroethylene (C.A.N.:Ethene, 1,1-dichloro)
U080	Methylene Chloride (C.A.N.:Methane, dichloro)
U081	2,4-Dichlorophenol (C.A.N.:Phenol, 2,4-dichloro)
U091	3,3-Dimethoxybenzidine (C.A.N.:[1,1-Biphenyl]- 4,4-diamine, 3,3-dimethoxy-
U092	Dimethylamine (1) (C.A.N.:Methanamine, N-methyl-(1))
U103	Dimethyl sulfate (C.A.N.:Sulfuric acid, dimethyl ester)
U107	Di-n-octyl phthalate (C.A.N.:1,2-Benzenedicarboxylic acid, dioctyl ester
U108	1,4-Diethylene oxide (C.A.N.:1,4-Dioxane)
U112	Ethyl ester acetic acid or Ethyl acetate
U115	Ethylene oxide (C.A.N.:Oxirane)
U117	Ethyl ether (C.A.N.:,1,1-oxybis-)
U119	Ethyl methanesulfonate or Methanesulfonic acid, ethyl ester
U122	Formaldehyde
U123	Formic acid
U124	Furan or Furfuran
U127	Hexachlorobenezene (C.A.N.:Benzene, hexachloro)

APPENDIX B Definitions continued . . .

U128	Hexachlorotadiene (C.A.N.:1,3-Butadiene,1,1,2,3,4,4-hexachloro-
U133	Hydrazine
U134	Hyrogen fluoride (C.A.N.:Hydrofluoric acid)
U135	Hydrogen sulfide (C.A.N.:Hydrogen sulfide H25)
U136	Cacodylic acid (C.A.N.:Arsinic acid,dimethyl 1-)
U138	Methyl iodide (C.A.N.:Methane, iodo)
U140	Isobutyl alcohol (C.A.N.:1-Propanol, 2-methyl-)
U144	Lead acetate (C.A.N.:Acetic acid, Lead(2+)salt)
U145	Lead phosphate (C.A.N.;Phosphoric acid, Lead(2+)salt(2:3)
U147	Meleic anhydride (C.A.N.:2,5-Furandione)
U149	Malononitrile (C.A.N.:Propanedinitrile)
U151	Mercury
U154	Methanol or Methyl alcohol
U155	Methapyrilene (C.A.N.:1,2-Ethanediamine,N,N-dimethyl-N-2-pyridinyl-N-(2-thienylmethyl)-
U159	2-Butanone or Methyl ethyl ketone (MEK)
U161	Methyl isobutyl ketone or 4-Methyl-2-pentanone
U162	Methyl meth acrylate (C.A.N.:2-Propenoic acid, 2-methyl-, methyl ester)
U163	MNNG (C.A.N.:Guanidine, N-methyl-N-nitro-N-nitroso-)
U165	Napthalene
U169	Nitrobenzene (C.A.N.:Benzene,nitro-)
U188	Phenol
U190	Phthalic anhydride (C.A.N.:1,3-Isobenzofurandione)
U194	n-Propylamine (C.A.N.:1-Propanamine)
U196	Pyridine
U197	p-Benzoquinone (C.A.N.:2,5-Cyclohexadiene-1,4-dione)
U201	Resorcinol (C.A.N.:1,3-Benzenediol)
U203	Safrole (C.A.N.:1,3-Benzodioxole, 5-(2-propenyl)-)
U209	1,1,2,2-Tetrachloroethane (C.A.N.:Ethane,1,1,1,2-tetrachloro-)
U210	Tetrachloroethylene (C.A.N.:Ethane, 1,1,2,2-tetrachloro-)
U211	Carbon tetrachloride (C.A.N.:Ethene, tetrachloro)
U213	Furan, tetrahydro- or Tetrahydrofuran
U216	Thalium chloride
U217	Thalium nitrate (C.A.N.:Nitric acid, thallium(1+)salt)
U218	Thioacetamide (C.A.N.:Ethanethioamide)
U219	Thiourea
U220	Toluene or Methylbenzene
U223	Toluene diiso cyanate (C.A.N.:Benzene,1,3-disoayanato Methyl-)
U226	Methyl chloroform or Ethane, 1,1,1-trichloro
U228	Ethene, trichloro- or Trichloroethylene
U231	
U235	1-Propanol,2,3-dibromo-, phosphate (3:1)
U239	Dimethylbenzene or Xylene
U246	Cyanogen bromide CNBr

Appendix C
Waltham Hazardous Materials Handlers
(Within Cambridge Reservoir Watershed)

	Facility Name & Address	Hazardous Materials	Maximum* Daily Amount	Average* Daily Amount
1.	Adams Russell Electronics Co. 1370 Main Street	- Liquid Nitrogen	03	03
		- Fuel Oil	03	03
2.	Boston Edison** Station 282 1265 Main Street	- Sulfuric Acid (in batteries)	01	00
3.	Boston Edison Station 450 1435 Trapelo Road	- Sulfuric Acid (in batteries)		
4.	Coca-Cola Bottling Co. of New England 80 Second Avenue	- Automotive Gasolines (unleaded & diesel)	03	03
		- Fuel Oil	04	04
5.	Exxon Co., U.S.A. 50 Jones Road	- Supreme Gasoline	05	05
		- Plus Gasoline	05	05
		- Unleaded Regular Gasoline	06	05
		- Heating Oil	08	07
		- Diesel 2	06	05
		- XCL -12 (gasoline additive)	03	03
		- Paradyne 25 additive	03	03
6.	GTE Laboratories 40 Sylvan Road	- Chlorine gas (290 lbs)	01	00
		- Nitrogen	04	04
7.	GTE Government Systems 520 Winter Street	- Gallium Trichloride	00	00
		- Nickel Power	00	00
		- Sulfur Dioxide	00	01
8.	Hewlett Packard 175 Wyman Street	- Ammonia Anhydrous/ Etch/Hydroxide	02	02
		- Formaldehyde Solution	01	01
		- Nickel & Nickel Solution	01	01
		- Sulfuric Acid (Tech. grade)	02	02
		- Fuel Oil Mixture	05	05
		- No 2 Diesel Fuel	03	03
		- Isopropyl Alcohol (2-Propanol): flux and flux thinner	01	01
9.	Polaroid Corp. 103 Fourth Avenue	- Fuel Oil #4	03	03

10.	Polaroid Corp. 868 Winter Street	- Nitric Acid	02	01
		- Potassium Hydroxide	03	02
		- Zinc Chloride	03	03
		- Mercuric Chloride	01	01
		- Manganese Dioxide	04	03
		- 1,1, 1-Trichlorethane	02	02
		- Fuel Oil #6	03	03
11.	Polaroid Corp. 1265 Main Street	- Potassium Bromide	02	02
		- Ammonium Hydroxide	03	03
		- Sodium Sulfate	03	02
		- Hydrochloric Acid	03	03
		- Nitric Acid	02	02
		- Sulfuric Acid	03	03
		- Potassium Hydroxide	01	01
		- Sodium Hydroxide	03	03
		- Ammonium Sulfate	03	03
		- Silica (Colloidal)	03	03
		- Silver Nitrate	02	02
		- Hydrogen Bromide	03	03
		- Phosphorous Pentachloride	02	02
		- Phosphorous Oxychloride	03	03
		- Sodium Chloride	03	02
		- Sodium Hypochlorite (bleach)	03	02
		- ODEC	03	02
		- SN -2	03	01
		- CPOH	03	02
		- TY -1	03	02
		-Trimethylvinylbenzylammonium Chloride (TMQ)	03	02
		- N - Butanol	04	03
		- Glacial Acetic Acid	03	03
		- N - N-Dimethylformamide	03	02
		- Phosphoric Acid	01	01
		- Acetone	04	03
		- Methyl -N - Propyl Ketone	04	03
		- Acrylic Acid	03	02
		- Dichloromethane	04	04
		- Ethyl Acetate	04	04
		- Toluene	04	03
		- 2 - Methoxyethanol	04	03
		- Isopropanol	04	04
		- Methanol	04	04
		- Isoproyl Acetate	03	03
		- Methyl Ethyl Ketone (MEK)	04	04
		- Diethyleneglycol, Dimethyl Ether (DIGLYME)	03	03
		- 4 - Vinylpyridine	03	03
		- CDN Hydrochloride	03	02
		- 1 -Hydroxy-3-[1-[4-Hydroxy-3-(methoxycarbonyl)-1-Napthalenyl]-3-Oxo-1H, 3H-Naptho-	03	02

	[1,8-CD] Pyran 1-YL] -6-(Octadecyloxy) -2 - Napthalene Carboxylic Acid		
	- Trifluoroethanol	03	02
	- Xylene	03	02
	- 1,2 - Ethanediol	03	03
	- Acetic Anhydride	03	02
	- Dichlorosulfonefluorescein	03	02
	- Dihydroxysulfonefluorescein	03	02
	- Methacrylic Acid, Glacial Inhibited	03	02
	- Dimethylsulfoxide	03	03
	- Vinylbenzyl Chloride (mixture of isomers)	03	02
	- Sulfobenzoic Acid	03	02
	- 3 (7-Carboxyindole) Naphthalide	03	02
	- N -Butyl Acrylate	03	02
	- Dimethyl Sulfate	02	02
	- Monochlorobenzene	04	04
	- O - Dichlorobenzene	04	03
	- Carbomethoxymethyl Acrylate	03	03
	- Soltrol 10	04	04
	- N -Propanol	03	02
	- DL -A-Amino-E-Caprolactum	03	02
	- Fuel Oil #6	04	04
	- Graft D Polymer	02	02
	- Latex LO-25	03	02
	- Ethylene/Maleic Anhydride Copolymer (EMA)	05	05
	- Polyvinyl Butyral	02	02

12. Kloss Video Corp.
42 Fourth Avenue

- Scotch Grip Brand 1357-NF High Performance Contact Adhesive
  - 1,1, 1-Trichloroethane (may contain up to 2.4% diethylene ether)
  - Polychloroprene polymer
  - Phenolic resin
  - curatives
  - antioxidant and dye
- D-Sol H-31
  - ethyl alcohol .5%
  - methyl alcohol 5.5%
  - trichlorotrifluoroethane 93.5%
- Fastbond (R) 30NF Green Contact Adhesive
  - toluene
  - methyl alcohol
  - polychloroprene elastomer
  - synethetic resin
  - wetting agents
  - protective colloid and antioxident

		- Diphenyl Methane Diisocyanate (polymeric Isocyanate)
		- Urethane Resin
		  - trichlorofluoromethane
		- Synasol Solvent
		  - Methanol
		- Krylon (enamel spray paint)
		  - acetone
		  - propane
		  - methyl isobutyl ketone
		  - methyl ethyl ketone
		  - toluene
		  - xylene
		  - 2 -ethoxyethyl acetate
		  - butyl alcohol
		- Tinning Oil for Soldering (Reliaoil)
		  - complex mixture of petroleum hydrocarbons plus small amounts of orzanic additions
		- Rosin Base Soldering Flux (Type RA)
		  - gum rosin dissolved in alcohol/ terpene solvent blend and small amount organic activator. Rosin solids=25%
		- isopropyl alcohol
		- Flux thinner
		  - isopropyl alcohol
		  - terpene solvent
		- Synthite
		  - Oil modified Polyurethane (xylene)
		- Aromatic Hydrocarbon (T-200x)
		  - Xylene
		- Glass Brite
		  - 2 -propanol (isopropyl alcohol)<15%
		  - 2 -butoxyethanol (glycol ether, butyl)<10%		

13.	M/A CCM Omni Spectra 140 Fourth Avenue	- Anhydrous Ammonia - Liquid Nitrogen - Copper Sodium Cyanide - Nitric Acid	02 03 01 02	02 03 01 02

14.	Walsh's Shell
	1019 Trapelo Road
		- SU 2000
		  - Toluene
		  - Xylene
		  - Benzene
		  - Tert - Butyl Methyl Ether
		  - Alkanes, Cycloalkanes, Alkenes and Aromatic Hydrocarbons
		- SR 2000
		- RU 2000
		- Regular
			03
			
			03
			03
			03
				03
				
				03
				03
				03

			onsite volume	monthly volume
15.	Honeywell Info. Systems** Smith Street	- methyl ethyl ketone (drum storage)		
		- flammable wastes		
		- cleanup wastes		
16.	Whittaker - Yardney ** Power Systems 520 Winter Street	- lithium	100 lbs	15 lbs
		- thionyl chloride	6 gal	6 gal
		- Isopropyl alcohol	10 gal	2 gal
		- trichloroethane	30 gal	15 gal
		- acetone	2 gal	.5 gal
		- carbon black	100 lbs	100 lbs

*Refer to Reporting Ranges Table (below) for Amount code values

** The hazardous materials information for these companies is on file with the local Fire Department, but the amounts are below the Threshold Planning Quantity (TPQ)

Reporting Ranges Table

Range Value	Weight Range in Pounds From	To .....
00	0	99
01	100	999
02	1,000	9,999
03	10,000	99,999
04	100,000	999,999
05	1,000,000	9,999,999
06	10,000,000	99,999,999

Appendix C
Lexington Hazardous Materials Handlers
(Within Cambridge Reservoir Watershed)

Facility Name & Address	Hazardous Material
1. Hyperion Catalysis 128 Spring Street	- ammonia chloride - ammonia persulfate - acetone - benzene - toluene - phenyl acetylene
2. Raytheon 131 Spring Street	- 1,1,1 Trichloroethane - 1,1,1 Trichloroethylene - chlorobenzene - arsenic trichloride - boron trichloride - hydrochloric acid - potassium hydroxide - iodine - mercury - xylene - diethyl mercury

The chemicals listed above are used at these Lexington facilities; however, they appear in small amounts, below the Treshold Planning Quantity for Title III of the Superfund Amendments and Reauthorization Act (SARA).

Appendix D
Lexington Fuel Oil Storage Tanks
In Cambridge Reservoir Watershed

Address	Tank Size (gallons)	Permit Date
1 Barberry Road	275	1959
4 Barberry Road	500	1959
5 Barberry Road	1,000	1981
6 Barberry Road	500	1953
10 Barberry Road	----	<1963
10 Barberry Roac	275	1984
11 Barberry Roac	500	1980
12 Barberry Roac	500	1953
13 Barberry Roac	----	1960
14 Barberry Roac	500	1953
15 Barberry Roac	1,000	1966
17 Barberry Roac	500	1958
18 Barberry Roac	1,000	1966
20 Barberry Roac	275	1952
22 Barberry Roac	1,000	1973
22 Barberry Roac	500	1956
23 Barberry Roac	275	1953
24 Barberry Road	2,000	1982
24 Barberry Road	1,000	1960
25 Barberry Road	550	1953
26 Barberry Road	500	1970
28 Barberry Road	275	1952
29 Barberry Road	275	1952
31 Barberry Road	1,000	1971
31 Barberry Road	275	1953
33 Barberry Road	275	1952
34 Barberry Road	275	1953
35 Barberry Road	275	1962
37 Barberry Road	1,000	1980
18 Bicentennial Drive	2,000	1978
14 Cary	275	1949
16 Cary	275	1949
464 Concord Avenue	1,000	1953
470 Concord Avenue	500	1959
476 Concord Avenue	275	1955
510 Concord Avenue	500	1956
524 Concord Avenue	275	1952
750 Concord Turnpike	1,000	1951
Crosby Road	500	1980
22 Deering Avenue	1,000	1957
46 Eastern Avenue	500	1961
4 Field Road	500	1956
6 Field Road	1,000	1976
8 Field Road	275	1952
9 Field Road	275	1952
10 Field Road	1,000	1967

Appendix D (continued)

Address (Lexington)	Tank Size (gallons)	Permit Date
12 Field Road	275	1952
15 Field Road	275	1952
Forbes Road, Building 5	2,000	1979
Forbes Roac, Building 1	2,000	1979
Hayden Ave. (W.R. Grace)	11,100	1976
Hayden Ave. (?)	10,000	1978
271 Lincoln Street	500	1958
336 Lincoln Street	1,000	1953
377 Lincoln Street	1,000	1966
381 Lincoln Street	----	<1967
401 Lincoln Street	1,000	1965
Marrett Roaj (Shell Oil)	500	1969
594 Marrett Road	1,000	1982
(Volunteer Assoc.)	5,000	1963
651 Marrett Road	1,000	1964
691 Marrett Road	1,000	1948
Marrett Road & Rt. 128	1,000	1970
Minuteman Regional H.S.	40,000	1975
3115 Mass. Ave.	500	1952
3126 Mass. Ave.	1,000	1953
18 Middle Street	500	1973
60 Munroe Road	500	1981
65 Munroe Road	500	1970
36 Normandy Road	275	1949
37 Normandy Road	275	1949
38 Normandy Road	1,000	1977
39 Normandy Road	275	1949
40 Normandy Road	275	1949
41 Normandy Road	275	1949
42 Normandy Road	275	1949
43 Normandy Road	275	1950
45 Normandy Road	275	1949
12 Phinney Road	500	1965
2 Rolling Lane	1,000	1973
31 Roosevelt Road	1,000	1979
School St. - Mary Hastings Elementary	7,500	1955
72 Shade Street	1,000	<1979
63 Spring Street	1,000	1968
65 Spring Street	250	1947
124 Spring St - Kennecott Corp.	9,990	1963
125 Spring St - Raytheon	10,150	1970
128 Spring St - Kennecott Copper	25,000	1971
128 Spring St - Richards, T.K.	1,000	<1948
141 Spring St - Raytheon Executive Building	20,000	1973
141 Spring St - Raytheon Manufacturing	19,970	?
145 Spring St - Swenson, A.M.	1,000	1948
160 Spring Street	1,000	1953
180 Spring Street	1,000	1975
186 Spring Street	500	?
Stonewall Roac #1	1,000	1961
Stonewall Roac #2	1,000	1961

Appendix D (continued)

Address (Lexington)	Tank Size (gallons)	Permit Date
3 Stonewall Road	1,000	1956
5 Stonewall Road	500	1956
9 Woodcliff Road	275	1969
11 Woodcliff Road	275	1969
13 Woodcliff Road	----	<1958
14 Woodcliff Road	275	1949
15 Woodcliff Road	275	?
17 Woodcliff Road	275	?
19 Woodcliff Road	275	<1975
20 Woodcliff Road	275	?
22 Woodcliff Road	275	?
24 Woodcliff Road	275	?
25 Woodcliff Road	----	<1958
27 Woodcliff Road	275	<1958
29 Woodcliff Road	275	1951
32 Woodcliff Road	275	<1967
34 Woodcliff Road	275	?
35 Woodcliff Road	275	<1969
39 Woodcliff Road	275	<1966

Appendix D
Lincoln Fuel Oil Storage Tanks
In Cambridge Reservoir Watershed

Address	Tank Size Gallons	Permit Date
9 Acorn Lane	500	1957
* Baker Bridge Rd (Carroll School)	3,000	1982
Baker Bridge Rd (Carroll School)	275	?
Baker Bridge Rd (Carroll School)	275	?
8 Baker Bridge Rd	1,000	aged. ?
26 Baker Bridge Rd	1,000	1967
26 Baker Bridge Rd	500	1952
44 Baker Bridge Rd	1,000	1959
Ballfield Rd (Smith School)	7,502	1962
Ballfield Rd (Smith School)	5,050	1971
Ballfield Rd (Smith School)	2,020	1959
Ballfield Rd (Smith School)	2,020	1959
Ballfield Rd (Smith School)	2,020	1963
*Ballfield Rd (Smith School)	7,610	1957
Ballfield Rd (Smith School)	6,280	1961
Beaver Pond Rd (Braude)	1,000	1966
18 Beaver Pond Rd	1,000	?
23 Beaver Pond Rd	1,000	1941
37 Beaver Pond Rd	1,000	1952
40 Beaver Pond Rd	275	1960
61 Beaver Pond Rd	500	?
*Bedford Rd (Bemis Hall)	1,000	?
Bedford Rd (Library)	1,000	to be installed
Bedford Rd (Stone Church)	1,000	?
24 Bedford Rd	2,000	?
42 Bedford Rd	1,000	1978
58 Bedford Rd	1,200	?
66 Bedford Rd	1,200	1978
143 Bedford Rd	500	?
Blueberry Lane (Sedgewick)	500	1950
4 Bowles Terrace	1,000	1977
Boyce Farm Rd (Liepins)	1,000	1965
*28 Boyce Farm Road	1,000	1987
12 Boyce Farm Rd	200	1963
279 Cambridge Turnpike	400	1966
10 Canaan Drive	500	1957
*27 Canaan Drive	1,500	1983
112 Codman Rd	2,000	1976
Conant Rd (Tummell?)	500	1954
Conant Rd (Horwitz)	500	<1966
Conant Rd (Rugo)	1,000	1965
67 Conant Rd	2,000	1969
94 Conant Rd	500	1965
103 Conant Rd	500	1970
116 Conant Rd	500	1969

Address	Tank Size Gallons	Permit Date
90 Davidson	500	1982
16 Grasshopper Lane	1,000	?
Hiddenwood Path (Kochler)	750	1966
12 Hiddenwood Path	500	1964
9 Hilliard Rd	500	?
9 Hilliard Rd	500	?
14 Hilliard Rd	1,500	<1959
23 Hilliard Rd	2,500	?
12 Huckleberry Hill	1,000	1956
27 Huckleberry Hill	2,000	1984
Laurel Drive (Najarian)	2,000	1981
Laurel Drive (Knox)	1,000	1960
30 Laurel Drive	500	1956
*Lewis St (Harthells Auto Repair)	1,000	1978
*Lewis St (McCart)	500	1987
28 Lexington Rd	250	1939
28 Lexington Rd	250	1939
85 Lexington Rd	2,000	?
91 Lexington Rd	500	1976
109 Lexington Rd	500	1948
Lincoln & Codman (Police & Fire)	5,000	?
Lincoln Rd (Town Offices)	1,000	<1969
101 Lincoln Rd	500	1986
*105 Lincoln Rd (Countryside Cont.)	550	1981
12 Mackintosh Lane	?	?
Mackintosh Lane (Bergen)	2,000	1955
*Mill St (Domenichella)	1,000	?
*Mill St (Costello)	1,000	?
45 Mill St	500	?
47 Mill St	200	?
*107 Mill St	1,000	1958
Moccasin (Brown)	1,000	?
1 Moccasin Hill	400	1958
8 Oak Meadow Rd	500	1980
20 Oak Meadow Rd	500	1985
23 Oak Meadow Rd	500	1983
Old County Rd (Roy)	1,000	1963
Old County Rd (Rasco)	255	1969
Old County Rd (Brandt)	3,000	1976
Old County & Conant (Mintz)	2,000	1972
Old County Rd (Bikales)	500	1960
225 Old County Rd	500	1963
226 Old County Rd	500	1966
7 Old Farm Rd	500	<1983
15 Old Sudbury Rd	1,000	1978
*20 Old Sudbury Rd	1,500	1983
22 Old Sudbury Rd	2,000	?
Old Winter St (Jevin?)	500	1963

Address	Tank Size Gallons	Permit Date
Old Winter St (Schwann)	275	1974
14 Old Winter St	2,000	1964
14 Orchard Lane	1,000	1986
*Page Rd (Lot 6)	500	1981
Page Rd (Swift)	1,000	1980
3 Page Farm Rd	2,000	1974
12 Page Farm Rd	2,000	1981
94 Page Rd	1,000	1978
3 Ridge Rd Apartments	?	?
15 Round Hill Rd	2,000	?
15 Sandy Pond Rd	?	?
58 Sandy Pond Rd	2,000	1982
138 Sandy Pond Rd	500	1954
138 Sandy Pond Rd	500	1967
142 Sandy Pond Rd	275	?
Silver Birch Lane (Litte)	1,000	1954
Silver Birch Lane (Rolfo)	1,000	1968
9 Silver Birch Lane	500	1954
10 Silver Birch Lane	?	?
Silver Hill Rd (Schlieman?)	2,000	1980
*38 Silver Hill Rd	1,000	1983
* South Great Rd	1,000	1980
280 South Great Rd	1,000	1959
296 South Great Rd	500	1982
298 South Great Rd	500	1981
*319 South Great Rd	1,000	1950's
338 South Great Rd	2,000	1973
Stonehedge Rd (Brodler)	500	1958
Stonehedge Rd (Elkas?)	?	1963
*Stonehedge Rd (Haessler)	?	1964
Stonehedge Rd (Messina)	?	?
Stonehedge Rd (McHugh)	500	1965
Stonehedge Rd (Milender)	500	1966
Stonehedge Rd (White)	500	1962
5 Stonehedge Rd	250	?
12 Stonehedge Rd	500	1965
17 Stonehedge Rd	500	1966
19 Stonehedge Rd	140	1967
20 Stonehedge Rd	500	1965
21 Stonehedge Rd	500	1962
25 Stonehedge Rd	500	1966
26 Stonehedge Rd	?	1966
31 Stonehedge Rd	1,000	1964
*32 Stonehedge Rd	1,000	1986
40 Stonehedge Rd	500	1965
45 Stonehedge Rd	2,000	?
45 Stonehedge Rd	500	?
*52 Stonehedge Rd	500	1964
12 Storey Drive	1,000	1975
18 Storey Drive	1,000	1978
27 Storey Drive	500	?

Address	Tank Size Gallons	Permit Date
*Tabor Hill Rd (Bolt)	1,000	1957
9 Tabor Hill Rd	?	?
33 Tabor Hill Rd	500	1954
*34 Tabor Hill Rd	500	1982
Todd Pond Rd (Harvey)	?	1968
62 Todd Pond Rd	1,000	1983
63 Todd Pond Rd	2,000	1972?
70 Todd Pond Rd	5,000	?
76 Todd Pond Rd	2,000	1976
102 Todd Pond Rd	2,000	1965
104 Todd Pond Rd	500	1966?
Tower Road (Fay?)	500	1957
Tower Rd (Harrington)	1,000	1967
Tower Rd (Lazaridis)	500	1967
Tower Rd (Quelch)	500	1982
*34 Tower Rd	500	?
60 Tower Rd	500	1971
108 Tower Rd	550	1967
115 Tower Rd	500	1984
136 Tower Rd	500	?
*153 Tower Rd	1,000	1984
*155 Tower Rd	500	1982
161 Tower Rd	500	1983
163 Tower Rd	500	1983
170 Tower Rd	1,000	1974
173 Tower Rd	275	?
207 Tower Rd	?	1968
242 Tower Rd	4,000	1974
115 Trapelo Rd	1,000	1952
121 Trapelo Rd	500	1955?
127 Trapelo Rd	500	late 40's
168 Trapelo Rd	1,000	?
*Twin Pond Lane (Bernard)	2,000	1976
Twin Pond Lane (Davis)	2,000	1972
7 Twin Pond Lane	500	1961
10 Upland Field Rd	500	1949
50 Wells Rd (Lincoln Woods)	?	?
60 Wells Rd (Lincoln Woods)	?	?
63 Wells Rd (Lincoln Woods)	?	?
Weston Rd (Moss)	?	1973
Weston Rd (?)	500	1985
28 Weston Rd	500?	?
91 Weston Rd	1,000	1952
121 Weston Rd	?	1949
132 Weston Rd	1,000	1975
Wheeler Rd (Whitman)	1,000	1968
*Winter St	500	1986
Winter St (Wiggin)	1,000	?
18 Winter St	100 (diesel)	1980
18 Winter St	100 (diesel)	1980

95 Winter St	500	?
129 Winter St	500	1970
Woodcock Lane (Hatsopoulos)	?	?
*Woodcock Lane	500	?
6 Woodcock Lane	1,000	1972
7 Woodcock Lane	275	1958

*indicates that these permits were on file at the Fire Department.

APPENDIX D

Waltham
Fuel Oil Storage Tanks
In Cambridge Reservoir Watershed

Address	Tank Size (gal)	Permit Date
62 Banbury Ave	500	1983
17 Bancroft St.	500	1967
24 Bancroft St.	1,000	-
13 Brennan Ave	500	1972
7 Candlewood Drive	1,000	1976
40 Candlewood Drive	1,000	1985
52 Carlin Road	500	1958
85 Colburn St.	300	1964
93 Copeland St.	500	1964
59 Conant Road	500	1961
100 First Ave	10,000	1955
100 First Ave	10,120	1962
130 Florence Road	260	1956
288 Florence Road	1,000	1954
Fox Road (alpha structural)	1,000	1958
20 Fox Road	1,000	1965
20 Fox Road	500	1968
20 Fox Road	500	1961
Fox Road (Woodland Brothers)	550	1961
61 Goldencrest Ave	500	1961
103 Goldencrest Ave	500	1963
22 Green St.	500	1982
22 Green St.	500	1982
39 Green St.	1,000	1960
40 Green St.	1,000	1984
5 Hamilton Road	500	1984
243 Hardy Pond Road	1,000	1964
100 Harland Road	1,000	1980
5 Hartwell St.	500	1956
14 Hays Road	275	1987
Hickory Drive (Mobil Solar Energy Corp)	1,000	1984
16 Hickory Drive	1,000	1963
Hickory Drive (Tyco Semi Conductor)	1,000	1962
60 Hickory Drie	10,000	1966
Hickory Drive (Master Safe Co)	1,000	1961
46 Hillcrest Road	500	1949
55 Hillcrest Road	1,000	1979
43 Jones Road	500	1958
50 Jones Road (Exxon)	1,000	1985

Address (Waltham)	Tank Size (gallons)	Permit Date
4 Leslie Road	1,000	1985
10 Leslie Road	500	1962
12 Leslie Road	1,000	1962
35 Leslie Road	1,000	1966
110 Leslie Road	500	-
5 Livingstone Lane	550	1953
1264 Main St.	1,000	1967
1265 Main St. (Polaroid)	170,000	-
1273 Main St.	500	1953
1295 Main St.	500	1963
1295 Main St.	40,040	1964
Main St. and Green St.	500	1959
1335 Main St.	30,000	-
1345 Main St.	1,000	1987
1345 Main St.	1,000	1968
1349 Main St.	1,000	1967
1362 Main St.	2,000	1960
1365 Main St.	2,000	1966
1365 Main St.	2,000	1969
1370 Main St.	1,000	1984
1380 Main St.	1,000	1971
1399 Main St.	500	1970
1420 Main St.	24,000	1989
1446 Main St.	6,000	1982
1480 Main St.	2,000	1963
1481 Main St.	500	1970
1490 Main St.	1,000	1960
15 Meadow Lane	1,000	1970
53 Milton St.	500	1964
60 Milton St.	500	1964
63 Milton St.	500	1965
66 Milton St.	500	1964
76 Milton St.	500	1963
80 Milton St.	500	1964
108 Milton St.	2,000	-
109 Milton St.	500	1965
121 Milton St.	500	1965
Roberts Road	6,000	1957
40 Second Ave (Raytheon)	8,000	1958
63 Second Ave (Sylvania)	5,000	1958
80 Second Ave	10,000	1985
80 Second Ave	10,000	1985
95 Second Ave	10,000	1961
176 Second Ave	5,980	1966
130 Second Ave (Raytheon)	6,680	1960
153 Second Ave	1,000	-
153 Second Ave	6,830	1963
176 Second Ave	2,000	1989
358 Secord Ave	10,000	-
358 Secord Ave	10,000	-
358 Secord Ave	5,000	-
62 Sherbcurne Place	1,000	-
91 Stow St.	1,000	1985
99 Third Ave	4,000	1979

Address (Waltham)	Tank Size (gallons)	Permit Date
1445 Trapelo Road	500	1963
1501 Trapelo Road	2,000	1955
1601 Trapelo Road	10,000	1957
1601 Trapelo Road	10,000	1986
1601 Trapelo Road	10,000	1963
1651 Trapelo Road	250	1973
1841 Trapelo Road	10,000	1968
305 Weston St.	1,000	1974
1000 Winter St. (Bay Colony)	1,000	-
868 Winter St. (Polaroid)	40,970	-
520 Winter St. (Whittaker -Yardrey)	10,000	-
572 Winter St. (Waltham Motel)	5,050	-
572 Winter St. (Waltham Motel)	5,050	-
520 Winter St. (Sylvania)	20,000	-
520 Winter St. (Raytheon)	10,000	1957
404 Wyman St.	15,000	-
175 Wyman St.	93,350	-
175 Wyman St. (Hewlett Packard)	15,000	-
175 Wyman St.	15,000	-
175 Wyman St. (Sanborn Co.)	1,000	1957
175 Wyman St. (Hewlett Packard)	2,000	-
175 Wyman St. (Hewlett Packard)	2,000	-
225 Wyman St.	1,000	-
225 Wyman St.	1,000	-
225 Wyman St.	1,000	-
400 Wyman St.	10,000	1964
400 Wyman St.	15,000	1987

APPENDIX D
Weston Fuel Oil Storage Tanks
In Cambridge Reservoir Watershed

Address	Tank Size	Permit Date
1 Aberdeen Road	500	1982
*30 Aberdeen Road	?	1963
79 Aberdeen Road	1,000	1965
58 Autumn Road	500	1968
Baker Hill Road (Iodice)	1,000	1963
41 Baker Hill Road	1,000	1962
10 Baldwin Circle	2,000	1970
123 Bay State Road	500	1975
Boston Post Road, Police Department	5,070	1974
2-2A Boston Post Road, Unitarian Church	9,000	1979
*65 Boston Post Road	?	1966
152 Boston Post Road	500	1968
175 Boston Post Road	1,000	1985
*177A Boston Post Road	?	1967
181 Boston Post Road	?	1976
*200 Boston Post Road	275	1977
221 Boston Post Road	275	1966
*270 Boston Post Road	?	1977
293 Boston Post Road	1,000	1965
349 Boston Post Road	?	1971
374 Boston Post Road, St. Julias Church	3,000	1985
394 Boston Post Road, Weston Fire Dept.	275	1988
464-78 Boston Post Road	1,000	1963
494 Boston Post Road	500	1983
625 Boston Post Road	1,000	1970
*625 Boston Post Road	275	1980
625 Boston Post Road	1,000	1983
*661 Boston Post Road	?	1979
662 Boston Post Road	500	1964
671 Boston Post Road	2,000	1980
*715 Boston Post Road	?	1963
751 Boston Post Road	1,000	1972
751 Boston Post Road	500	1978
775 Boston Post Road	500	1965
40 Bradford Road	550	1978
89 Bradford Road	2,000	1979
27 Brook Road	1,000	1980
*2 Bryden Road	?	1979
18 Cedar Road	5,000	1981
18 Cedar Road	2,000	1974
36 Cedar Road	500	1969
51 Cedar Street	500	1978
73 Chestnut Street	1,000	1974
77 Chestnut Street	1,000	1960
78 Chestnut Street	1,000	1974
150 Chestnut Street	500	1966
197 Chestnut Street	2,000	1961
Church Street, First Parish Church	8,460	1968

Note: For general inventory purposes only. Data has not been verified.

Address	Tank Size	Permit Date
36 Church Street	2,500	1979
120 Church Street	1,000	1982
*12 Coburn Road	?	1968
43 Coburn Road	?	1980
20 Colchester Road	500	1962
Colpitts Road, Abel Colpitts Co.	2,000	1965
45 Colpitts Road	500	1969
56 Colpitts Road	2,000	1967
8 Conant Road	500	1964
*18 Conant Road	?	1970
22 Conant Road	275	1967
*204 Conant Road	275	1970
211 Conant Road	500	1976
*229 Conant Road	275	1971
*269 Conant Road	?	1960
300 Conant Road	1,000	1963
353 Conant Road	500	1966
413 Conant Road	?	1979
*470 Conant Road	500	1966
484 Conant Road	2,000	1975
308 Conant Road	275	1974
*319 Concord Road, Campion Center	?	1978
381 Concord Road, Weston Observatory Bldg1 (?)	2,000	1983
381 Concord Road, Weston Observatory Bldg2 (?)	2,000	1983
1 Concord Road	1,000	1976
83 Concord Road	1,000	1974
90 Concord Road	1,000	1961
99 Concord Road	2,000	1973
319 Concord Road	1,000	1964
410 Concord Road (?)	1,000	1976
*420 Concord Road (?)	275	1985
*420 Concord Road (?)	275	1985
39 Crescent Street	2,000	1979
49 Crescent Road	?	1977
Dogwood Lane (Cole)	500	1962
63 Doublet Hill Road	1,000	1970
Drabbington Way, Lot 1, (Cain)	2,000	1960
45 Drabbington Way	1,000	1964
74 Drabbington Way	500	1967
79 Drabbington Way	1,000	1984
168 Drabbington	500	1961
75 Dubblet Road	275	1967
9 Ellis Road	500	1965
12 Ellis Road	500	1986
*6 Fairhope Road	275	1976
12 Fairhope Road	1,000	1973
20 Fairhope Road	500	1969
20 Fairview Road	1,000	1974
20 Fairview Road	550	1972
*47 Fairview Road	?	1982
50 Fairview Road	1,000	1985
63 Fairview Road	1,000	1972
Farm Road, Meadowbrook School	10,000	1968
Farm Road, Meadowbrook School	1,000	1982
Farm Road, Meadowbrook School	5,000	1966

Address	Tank Size	Permit Date
Farm Road, Meadowbrook School	4,000	1981
*4 Farm Road	275	1983
31 Farm Road	?	1971
7 French Road	500	1973
7 French Road	275	1966
Georgian Road, Cambridge School	10,120	1978
Georgian Road, Cambridge Sch. Trap. House	500	1978
Georgian Road, Cambridge Sch. Main Bldg	1,000	1963
Georgian Road, Cambridge Sch. Office	1,000	1963
7 Golden Ball Road	2,000	1980
54 Golden Ball Road	1,000	1978
56 Gun Club Lane	2,000	1974
52 Gun Club Lane	2,000	1973
Gypsy Trail (Sloan)	1,000	1962
7 Gypsy Trail	1,000	1986
*109 Highland Street	?	1969
125 Highland Street	1,000	1963
3 Hillcrest Road	300	1977
11 Hillcrest Road	1,000	1974
29 Hillcrest Road	1,000	1981
38 Hillcrest Road	1,000	1985
*25 Hilltop Road	275	1972
*45 Hilltop Road	?	1962
3 Hobbs Brooks Road	1,000	1968
*4 Irving Road	?	1982
*7 Irving Road	275	1983
14 Irving Road	500	1970
18 Jones Road	500	1966
16 Kendall Common Road	500	1972
45 Kendall Common Road	1,000	1977
46 Kendall Common Road	275	1978
Kings Grant Road, Lot 115	2,000	1983
Kings Grant Road, Lot 120	2,000	1983
125 Kings Grant Road	2,000	1984
134 Kings Grant Road	1,000	1978
183 Kings Grant Road	?	1983
21 Lantern Lane	1,000	1984
40 Lantern Lane	2,000	1981
*4 Laurel Road	?	1981
*2 Legion Road	275	1968
Lexington Street, Cambridge Sch. Gym	2,000	1960
50 Lexington Street	?	1970
*143 Lexington Street	?	1979
151 Lexington Street	500	1966
Lincoln Street, Lot 18 (DiBona)	2,000	1984
8 Longmeadow Road	500	1977
*10 Maple Road	?	1971
*80 Meadowbrook Road	?	1979
141 Meadowbrook Road	1,000	1986
*141 Meadowbrook Road	275	1973
174 Meadowbrook Road	500	1978
275 Meadowbrook Road	5,000	1969
275 Meadowbrook Road, Weston Golf Club	500	1963
275 Meadowbrook Road, Weston Golf Course	10,000	1983
279 Meadowbrook Road	1,000	1985
*2		

Address	Tank Size	Permit Date
95 Meadowbrook Road	?	1983
*111 Merriam Street	275	1960
165 Merriam Street	500	1975
*255 Merriam Street	?	1982
28 Montvale Avenue	500	1981
52 Montvale Road	1,000	1982
Myles Standish Road, Lot 151	2,000	1981
15 Myles Standish Road	500	1965
55 Myles Standish Road	500	1980
86 Myles Standish Road	1,000	1968
149 Myles Standish Road	500	1967
105 Newton Street	1,000	1962
*152 Newton Street	?	1975
209 Newton Street	500	1973
209 Newton Street	275	1961
1 North Avenue	1,000	1968
2 North Avenue	275	1976
Weston Country Day School	15,000	1982
49 North Avenue	1,000	1966
*257 North Avenue	?	1971
271 North Avenue	2,000	1965
290 North Avenue	500	1968
307 North Avenue	500	1963
313 North Avenue	275	1968
336 North Avenue	500	1967
347 North Avenue	500	1963
377 North Avenue	2,000	1971
*395 North Avenue	?	1985
*517 North Avenue	275	1985
544 North Avenue	500	1985
552 North Avenue	500	1984
560 North Avenue	500	1985
*45 October Lane	?	1975
*3 Old Coach Road	275	1981
16 Partridge Hill Road	275	1986
*27 Partridge Hill Road	275	1978
Perry Lane, Lot 1 (Mammola)	1,000	1978
25 Perry Lane	1,000	1976
69 Pigeon Hill Road	2,000	1984
69 Pigeon Hill Road	1,000	1968
*97 Pigeon Hill Road	?	1982
60 Pinecroft Road	2,000	1967
74 Pinecroft Road	275	1979
*11 Plymouth Road	?	1984
49 Possum Road	500	1981
21 Robin Road	2,000	1982
44 Robin Road	?	1986
60 Rolling Lane	1,000	1981
*68 Rolling Lane	275	1981
Route 20, American Oil Co.	500	1965
Route 20, Weston Town Garage	2,000	1972
27 School Street	2,000	1975
47 School Street	275	1966
68 School Street	550	1966

Address	Tank Size	Permit Date
89 School Stret	500	1973
15 Sears	500	1984
34 Silver Hill Road	500	1964
1 Spruce Hill Road	500	1966
*36 Spruce Hill Road	500	1967
64 Spruce Hill Road	500	1967
65 Spruce Hill Road	500	1981
72 Spruce Hill Road	550	1975
73 Spruce Hill Road	275	1980
52 Spruce Hill Road	500	1985
97 Spruce Hill Road	?	1982
65 Spruce Hill Road	500	1966
18 Sunset Road	275	1966
39 Sunset Road	275	1981
92 Sunset Road	500	1965
94 Sunset Road	500	1965
Townhouse Road, (Weston Town Hall	3,000	1967
27 Viles Street	1,000	1973
27 Viles Street	1,000	1973
39 Warren Avenue	1,000	1967
39 Warren Avenue	500	1975
39 Warren Avenue, Ogilvie's	275	1966
14 Warren Lane	?	1967
29 Webster Road	2,000	1970
49 Webster Road	2,000	1980
*49 Wellesley Street	?	1966
*60 Wellesley Street	?	1980
*138 Wellesley Street	275	1978
150 Wellesley Street	1,000	1978
171 Wellesley Street	2,000	1976
82 Westland Rd	2,020	1973
12 Whitney Tavern Road	2,500	1973
36 Whitney Tavern Road	500	1967
47 Whitney Tavern Road	500	1966
*37 Willard Road	275	1985
50 Willard Road	1,000	1985
2 Winthrop Circle	500	1971
10 Winthrop Circle	500	1968
21 Winthrop Circle	1,000	1968
* Woodland School (?)	?	1982

* Tanks listed as "existing" rather than as underground or cellar in the Fire Department records. Records go back to 1960. These tanks were installed prior to that date.

LATE RACE RESULTS
(SEE PAGE 26)

FINAL EDITION

Boston Evening Globe

3 O'CLOCK STOCKS
(SEE PAGE 34)

FINAL EDITION

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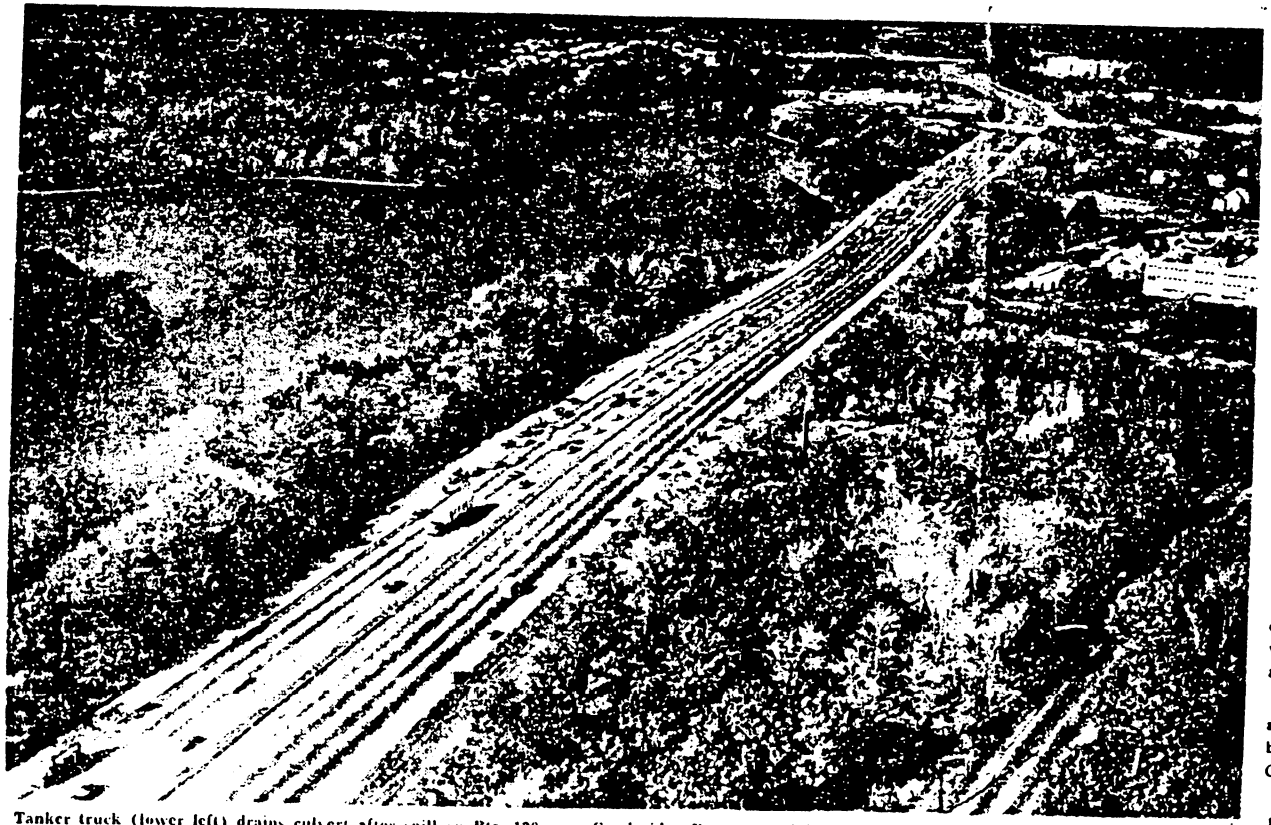
Fumes daze drivers, shut Rte. 128 in Waltham



Tanker truck (lower left) drains culvert after spill on Rte. 128 near Cambridge Reservoir while traffic piles up. (Tom Landers photo)

By Frank Mahoney
and Robert Ward
Globe Staff

Fumes from a liquid used in the manufacture of plastics spilled on a section of Rte. 128 in Waltham shortly before noon today, dazing a dozen motorists and forcing a five-mile shutdown of the highway.

An emergency treatment center for those affected was set up at Waltham Hospital. Polaroid Corp., adjacent to the chemical spill, said several employees apparently had inhaled the fumes and were en route for treatment.

At least a dozen police and firefighters from Waltham went to the center for a check as a precautionary measure.

Officials said the fumes came from ethyl acrylate, an extremely toxic liquid which can be absorbed through the skin. Anyone feeling dizzy or having breathing problems was urged to seek immediate medical attention.

The liquid apparently came from a tank truck traveling in the southbound lane of the road, near the Cambridge Reservoir.

Police were still trying to find the truck and determine what caused the spill.

Chemists at the Polaroid plant tested a sample and initially reported that it was a "nontoxic" liquid.

However, later tests determined that the liquid was a "highly toxic, highly flammable member of the acetate family," according to Waltham Fire Chief Edward A. Cloonan.

The chief said the spill was on the same side of the highway and next to the Cambridge Reservoir, the water supply for that city.

"If it (the liquid) had leaked into the water, it would have poisoned it," the chief said.

The spill along the road ..n for about 100 yards and was about four feet wide, three feet on the dirt road shoulder and a foot on the pavement.

Firefighters were using a blow torch to burn it off, then turning the dirt over.

The road shutdown caused a monstrous traffic jam in the area. At the height of the tie-up, Waltham firefighters had trouble answering an alarm for a house fire. The home was destroyed and a mother and child narrowly escaped injury.

Police in more than a dozen surrounding communities received calls reporting erratic driving by motorists along the highway.

FUMES, Page 16

Appendix E

Fumes from spill shut Rte. 128 in Waltham

★ FUMES
Continued from Page 1

A state trooper, among the first on the scene, said, "I couldn't believe what I was seeing. People were weaving all over the road, going off on the shoulder and then coming back driving in the opposite direction.

Not knowing what had happened, police shut the road between Rte. 2 in Lexington and Rte. 30 at the Masachusetts Turnpike in Weston.

According to police, motorists would drive through the invisible fumes, which were sucked into the car by the air intake, and suddenly become dizzy and disoriented.

The effects of the fumes were not evident until drivers had passed the spill and had neared Rte. 30 southbound or Rte. 20 northbound.

Police, in assisting motorists, detected the sweet odor, but did not know where it came from. However, they determined that the cars had passed through something and ordered the road closed.

At least five area fire departments sent men and equipment to the scene.

Once the substance was located, a team from Hanscom Air Force Base in Bedford checked the liquid for its explosive properties.

A driver of a truck stopped at the Rte. 30 roadblock told his office via two-way radio that police were looking for a yellow tank truck with the world "chemicals" on its side.

Waltham Hospital said they received a call shortly before 3 p.m. that some Polaroid employees apparently had inhaled the fumes and were enroute there as a precautionary measure.

Although the spill was concentrated on a small section of the road, the fumes spread into surrounding areas and into the sky.

A Globe photographer in a helicopter reported the fumes could be detected at 700 feet and the pilot radioed the tower at Logan International Airport to advise that small planes be kept out of the area.

Waltham Police Capt. William Carmody said calls started about 11:50 p.m. from motorists who said they became dizzy and had to pull off the road.

Paul Keough, spokesman for the Federal Environmental Protection Agency in Boston, said about 30 gallons of the liquid ran into a nearby closed catch basin. He stressed that the liquid did not get into the Cambridge water supply.

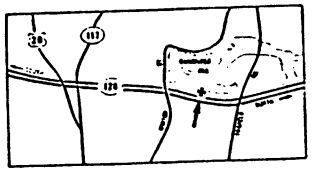
The agency's biggest concern, Keough said, was for the Cambridge water supply, which is fed by Howes Brook near the spill scene.

Keough said that Cambridge public health officials, state Public Safety Comr. John F. Kehoe Jr. and representatives of state environmental agencies were at the scene.

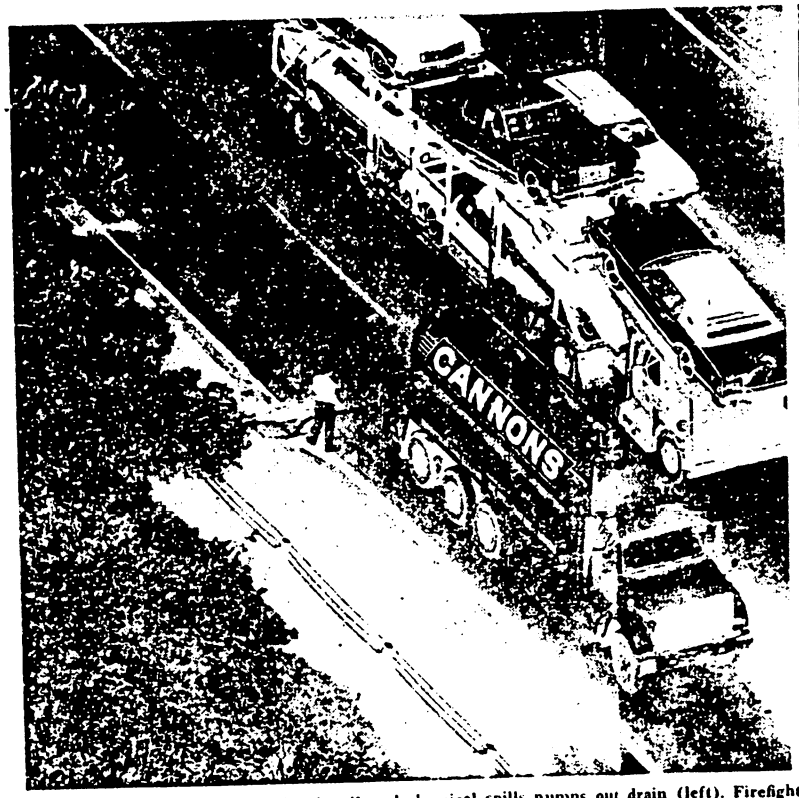
"Right now, it appears to be a local air pollution problem which will abate," Keough said of the fumes still lingering in the area at late afternoon.

He added that Federal water supply personnel had been alerted and were ready to assist Cambridge and state officials if necessary.

Fumes from spill shut off Rte. 128



Cross locates site of spill.



Employee of company specializing in oil and chemical spills pumps out drain (left). Firefighters cover chemical in roadway. (Globe photos by Tom Landers and Bill Brett)

By Frank Mahoney
Globe Staff

Toxic fumes from a spill of liquid plastics on Rte. 128 between Winter street and Trapelo road in Waltham at noon yesterday sent six policemen to a hospital, left dozens of motorists lightheaded and dizzy and caused the highway to be closed nearly two hours.

The policemen were from Waltham and had responded without masks.

The fumes were from a 50-gallon spill of ethyl acrylite, a highly inflammable liquid used throughout the plastics industry.

Waltham Fire Chief Edward A. Cloonan said it appeared that the spill occurred when a tank truck driver stopped and apparently adjusted his hose lines, allowing the liquid to spill. State Police said they have not been able to determine the name of the owning company or the whereabouts of the truck.

The spill occurred in the southbound lane next to the Cambrdige Reservoir and saturated an area about 100 yards long and 5 feet wide. Some of the material went down a storm drain, but it was plugged with leaves and sand, keeping the liquid from entering the drinking water supply.

Although calls began coming into the Waltham, Newton, Lexington and Weston fire and police departments at 11:50 a.m., it took almost a half-hour to find the source of the trouble.

Police explained that as motorists passed through the area the fumes were pulled into their cars through air vents and did not begin to affect occupants until they were a distance away and could not give an exact location of the spill.

A State Police cruiser, its driver wearing a mask, rode through the affected area and found the spill. He directed firefighters to the scene.

Firefighters and troopers wore air masks as they moved into the area, and Cloonan put in call for chemists from Polaroid Corp. nearby.

Police on each side of the spill reported cars going onto grass plots, stopping in the middle of the road and moving in an erratic manner.

State and local police stopped the cars and helped the drivers into the fresh air.

Cloonan ordered the road closed until it could be determined what type of liquid and fumes they were dealing with.

Polaroid chemists diagnosed the chemical as acrylite. It will ignite by itself at high temperatures.

To lessen the odor being blown up into homes and industrial buildings on Winter street, Cloonan set fire to the spill and allowed it to burn off.

The odor was descibed as "sickenly sweet and cloying," causing people to suffer dry throats, eye irritations, some nausea and extreme dizziness, police said.

Globe photographer Tom Landers reported from a helicopter he could smell the fumes 700 feet in the air. His pilot radioed Logan Airport to warn air controllers to keep small planes out of the area.

The site is in one of the landing patterns for Hanscom Field.

Drs. Sami Daoud, Arnold Brill and Donald Hutchings put Waltham General Hospital's emergency room on alert, and vice president of nursing Sonia Satsuk called a Philadelphia chemical company to get the properties of the liquid.

Chief biochemist Charles Benjamin of Rohm & Hams said the chemical would burn on contact and that excessive inhalation would cause a bad cough at least. He recommended a plain water bath for the eyes and skin. If symptoms become worse: i.e., a deepening burn, nausea or dizziness that persists, hospitalization is necessary.

Paul Keough, a spokesman for the Federal Environmental Protection Agency, said his men tested the Cambridge drinking water at the spill point and found it unaffected.

He said it would remain a local air pollution problem for awhile but that the smell would go away.

At 4 p.m. a Waltham Public Works crew wearing air masks lent by Polaroid scooped up all of the saturated dirt and hauled it to the city dump.

Northbound traffic was back to normal about 3 p.m., and two lanes of traffic were opened in the southerly direction. All eight lanes were open by rush hour, State Police said.

Septic Limitations: Slow Percolation Rate

Soil name and map symbol	Depth (In)	Permeability (In/hr)
27 Scituate	0 - 10	0.6 - 2.0
	10 - 28	0.6 - 2.0
	28 - 60	0.06 - 0.2
28 Scituate	0 - 10	0.6 - 2.0
	10 - 28	0.6 - 2.0
	28 - 60	0.06 - 0.2
32 ridgebury	0 - 6	0.6 - 6.0
	6 - 16	0.6 - 6.0
	16- 60	<0.2
33 Whitman	0 - 8	0.6 - 6.0
	8 - 15	0.6 - 6.0
	15 - 35	<0.2
	35 - 60	<0.2
34 Whitman	0 - 8	0.6 - 6.0
	8 - 15	0.6.- 6.0
	15 - 35	<0.2
	35 - 60	<0.2
--------	-------	--------
81 Woodbridge	0 - 7	0.6 - 2.0
	7 - 30	0.6 - 2.0
	30 - 60	<0.2
82 Woodbridge	0 - 7	0.6 - 2.0
	7 - 30	0.6 - 2.0
	30 - 60	<0.2
122 Paxton	0 - 8	0.6 - 2.0
	8 - 26	0.6 - 2.0
	26 - 60	<0.2
123 Paxton	0 - 8	0.6 - 6.0
	8 - 26	0.6 - 6.0
	26 - 60	<0.2
181 Birchwood	0 - 10	2.0 - 20
	10 - 30	>6.0
	30 - 60	<0.2
222 Montauk	0 - 2	0.6 - 6.0
	2 - 27	0.06 - 0.6
	27 - 60	--------

223 Montauk	0 - 2
	2 - 27
	27 - 60
224	0 - 2
	2 - 27
	27 - 60
241	0 - 6
	6 - 26
	26 - 60
252 Broadbrook	0 - 8
	8 - 25
	25 - 60
263 Woodbridge	0 - 7
	7 - 30
	30 - 60
611 Birdsall	0 - 8
	8 - 16
	16 - 50

Appendix F

Septic Limitations: High Water Table

Soil		Depth to Water Table (ft)	Season	Also
181	Birchwood	1.5 - 2.5	Nov. - April	Slow Perc.
611	Birdsall	0 - 1.0	Oct. - July	Slow Perc.
252	Broadbrook	1.5 - 2.5	Feb. - April	Slow Perc.
138	Deerfield	1.5 - 3.0	Dec. - April	----------
46	Freetown	0 - 1.0	Jan. - Dec.	----------
99	Freetown	+3 - 0	Jan. - Dec.	----------
222,223	Montauk	2 - 2.5	Feb. - May	Slow Perc.
70	Ninigrit	1.5 - 2.5	Nov. - April	----------
122,123	Paxton	1.5 - 2.5	Nov. - April	----------
42	Pookatuck	1.5 - 2.5	Nov. - April	----------
241	Rainbow	1.5 - 2.5	Nov. - May	Slow Perc.
602	Raynham	0 - 1.0	Nov. - May	----------
32	Ridgebury	0 - 1.5	Nov. - May	Slow Perc.
43	Rippowam	0 - 1.5	Sept. - June	----------
44	Saco	0 - 0.5	Sept. - June	----------
40	Scarborc	+1 - 1.0	Jan. - Dec.	----------
591	Scio	1.5 - 2.0	March - May	----------
267	Scio	1.5 - 2.0	March - May	----------
27,28	Scituate	1.5 - 3.0	Nov. - May	----------
38	Sudbury	1.5 - 3.0	Dec. - April	----------
71,72	Sutton	1.5 - 2.5	Nov. - April	----------
45	Swansea	0 - 1.0	Jan. - Dec.	----------

Soil		Depth to Water Table (ft)	Season	Also
100	Tisbury	1.5 - 2.5	Nov. - April	----------
39	Walpole	0 - 1.0	Nov. - May	----------
139	Wareham	0 - 1.5	Sept. - June	----------
33,34	Whitman	+1 - 0.5	Sept. - June	Slow Perc.
92	Winooski	1.5 - 3.0	Nov. - April	----------
81,82	Woodbridge	1.5 - 2.5	Nov. - May	Slow Perc.
253	Woodbridge	1.5 - 2.5	Nov. - May	

MP/emt
(landuse-water)

Appendix F

Erosion Potential of Soils in Stony Brook Watershed

Map Symbol	Soil Name	Depth	Erosion Factor
7B, 7C, 7D	Charlton	0-6	0.20
		6-26	0.24
		26-60	0.24
	Hollis	0-2	0.17
		2-15	0.32
8C, 8D	Chatfield	0-8	0.20
	8-26	0.20	
9	Rock outcrop		
19D	Charlton	0-6	0.24
		6-26	0.24
		26-60	0.24
20D	Charlton	0-6	0.20
		6-26	0.24
		26-60	0.24
27B, 27C	Scituate	0-10	0.24
		10-28	0.24
		28-60	0.24
28B, 28D	Scituate	0-10	0.17
		10-28	0.24
		28-60	0.24
29A, 29B	Ridgebury	0-6	0.24
		6-16	0.32
		16-60	0.24
32A	Ridgebury	0-6	0.20
		6-16	0.32
		16-60	0.24
33A	Whitman	0-8	0.28
		8-15	0.32
		15-35	0.24
		35-60	0.24

34A	Whitman	0-8	0.20
		8-15	0.32
		15-35	0.24
		35-60	0.24
35A, 35B, 35C, 35D, 35E	Hinkley	0-7	0.17
		7-15	0.17
		15-60	0.10
37A, 37B, 37C	Merrimac	0-15	0.24
		15-22	0.24
		22-26	0.17
		26-60	0.10
38A	Sudbury	0-13	0.24
		13-19	0.24
		19-26	0.17
		26-60	0.10
39A, 39B	Walpole	0-7	0.20
		7-24	0.24
		24-60	0.10
40	Scarboro	9-16	0.17
		16-33	0.10
		33-60	0.10
42	Pootatuck	0-4	0.20
		4-29	0.20
		29-60	0.17
43	Rippowam	0-5	0.20
		5-27	0.20
		27-60	0.17
44	Saco	0-12	0.49
		12-48	0.64
		48-60	0.10
45	Swansea	26-60	0.10
46	Freetown		

49	Ipswich		
59A, 59B	Boxford	0-9	0.32
		9-17	0.49
		17-44	0.49
		44-6	0.49
60A, 60B	Scitico	0-9	0.49
		9-24	0.43
		24-60	0.28
63A, 63B	Haven	0-19	0.32
		19-28	0.24
		28-60	0.17
67A, 67B	Windsor	0-2	0.17
67C, 67D		2-20	0.17
67E		20-60	0.10
68A, 68B	Agawam	0-11	0.28
68C		11-16	0.37
		16-26	0.28
		26-55	0.17
		55-6	0.10
70A, 70B	Ninigret	0-8	0.32
		8-26	0.37
		26-60	0.15
71A, 71B	Sutton	0-6	0.24
		6-28	0.32
		28-60	0.24
72A, 72B	Sutton	0-6	0.20
72C		6-28	0.32
		28-60	0.24
75A, 75B	Carver	0-7	0.10
75C		7-29	0.10
		29-60	0.10
79A, 79B	Enfield	0-7	0.49
		7-25	0.64
		25-60	0.10

81A, 81B 81C	Woodbridge	0-7 7-30 30-60	0.24 0.32 0.24
82A, 82B 82C	Woodbridge	0-7 7-30 30-60	0.20 0.32 0.24
83A, 83B 83C	Woodbridge	0-7 7-30 30-60	0.20 0.32 0.24
89A	Suncook	0-7 7-48	0.17 0.17
91A, 91B	Hadley	0-11 11-28 68-72	0.49 0.49 0.49
92	Winooski	0-8 8-60	0.49 0.49
93	Limerick	0-5 5-23 23-60	0.49 0.49 0.49
99	Freetown		
100A, 100B	Tisbury	0-8 8-26 26-60	0.49 0.64 0.10
113B, 113C 113D	Canton	0-2 2-22 22-60	0.24 0.28 0.17
114B, 114C 114D	Canton	0-2 2-22 22-60	0.20 0.28 0.17
115B, 115C 115D, 115E	Canton	0-2 2-22 22-60	0.20 0.28 0.17

119D	Narragansett	0-6	0.28
		6-28	0.43
		28-60	0.23
120D	Narragansett	0-6	0.24
		6-28	0.43
		28-60	0.24
122B, 122C 122D, 122E	Paxton	0-8	0.24
		8-26	0.32
		26-60	0.24
123B, 123C 123D	Paxton	0-8	0.20
		8-26	0.32
		26-60	0.24
138A, 138B	Deerfield	0-9	0.17
		9-19	0.17
		19-60	0.17
139	Wareham	0-6	0.17
		6-16	0.17
		16-36	0.17
		36-60	0.10
151A, 151B 151C, 151D 151E	Quonset	0-2	0.20
		2-20	0.17
		20-60	0.10
181B, 181C	Birchwood	0-10	0.24
		10-30	0.17
		30-60	0.24
182B, 182C	Birchwood	0-10	0.17
		10-30	0.17
		30-60	0.24
191B, 191C 191D	Newport	0-8	0.28
		8-24	0.37
		24-60	0.24
201B, 201C 201D	Newport	0-4	0.20
		4-24	0.37
		24-60	0.24

221B, 221C 221D, 221E	Bernardston	0-6 6-20 20-60	0.28 0.37 0.28
222B, 222C 222D	Montauk	0-2 2-27	0.24 0.24
223B, 223C 223D	Montauk	0-2 2-27 27-60	0.24 0.24 0.24
231C, 231D 231E	Bernardston	0-6 6-20 20-30	0.20 0.37 0.28
241A, 241B 241C	Rainbow	0-6 6-26 26-60	0.28 0.43 0.24
252B, 251C 252D	Broadbrook	0-8 8-25 25-60	0.28 0.43 0.24
253B, 253C 253D	Broadbrook	0-3 3-25 25-60	0.20 0.43 0.24
260	Urban Land		
261	Merrimac	0-15 15-22 22-26 26-60	0.24 0.24 0.17 0.10
262	Urban Land		
263	Woodbridge	0-7 7-30 30-60	0.24 0.32 0.24
264	Charlton	0-6 6-26 26-60	0.24 0.24 0.24

265	Charlton	0-6	0.24
		6-26	0.24
		26-60	0.24
267	Scio	0-9	0.49
		9-40	0.64
		40-50	0.17
281A, 281B 281C	Pittstown	0-10	0.28
		10-29	0.37
		29-60	0.28
291A, 291B 291C	Pittstown	0-10	0.20
		10-29	0.37
		29-60	0.28
311	Stissing	0-8	0.28
		8-16	0.37
		16-60	0.28
321	Stissing	0-8	0.20
		8-16	0.37
		16-60	0.28
322B, 322C 322D	Poquonock	0-8	0.20
		8-28	0.17
		28-60	0.24
323B, 323C 323D	Poquonock	0-8	0.17
		8-28	0.17
		28-60	0.24
335B, 335C 335D	Hinkley	0-7	0.17
		7-15	0.17
		15-60	0.10
411A, 411B	Occum	0-10	0.20
		10-17	0.20
		17-25	0.20
		28-60	0.17
591A, 591B	Scio	0-9	0.49
		9-40	0.64
		40-50	0.10

RECHARGE/INFILTRATION

Using stormwater to replenish groundwater supplies by allowing runoff to percolate into the soil is an important factor that should be considered in any drainage design. But it is not wise to regard infiltration of runoff as a panacea for preventing contamination of surface waters and replenishing aquifers. Only clean stormwater should be employed as recharge.

Some soils have properties that purify stormwater as it seeps through the ground. Percolation rates vary with soil type: permeable sands and gravel remove fewer contaminants than less permeable loams and impervious clays. In general, fewer contaminants will be removed under the following conditions:

- shallow water table
- fast percolation rate (permeable soils)
- minor bacterial activity
- lack of vegetation and topsoil

Some contaminants, particularly dissolved ones, such as salt and nutrients, are more persistent than others. Adsorption and biodegradation are the two main processes that cleanse stormwater as it passes through soil. For example, heavy metals can be adsorbed onto soil particles. Some bacteria can biodegrade oil and grease. In general, stormwater is usually cleaner when it reaches the aquifer, but is it clean enough?

Infiltration has been accepted to have advantages as a cleansing process for runoff too. Previously, most infiltration techniques were designed for quick percolation of large volumes of stormwater into the ground. These same techniques can be modified to allow rapid infiltration of clean runoff.

The basic premise for using infiltration methods for drainage is that hydrologic regimes are least disturbed when as much stormwater as possible can be retained on the site where it originates. Not only are underlying aquifers replenished, but less runoff is added downstream, which reduces downsteam flooding and erosion. Infiltration techniques can either be employed using open drainage methods or a combination. As a pollution control method, infiltration is more cost-effective than treatment systems.

One problem common to all infiltration methods is clogging. Pores in the soil must remain clear to allow stormwater seepage. Most suspended solids are deposited on the surface and thus are not a groundwater concern. Even the finest-sized solids settle out near the ground surface. Unfortunately, the ground is so effective at removing solids that their accummulation can interfere with the infiltration process. Sediment must be removed periodically to avoid clogging of the soil pores.

Recharge Basins

Recharge basins are simply ground depressions designed to collect runoff and introduce it into the soil. Natural depressions can be used or basins may be excavated. A recharge basin dries out, while a retention basin does not. A detention basin empties by releasing its contents downstream, a recharge basin will dry out through soil infiltration. These three types of basins may look similar, but they function differently.

A recharge basin is usually sited at the end of a drainage system, whether it collects runoff via open swales and ditches or via pipes. (See Figure 10.) A primary advantage of a basin is its flexibility of design. Many small basins can be scattered throughout a site or one larger basin can serve the entire area. (See Figure 11 for specifications of a typical basin.)

Several factors will affect a basin's design and effectiveness. Soils beneath the basin must be sufficiently permeable to allow infiltration; otherwise, the recharge basin becomes a pond. Topography is important because steep slopes make basin construction impractical. Finally, even if construction consists of nothing more than minor excavation and grading, costs can be important where land is expensive, particularly in urban areas. During dry weather large recharge basins can be designed for other uses, such as athletic fields. Problems of aquatic weeds and mosquito breeding should not occur because recharge basins are designed to drain quickly.

Retention/Detention Basins

Retention/detention basins slow runoff by holding it and releasing it at a controlled rate to downstream areas. Detention basins are intended to dry up after a storm, while retention basins may remain wet permanently; a natural pond can be called a retention basin if it is used to store runoff.

The space requirements for basins depends on shape and capacity of the design. Most basins are three to ten feet deep. Emergency overflow spillways are provided in case capacity is exceeded.

Both detention and retention basins will accummulate sediment and weeds that need removal. Retention basins may breed mosquitos. Fencing and landscaping may be needed for safety and aesthetics. The advantages of retention basins include their potential use for recreation, such as skating or boating.

Besides reducing the first flush effect, these basins can help water quality in other ways. If the storm flow is held long enough, some suspended solids may settle out though the basin design is crucial to achieve this settling. (See section on "Sediment Basins".) Oil and grease may rise to the top of the water in the basin, allowing removal by skimming or adsorption. Dry detention basins can be more readily cleaned than wet retention basins. The latter may actually concentrate contaminants as a catch basin does. At the onset of a storm accummulated sediments are stirred up, metals are dissolved and a poorer quality outflow can result.

Sediment Basins

Sediment basins are very similar in design to detention/retention basins, but their function differs. A sediment basin is designed to trap suspended solids, while storage basins are mainly concerned with controlling peak runoff flows. Sediment basins do not prevent erosion, but they were originally designed to keep eroded soil from leaving construction sites.

A sediment basin removes solids by reducing runoff velocities long enough to permit particles to fall out of suspension to the basin's bottom. Velocities of incoming flows can be reduced by use of baffles in the basin. A riser pipe should be placed near the center of the basin. This whirlpool effect will force suspended solids to the outside walls of the basin. The vortex will be more pronounced if the basin is circular instead of square.

Basin maintenance includes periodic removal of the accummulated sediment. Costs are similar to detention basin estimates. (Capital costs for basin construction rarge from $10,000-$50,000 for each million gallons of capacity.)

Sediment basins are frequently used by the Massachusetts Department of Public Works (MDPW) when highways are under construction and large areas of soil are exposed. MDPW used to abandoned the tanks after completing construction and vegetation was planted to prevent erosion. The agency now intends to make the basins permanent in some areas, such as for Route 25 in Wareham and near the Wachusett Reservoir along Route I-190. The future practicality of sediment basins will depend on land availability because large amounts of land are needed to provide adequate settling for runoff from major projects.

Many researchers have studied the sediment basin's effectiveness in removing suspended solids. The consensus is that sediment basins are efficient for suspended solid reduction, but are of only marginal value for other runoff contaminants.[62] The removal of fine particles depends on the settling time offered by an individual basin. Because many other contaminants are adsorbed onto the fines, it is important that the basins be large enough to allow long enough detention times to promote settling of the fines. Sediment basins should drain dry in between storms because standing water can transform settled metals into dissolved form, making them more toxic and harder to treat.[63]

Oil Separators

Concentrations of oil and grease in runoff can range from 10 parts per million (ppm) in residential areas, to 40 ppm on highways, to over 50 ppm in large parking lots.[72] While these average loads seem small, hydrocarbons can be significant runoff contaminants for several reasons. In addition to its inherent toxicity, oil often contains other toxic compounds, such as lead and benzene. Oil films also cause aesthetic problems in receiving waters and harm waterfowl. Finally, oil may coat and clog many of the runoff control and treatment devices, impairing their effectiveness and increasing maintenance requirements.

The primary development in technology to remove oil from runoff is the gravity separator or oil trap. The device is usually used in a catch basin or other underground holding tank connected to a storm sewer. When runoff flows into a basin, oil will float to the top, while gravity sinks the heavier water to the bottom. The oil is trapped in the basin as long as the outflow pipe drains water from the bottom of the basin. The design of the discharge pipe and the constant liquid level left in the basin prevent the oil from draining out too.

Removal Efficiencies of Runoff Control Methods

	CONTAMINANTS (Removal Efficiencies - %)					
CONTROL METHOD	SUSPENDED SOLIDS	ORGANIC WASTES	NUTRIENTS	HEAVY METALS	OIL	OTHER
Street Sweeping (Broom)	20 20 50	30 20-40 25-40	10	28-45 10-35 38-51		
Street Sweeping (Vacuum)	90 93	67	85	45-62 83-98		
Catch Basin Cleaning	32 56	6 43				
Detention Basins	25	25		40-70	70	
Sediment Basins	25-50 30-70 60-90	20-40 25-40 30	20 38	40-50	70	
Recharge Basins	100	92		30-60 90	good	100- (bacteria)
Grass Strips	90	80		60-90		
Wetlands	80-90 94	good	78			

Appendix H Wetlands Protection

A. Performance Recuirements for Approval under Wetlands Protection regulations

Within a water supply watershed, the following measures are included:

(1) Any proposed work in a Protected Resource Area and any proposed work that involves a new storm drain system or connection to an existing storm drain system that discharges to a Protected Resource Area, shall not result in an increase in the peak rate of surface runoff during either a 2-year, 10-year or 100-year storm event to areas beyond the boundaries of the property on which the activity is to be conducted.

(2) Catch basins shall be equipped with sumps and oil and gas traps and shall be inspected and cleaned on a semi-annual basis. After each inspection and cleaning, the inspector shall provide to the Conservation Commission written confirmation that the inspection and cleaning were conducted.

(3) At the frequency specified below, samples of surface water runoff will be collected within 12 hours following the conclusion of precipitation of one inch or more, either rain or equivalency, during the previous 24 hour period. The samples will be taken in the stilling basins at the discharge from the two detention basins. The samples will be taken following the first 24 hour. 1" storm event in the following five time periods: January-March, April-May, June-July, August-September, October-December. The water samples will be tested per methods specified by the Safe Drinking Water Act at its regulation for:

flow
total dissolved solids
suspended solids
settleable solids
nitrate (as N)
total phosphate
lead
turbidity
zinc
conductivity
sodium
volatile organic compounds

Copies of test results shall immediately be sent by the testing firm to the Cambridge Water Board and the Lexington Conservation Commission. The Lexington Conservation Commission, following consultation with the owner and the Cambridge Water Board, reserves the right to require changes in parameters tested, frequency of sampling, and other features of the monitoring program.

(4) There shall be no exterior use of herbicides or other pesticides on the property.

(5) No rock salt (sodium chloride) shall be used on this property, and permanent signs designating a no salt zone shall be displayed in prominent locations. Use of calcium chloride shall be allowed on the property.

Appendix I Site Plan Review Provisions for Watershed Protection

Performance Requirements for Site Plan Review Approval

The site plan shall show adequate measures to prevent pollution of surface or groundwater soil erosion, increased runoff, changes in groundwater level, and flooding.

Within a water supply watershed, the following measures are required:

(1) Sediment Control: In order to reduce erosion accompanying the installation of ways, utilities and drainage, and the resultant pollution of streams, wetlands and natural drainage areas, the applicant shall submit a sediment control plan, including control methods such as berms, dikes, detention ponds, mulching, and temporary sodding.

(2) Drainage: Storm drains, culverts, and related facilities shall be designed to permit the unimpeded flow of all natural-water courses. To the maximum extent feasible, storm water shall be recharged rather than piped to surface water. Peak stream flows and runoff at the boundaries of the development in a 100-year frequency storm shall be no higher following development than prior to development.

(3) Pollution control devices: Within provisions for contaminant removal shall be made employing detention basins with subsurface drains or perforated riser, oil and grit separator catch basins, or other appropriate devices.

(4) Road Salt: The board may limit the use of de-icing chemicals on ways located over aquifer and recharge areas for existing or potential drinking-water supplies or where runoff may affect drinking water reservoirs or wells.

Appendix J

GENERAL BYLAW - HAZARDOUS MATERIALS

SECTION 1: AUTHORITY--This Bylaw is adopted by the town under its home rule powers, its police powers to protect public health and welfare, and its authorization under Mass. Gen. Laws Chapter 40, 21.

SECTION 2: PURPOSE--The purpose of this Bylaw is to protect, preserve, and maintain the existing and potential groundwater supply, groundwater recharge areas, and surface water within the town from contamination with hazardous materials.

SECTION 3: DEFINITIONS--The following definitions shall apply in the interpretation and implementation of the Bylaw.

SECTION 3:1 "Hazardous material" means a product or waste, or combination of substances which because of quantity, concentration, or physical, or chemical, or infectious characteristics, poses in the Board of Health's judgement a substantial present or potential hazard to the human health, safety, or welfare, or the environment when improperly treated, stored, transported, used, or disposed of, or otherwise managed. Any substance deemed a hazardous waste in Mass. Gen. Laws, ch. 21C, shall also be deemed a hazardous material for the purpose of this Bylaw.

SECTION 3:2 "Dicharge" means the disposal, deposit, injection, dumping, spilling, leaking, incineration, or placing any hazardous material into or on any land or water so that such hazardous material or any constituent thereof may enter the environment or be emitted into the air or discharges into any waters, including groundwaters.

SECTION 4: REGISTRATION

SECTION 4:1 Every owner or operator of a commercial or industrial establishment (including home occupations) storing hazardous materials in quantities totalling more than fifty gallons liquid volume or twenty-five pounds dry weight shall register with the Board of Health the types, quantities, location, and method of storage of said hazardous materials. Registration required by this provision shall be initially submitted by [initial date] and annually thereafter within thirty days of [month, day] each year.

SECTION 4:2 Owners or operators of commercial or industrial establishments who have not previously registered in accordance with Subsection 4:1 shall, if they meet registration requirement, register initially within thirty days of meeting such requirements and thereafter within thirty days of [month, day] each year.

SECTION 4:3 In addition to registration, owners or operators of commercial or industrial establishments registered in accordance with Subsections 4:1 and 4:2 shall maintain on the premises an inventory, reconciled on a monthly basis, of purchase, use, sale and disposal of hazardous materials. The purpose of this account is to detect any product loss and to provide an ongoing record of all quantities of hazardous materials within the town over the registration threshold.

SECTION 4:4 Upon the request of the Board of Health, owners or operators shall produce within twenty four hours the latest reconciled inventory.

SECTION 4:5 HAZARDOUS WASTES GENERALLY--Wastes containing hazardous materials shall be held on the premises in product-tight containers for removal by a licensed carrier and for disposal in accordance with the Massachusetts Hazardous Waste Management Act, Mass. Gen. Laws, ch. 21C.

SECTION 4:6 ABOVEGROUND STORAGE AND HAZARDOUS WASTES--Aboveground containers of wastes containing hazardous materials shall be stored on a surface impervious to the material being stored. The storage area shall be enclosed by a permanent dike of impermeable construction. The volume of the area enclosed by the dike shall be equal to or greater than the capacity of the containers within the dike.

4.7 Registration includes the following:

(1) Submission of a map or written description locating areas where hazardous materials are stored, handled, or in use, specifying approximate average quantities of materials in each location and the special handling required in a fire, leak, spill, or exposure. Areas must also be identified which store emergency equipment including medical supplies, along with a brief description of the capabilities of the equipment.

This map or written description must also be posted in one of the following on site locations: (a) Guard Shack, (b) Fire Alarm Box, (c) Sprinkler Riser, (d) other location acceptable to the Head of the Fire Department. The location of this posting must be specified during registration.

(2) Submission of names, addresses, and telephone numbers of all qualified "Emergency Coordinators" who are individuals identified by owners or operators of commercial or industrial establishments which must register in accordance with this By-Law. "Emergency Coordinators" must be knowledgeable in the types of hazardous materials used at the establishment, proper storage and handling of those materials, familiar with the establishments emergency contingency plan, and authorized as on-site coordinator in the event of an emergency.

(3) Keep on file at all times in an on-site location known and accessible to all "Emergency Coordinators", Materials Safety Data Sheets on all hazardous materials manufacturing, stored, or used at the establishment. These Materials Safety Data Sheets must be available to the Board of Health and the Head of the Fire Department during routine inspections, investigations, and in the event of an emergency.

(4) Keep on file at all times in an on-site location known and accessible to all "Emergency Coordinators" an Emergency Contingency Plan which identifies "Emergency Coordinator" and details the area where and ways in which an emergency could come about, the techniques and procedures to be used for prevention and control of such emergencies, the emergency equipment available on-site, outside agencies and organizations who should be notified and/or may provide services in an emergency, an evacuation plan for personnel, and an inventory of the types, approximate quantities, and method of storage, transportation, and disposal of all hazardous materials.

SECTION 5 VARIANCES--The Board of Health may vary the application of any provision of this Bylaw, unless otherwise required by law, in any case when, in its opinion, the applicant has demonstrated that an equivalent degree of environmental protection required under this Bylaw will still be achieved. The applicant at his own expense must notify all abutters by certified mail at least ten days before the Board of Health meeting at which the variance request will be considered. The notification shall state the variance sought and the reasons therefore. Any variance granted by the Board of Health shall be in writing. Any denial of a variance shall also be in writing and shall contain a brief statement of the reasons for the denial.

SECTION 6 ENFORCEMENT

SECTION 6.1 PROTECTION--All discharges of hazardous material within the town are prohibited.

SECTION 6.2 REPORTING OF DISCHARGE--Any person having knowledge of a discharge of hazardous material shall immediately report the discharge to the Board of Health and if involving flammable or explosive materials, to the Head of the Fire Department.

SECTION 6.3 RIGHT OF ENTRY--The Board of Health and its agents may enter upon privately owned property for the purpose of performing their duties under this Bylaw.

SECTION 6.4 PENALTY--Any person who violates any provision of this Bylaw shall be punished by a fine of not more than [$____]. Each day or portion thereof during which the violation continues shall constitute a separate offense; if more than one, each condition violated shall constitute a separate offense. This Bylaw may be enforced pursuant to Mass. Gen. Laws ch. 40, 21D by a Town police officer or other officer having police powers. Upon request of the Board of Health or the Fire Department, the Board of Selectmen and Town Council shall take such legal action as may be necessary to enforce this Bylaw.

SECTION 7 FEES

Any person registering storage of hazardous materials pursuant to Section 4 shall pay to the [town] [Board of Health] an annual Registration Fee of [ ] dollars for every [ ] gallons or fraction thereof of storage capacity. Such fee shall be due on the same date as the annual registration. Failure to pay shall constitute a violation and shall subject the violation to the penalities of Section 8 of the Bylaw.

The Board of Health may charge for expenses incurred in the enforcement of this bylaw.

APPENDIX K

WATERSHED PROTECTION DISTRICT

SECTION I

Purpose of District

A. A Watershed Protection District is established in the Town/City of _____ for the following purposes:

(1) to preserve and protect the lakes, ponds, streams brooks, rills, marshes, swamps, bogs, and other waterbodies and water courses in the town;

(2) to protect, preserve and maintain the water table and water recharge areas within the town, so as to preserve present and potential sources of water supply for the public health and safety;

(3) to protect the community from the detrimental use and development of land and waters within the watershed protection district; and

(4) to conserve the watershed areas of the Town/City of _____ for the health, safety, welfare, and enjoyment of its people.

SECTION II

Establishment and Definition of District

A. The intent of the Watershed Protection District is to include lands lying adjacent to water courses and surface water bodies which create the catchment or drainage areas of such water courses and bodies, as part of their natural drainage system. The district includes all areas designated on the Watershed Protection District Maps for the Town/City of _____, on file in the Office of the Town Clerk, which are hereby made part of the zoning map(s).

B. The Watershed Protection District is an overlay district and shall be superimposed on the other districts established by this bylaw. No uses not permitted in the portions of the districts so overlaid shall be permitted within the district.

SECTION III

Permitted Uses

A. The following uses are permitted within the watershed protection district, subject to Section IV, provided that all necessary permits, orders, or approvals required by local, state, or federal law shall also be obtained:

(1) conservation of soil, water, plants, and wildlife;

(2) outdoor recreation, nature study, boating, fishing, and hunting where otherwise legally permitted;

(3) boat docks, landings, foot, bicycle and/or horse paths and bridges;

(4) proper operation and maintenance of existing dams, splash boards, and other water control, supply and conservation devices;

(5) residential development, as permitted in the underlying district, with a maximum density of [two] units per acre, providing that the average slope of each lot shall not exceed 15%;

(6) repair, maintenance and reconstruction of structures and uses lawfully existing prior to adoption hereof may be continued as permitted under the Zoning Act. Existing dwellings may be expanded provided ground coverage is not increased to more than 20%; and

(7) farming, gardening, nursery, conservation, forestry, harvesting, and grazing.*

SECTION IV

Prohibited Uses

A. The following uses are prohibited within the watershed protection district:

(1) the location of landfills and the uncovered storage of salt and road de-icing chemicals;*

(2) the disposal of solid waste, other than brush;

(3) junkyards

*Storage by State DPW on state-owned land will be exempt from this by-law. However, uncovered storage of salt in water-supply areas is forbidden by G.L. Ch. 85, s. 7A.

(4) industrial and commercial uses which discharge process wastewater on-site;

(5) any use which generates hazardous wastes as defined by Massachusetts General Laws, Chapter 21 C, in quantities greater than 100 kilograms per month, or any amount of acutely hazardous waste.

SECTION V

Special Permit Uses

A. The [Special Permit Authority] may allow the following uses, subject to Section IV, within the Watershed Protection District, upon issuance of a special permit in accordance with Section VI hereof and subject to any additional conditions the [SPA] may impose.

(1) those commercial and industrial activities permitted in the underlying district, with a site plan review;

(2) residential construction upon a lot with an average slope exceeding 15%;

SECTION VI

Procedures for Issuance of Special Permit

A. Each application for a special permit shall be filed with the [SPA] and shall be accompanied by _____ copies of the plan.

B. Said application and plan shall be prepared in accordance with the data requirements of the proposed development (e.g. site plan review, erosion, and sedimentation control plan, etc.).

C. The [SPA] shall refer copies of the application to the Board of Health, the Conservation Commission, and Town Engineer/Department of Public Works, and the Planning Board. These boards/departments shall review, either jointly or separately, the application and shall submit their recommendations. Failure to make recommendations within 35 days of referral of the application shall be deemed lack of opposition.

D. The [SPA] shall hold a hearing, in conformity with the provisions of G.L. Chapter 40A, s. 9 within 65 days after the filing of the application and after the review of the aforementioned town boards/departments.

Notice of the public hearing shall be given by publication and posting and by first-class mailings to "parties in interest" as defined in G.L. ch. 40A, s. 11. The decision of the [SPA] any any extension, modification, or renewal thereof, shall be filed with the [SPA] and Town Clerk within 90 days following the closing of the public hearing. Failure of the [SPA] to act within 90 days shall be deemed a granting of the permit. However, no work shall commence until a certification is recorded as required under said s. 11 of ch. 40A.

E. After notice and public hearing, and after due consideration of the reports and recommendations of the Planning Board, the Board of Health, the Conservation Commission and Town/City Engineer, Department of Public Works; the [SPA] may grant such a special permit provided that it finds that the proposed use:

(1) is in harmony with the purpose and intent of this by-law and will promote the purpose of the watershed protection district;

(2) is appropriate to the natural topography, soils, and other characteristics of the site to be developed;

(3) will not during construction or thereafter, have an adverse environmental impact on any water body or course in the district; and

(4) will not adversely affect an existing or potential water supply.

SECTION VI

Limit of Authority

This district does not limit the existing authority of the Conservation Commission pursuant to section 40 of Chapter 131 of the General Laws.

SECTION VIII

Development Regulations

All construction and land disturbing activities within the watershed protection district shall be designed or sited to minimize erosion and runoff by adhering to the practices outlined in "Guidelines Soil and Water Conservation in Urbanizing Areas of Massachusetts", SCS, April 1975, to incluce minimizing the construction period, slope stabilization, ditch maintenance, filtering, sedimentation basins, and revegetation.

Appendix L

Project Review Guidelines -- Wetlands Replication

In addition to the performance standards set forth under 310 CMR 10.55 (4) (o) (1-7), the following are general guidelines for projects proposing wetlands replication per 10.55 (4) (b) or for limited projects, 10.53(3), where the issuing authority has required wetlands replication.

I. Both types of projects are discretionary.

II. Applicant must document that there are no alternatives other than that proposed.

III. Wetland area to be lost and replaced must be minimized to the best extent possible.

IV. Wetland replication plans should include the following:

1. Existing wetlands to be altered.

   A. Delineation on plans of the wetland area at a suitable scale.

   B. Area (S.F) calculation (if area calculations are held to 4,999 S.F., additional planimetric calculations should be attached.

   C. Elevations - giving reference to a local datum elevation or benchmark.

   D. Typical cross-sections as necessary to characterize surface and underlying hydrologic conditions.

   E. Test pits or soil boring logs - this information should be depicted on all cross sections under "D" above.

2. Proposed wetlands replication area.

   A. Delineation on plans of the wetland area at a suitable scale.

   B. Area (S.F.) calculation (if area calculations are held to 4.999 S.F., additional supporting planimetric calculations should be attached.)

   C. Elevations - giving reference to a local datum elevation or benchmark.

   D. Typical cross-sections - as necessary to characterize surface and underlying hydrologic conditions.

E. Test pits or soil borings logs - this information should be depicted on all cross-sections under "D" above.

3. Groundwater elevation

A. Seasonal high and low ground water elevations and perched groundwater conditions should be determined in the field and depicted on cross-sections for numbers 1 & 2 above.

4. Wetland plant species list.

A. Existing wetland area to be altered.

B. Proposed wetland replication area.

5. Revegetation Procedure

A. If the wetland replacement area will be established with indigenous wetland vegetation transplanted from the wetland t o be altered, a detailed plan for this procedure should be attached.

B. If the wetland replacement area will be established by planting individual seeds or root stock, a detailed description should be attached describing the methodology to be used. Such a description should include at a minimum a list of proposed indigenous seed or rootstock, with appropriate planting requirements.

V. Recommended Construction Sequence Guidelines

1. The wetland replacement plan shall include a milestone schedule of events for all proposed construction sequencing, monitoring, and periodic reporting to the issuing authority. The milestone schedule of events shall also specify dates for project commencement, and dates for each anticipated procedure included in the wetland replacement plan.

2. An encroachment limit line shall be identified, using flagging and/or staking at the site for wetland areas that will be altered, and upland areas where wetland replacement will occur. Identify the wetland replacement area by using flagging and/or staking. Reason: This is designed to give construction workers and the Conservation Commission or Department personnel, a clear and undisputed description of the work area during construction and through the coming growing seasons.

3. Prior to filling, excavating, or altering existing wetland-excavate and grade proposed wetland area to predetermined specifications.

4. The seasonal elevation of groundwater should be verified in the wetland replication area once the proposed replication area has been excavated to near final grade. If seasonal high groundwater is not present at or within sufficient depth to support wetland vegetation, then the applicant will be required to create a perched condition, or substantiate the elevation of groundwater at another location.

5. Optional - Wetland plants in existing wetland removed in plugs or culms, protect against desiccation, use to vegetate replicated area.

6. Excavate existing wetland peat or organic muck.

7. Spread excavated peat or organic much onto proposed wetland area to a depth equal to that of the existing wetland area. Grade replacement area to its predetermined surface elevation, slope, etc.

8. Wetland replacement area, elevation, slope, etc. should be certified by a Registered Professional Engineer or Land Surveyor upon firal on-site grading. An "As-built Plan" shall be submitted for field verification and approval to the issuing authority.

9. Exposed substrate should be protected against erosion until re-establishment of wetland vegetation occurs.

10. Substrate should be tested for nutrient deficiencies and fertilized as necessary.

11. It should be required that the above work be completed either prior to commencement of construction of the project in question or prior to the first full growing season following issuance of the Order.

VI. Performance Standards and Monitoring

1. Must comply with 310 CMR 10.55(4)(b)(6) 75% re-establishment within two growing seasons.

   A. At the end of each growing season a progress report of the relative success or failure of the replication effort shall be conducted by Professional Biologist, Botanits, or Wetlands Scientist and submitted to the local commission and the DEQE.

   B. Either at the end of the first growing season or the second growing season, (or both), if the success rate is not expected to be or is not 75%, active planting of the replacement area should be required.

2. If at the end of the second growing season compliance with 310 CMR 10.55(4)(b)(6) is not achieved, the issuing authority maintains the right to require additional mitigative measures.

3. Parties responsible for the wetland replication, the monitoring program and submittal of progress reports should be identified.

MP/mlm
12/1/89

LandUse
(Appendices)

APPENDIX M

Cambridge Watershed Advisory Committee

Memorandum of Understanding

WHEREAS the Towns of Lexington, Lincoln, and Weston and the Cities of Cambridge and Waltham in Middlesex County, Massachusetts have certain natural resources of surface and underground waters, streams, and water courses within the watersheds of the Hobbs Brook and Stony Brook and within these watersheds are located certain ponds, lakes, reservoirs, storage basins and wells now used or with a potential use as sources of water supply, and

WHEREAS the communities have a common interest in protecting such natural resources to ensure the availability of public water supplies in such quality and quantity as necessary,

NOW, THEREFORE, the signatories of this memorandum of understanding representing the communities agree as follows:

1. To consult together and cooperate in matters pertaining to natural resources of wetlands, surface and underground waters within the watershed of the Hobbs Brook and Stony Brook.

2. To consult together and make recommendations relative to zoning and general by-laws which may affect such resources, adopted by the communities under their independent home rule authority.

3. To consult together and make recommendations relative to the adoption and promulgation of rules and regulations of the several city and town boards whose official duties concern the use of land, the protection of natural resources, and the present and potential sources of water supply.

4. To work together as a mechanism for joint local action for the resolution of water quality and water resource issues.

5. To share information and notify the participating communities of pending applications for projects in the watersheds of the Hobbs Brook and Stony Brook which require action or a decision by local agencies, including the Planning Boards, Boards of Appeal, Conservation Commissions, Boards of Health, and other permit granting agencies.

It is further agreed that it is the intent of this memorandum of understanding that local action and implementation of local powers shall be utilized to the fullest extent. For the purpose of providing public information and advice on matters pertaining to the protection of water resources, this association of signatories may be referred to as the Water Supply Protection Advisory Committee. The membership of the committee shall be comprised of one representative and one alternate from each participating community, to be certified in writing by the respective appointing authorities. Each community may determine its own procedures for appointment. The committee shall function as an advisory committee to the Chief Elected Officials of each community, and shall report its findings and recommendations to the participating communities.

It is further agreed that this memorandum may be amended from time to time by agreement of the signatories. Such amendment may provide for participation by representatives of other adjacent municipalities

Dated:

For the Town of Lexington
Board of Selectmen _____

For the Town of Lincoln
Board of Selectmen _____

For the Town of Weston
Board of Selectmen _____

For the City of Cambridge
Mayor _____

For the City of Waltham
Mayor _____

TOWN OF LINCOLN
MIDDLESEX COUNTY

P.O. BOX 353
LINCOLN CENTER, MASSACHUSETTS 01773
TELEPHONE 617/259-8850

Appendix N

December 14, 1989

Mr. Martin Pillsbury
Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

Dear Martin,

Thank you for the opportunity to comment on the draft Cambridge Watershed Protection Plan. Overall, the Town of Lincoln supports the report's recommendations, and we are grateful to you and your staff for producing such an impressive draft report and maps and for your efforts to bring five communities together to focus on the important issue of water supply and protection.

Beyond the study's obvious benefits for the Cambridge Reservoir, its more far-reaching value may lie in its demonstration of the usefulness of -- and necessity for -- a regional approach to environmental and land use planning issues. Thus, we concur heartily with your final recommendation that a permanent Cambridge Watershed Advisory Committee be established. We hope a meeting can be scheduled after the holidays to discuss the proposed memorandum of understanding.

For your convenience I have enclosed specific comments from the Planning Board, the Conservation Commission and the Town Engineer. These comments reflect a general consensus about the report. The Town has already implemented, or initiated efforts to implement, many of your recommendations; in other cases some specific recommendations may not be applicable because of the town's small size and lack of any industrial or commercial base. We ask that the draft report be amended in each of these instances to reflect what the Town is already doing or where a particular recommendation may not apply.

In addition to the written comments submitted by the aforementioned Town agencies, I have tried to summarize below some more generalized reactions which provide some nuance and shading to the Town's overall statement of support for the report.

The Town has worked actively to protect its own water supply and the Cambridge watershed through its existing zoning and wetlands protection bylaws, Board of Health regulations, land acquisition undertakings and road salt policies.

These efforts have not been without cost, and additional measures could mean added expense. In addition, our general road salt practice of five percent, although desirable for water protection, is far less than the practice in other communities and does present the Town with serious public safety issues. Thus, some citizens have expressed concern that the Town, which is a source of low pollution, has already done a great deal. The Selectmen would like to see the report prioritize its findings so that greater attention is focused on mediating the heavy sources of pollution which directly threaten the reservoir. Because so much of the watershed does lie in Lincoln, concern also exists about the need to balance watershed protection efforts with the rights of residential property owners and the necessity for the Town to conduct normal municipal operations.

All of these concerns can certainly be addressed in ongoing discussions of what we hope will be a permanent inter-community dialogue. Again, we greatly appreciate your willingness to receive our comments and the long-term opportunities which this study represents for the five communities and the greater region as a whole. We look forward to cooperating further in this important undertaking.

Our best wishes to you and your staff for the holidays, and our congratulations on a job well done.

Very truly yours,

Susan C. Fargo

Susan C. Fargo, Chairman
Lincoln Board of Selectmen

SCF:nmr

cc: Planning Board
Conservation Commission
Town Engineer

Enclosures

Appendix N

TOWN OF LINCOLN

MIDDLESEX COUNTY . . . MASSACHUSETTS

PLANNING BOARD

TOWN OFFICES
P.O. Box 353
Lincoln Center, Mass. 01773
(617) 259-8850

November 28, 1989

The importance of protecting the Cambridge Reservoir Watershed cannot be overstated. Quality and quantity of water is and will continue to be a major concern not only to those in the Boston area, but nationwide. Currently the city of Cambridge gets its water from the Cambridge Reservoir, and although it doesn't withdraw groundwater directly from the watershed, groundwater is a significant source of discharge to the reservoir's annual water budget. Cambridge does have a longstanding legal right to receive water from the MWRA and the Quabbin Reservoir should its current source deteriorate, and, indeed, uses MWRA water in emergencies, droughts, and when needed at peak hours.

The MAPC study identified potential threats, mostly from pollution of the watershed, to the Reservoir. In it's final draft, those sources of pollution were identified, and steps for preventive action outlined.

Although Lincoln already has in place several of the recommended measures for protecting the watersheds, there are actions that the Town could take to strengthen the protection of the watershed.

1. Stormwater runoff:
   Site Plan Review should be amended to include the following:
   a. pollution control devices (oil and grease separators);
   b. restrictions on salt within the Hobbs Brook/Stony Brook reservoir watershed.

   The following are included in the Rules & Regulations:
   a. erosion and sediment control plans;
   b. stormwater drainage controls;

   Surface water drainage and wastewater disposal are covered under site plan review.

2. Underground fuel oil tanks:
   adopt local general bylaws or ordinances which regulate underground storage tanks, in particular:
   a. registration of existing and new underground storage tanks.
   b. prohibition of new underground residential oil tanks;
   c. removal of existing unprotected tanks, or installation of a monitoring system with reports to the fire chief.

3. Hazardous waste and materials:
   a. require registration of hazardous materials in excess of designated amounts.
   b. require designation of an emergency coordinator and preparation of an emergency contingency plan.
   c. establish standards for storage of hazardous materials.
   d. restrict future uses which would generate hazardous waste in designated quantities.
   e. Conduct household hazardous waste collection days.

4. Road Salt:
   Lincoln uses less road salt than most communities. Restricting the use of road salt on commercial roads and parking lots can be accomplished by site plan review regulations and/or wetlands protection regulations.

5. Wastewater: These may be covered in Board of Health bylaws, rules, regulations.
   a. periodic inspection and pumping of septic systems;
   b. increased setbacks between septic systems and water bodies in the watershed.
   c. establishment of a minimum acceptable percolation rate.
   d. prohibit use of septic system cleaners containing organic solvents.

6. Landfills:
   Lincoln is capping its landfill and using a transfer station, and should monitor groundwater.

7. Watershed protection zoning overlay district:
and
8. Wetlands protection:

Lincoln has an Open Space Overlay and a Wetland Watershed Protection District, as well as a Flood Plan District.

9. Emergency response:
   Communities should have a mutual aid agreement allowing the most effective response to a chemical spill in the watershed.

10. Intercommunity coordination:
    Lincoln should be part of a Cambridge Watershed Advisory Committee established as a permanent standing committee.

Details of recommendations and sample bylaws are in the Technical Memo #5. Many of them are outside the jurisdiction of the local communities, but because a major part of the watershed is in Lincoln (39& which is 61.7& of the community), and because Lincoln draws half of its municipal supplies of water from surface and groundwater sources in the Stony Brook watershed, whatever measures can be taken locally will have a positive impact on the Cambridge Reservoir.

CAMBRIDGE RESERVOIR WATERSHED PROTECTION PLAN
Lincoln Comments: Town Engineer

1. p. 5-6: re adoption of specific performance standards: "water quality monitoring is expensive."

2. p. 5-6: re amending site plan review regulations: "Lincoln has sufficient control."

3. p. 5-8: re fuel tanks: recommendations o.k.

4. p. 5-9: re hazardous materials: "Voluntary compliance by informed citizens should suffice in Lincoln."

5. p. 5-10: re hazardous materials: "Lincoln has collection of hazardous waste program, and a waste oil program is being planned."

6. p. 5-11: re road salt: "DPW presently minimizes salt."

7. p. 5-11: re wastewater: "Lincoln's present policy should suffice."

8. p. 5-11: re Board of Health adoption of regulations:

- inspection and pumping of septic systems: "Would require additional staff to implement."

- increased set backs: "Lincoln has this regulation in place."

- minimum acceptable percolation rate: Recommendation doesn't ~~make~~ sense.

- prohibit use of chlorinated hydrocarbons: "Sanitary Code precludes this use."

9. p. 5-12: re discharge of industrial wastewater: "N.A." (Town has no industry)

10. p. 5-12: re landfills: "Lincoln cap completion imminent. Monitoring will be performed."

11. p. 5-12: re prohibiting siting of landfills: "N.A." (Town will not want to be constrained if there is need to resite stump dump, repair, replace treatment plant at Lincoln Woods, etc. S.C.F.)

Lincoln Comments: Town Engineer

12. p. 5-13: re adoption of watershed protection zoning overlay district: "Lincoln's present zoning and site plan review process is sufficient protection."

13. p. 5-14: re mutual aid agreement: "O.K." (Town has developed a hazardous waste incident response plan, based on Concord's. The Air Force and Massport (Hanscom Field operator) should be contacted. S.C.F.)

14. p.5-14: re inter-community coordination: "Lincoln BOH presently makes it a policy to notify Cambridge."

Appendix N

CAMBRIDGE RESERVOIR WATERSHED PROTECTION PLAN
Conservation Commission Comments

Technical Memo #5 is very well done. It is tailored to conditions around the Cambridge Reservoir - a far superior approach than that taken by the Barrett bill. We strongly support these efforts, though we realize that the Barrett bill has more clout in controlling development than the homerule approach which relies on decisions made by several communities.

We hope to re-activate our Aquifer Protection Committee to work on some of the suggestions made in the report.

Specific Comments:

Sect. 5.1.1 We already require on-site retention during the 100 year storm. We have already restricted pesticide, herbicide, and salt use in individual cases.

Sect. 5.1.2 } We agree with your suggestions on underground storage
5.1.3 } tanks and hazardous wastes and will implement changes through our Aquifer Protection Committee.

Sect.5.1.4 Road salt section is fine. We are doing much of this during site plan review.

Sect. 5.1.5 Recommendations are very appropriate. The Conservation Commission already requires the 100 foot setback, but we (or the Board of Health) do not yet require periodic pumping.

Sect.5.1.6 Landfills - We agree.

Sect. 5.1.7 The Aquifer Protection Committee was working on such an Overlay District.

Sect. 5.1.8 Will review guidelines for using replication. Has been used in the past.

Sect. 5.1.9 Emergency Response - agree with recommendations.

Sect. 5.1.10 We have sent notices of wetland hearings within the Cambridge watershed to the Cambridge Water Board for the last three years. We agree with your recommendations.

Sect. 5.1.13 Lincoln, through its Conservation Commission, has focused on acquiring land in the watershed area for some time now.

Appendix 5E How far would the Watershed Overlay Protection District extend in Lincoln? Needs elaboration.

December 6, 1989

Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

Attn:Martin Pillsbury, Project Coordinator
Cambridge Reservoir Watershed Protection Plan

Dear Mr. Pillsbury:

Here is a summary of the remarks I made December 5, 1989 at the very informative, well-attended meeting in Waltham on the Watershed Protection Plan. Because of a scheduling conflict no member of the Weston Planning Board will be able to attend the presentation you have scheduled for December 11, 1989 at 7:30 at the J. Smith Tavern in Weston.

Copies of my statement and your Executive Summary of the Protection Plan are being sent to the Executive Secretary and to each Selectman, Conservation Commission, three Water Commissioners, Chairman of the Zoning Board of Appeals and the Health Director for the Board of Health.

Sincerely yours,

Ingeborg Uhlir

Ingeborg Uhlir, Member
Watershed Advisory Committee

Appendix N

CAMBRIDGE RESERVOIR WATERSHED PROTECTION PLAN

The plan as proposed is a valuable tool for on-going work in each community to assure that water supply considerations are taken into account at every opportunity. The leadership provided by MAPC (Martin Pillsbury) with MWRA funding has consolidated base data about land in the watershed that will be helpful to Weston in many respects.

It is the intent of the Town of Weston to continue with a prcgram of mapping and zoning of additional aquifer prctection districts within the watershed. The task force that provided the impetus for the APOD also included concerns about identification and regulation of potential hazards such as in-ground fuel tanks. That work, within the limits of time and energy of volunteer members, is still to be completed.

Through purchase of extensive open space within the watershed the Town of Weston, at its own expense for the most part, has invested heavily in water supply protection. Zoning limits on density of use further benefit the water quality in the watershed.

Site Plan Approval by the Planning Board for development within our Wetlands and Flood Plain Districts and for certain non-residential land uses includes protection of water quality and quantity through standards and criteria included in our Zoning Bylaw as amended in May 1989.

All of the above steps have and do require limits on land uses, investment of public and private money and the broad cooperation of the voters of the Town to agree that benefits to the town, to the region, and to Cambridge merit support.

To achieve further limits on land use by extending the APOD program, regulating possible sources of pollution from fuel tanks or disposal systems or hazardous materials, I need to be able to tell the voters of Weston that Cambridge is sharing the burden. Has Cambridge done all it can to:

1. limit growth in water demand through zoning restraints?

2. purchase key parcels of land in the watershed?

3. minimize leaks in the delivery system?

4. reduce use through local codes for low-flow plumbing?

5. scale charges for water to increase for large users?

6. increase water rates (1/3 MWRA now) to reflect its worth?

7. develop local sources for non-potable uses?

8. work to prohibit the continued rate of salting of roads?

When such assurances are given, Weston voters are more likely to accept further burdens to protect water supplies.

Ingeborg Ulbin

TOWN OF
WESTON

Post Office Box 378
WESTON, MA 02193
(617) 893-7320

CONSERVATION COMMISSION

TOWN OF WESTON. INCORPORATED 1712-13.

May 16, 1989

Metropolitan Area Planning Council
110 Tremont Street
Boston, MA 02108

Attn: Mr. Martin Pillsbury

Dear Mr. Pillsbury:

We wish to thank you for the opportunity to attend the April 20th meeting to review Technical Memo No. 2 for the Cambridge Reservoir Watershed Protection Study.

Mr. James DeYoung, who attended the meeting on our behalf, reported that your presentation was a stimulating resume of watershed resources.

The single copy of Technical Memo No. 2, forwarded to us, is hereby returned with various items marked up to indicate points requiring minor correction or clarification. Most of the points are typographical or spelling errors, with principal items requiring clarification listed below:

P.16 - Table 2-7. Yield in gal./min. is meaningless without reference to specific aquifer area or volumn (i.e. gal./min./ft.).

P.17 - Spillage at the reservoir dams is not shown to be related to "impervious surfaces."

P.18 - Soils are usually developed <u>below</u> their geologic parent material.

P.29 - Map should show <u>scale</u> and <u>north arrow</u>.

P.30 - What is the ultimate disposition of <u>sludge</u> (from the sedimentation basin) and filter backwash? Is chlorine applied at the filter influent?

P.31 - Is the open channel from Hobbs Brook Reservoir to Stony Brook Reservoir lined (if so, with what)?

P.42 - (Disinfection) Is residual chlorine checked in the distribution system?

We hope the above is helpful in finalizing this phase of the subject report. We look forward to receiving the two additional copies of Technical Memo No. 2 requested at the review meeting as well as copies of the splendid maps used for presentation at the meeting.

Sincerely,

George P. Bates

George P. Bates,
Chairman

Enclosure

Appendix N

MWRA staff comments

Cambridge Reservoir Protection Plan
Draft Additional Recommendations

1. Purchase of key additional pieces of land in the watershed by the City of Cambridge or others and keeping them or converting them to uses which will preserve the quality of groundwater and run-off.

2. Through education and other actions, achieve greater public involvement and support of watershed protection program.

3. DEP and perhaps the MWRA should comment more strongly on MEPA submittals in order to protect Cambridge Reservoir.

4. Additional efforts should be made to enforce existing bylaws and regulations. The adequacy of existing bylaws should be reviewed and MAPC should recommend strengthening, if necessary.

5. Boards of Health should be more informed and more active in reviewing developments that are proposed and the impact of these developments on reservoirs.

6. Cambridge Water Department should have an ongoing monitoring program that tests both groundwater and surface water.

Engineering/Design Considerations

1. Install a structure in Hobbs Brook Reservoir such that water could be diverted around Stony Brook Reservoir and into the drinking water supply in the event that Stony Brook Reservoir becomes contaminated.

2. Install a water intake system that has multiple levels, if not in place already, such that certain water levels could be avoided if they become polluted.

3. Install storm drain outlets along Rt. 128 that are holding basins sized large enough to hold a tanker load.

4. Construct a water diversion mechanism that will allow water from Stony Brook, during high flow periods, to be pumped up to Hobbs brook Reservoir. This would avoid wasting water and would increase the yield of the system.

5. Direct drainage from Rt. 128 out of the watershed, so that contaminated water will not enter the reservoir.

[illegible]
[illegible]
[illegible] Road
Waltham, MA 02154

COMMENTS TO THE METROPOLITAN AREA PLANNING COUNCIL
PUBLIC MEETING ON THE CAMBRIDGE WATERSHED PROTECTION PLAN
TUESDAY, DECEMBER 5, 1989
WALTHAM CITY HALL

Hello, my name is Candice McGann and I am a resident of Waltham. I am here tonight as a representative of the Coalition for the Preservation of a Neighborhood Environment.

Within our own neighborhood we are good and considerate neighbors to each other. As Waltham residents, we would like to be seen as good neighbors to the surrounding communities. Towards this end, it is incumbent upon us to exercise "Home Rule Powers" in protecting the Cambridge Watershed.

We support your recommendation that the Cambridge Watershed Advisory Committee be established as a permanent committee. However, we recommend two alterations of the memorandum of understanding which would charter this committee.

First, the procedures for appointment of members of this committee by each community should be standardized by the advisory committee. This will insure that each community will be uniformly represented.

Secondly, we recommend that the committee not consist solely of government officials and employees. Some form of citizen representation should be included.

We support all your recommendations for changes in Waltham ordinances. Specifically, we agree that Waltham should adopt local wetlands protection measures, such as those that have been adopted by the town of Lexington.

We agree with your recommendation that these provisions should also require water quality monitoring as described in appendix 5B of technical memo #5.

We agree with your recommendation that Waltham should amend their site plan review regulations as described in appendix 5C of technical memo #5.

We also agree with your recommendation that Waltham should adopt a local general bylaw or ordinance which would regulate fuel oil tanks exempted by state regulations in the Hobbs Brook and Stony Brook Reservoir Watershed.

We agree with your recommendation that the city ordinance of hazardous materials should be amended to conform with the most recent state regulations (527.CMR 2).

We agree with your recommendation that Waltham amend their hazardous materials storage ordinance by adding provisions as you described in Sec 5.1.3.2 of technical memo #5.

We also agree with your recommendation that Waltham should adopt a watershed protection overlay zoning district as described in appendix 5E of technical memo #5.

We strongly recommend to our city government that the city conduct regular, well publicized collections of hazardous household waste and provide for their proper disposal.

We agree with your recommendation that the City of Waltham extend its sodium reduction program to the Stony Brook reservoir watershed.

We also agree with your recommendation that the Conservation Commission of Waltham adopt the project review guidelines as described in appendix 5F.

Finally, we agree with your recommendation that Waltham enter irto a mutual aid agreement with the other communities to aid in ar effective response to a chemical spill in the watershed.

We would like you to help us in persuading our city government to incorporate these improvements to the Waltham city ordinances.

Thank you for your time.

LOR TAGARELIS
24 INTERVALE RD
WALTHAM, MA 02154
893-1025

Appendix N

COMMENTS TO THE METROPOLITAN AREA PLANNING COUNCIL
PUBLIC MEETING ON THE CAMBRIDGE WATERSHED PROTECTION PLAN
TUESDAY, DECEMBER 5, 1989
WALTHAM CITY HALL

Hello, my name is Lori Tagarelis and I am a resident of Waltham. V-C Chairperson
I am here tonight as a repreeentative of the Coalition for the Preservation of a Neighborhood Environment. We originally formed out of concerns for the Brandeis Cogeneration Power Plant proposal and it's potential adverse affects on the local suburban environment. During the course of our research we learned that this proposal increases the risk of contamination to the Cambridge water supply.

Brandeis University proposes to lease eight acres of wetlands and woodlands, located in the Cambridge Watershed, to Consolidated Natural Gas Energy Company(CNG) for twenty years. CNG, in a joint venture with Pentech, will construct, own and operate an 84 megawatt natural gas cogeneration power plant on this leased land. The physical plant will occupy at least 40,000 square feet, rise fifty feet into the air, and have three smoke stacks, each towering 125 feet. ~~The proposed cogeneration power plant will be fueled by number two fuel oil, in lieu of natural gas, for at least 60 days during the winter months.~~

The siting of this power plant is inappropriate for a number of reasons, one of which is its location within the watershed.

CNG proposes to burn number two fuel oil at least sixty days every year in lieu of natural gas. CNG has indicated this will necessitate on-site or near-site storage of at least 200,000 gallons of fuel oil. Storing such a large quantity of flammable fuel oil on or near wetlands poses a serious threat to the wetlands as well as the watershed. The Exxon tank farm on the west side of 128 just north of Route 20 has been suggested by CNG, as an alternative site for fuel storage. As stated in your technical memo #2, there have already been two leaks of petroleum products into the environment at that facility. Any new tanks and underground pipelines further increase the risk to the surrounding wetlands and the watershed.

In addition to fuel oil, other hazardous materials will be used in construction and operation of the power plant. This could pose a long term threat to the potable water supply of Cambridge.

We are not in a position to make a complete technical assessment of this proposal and its potential impact on the Cambridge reservoir. However, we suggest that you pursue this issue with Brandeis University and CNG.

I hope that we can continue to work with you to protect the Cambridge water supply.

Edward C. Michaud, D.D.S.

PRACTICE LIMITED TO ORTHODONTICS

512 BOSTON POST ROAD
WESTON, MASSACHUSETTS 02193
899-6666

Duxbury Professional and Medical/Dental Building
DUXBURY, MASSACHUSETTS 02332
934-6516

December 11, 1989

Mr. Martin Pillsbury, Project Coordinator
Cambridge Reservoir Watershed Protection Plan
Metrpolitan Area Planning Council
60 Temple Place
Boston, Mass. 02111

Dear Mr. Pillsbury:

I respectfully suggest that water bill rates for citizens of Cambridge and Weston be equalized. The population of Weston is about 5% of the population of Cambridge and the water bills of the people of Weston are about three times as much as the water bills of the people of Cambridge.

The immediate equalizing of all water bills of the people of Cambridge and Weston, while resolution of the ownership of Cambridge Water Supplies which lie within the jurisdiction of the Town of Weston is being debated, would be most efficacious.

With kindest regards.

Very sincerely yours,

Edward C. Michaud, D.D.S.

ECM/cal

cc to: Mr. Dudley Dumaine, Water Commissioner, Town of Weston
Ms. Ingeborg Uhlir, Member Watershed Advisory Committee

Appendix O

Cambridge Reservoir Study
Lincoln Public Meeting
Thursday, November 30, 1989

Q - How would you rank dangers to prioritize mitigation?

A - Urban runoff, hazardous wastes and materials, and underground and above ground storage tanks are the greatest threats to the reservoirs.

Q - Is this plan just buying time? Is the Cambridge System viable for the future?

A - The plan is more than buying time. The watershed should be able to serve the area into the foreseeable future if it is protected. There is treatment on the system which should allow it to handle most current problems except sodium.

Q - The study is good, but what about implementation?

A - Recommendations in the plan include continuing the inter-community cooperation to push forward the plan. Implementation of the recommendations is a long process. Mass Water Resources Authority and the Metropolitan Area Planning Council will continue to provide help. But it is in the best interest of the other MWRA communities to keep Cambridge Reservoir clean and to keep Cambridge off of MWRA supplies. State recommencations are a little tougher to call. New proposals by the Dept. of Ervironmental Protection concern raising the reservoir to a Class A water.

Q - What are Lincoln's regulations on underground tanks?

A - The town still allows installations of such tanks.

Q - What are the costs associated with protection of the water supply? This study would have more impact if people saw how much it would cost if the supply were lost.

A - Good point but it would be difficult to assess a specific financial cost. It could be substantial, if additional source development by MWRA was needed.

Q - Should septic systems be allowed in basin?

A - Yes. They work very well if properly installed and regulated.

Q - Are selectmen optimistic about keeping towns working together?

A - Yes, towns have had some good experience with HATS. They are already doing a lot of this now. The committee meets every other month. Meetings have been attended by all towns - good participation. Committee needs to get message to towns that it is in the best interest of the local pocketbooks to see this effort succeed.

Q - How is Cambridge assisting in this effort?

A - Cambridge is grappling with the issues. They could do more monitoring and diagnostic work.

Q - How difficult will it be to work with the DPW on drainage and the DEP on permit limitations?

A - The Secretary of Environmental Affairs is not afraid of these issues. That should help a great deal.

Cambridge Reservoir Study
Lincoln Public Meeting
Thursday, November 30, 1989

Name	Affiliation/Town	Phone
Ronald Row	Lincoln resident	259-8654
Bruce Adler	Stratford Realty Co.	259-8786
Susan Fargo	Lincoln Board of Selectmen	259-9623
Sam Mygatt	Lincoln resident MWRA Board	259-0948
Fred Brandon	MWRA	242-7110
J. Quincy Adams	Lincoln Cons. Comm.	
Harriet Todd	Selectman	259-8820
Ann Gannett	MWRA WSCAC	259-0691
John Solman	Lincoln	259-0467
R. Birkhoff	Cambridge	498-9070
Beth Sutherland	Lincoln 128 Committee	259-8227
Timothy MacDonald	Cambridge Water	498-9070
John Hammond	Lincoln	259-9366

Cambridge Reservoir Study
Waltham Public Meeting
Tuesday, December 5, 1989

Comment by Ms. Uhlir; Advisory Committee one of most pleasurable she has ever been involved with. She felt the information and maps were good tools for ongoing land planning efforts. Her main concern was what Cambridge will do to limit growth or buy land for protection. Watershed communities want proof that Cambridge is an active part of protection efforts. Other communities have spent their own money and energy to protect reservoirs. Cambridge should demonstrate that they are conserving, using low flow devices, performing leak detection, etc. as part of assurance that they are cooperating.

Q - What is an unfavorable aquifer versus a favorable aquifer?

A - Favorability concerns whether and to what degree sediments can hold and transmit water. It describes an aquifer's potential as a water supply. This is especially important when considering that contaminants can move as easily as water through some sediments.

Q - Who does monitoring at Bay Colony for discharges?

A - Permit usually requires company to do it. They usually test after a rainstorm event and send results to DEP. To date, Bay Colony has met the standards prescribed in their permit.

Q - Self monitoring does not seem very trustworthy.

A - The companies have to use state certified labs.

Q - What is the useful life of a retention basin?
Can they be restored if need be?

A - Over time sediments will build up and would need to be cleaned out. Retention basins haven't been in place long enough to see long term maintenance requirements. Oil and grease separators through, need periodic regular cleanings to remain effective.

Q - Still concerned with self monitoring process.
Doesn't DEP do spot checks?

A -Don't know if they do, but will check with DEP.

Q - Could you describe the volumes concerned when noting the different classes of hazardous waste generators?

A - VSQG or very small quantity generators generate less than 100 kg per month of hazardous waste. SQG or small quantity generators generate between 100 kg and 1000 kg per month of hazardous waste. LQG or large quantity generators generate over 1000 kg per month of waste. A 55 gallon drum is roughly equivalent to 100 kilograms of waste.

Q - What types of wastes are generated?

A - It varies greatly from company to company but these are materials that are classified and defined under Chapter 21C of the Mass. General Laws and include any wastes that are corrossive, toxic, explosive, contain heavy metals, contain volitile organic compounds or VOCs, etc.

Statement: read by Lori Tagarelis, Coalition for the Preservation of a Neighborhood Environment (Statement attached.)

Q - Also concerned with Brandeis Cogeneration Power plant and affects on wetlands and drainage of site into reservoir.

A - The consultant has been in contact with MAPC and is considering the possibility of putting the storage facilities out of the watershed. They seem to be aware and concerned and perhaps this is a sign of their willingness to cooperate with communities.

Q - Consolidated Natural Gas Energy Company (CNG) owns the plant, Brandeis will use it, who is responsible for monitoring it?

A - That would be worked out in the permitting process.

Q - Where is Route 128 in relation to the watershed?

A - Route 128 runs along the eastern edge of the watershed (Demonstrate on maps.)

Q - If tanks are moved out of this watershed, won't they harm another water supply?

A - They would still be within the Charles River watershed, but not in a drinking water watershed.

Q - What tanks are controlled under state regulation?

A - State regulations cover all tanks except fuel oil tanks.

Q - What is the next step for the study?

A - Cities and towns need to follow up on the recommendations. Communities need to consider study recommendations and adopt appropriate regulations and bylaws for increased protection. Its important for communities to continue to work together on this and to keep each other moving on adopting protection measures.

Statement read by Candice K. McGann (attached).

Comment by Bill Keisling of CNG Energy. Commends efforts of communities and MAPC in developing study. He has advised his technical group to proceed with plans for energy plant as though recommendations in study had already been adopted by communities.

Q - Is any work being done on the storm drains on Route 128 now?

A - Yes, the Mass. Dept. of Public Works (MDPW) is investigating whether they should divert drainage out of the watershed or treat runoff before discharging it to the reservoir. We recommend the MDPW also consider quantity as well as quality concerns since 8% of the drainage to the reservoir is from road runoff. Diversion of this amount is significant.

Q - Are any Cambridge representatives on the water study board?

A - Yes. The mayor of Cambridge and representatives of the Cambridge Water Board have been involved in the study and have attended the public sessions.

Q - Shouldn't monitoring be done by concerned citizens?

A - Citizens make the best monitors, they can help.

Q - What is Waltham's liability for loss of the reservoir?

A - The city is not legally liable; if there were a contamination incident, the responsible party can be held legally liable and made to take remedial action, and pay damages.

SM/mlm
12/18/89

Land Use
(C R Study)

Cambridge Reservoir Study
Waltham Public Meeting
Thursday, December 5, 1989

Name	Affiliation/Town	Phone
David Walz	Waltham	894-0146
Bill & Louise Butler	1625 Trapelo Road Waltham, WCONA	
Ingberg Uhlir	Watershed Advisory Comm.	
Ed Dooley	37 Morton St. Waltham, Roberts Association	
Doris Donovan	68 Morton St. Waltham, Roberts Association	
Albert Landry, Jr.	72 Rockridge Road Waltham	
Robin Skinner	331 Florence Road Waltham	
Jim Van Sciver/Jodie Osgood	50 Florence Road Waltham	
Herb H. Henderson	68 Reservoir Rd Waltham	
Eiland Pat Cloonan	100 Harland Road Waltham	
Paul Cronin	23 Cedarwood Avenue Waltham	
Eunice Burstein	36 Riverside Drive Waltham	
Susan Burstein	33 Summit Avenue Waltham	
Evelyn Cummings	258 Florence Road Waltham	
Timothy MacDonald	Cambridge Water Dept.	
Lise Marx	MWRA	
Bill Birkhoff	Cambridge Water Board	
John J. O'Toole	118 Thornton Road Waltham	
Warren Sweden	Waltham Dept.	
Melvin Casey	55 Cedarwood Avenue Waltham, MA	
Allen Pettis	87 Florence Road Waltham	
Arthur Duquette	81 Florence Road Waltham	
Theresa Zazzagnini	51 Florence Road Waltham	
Philip Fisham	21 Summit Avenue Waltham	
Wendy Smith	21 Summit Avenue Waltham	
Bob & Marianne Marshall	55 Harland Road Waltham 02154	
Steve Gardner	3 University Park Waltham	
Amerigo & Daisey Fucci	57 Wheelock Road Waltham	
Nancy Via	61 Columbus Avenue Waltham	
Barbara MacLellan	314 Florence Road Waltham	
Howard Womboldt	127 Westgate Road Waltham	
Douglas J. Smith	100 Virginia Road Waltham	
Jim Doucette	110 Thornton Road Waltham	
Sue Ponsetto	10 University Road Waltham	
Roberta Despres	121 Thornton Road Waltham	
Mary Brandt Kerr	106 Thornton Road Waltham	
Karen Walz	35 Virginia Road Waltham	
Candice K. McGann	32 Intervale Road Waltham	
Lori Tagarelis	24 Intervale Road Waltham	
John C. Khederian	5 Cunningham Circle Waltham	
Michael MacLellan	314 Florence Road Waltham	
Mark Lefizi	124 Westgate Waltham	
Marie Riley	96 Harland Road Waltham	
Gina Cella	CNG Energy	
Bill Keisling	CNG Energy	
Hugh Pendleton	287 Florence Road Waltham	
Sylvia Pendleton	287 Florence Road Waltham	

PUBLIC MEETING
Cambridge
Wednesday, December 6, 1989

Q. What about the quality of the dams or spillway? Has any of this been looked at?
A. No, no engineering work has been done in this study. (1970 C.D.M., Army Corps Phase I studies, 1980, C.W.D. construction projects current.)

Q. Has any historical research been done on similar reservoir in similar circumstances throughout the country?
A. No, but, we looked at accident rates for this particular area. There are about 20 car accidents per year at intersections.

Q. Can other communities put in municipal wells in the watershed?
A. Lincoln's wells are out of the watershed. The permitting process through the DEP would look at other uses in the area and determine potential impacts before a permit was given.

Q. What about commercial users like the Bay Colony Development or residential users putting in wells. Are they subject to a permit process and potential impact review?
A. Any well drawing more than 100,000 gallons per day is required to acquire a permit from the DEP.

Q. What is happening with the Belmont facility?
A. The facility will be closed one half at a time while under construction, 15 million gallons per side. The cost is $12.5 million. New clearwell type structures will be built within the foot print of the existing dam, i.e. underdrain system, concrete walls, floor and roof will be built and covered with grass.

Q. What is the incentive for other communities to protect the Cambridge Reservoir?
A. If the Reservoir is not protected, these communities will be in competition for the same MWRA water. Costs will rise and use restrictions will have to go into effect.

Q. What is Fresh Pond and has it been at a good level?
A. Fresh Pond is a storage or holding reservoir where the water settles. Studies in the 1930's or 1940's demonstrated that there is only a minor groundwater contribution.

Q. The sodium levels are high now and won't the mitigation measures take years to implement? How are the Cambridge water customers informed about health hazards?
A. When the levels are high there are notices put into local papers and notices are mailed to customers.

Q. Won't Cambridge residents be paying higher water rates because of MWRA sewer rates and reservoir protection measures than other MWRA serviced communities?

A. The costs to Cambridge residents will remain than most other communities' water rates. The water and sewer rates are based on independent cost accounting of both services. The Cambridge water system is independent of the MWRA water system and the water rates should remain below these of the MWRA water rates due to the infrastructure in place in the Cambridge system.

Q. It is hard to believe that these 4 study area communities could possibly have any vested interest in protecting the reservoir. What about the city of Waltham?

A. Fifty people came to the public meeting held in Waltham. The people were especially interested in a proposed co-generation project at Brandeis University.

Q. Why was the Cambridge Water Department late in notifying the community about the high level of THM's? And, will they indeed be fined?

A. The Water Department will be working with DEP on this matter and it appears that there will be no fine. DEP will be negotiating with Cambridge Water on evaluating the Cambridge water treatment plant and its current and future performance. The goal being to have treatment works in place to meet the requirements of the SDWA and avoid MGL violations.

Q. Will the Cambridge Water Department be looking into such things as the Ocean Arks International aquaculture wastewater treatment system.

A. These types of decisions will come out of the DEP scoping session.

Q. Will the expansion of Route 2 in the Alewife area impact the watershed?

A. No, the expansion is outside the reservoir watershed (groundwater in the area of Route 2 flows away from Fresh Pond).

Q. If Route 128 is really I95 wouldn't there be some federal money available for sodium runoff mitigation?

A. Good Question?

Q. Should there be an upgrade of the methods of spill response on Route 128?

A. This is included in our recommendations. The communities could ccoperatively purchase fire equipment possibly with Hanscom base. Secondly, DEP should be notified. The Cambridge Water Department owns a boom for containing pollutants within the reservoirs and has a file with emergency numbers to call. There is a state-wide emergency response system in place.

Q. Can someone give us an update of Senator Barret's Bill?
A. (Chris Berner from Sen. Barret's office) The Bill restricts hazardous activities and the use of sodium upon roads that discharge within the reservoir. The Bill has just recently begun moving, it has been stalled in the House Ways and Means Committee. However, the clock is running out. It has been refiled for next year.

Q. How can this study effect the MEPA review process?
A. If the communities continue to work together through a MOU, the area could adopt uniform standards to be applied throughout the reservoir watershed.

Q. Beside the decaying leaves combining with chlorine to create THM's, isn't it true the filtration beds have not been working for over a year consequently adding to the below standard quality of the water?
A. Yes, it is true the treatment system is less than 100% and if all were working well the level of THM's would be lower.

Q. Is the alum floc to Fresh Pond beginning to be a problem?
A. Not yet, but its removal needs to be discussed with DEP.

Q. What can the residents do to help with the Water Department's treatment problems?
A. Maintain their active interest and involvement in the department and city government.

Q Couldn't we discharge the floc to the MWRA sewer system?
A. The discharging of sludge into a wastewater systems is encouraged by DEP whether the MWRA would allow is another subject!

Q. Are there any trends in chemical pollution in the history of the reservoir and how long has it been monitored?
A. Monitoring has been going on for many years. There is systematic monitoring of exotics. A more sophisticated program for monitoring is recommended in the study.

Q. Are the levels of sodium going up or down?
A. Sodium levels are going up and down but they remain on the high side. All other standards have been met (C.W.D. has been exceeding the MGL for THM during 1988 and 1989).

Q. How often are water samples tested?
A. We began with 4 quarterly samples and we were then cut back to sampling once a year. Fifty-nine VOC's are tested yearly.

Q. Has Cambridge hired a chemist?
A. Yes, the start date is soon (12-18-89).
Q. Will they do the VOC testing?
A. No, a consultant will continue to be hired out.

Q. Why not in house?
A. Because we wouldn't be trusted.
Q. Will CDM continue to do it? or will we go back out to bid?
A. I do not know it has not been determined.
Q. Do the water quality standards have to be exceeded before action is taken?
A. No, the trends are followed and then decisions are made as to what action to take if any.

Q. Can Cambridge hook into the Quabbin in an emergency? easily?
A. Yes, there are three connections and under a low pressure situation they open automatically.

Q. How well enforced are septic system regulations within the watershed communities?
A. I don't know, I do know that Weston center has a problem, the holding tanks located there are out of compliance.

Q. Do any of the communities require regular pumping of septic systems?
A. No, but this is included among the recommendations.

Q. Isn't down zoning considered a taking?
A. No, the courts have upheld down zoning as long as all reasonable uses are not removed from the parcel of land.

Q. Regarding the study and recommendation, what's next?
A. The final report will be put together then the ball will be passed to the communities to get to work. However, a follow up program and activities should be structured.

Q. Are there any model bylaws available?
A. Yes, in Technical Memo #5.

Q. Can the Cambridge Water Department have copies of the study maps?
A. Yes.

Q. Who represents Cambridge on the Reservoir Advisory Committee.
A. Tim MacDonald and John Cusack, both from the Water Department.
Comment: That is a very poor representation for Cambridge, no citizens or Conservation Commission representatives.

Q. What about hazardous chemicals <25 lbs, can't a very small amount of hazardous waste contaminate drinking water?
A. These chemicals are generally sold in 55 gallon drums which are more than 25 lbs. Consequently, this weight covers nearly everything.

APPENDIX O

PUBLIC MEETING
Lexington
Thursday, December 7, 1989

Q What are the guidelines for artificial wetlands?
A There are standards for this because they are tricky.

Q. Is there an alternative way for the MDPW to drain the highways?
A. Yes, Drainage could be diverted out of the watershed by pumping it into the Charles River or it could be treated before returning it to the watershed. Diverting all the water out of the watershed causes a 7-8% net loss of water. Quantity becomes an issue.

Q. Who would pay for these drainage changes?
A. Possibly the State transportation bond, a $20 million line item in 1988.

Q. UST regulations have tightened. Because the new regulations encourage the use of fiberglass which may be fragile during an earth tremor, will the study recommend alternatives?.
A. Double-walled steel tanks are also permitted. I do not know if the State took the possibility of an earthquake into consideration when writing the regulations, but I doubt it.

Q. Is Senator Barret's bill going back to the drawing board and have your two efforts been linked at all?
A I have been sending copies of the study all along to Senator Barret's office. The bill is a state mandate approach whereas the approach of this study is to address home rule powers. The two approaches are significantly different.

Q. Of the different communities involved, do you sense various attitudes from each?
A. No, I have been pleasantly surprised with the positive participation throughout the study. I was very pleased by Waltham's participation during the public hearing process. Fifty people attended the meeting.

Q. I think the clean up of the underground plume of salt from the previously uncovered storage pile is essential and should be include in the recommendations.
A. This will be included in the recommendations.
Comment: I think the salt plume should be treated as a hazardous waste with a strict approach.

Q. Is this project equitable where these four communities are concerned? Some incentives may need to included.
A. Cambridge will be expected to to do more, for example, increased monitoring, land acquisition, etc.

Comment: An MOU and an intercommunity committee could address these issues. Citizens from Cambridge must be involved with the committee.

Comment: Sue the State! The state has ignored the highway drainage problem up until now.!

Lexington - Cambridge Watershed Meeting
December 7, 1989

Name	Affiliation	Address
Peter Torode	Lexington Fire Department	45 Bedford Street
Thomas Gawrys	MWRA	100 First Ave. Charlestown
Joyce Miller	Lexington Conservation	17 Oakland Street
David Williams	Lexington Planning Board	1433 Massachusetts Ave.
Jack Eddison	Lexington Board of Selectmen	20 Nickerson Road
Myla Kabat-Zinn	MAPC Rep. - Lexington	58 Oak
Alan Levine	Town Meeting/CLC	54 Reed Street
Kevin Mendik	Town of Lexington (Con. Adm)	
Joel Adler	Lexington Conservation Comm.	22 Village Drive

APPENDIX O

PUBLIC MEETING
Weston
Monday, December 11, 1989

Q. Will tertiary treatment of wastewater be required at Mass Broken Stone?
A. Maybe, there are recommendations to treat wastewater.

Q. Only two types of contamination of the reservoir waters have been mentioned, THM's and sodium. What about iron, and manganese?
A. I am not sure, but it is a naturally occuring problem in New England.

Q. I'm curious, what are the three waste generators located in Weston?
A. Central Tailoring Co. Inc. at 399 Boston Post Road, Weston Amoco Inc. at 88 Boston Post Road, and Weston Golf Club at 275 Meadowbrook Road.

Q. What percent of sodium contamination is attributed to highway application?
A. The vast majority. 70% comes from State highways, 5-6% from salt storage and a very small percent comes from private parking lots and local roads.

Q. Could you speak on Senator Barret's bill for a minute and mention whether or not the bill interfaces with this study?
A. This study focuses on home rule recommendations, whereas the bill looks at state mandates and not local approaches. The bill is interested in establishing buffer zones around the reservoirs and placing limits on certain land uses including density restrictions.

Q. Has the Advisory Committee taken an official stance on the bill?
A. No, they have only closely watched this study. The group primarily advised this study and directed the recommendations. It may be something that could be done in the future.

Q. What kind of time period are these recommendations on?
A. There is no time line. It takes a great deal of time to go to town meeting. With a 2/3 vote necessary, the homework needs to be done to get it through. The Boards will be encouraged to look at all the recommendations.

Q. Is Cambridge looking into treating water better to stop THM's?
A. Yes, a change is now in operation at the Belmont Reservoir where construction is underway to cover the facility.

Q. Are these recommendations directed at the 4 communities assumed to improve quality of water.
A. Yes, septic systems, UST's and commercial uses can all cause problem in water quality.

Q. Why does the study leave out a risk assessment of small incidents added up and larger potential problems. Where are the priorities?
A. Ranking the potential problems is important. But, all of them should be looked at. It wasn't possible to quantify the relative risks, but priorities will be assigned qualitatively.

Q. In the definition of watershed, are vadose zones, etc. used to delineate?
A. No, the study did not include hydrogeologic research, it took a topographical approach to delineate the watershed.

Q. What does Cambridge do for water treatment?
A. They use sand filtration beds, sedimentation, flocculation, coagulation, fluorine, chlorine, and sodium hydroxide

Q. There isn't any fancy treatment?
A. No.

Q. Is there pH control?
A. Yes.

Q. Was the Cambridge fire department contacted for emergency response?
A. No, the recommendation was for the five communities to work towards coordinated emergency response.

Q. Q. Do the recommendations mention strengthening the guard rails along the highway?
A. I don't believe that it is even possible to have tanker proof guard rails. Jersey barriers would not even stop a tanker.

Q. Is road salt usage heavier now than it was ten years ago?
A. No, lighter. A different mix is currently in use, calcium chloride and sodium. But, the state does however apply more of this mix per lane mile. Apparently, there is not much net reduction in sodium.

Weston
Cambridge Reservoir
Public Meeting
December 11, 1989

Name	Community Affliation
H. B. Willis	Selectmen Weston
John Shawcross	MWRA
C. R. Champagne	Resident/int
Trish Garrigan	Resident
Bryan Nicholson	Resident
Mary Nicholson	Resident
William Elliott	WSCAC
David Bell	Resident
Jackie Mevi	Weston TAB
D. B. Dumaine	MCD
Jeff Adam	West Town Crier
Dick Murray	Selectmen - Weston
Nick Gleysteen	Resident
Paul and Iris Hermann	Resident
Karyn Scheier	Resident
Robert Watjen	Boston Edison Company
David	Weston Resident
Caeta Hesse	103 Waeher Street, Weston, MA
Elizabeth Ericson	51 Fairview Road, Weston, MA

Cambridge Reservoir Advisory Committee Meeting
December 14, 1989

Attendance:

Martin Pillsbury, MAPC
Nora Kelleher, MAPC
Susan Fargo, Lincoln Board of Selectmen
Stanley Whynock, Waltham Board of Survey and Planning
John M. Bradley, Waltham Conservation Commission
Richard Rossi, MWRA
Inge Uhlir, Weston Planning Board

Minutes:

Martin explained briefly what happened over the course of the public meeting period. During each public meeting there was a slide presentation. Many interested people attended, consequently new view points were discovered and addressed. The meeting minutes will be typed up and mailed to all advisory committee members. In addition, the final report will include meeting comments in an appendix.

Tonight's meeting is to gather any more comments regarding the study either written or oral. We would also like to discuss what the next plan of action should entail.

Stanley Whynock: I do not have any written comments now nor will I be submitting any at a later date. However, I do have some comments that I would like to have addressed now. The four communities of Weston, Waltham, Lincoln and Lexington have been asked to help to upgrade the water supply for Cambridge. This I believe is all well and good. However, will all these communities be expected to sacrifice a lot? Will there be money involved, or ordinance changes? I would especially like to know what part Cambridge will be taking in all of this. What is Cambridge going to do?

Martin Pillsbury: This issue was brought up in other public meetings, What should Cambridge do? Financial assistance? Should Cambridge develop standard procedures that all communities can agree on to follow through?

Susan Fargo: I endorse the final recommendations. However, the report needs to illustrate what protective measures each community has already adopted. Lincoln feels as though it has done a lot already. What more should we do? Watershed protection bylaws cost a great deal in legal fees. Lincoln's practice of a 5% salt application rate has a public safety down side. The recommendations should include an acknowledgment of administrative costs, legal costs, etc. These should not be overlooked.

Martin Pillsbury: Cities and towns have to recognize self interest and I think we need to point that out.

John Bradley: Establishing a zoning overlay district is a considerable expense to the community. Cambridge should consider hiring the consultant to do one study for the four communities. This could potentially save money. Cambridge should supply the technical assistance.

Martin Pillsbury: Communities may not necessarily need to hire a consultant. A bylaw may only need to be edited for individual communities needs.

Stanley Whynock: I don't want to appear pessimistic but, realistically I don't believe I can get the Waltham Planning Board to pass any of these recommendations without a consultant. A consultant is required to get Waltham to do anything. Waltham's Board needs to be directed.

Susan Fargo: Boards are not all alike. Lincoln is a more do-it-yourself place and Waltham works differently and needs to be encouraged. We need to talk and learn about city and town differences. If we work with these differences, we can get the recommendations passed.

Inge Uhlir: Weston has adopted an aquifer protection district for a small portion of the town. It may be possible to dovetail this with Cambridge Reservoir protection later.

Martin Pillsbury: Surface waters are easily delineated. We need to determine a process for the future. Where do we proceed from here? Community education needs to continue. Organizational problems stemming from different government structures needs to be managed. An agenda for moving forward needs to be developed.

Stanley Whynock: We need a priority list for each community. Should this group continue to work together?

Martin Pillsbury: Underground storage tanks could be looked at across the board. Lincoln needs to look at them first. If the group continues to perpetuate itself, elected officials should join the committee. Waltham should pick a City Councillor, a junior member that is ambitious and Cambridge a City Manager.

Inge Uhlir: Board of health members should join the committee.

Martin Pillsbury: A delegation from each community could be formed with one vote per community. The Board of Health is a good idea. Possibly a task force of Fire Chiefs as a working subcommittee could be formed. A priority list consisting of what we feel we can accomplish can be compiled and then we can go from there. This networking is very valuable.

Susan Fargo: I think a breakfast meeting of all the major selectman and managers should be arranged.

Martin Pillsbury: MAPC has had success with breakfast meetings. I think that is a good idea.

Stanley Whynock: Hillcrest on Trapello Road is good place and Mr. Levy will pay?

It was suggested that Martin bring his presentation around to all the local boards.

Inge said her Board is over worked and may not be able to invite Martin.

An MOU should be addressed initially with the continuation of the advisory committee.

Soon after the new year a breakfast meeting will be organized.

The Lincoln Board feels that this study demonstrates the need for regional planning.

These communities want to hear more about what Cambridge is going to do to protect the water.

Tim MacDonald: Cambridge just increased its water rates, a leak detection program and a conservation program has been established.

The committee would like to pursue an endorsement from elected officials with signed MOU's, establish a varied group and ask the MWRA for support.

The advisory committee will disband. It was a great year! THANKS

Appendix B

CAMBRIDGE RESERVOIR WATERSHED ADVISORY COMMITTEE

LEXINGTON

Selectmen	Ms. Jacquelyn Smith Board of Selectmen Town of Lexington 1625 Massachusetts Avenue Lexington, MA 02173
Planning Board	Mr. David Williams 1433 Massachusetts Avenue Lexington, MA 02173
Conservation Commission	Ms. Joyce Miller Chairman, Conservation Commission Town of Lexington 1625 Massachusetts Avenue Lexington, MA 02173

LINCOLN

Selectmen	Ms. Susan Fargo Board of Selectmen Town of Lincoln Lincoln Road Lincoln, MA 01733
Planning Board	Mr. Ken Basset Planning Board Town of Lincoln Lincoln Road Lincoln, MA 01733
Conservation Commission	Ms. Joann Carr Conservation Commission Town of Lincoln Lincoln Road Lincoln, MA 01773

WALTHAM

Mayor	Mr. Larry Leone Mayor's Office City Hall 610 Main Street Waltham, MA 02154
Planning Board	Mr. Stanley C. Whynock 6 Priscilla Lane Waltham, MA 02154
Conservation Commission	Mr. John Bradley 32 Colburn Street Waltham, MA 02154

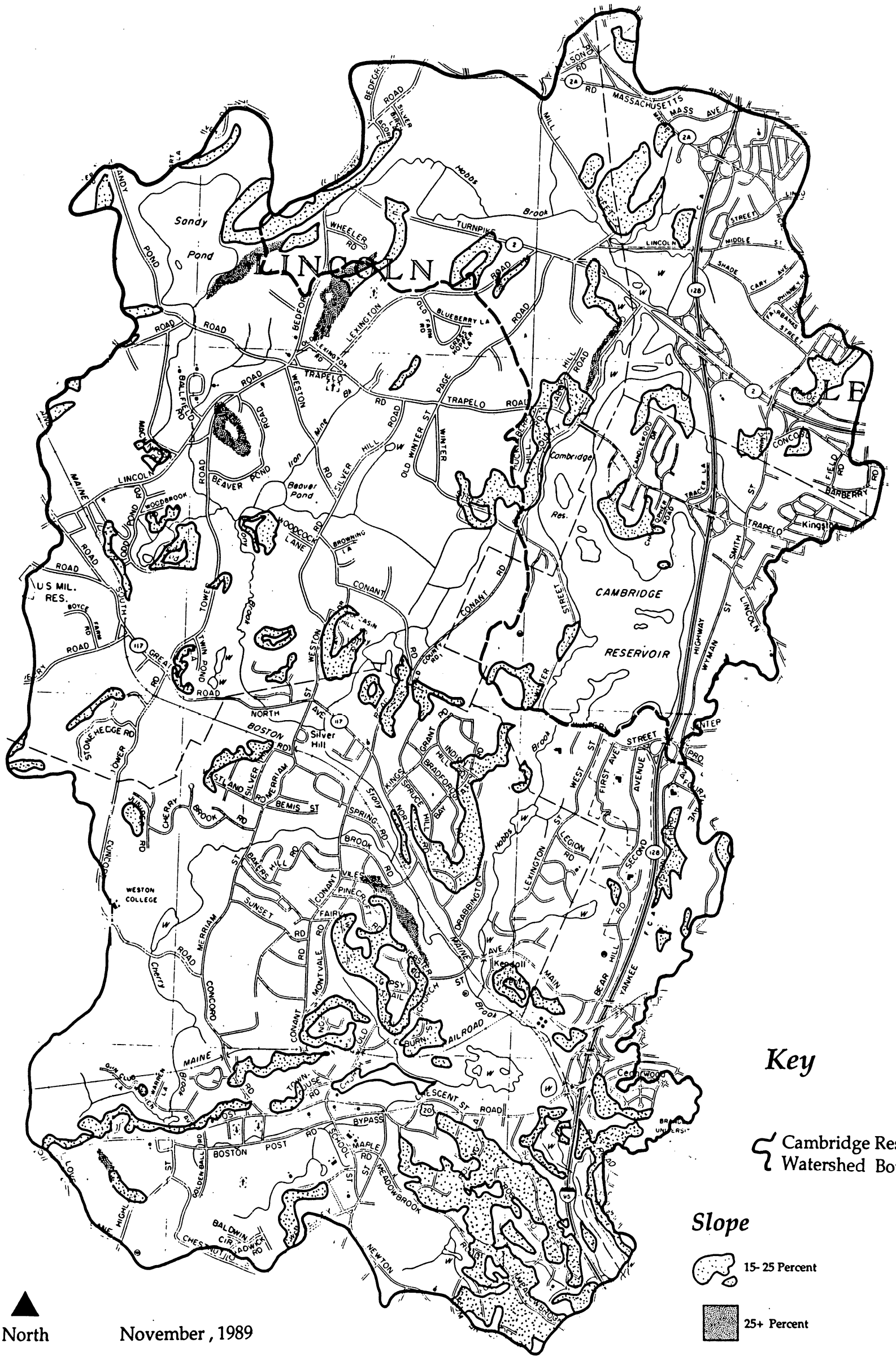
WESTON

Selectmen	Mr. Harold Willis 39 Concord Road Weston, MA 02193
Planning Board	Ms. Ingeborg Uhlir 45 Kendal Common Road Weston, MA 02193
Conservation Commission	Mr. Jim DeYoung 110 Loring Road Weston, MA 02193

CAMBRIDGE

City Manager	Mr. Richard Rossi City Manager City of Cambridge 795 Massachusetts Avenue Cambridge, MA 02139
Water Department	Mr. Tim MacDonald Cambridge Water Dept. 250 Fresh Pond Parkway Cambridge, MA 02138 Mr. John Cusack Cambridge Water Dept. 250 Fresh Pond Parkway Cambridge, MA 02138
MWRA Project Manager	Ms. Cindy Anthony Mass. Water Resources Authority Charlestown Navy Yard 100 First Avenue Boston, MA 02129
MAPC Project Manager	Mr. Martin Pillsbury MAPC 60 Temple Place Boston, MA 02111

MP/lab
7/5/89
(lnduse-advcomm)



Key

Cambridge Reservoir Watershed Boundary

Slope

15- 25 Percent

25+ Percent

Source : U. S. Department of Agriculture, Soil Conservation Service, *Middlesex County Interim Soil Survey Report*, July, 1986

North

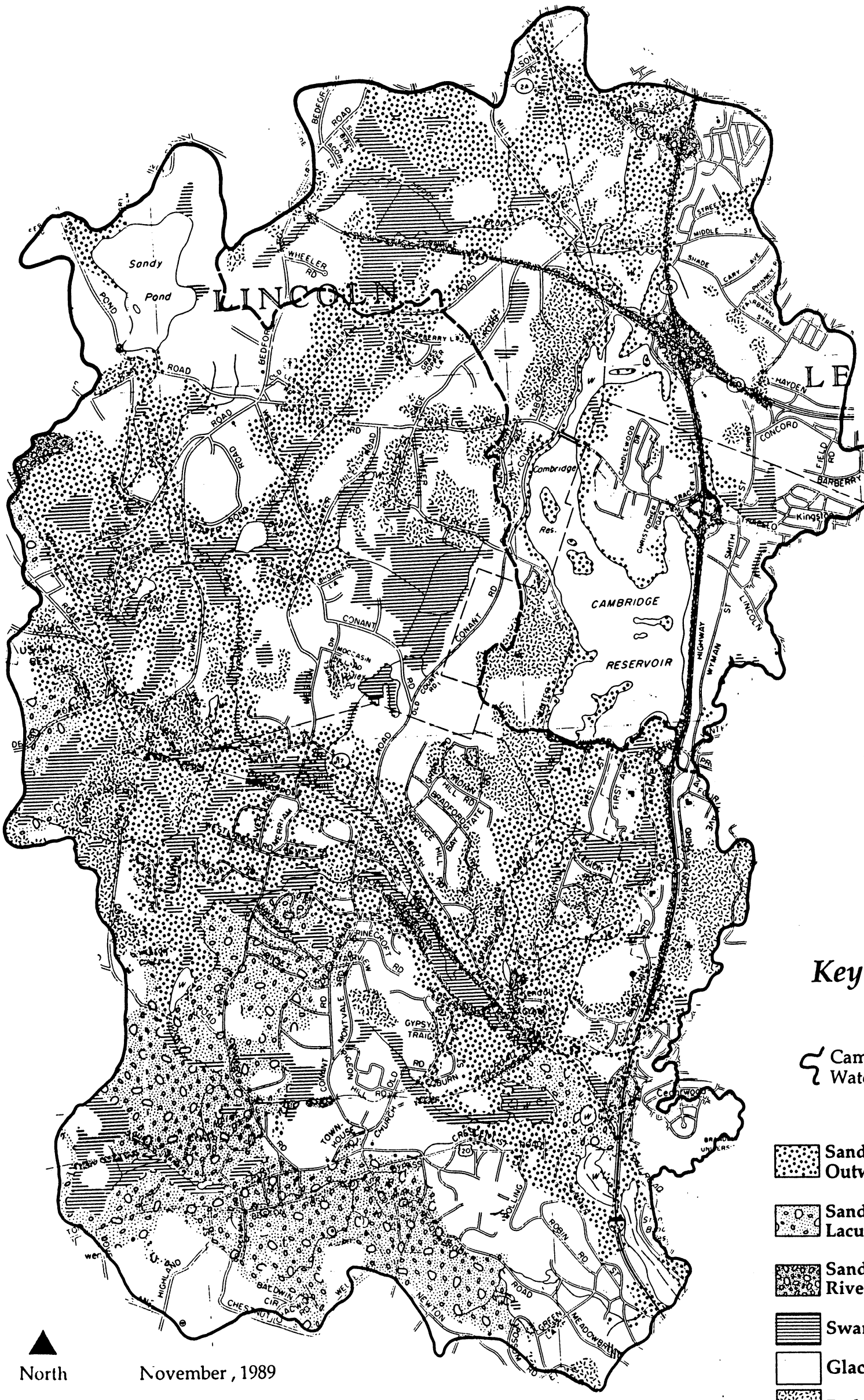
November , 1989

Cambridge Reservoir Watershed Protection Plan

Map 1 : *Slope*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111

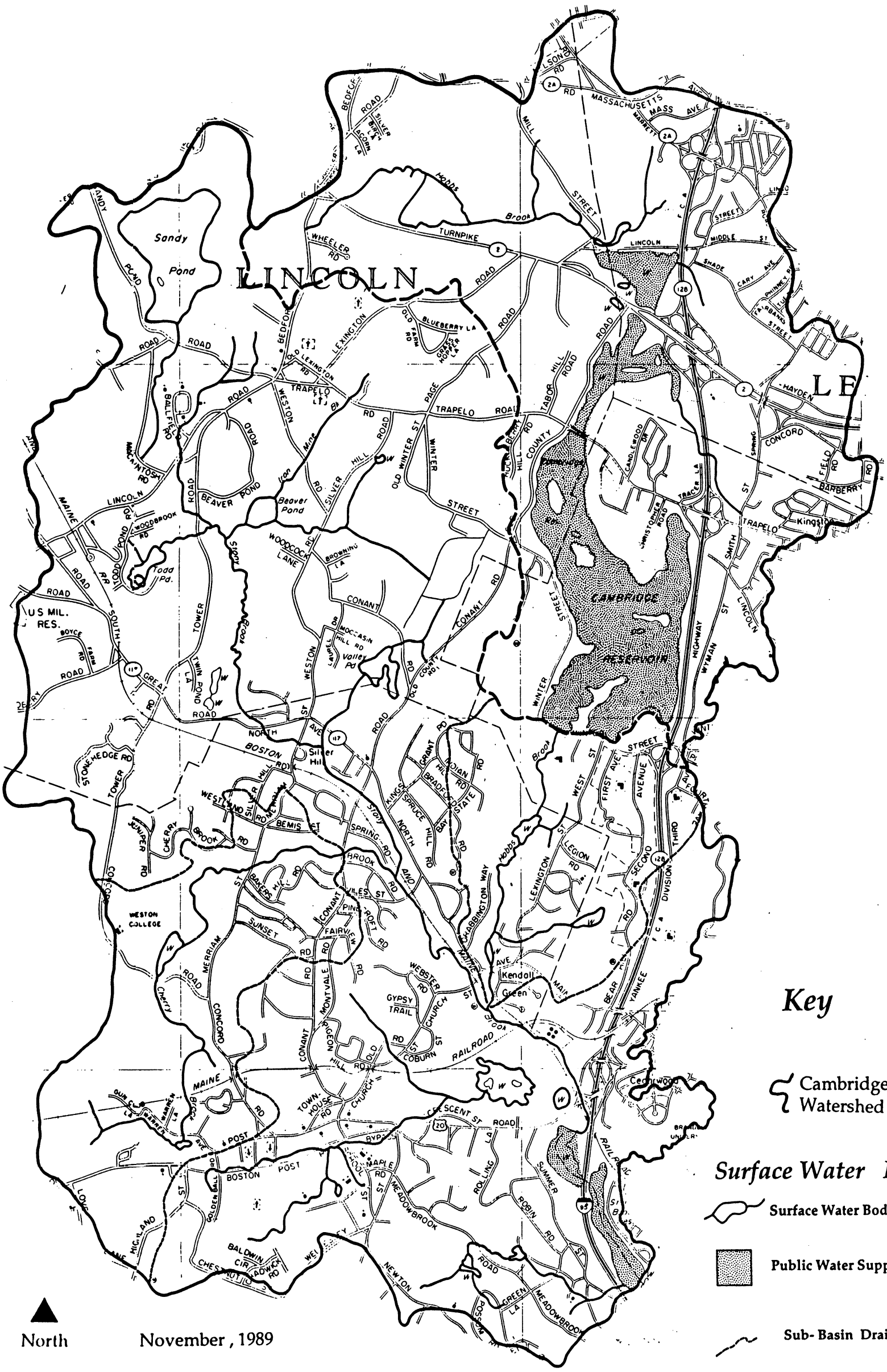


Cambridge Reservoir Watershed Protection Plan

Map 2: *Surficial Geology*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board

by:
Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111



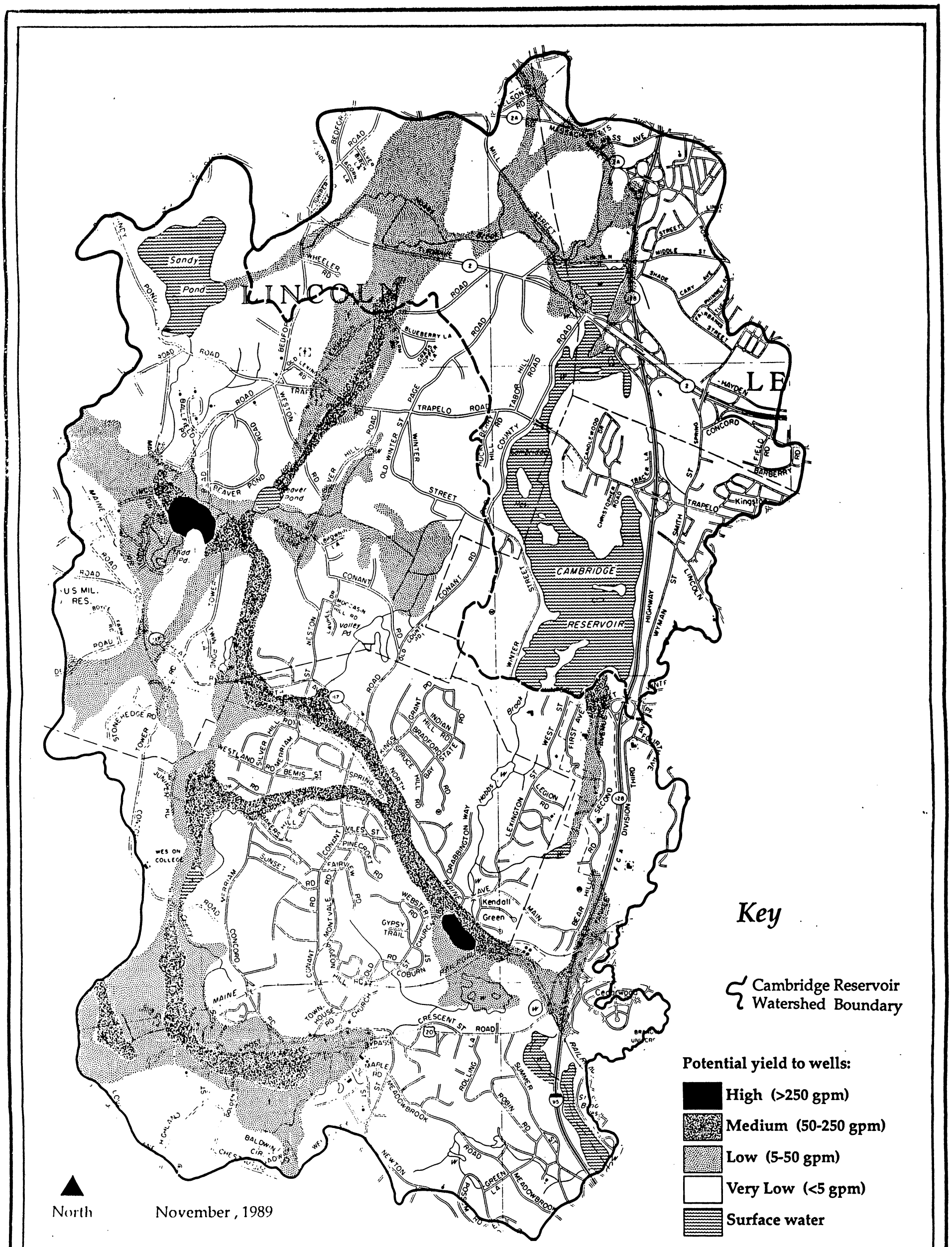
Source: *USGS Topographic Quadrangles; Lexington, Concord, Natick*

Cambridge Reservoir Watershed Protection Plan

Map 3: *Surface Water*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

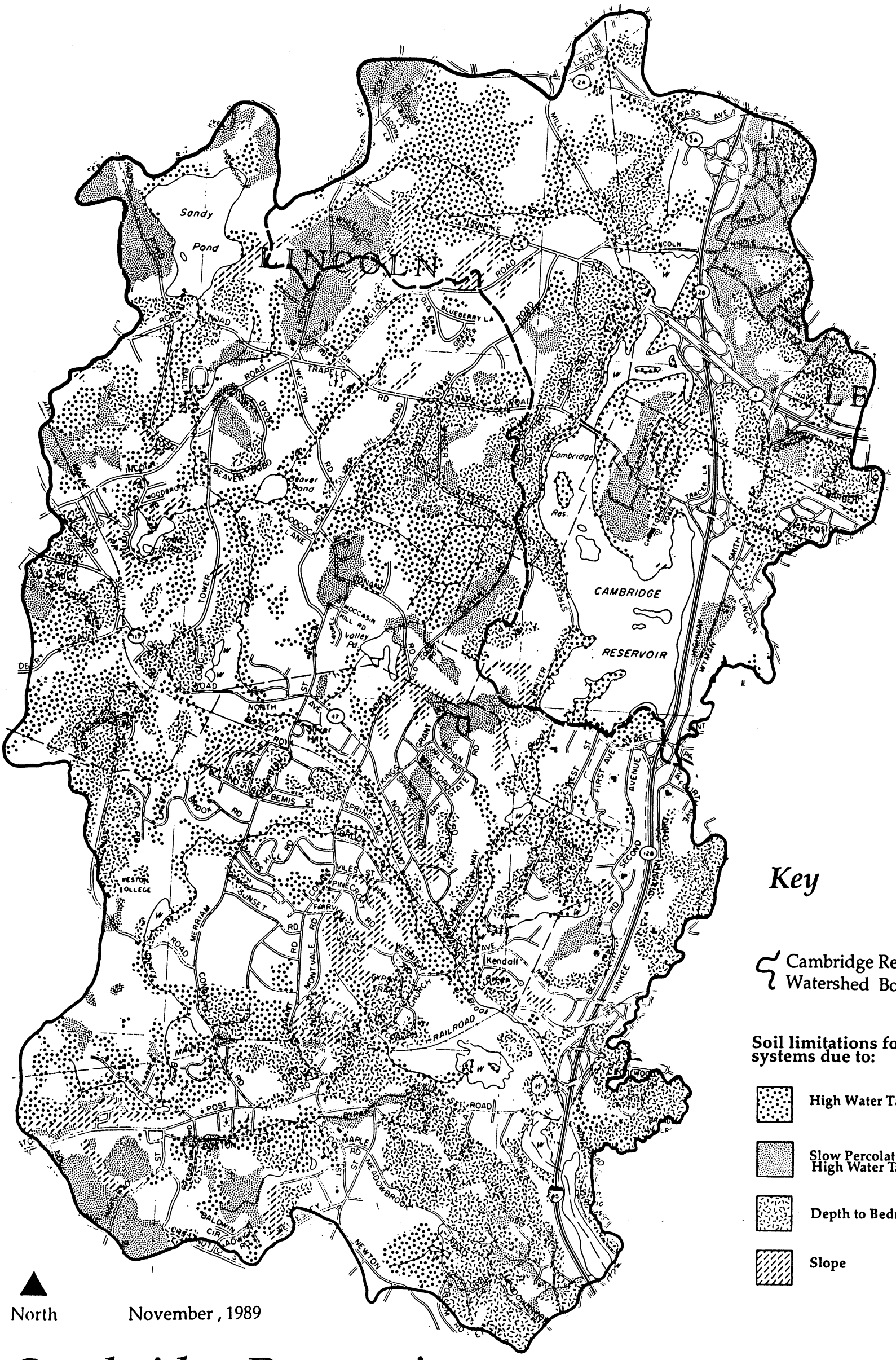


Source: *USGS Hydrologic Atlas, HA-554*

Cambridge Reservoir Watershed Protection Plan

Map 4 : *Groundwater Resources*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:
Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111



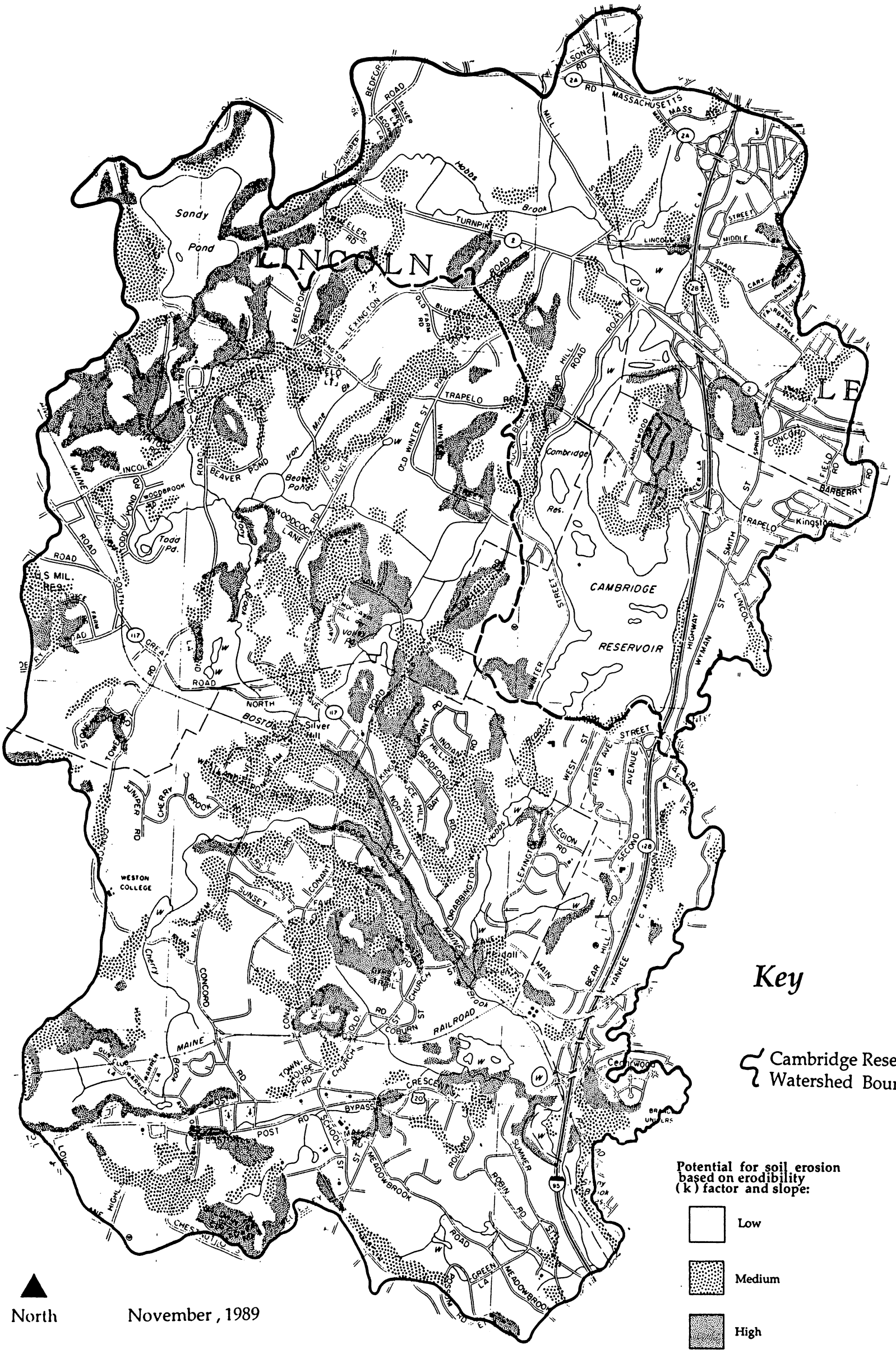
Cambridge Reservoir Watershed Protection Plan

Map 5: *Soils: Septic Limitations*

Source: U.S. Department of Agriculture, Soil Conservation Service, *Middlesex County Interim Soil Survey Report*, July, 1986

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111



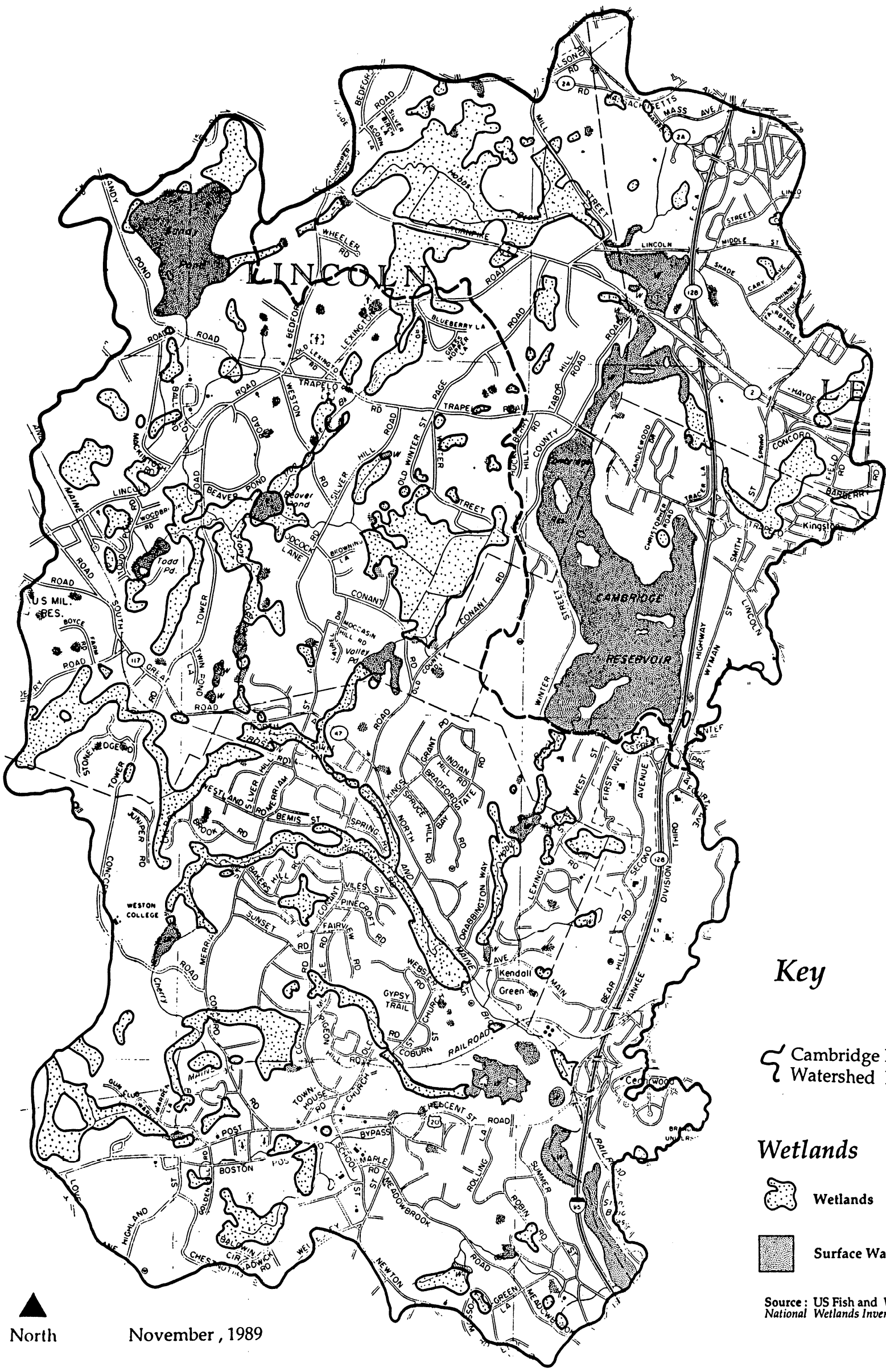
Source: U.S. Department of Agriculture, Soil Conservation Service, *Middlesex County Interim Soil Survey Report*, July, 1986

Cambridge Reservoir Watershed Protection Plan

Map 6 : *Soils : Erosion Potential*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

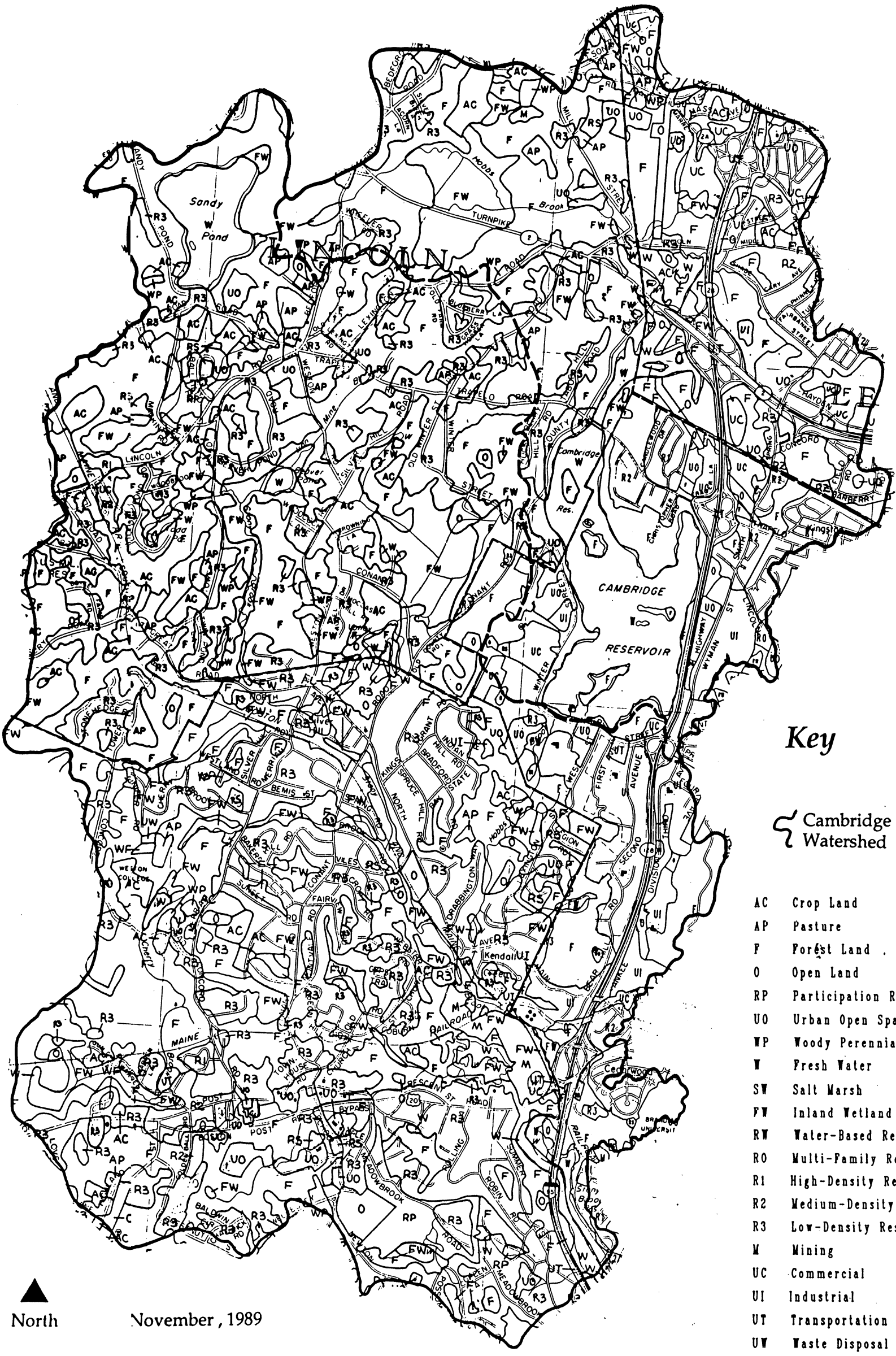


Cambridge Reservoir Watershed Protection Plan

Map 7: *Wetlands*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111

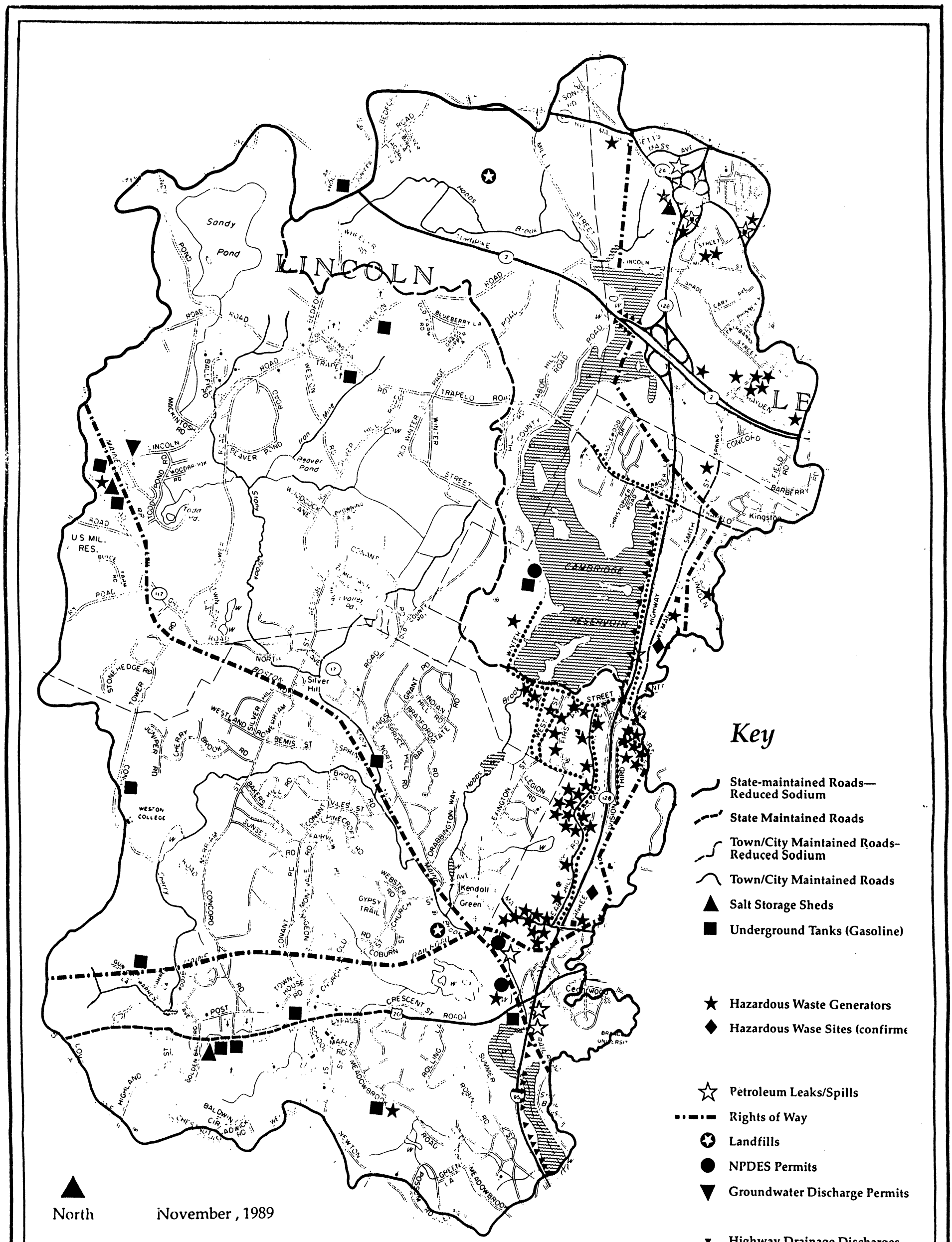


Cambridge Reservoir Watershed Protection Plan

Map 8: *Land Use*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

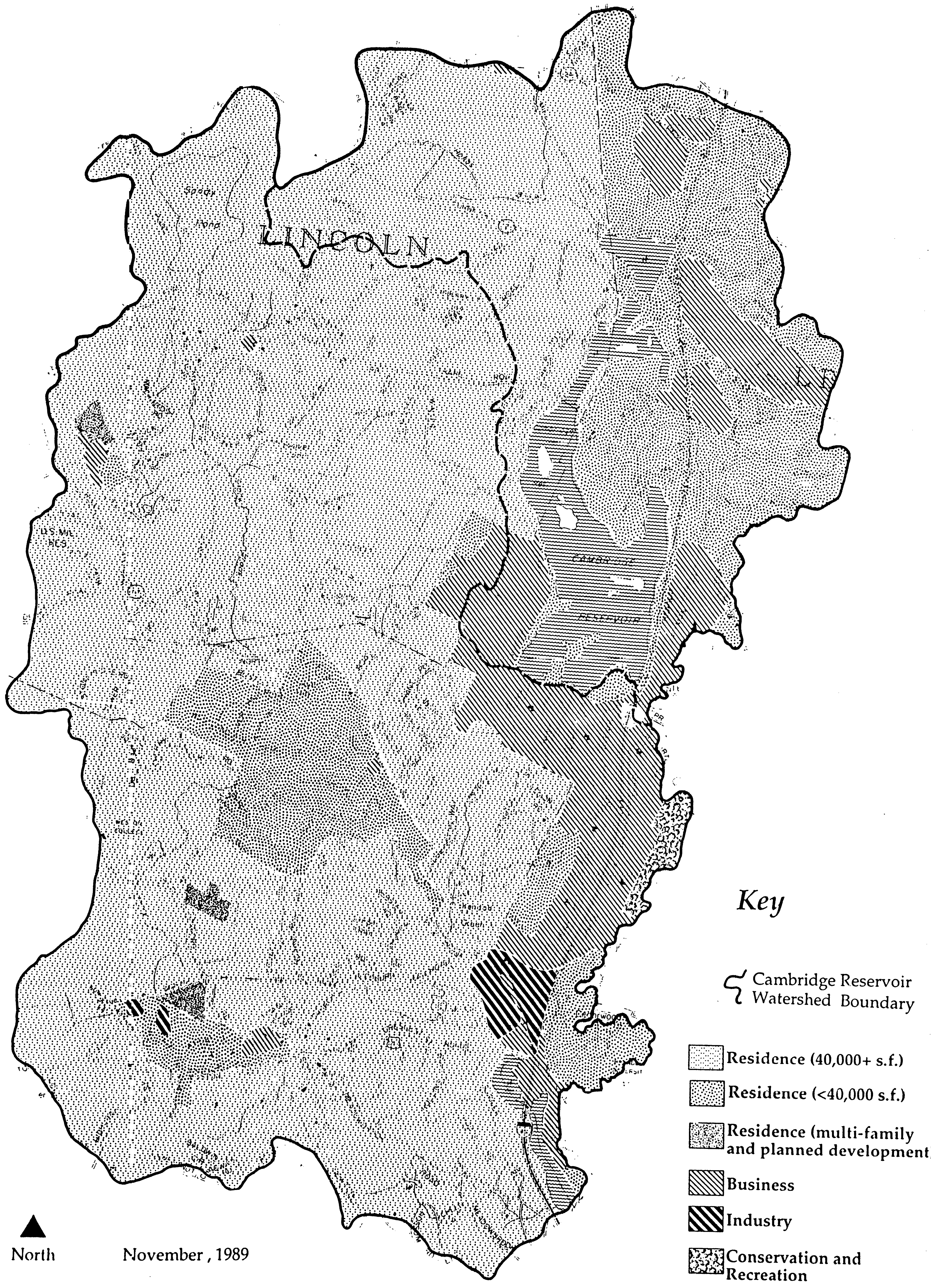


Cambridge Reservoir Watershed Protection Plan

Map 9: *Potential Sources of Contamination*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by:

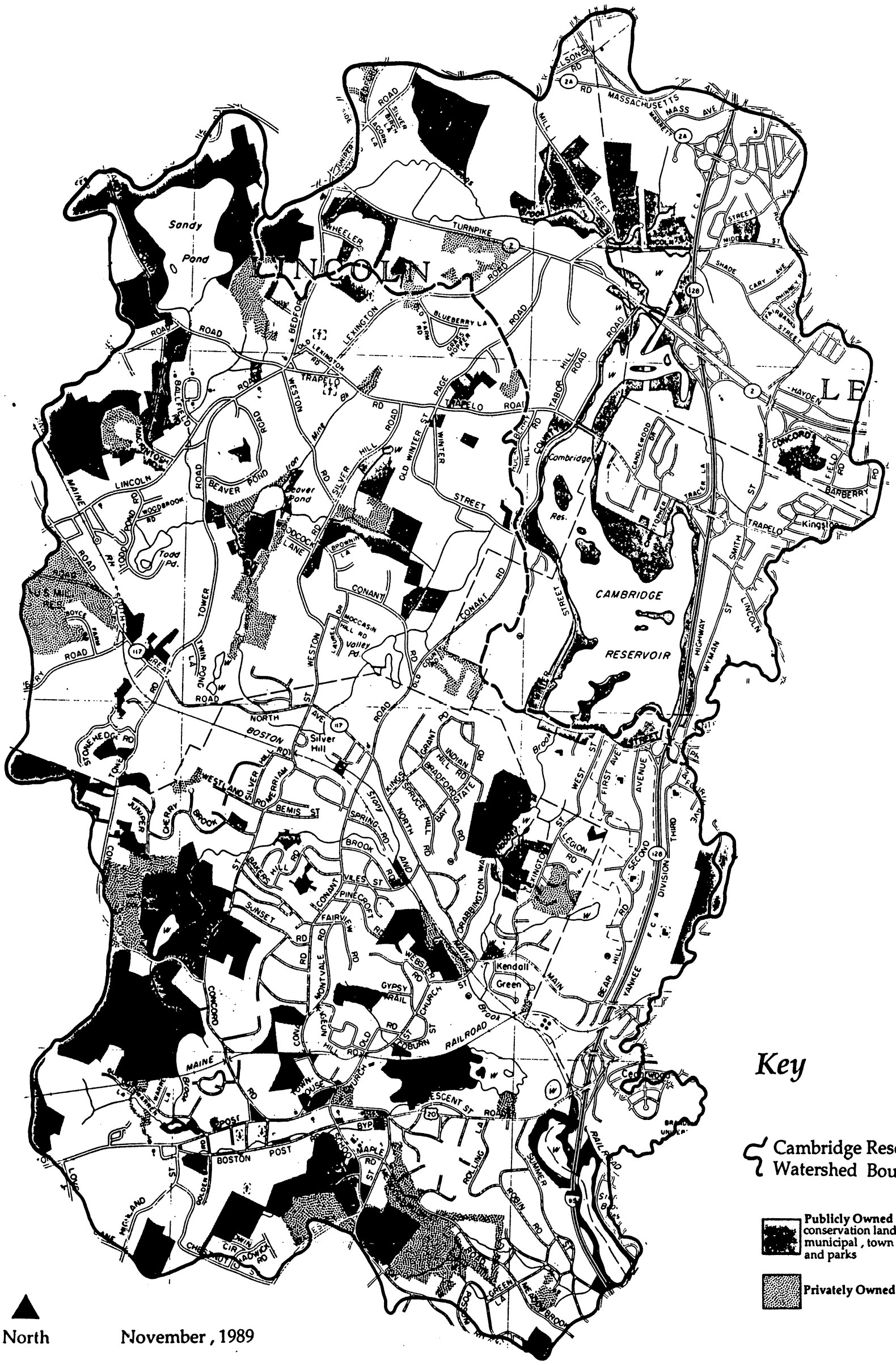
Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111



Cambridge Reservoir Watershed Protection Plan

Map 10: *Zoning*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board by: Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

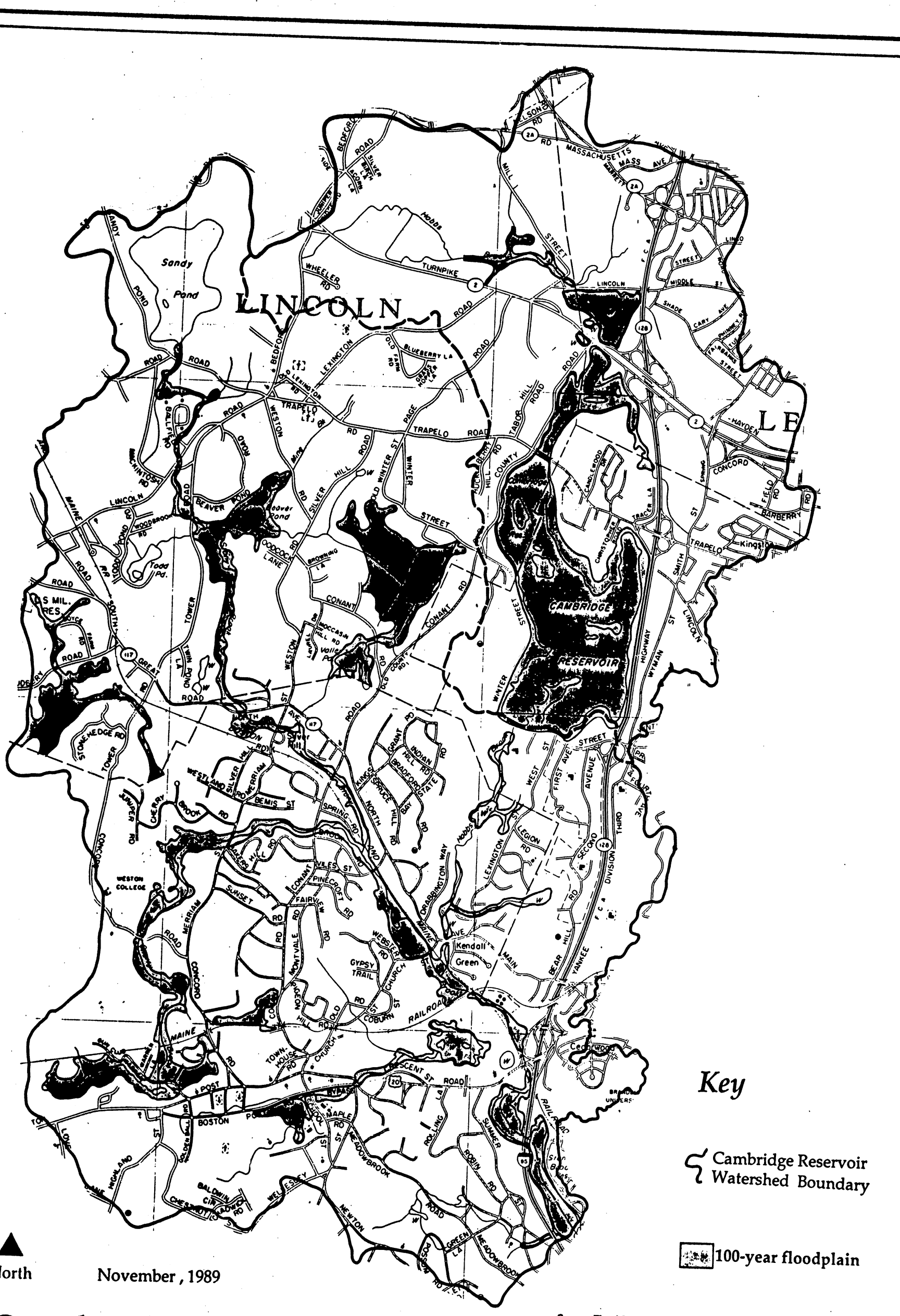


Cambridge Reservoir Watershed Protection Plan

Map 11: *Protected Lands*

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board

by:
Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111



Cambridge Reservoir Watershed Protection Plan

Map 12: Floodplain

Source: Flood Insurance Rate Maps, (Lexington, Lincoln, Waltham) and Flood Boundary and Floodway Map (Weston), U. S. Dept. of Housing and Urban Development, Federal Insurance Administration, 1979, 1980.

Prepared for:
Massachusetts Water Resources Authority and Cambridge Water Board

by:
Metropolitan Area Planning Council
60 Temple Place
Boston , MA 02111

CCM-101

City of Cambridge

26.

IN CITY COUNCIL
FEBRUARY 12, 1990

VICE MAYOR REEVES

ORDERED: That the City Council go on record extending its support of the Harriet Wigfall Community Service Award, and the February 9, 1990 Gospel Concert sponsored by the Civic Unity Committee and the Department of Human Services Programs at Union Baptist Church, 874 Main Street, Cambridge, MA at 7:00 p.m. with Reverend Jeffrey Brown, Pastor.

In City Council February 12, 1990.
Adopted by the affirmative vote of eight members.
Attest:- Joseph E. Connarton, City Clerk.

A true copy; Joseph E. Connarton

ATTEST:-

Joseph E. Connarton, City Clerk.

CCM-101

City of Cambridge

26.

IN CITY COUNCIL

FEBRUARY 12, 1990

VICE MAYOR REEVES

ORDERED: That the City Council go on record extending its support of the Harriet Wigfall Community Service Award, and the February 9, 1990 Gospel Concert sponsored by the Civic Unity Committee and the Department of Human Services Programs at Union Baptist Church, 874 Main Street, Cambridge, MA at 7:00 p.m. with Reverend Jeffrey Brown, Pastor.

City Council FEB. 12 1990

Adopted by the affirmative vote

of 8 members

Joseph E. Connarton City Clerk

Order # 26 S-108

Vice-Mayor Reeves re: support of the Harriet Wigfall Community Service Award.

In City Council,

February 12, 1990

Order adapted
by 8 members.