

April 25, 2001

To: Jon Witten, Melvyn Colon, Grace Perez, and Molly Anderson  
Re: Cambridge Sewer Separation/ Alewife Brook Combined Sewer Overflow (CSO)  
Control Field Project

Please find attached our final project submission to satisfy the UEP Field Project requirement. We enjoyed the opportunity to work with all of you and will continue to work with the Mystic River Collaborative and Mystic River Watershed Association to ensure that residents in the Alewife Brook area are aware of what is happening in their watershed.

Thank you,

Danielle Fuligni  
Aimee Gardner  
David Moore

Cc: Ann Urosevich, Meredith de Carbonnel

## Cambridge Sewer Separation/Alewife Brook Combined Sewer Overflow (CSO) Control Public Information Piece

The Massachusetts Water Resources Authority (MWRA) is planning to submit to the Massachusetts Department of Environmental Protection (DEP) a Notice of Project Change regarding the Cambridge Sewer Separation/ Alewife Brook Combined Sewer Overflow (CSO) Control Project. These changes may have impacts on the Mystic River watershed, especially due to the failure to eliminate CSOs. MWRA must present these project changes to the public and provide opportunity for public comment under the Massachusetts Environmental Policy Act (MEPA).

The UEP Field Project Team prepared a plain-english outreach instrument in the form of a booklet that provides an overview of MWRA's proposed changes, the anticipated impacts of these changes, and the availability of other options. The materials also outline how the public can provide their input and briefly describe general watershed stewardship tenets. The Field Project Team reviewed materials provided at public meetings by the MWRA and City of Cambridge, Massachusetts Environmental Policy Act regulations, state and federal CSO policies, and interviewed City of Cambridge officials to develop an understanding of the project elements and impacts as well as their larger context. Developed materials do not advocate the position of the Mystic Watershed Collaborative (MWC), Tufts University, the UEP Field Project Team, MWRA, or the Mystic River Watershed Association (MRWA). The anticipated audience for the outreach materials includes municipal government officials, area non-profits and the public at large.

All materials were reviewed by Molly Anderson of the MWC, Grace Perez of MRWA and the City of Cambridge Department of Public Works before they were made available to the public. The goal of this effort is to make people aware of their watershed citizenship and opportunity to participate in its governance, and this particular project's potential impact on their watershed.

In addition to the public information piece, the Field Project Team developed a distribution plan, as well as a presentation regarding the project. You will find the public information piece, distribution plan, and presentation attached.



**Citizens of Cambridge, Somerville,  
Arlington and Belmont**  
An Opportunity to Influence Water Quality  
Where You Live

- *Does the water quality in Alewife Brook concern you?*
- *Do you use the Alewife Reservoir for recreation?*
- *Do you experience flooding during and after storm events?*

A Notice of Project Change in the Cambridge Sewer Separation/Alewife Brook Combined Sewer Overflow (CSO) Control Project is open for comment

Your community needs you to take an interest in your watershed by providing your input on this project; find out how and why inside.

Mystic River Watershed Association  
20 Academy Street, Suite 203  
Arlington, MA 02476  
781-316-3438 (Voice)  
(781)641-2103 (Fax)  
Grace Perez, Executive Director  
e-mail: [giperez@earthlink.net](mailto:giperez@earthlink.net)

**What is a Combined Sewer  
Overflow (CSO)?**

A combined sewer overflow (CSO) is an antiquated mechanism used in the metropolitan Boston sewer system. CSO's were built into early sewer systems to act as relief points for storm water and sewage during heavy rains. While modern systems handle rainwater and sewage from homes and businesses in different pipes, some older systems - like Boston's - have combined sewers that carry both flows together.

With a CSO system, during normal conditions combined flows are delivered to wastewater plants for treatment. During storm events however, when flows can double or triple, the system provides relief by letting excess water flow directly into the nearest natural body of water.

This system does prevent sewage backups into homes and onto streets, although the sewage-containing overflow adds so much bacteria directly to rivers and streams, that the water is no longer classified "fishable" or "swimmable" by the State.

Across the country, communities with CSO systems are working to minimize discharges to receiving waters. Although complete sewer separation and the resulting elimination of the CSO is the most obvious solution, exorbitant construction costs, and sometimes minimal improvement to the overall quality of water, make the choice a difficult one.

This Cambridge Sewer Separation/Alewife Brook CSO Control Project involves changes to the plan for separating sewers and reducing or eliminating CSO discharges in your area.

**What is the project that is open for public comment?**

The project that is open for public comment is a change to the originally proposed plan to address CSOs in this area. The project is described in a document called a *Notice of Project Change (NPC)* for the *Cambridge Sewer Separation/Alewife Brook CSO Control Plan*. This project is a joint undertaking by the Massachusetts Water Resources Authority (MWRA) and the City of Cambridge. The MWRA is the state agency responsible for the regional sewer system and long-term CSO control planning. Under the current project, the MWRA will provide funding, and the City of Cambridge, Department of Public Works, will carry out the work.

**Why is this project being undertaken?**

The Cambridge Sewer Separation Project has come about due to a Federal Court

mandate stemming from the United States v. Conservation Law Foundation civil lawsuit – most commonly referred to as the “Boston Harbor Case”. This case was filed in 1994 by the Conservation Law Foundation, in reaction to poor water quality in Boston Harbor and contributing waterways.

**What does MWRA have to do?**

As partial result of the Boston Harbor Case the Court required MWRA to complete a CSO Conceptual Plan and a Sewer Master Plan. This plan recommended partial sewer separation along Alewife Brook - including complete sewer separation upstream of CAM002 and CAM004 (map on page xx) in Cambridge. The plan determined a cost-effective means to provide a reasonable level of CSO control in Alewife Brook.

**What is changing?**

To meet EPA requirements, a 1997 Final CSO Facilities Plan and Environmental Impact Report was submitted, which included water-quality modeling that indicated that partial sewer separation was the most cost efficient alternative for the Alewife Brook.

Unfortunately, as work began on the sewer separation project in 1997, discoveries of additional unknown CSO’s and cross-connections were made that would significantly change the cost of the project (from estimated \$12.5 million to \$75.6 million). The City of Cambridge and MWRA re-assessed the cost/benefits of the sewer separation plan. The NPC open for public comment is the result of their final decision regarding specific elements of the project that have changed since the original project was proposed.

**How does this project impact water quality in Alewife Brook?**

The State has a classification system for water that determines the overall quality and permissible uses of waterways. The Alewife Brook has previously been rated Class B water - which is considered both “fishable and swimmable” by the State.

However, fecal coliform - a bacteria which is primarily found in human and animal waste - has been found to exist in Alewife Brook at levels far beyond that which would allow it to remain Class B:

**State Standard = < 200 counts /100 ml water,  
Alewife Brook = > 500,000 counts/100 ml water**

**How does bacteria enter the brook and will this project fix it?**

Bacteria enters the Alewife Brook via both non-point sources such as urban storm water and illicit sewer hookups, and point sources such as combined sewer overflows. Water models have shown that even if CSO's were completely eliminated in the Alewife, the contribution of bacteria by storm water and non-point sources would still cause the brook to exceed Class B criteria.

In 1997, the Department of Environmental Protection (DEP) considered re-designation of the Alewife Brook from Class B to Class B<sub>CSO</sub>. This new classification would allow "short-term excursions" from Class B standards due to CSO discharges during storm events. With a Class B<sub>CSO</sub> determination, the waterway would still be required to

meet Class B standards 95% of the time.

Because other contributors of bacteria could not be easily identified, DEP could not determine the necessary level of CSO control needed in the Alewife, and instead granted the MWRA and City of Cambridge a 36-month variance. The purpose of the variance was to allow time for analysis of non-CSO sources of pollution, to gather additional storm water data, and CSO-related water quality data. The variance will expire in March 2002, and at that time DEP will make a final determination on a water quality standard for Alewife Brook.

**What are the impacts of this project on me?**

In general, MWRA and the City of Cambridge expect that the project will result in increased CSO control and flood mitigation in the Alewife Reservation and surrounding areas, as well as water supply protection of Fresh Pond. The following specific elements and their impacts, as predicted by MWRA and the City of Cambridge are described below: (See the map at the center of this document for exact activity locations.)

*Complete sewer and stormwater separation of CAM004:*

The expected results for this project element include elimination of the CAM004 CSO outfall and water quality improvements due to reduced CSO discharges to Alewife Brook and protection of the Fresh Pond Reservoir.

*Creation of a new stormwater outfall in CAM004: 3-acre detention basin in Alewife Reservation*

Modeling by MWRA and Cambridge consultants predict that the basin will delay storm-caused flooding peaks of the Little River by 2 hours. There will be no standing water during dry periods. In the short-term, temporary disruption of trails and access to the MDC Reservation is expected.

*Creation of a flood-control berm in Arlington:*

The berm will be approximately 1900 feet long, and is expected to eliminate existing flooding of Arlington neighborhoods for the 10 year/24 hour storm. The berm will be between .5 and 3 feet high and will run alongside the Alewife Brook, extending from Lafayette Street toward the Route 2 culvert.

*Complete sewer and stormwater separation of CAM400:*

The expected results for this project element include water quality improvements due to reduced CSO activation frequency and volume of outfall CAM400 into the Alewife Brook. In addition, 9 common manholes will be removed upstream of CAM400 and several illicit sewer connections will be eliminated.

*Relief of dry weather flow connections at CAM002, CAM401B and SOM01A and of the siphon at the end of Ridge Avenue:*

These measures involve enlarging the interceptor connections at each outfall. Water quality improvements are expected due to improved flow capacity and reduced CSO activations. Temporary, localized construction and traffic disruption around the sites are likely.

*Installation of MWR003 Floatables Control and Hydraulic Relief Gate:*

Modeling by MWRA and Cambridge consultants predict that this underground construction will reduce floatables and solids discharged from outfall MWR003, as well as relieve upstream flooding during extreme storm events. Temporary disruption of the MDC Reservation along the Alewife Brook is expected.

**Have alternatives to what is currently planned been considered?**

Yes. Alternatives including CSO elimination by system-wide sewer separation, interceptor relief and pumping station modifications, consolidated near-surface storage tanks, primary treatment facilities, screening and disinfection facilities and local sewer separation have been considered by the project proponents. More background information can be found in the Notice of Project Change.

**Can I get involved in decisions about this project?**

Yes, **the public is encouraged** to get involved, and MWRA is required by Massachusetts law and policy to include you in decisions about this project.

The Massachusetts Environmental Policy Act (MEPA) requires project changes which have significant environmental impact to file a Notice of Project Change (NPC) with the MEPA Office of the Massachusetts Executive Office of Environmental Affairs (EOEA). When MWRA files their NPC, you will have 30 days to comment to the MEPA Office at EOEA.

**What do I comment on?**

Some issues you might consider in your comments include: Is there a better spot for a detention basin? Is a berm the appropriate solution to flooding along the north bank of Alewife Brook? Is partial sewer separation achieving a desirable level of water quality for the area? Does the alternatives analysis include a sufficiently broad range of alternatives?

**When will the Notice of Project Change be published and where can I read it?**

An announcement the NPC was published in the Environmental Monitor on [xxxx] 2001. The complete NPC including the alternatives analysis, maps, and economic analysis for the project are available in the following local libraries and public buildings. You can also request a copy from the MWRA, but it is a lengthy, multi-volume document and we encourage people to use the copies available in public spaces.

**How do I comment and to whom?**

You should send your comments to the MEPA Office at the following address:

Secretary of Environmental Affairs  
Executive Office of Environmental Affairs  
ATTENTION: MEPA Office  
[Analyst's Name] EOEA No. [xxxx]  
251 Causeway Street, Suite 900  
Boston, Massachusetts 02114

If you have access to the Internet, you can submit your comments on-line:  
<http://www.state.ma.us/meopa/meonline.htm>

Be sure to include in your comments the MEPA File Number ([xxx]) for this project:

All comments must be received during the comment period, which for this project is 30 days following publication in the Monitor. It is vital that you get involved in projects such as these in order to enhance and preserve the quality of the water in the Alewife Brook and the Mystic River Watershed in general.

**The Mystic River Watershed Association asked that this public information piece be written in a neutral fashion, using the information provided by the project proponents MWRA, and the City of Cambridge.** As a watershed advocacy organization however, the Mystic River Watershed Association will review the NPC and develop a position on those aspects of the project that they feel will impact water quality where you live. Their comments which will be available on their website at the following address:

<http://www.tufts.edu/mystic/index.htm>

You are also welcome to contact the MRWA directly at the following address:

20 Academy Street, Suite 203  
Arlington, MA 02476  
781-316-3438 (Voice)  
781-641-2103 (Fax)

Grace Perez, Executive Director  
e-mail:  
[giperez@earthlink.net](mailto:giperez@earthlink.net)

### **What else can I do to improve the local water quality?**

You can act as a steward of your watershed and encourage your neighbors to do the same by employing some watershed best management practices to control **non-point source pollution**.

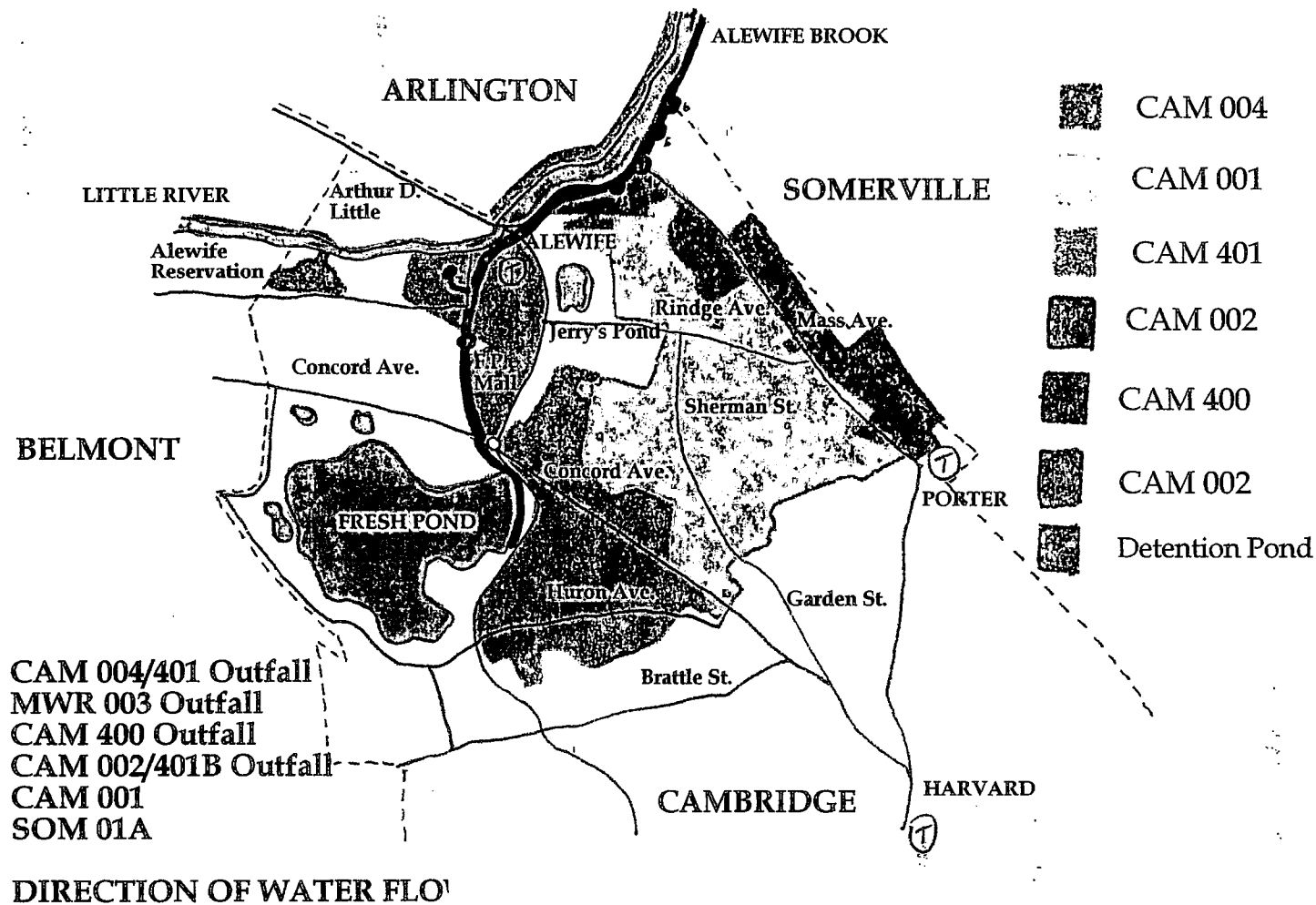
### **How does non-point source pollution affect the Mystic River?**

In addition to bacteria contributed by CSOs and other pollutants, such as heavy metals from historical industrial pollution, rainwater, snowmelt, and irrigation water runs over land and through the ground, picks up pollutants, such as oil from our cars, fertilizers and pesticides from our lawns, and pet wastes and deposits them in surface waters, such as the Alewife Brook, and/or introduces them to groundwater.

### **How can I help control nonpoint pollution?**

- Use trees and shrubs to filter runoff, soak up pollutants, and prevent soil erosion
- Keep your lawn small and use natural alternatives to chemical fertilizers and pesticides
- Curb and pick up after your pets
- Dispose of chemicals properly; for example paint thinner, moth balls and oven cleaners should not go down the drain; contact your municipality to find out how to dispose of household hazardous waste
- Use permeable surfaces in landscaping such as concrete lattice, bricks, and wood decking, as opposed to asphalt or solid concrete
- Get involved in cleanup and monitoring activities:

# Cambridge Sewer Separation - Project Areas



## Proposed Distribution Plan

The Field Project Team recommends that MRWA make The Cambridge Sewer Separation/ Alewife Brook Combined Sewer Overflow (CSO) Public information piece available to the residents of Arlington, Belmont, Cambridge, and Somerville as well as any other individuals who live or work in, or make use of, the Alewife area.

To that end, we recommend that the following groups of people receive or have access to the public information piece:

- \* Concerned citizens in affected communities
- \* All entities on NPC mailing list
- \* MRWA constituent groups
- \* Boston area environmental advocacy groups
- \* Professional associations
- \* Students, faculty, and staff at local colleges and universities.

We expect that by making the piece available in the following places, the intended audience will be able to make use of it:

- \* Public libraries where the NPC is available for viewing
- \* Town Halls and community centers in Arlington, Belmont, Cambridge, Somerville
- \* Chambers of Commerce
- \* Schools and universities
- \* MRWA office in Arlington
- \* MRWA and MWC homepages.

MRWA might also announce the availability of this supplemental information in any press releases regarding the NPC.

Cambridge Sewer  
Separation/Alewife Brook CSO  
Control

*Community Involvement*

*Watershed Stewardship*

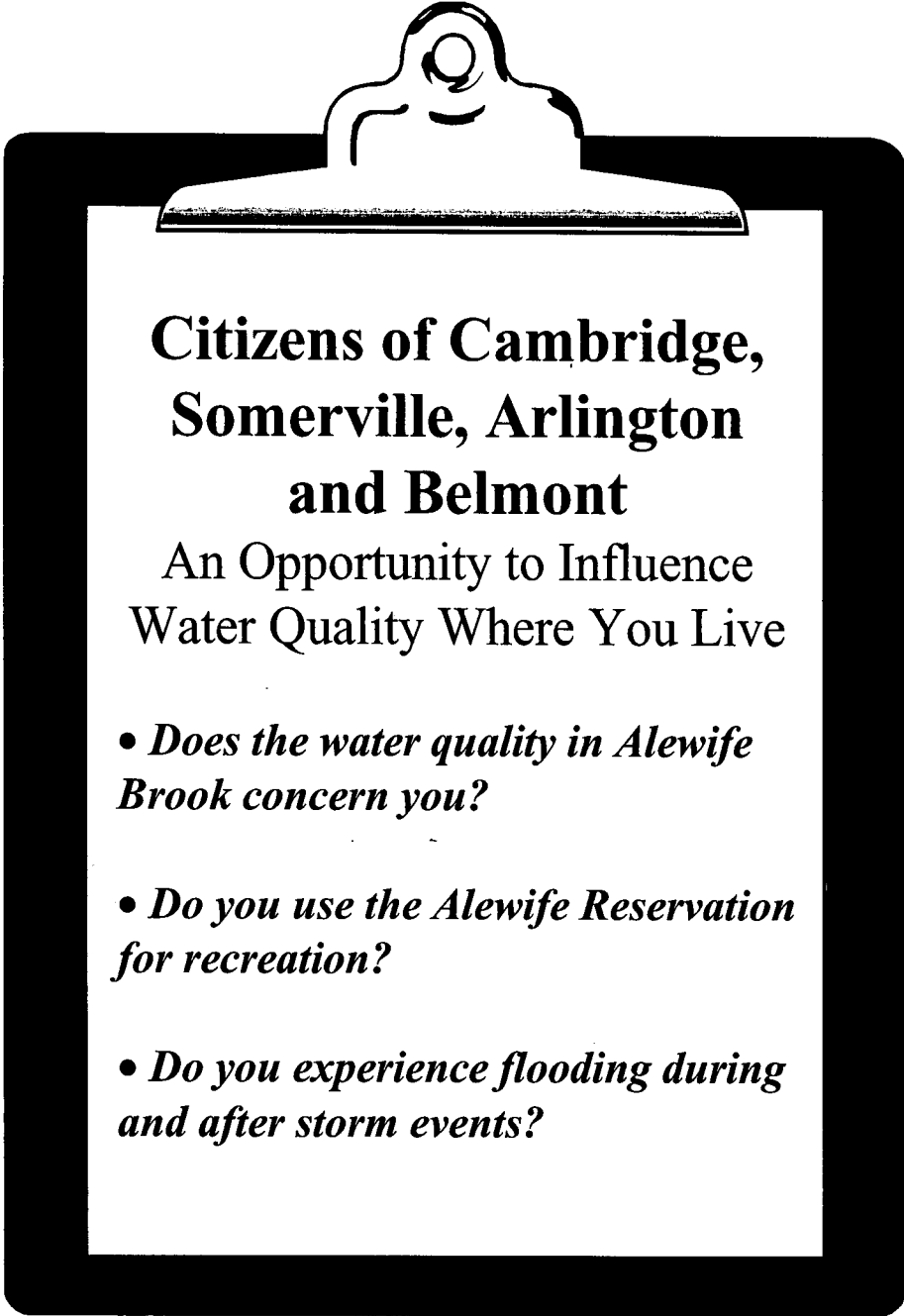


**Mystic Watershed Collaborative**



# Mystic River Watershed





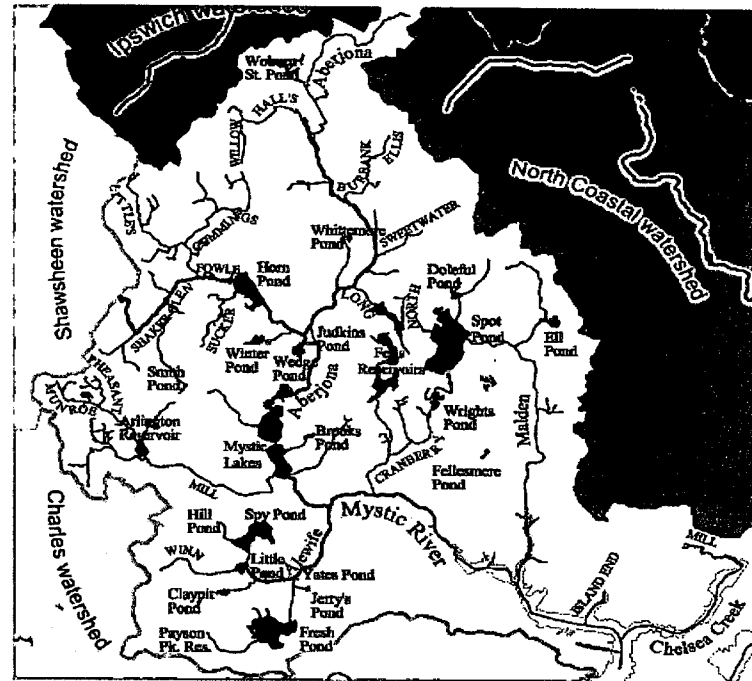
**Citizens of Cambridge,  
Somerville, Arlington  
and Belmont**

An Opportunity to Influence  
Water Quality Where You Live

- *Does the water quality in Alewife Brook concern you?*
- *Do you use the Alewife Reservation for recreation?*
- *Do you experience flooding during and after storm events?*

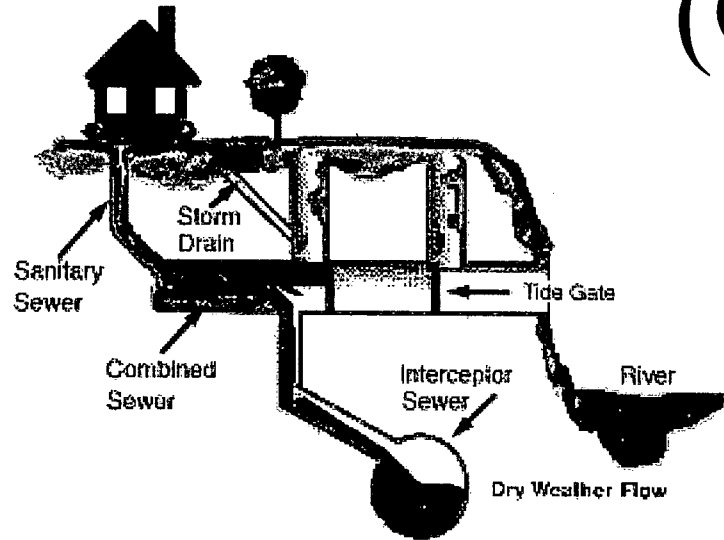
# Cambridge Sewer Separation/Alewwife Brook CSO Control

- Project Background and History
- Specific Elements and Impacts
- Public Involvement

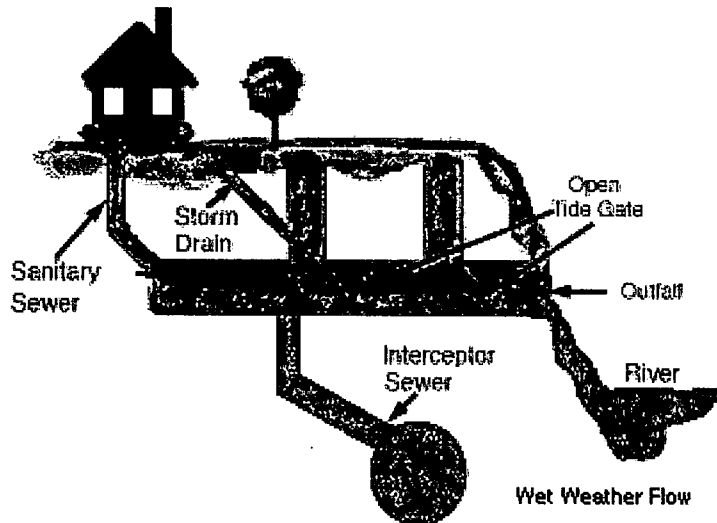




# Combined Sewer Overflow (CSO)



Dry Weather



Wet Weather



# Background

- MWRA and City of Cambridge
- Boston Harbor Case
  - CSO Conceptual Plan 1994
  - Final CSO Facilities Plan 1997
- Recommendation – Partial Sewer Separation

# Change in Baseline Conditions

- Field investigations resulted in discovery of additional CSO and Cross-connections
- Result: More baseline discharge

	Total Annual Activations	Total CSO Volume
1997 CSO Plan	16	18.3
Updated Conditions	63	49.7

# Re-assessment / Project Change

- Reviewed a broad range of alternatives
- Project Change is open for public comment
- Similar CSO Reduction from original plan
  - Still not CSO elimination

	<u>Annual CSO Volume (MG)</u>		<u>% Annual</u>
	<u>Now</u>	<u>Recommended</u>	<u>Reduction</u>
1994 Conceptual Plan	18.3	2.9	84%
Updated Conditions	49.7	7.4	84%

# Water Quality Classification

- Alewife Brook Water Quality
- Fecal Coliform Bacteria

Standard for Fishing or Swimming is  
<200 counts/100ml

- Currently Class B – violation!

# Average Bacteria Concentrations

1994

Fecal Coliform Bacteria (counts/100 ml)	
<u>Untreated CSO</u>	538,000
<u>Untreated Stormwater</u>	30,250

Fecal Coliform Bacteria (counts/100 ml)	
<u>Sampling 1988-92</u>	30,250
<u>Sampling 1999-2000</u>	12,600

# Variance

- DEP could not determine – required additional data
- Must assess CSO and Storm loads
- March 2002, variance expires
  - Decision by DEP on WQ Classification



# Water Quality Classification

- To achieve Class B:
  - All CSO must be eliminated
  - Non-point sources must be controlled
- Recommended Class Bcso
- Is this good enough???

# EXPECTED BENEFITS

## BEFORE

\* 63 activations

\* 49.7MG

*(CSO volume)*

## AFTER

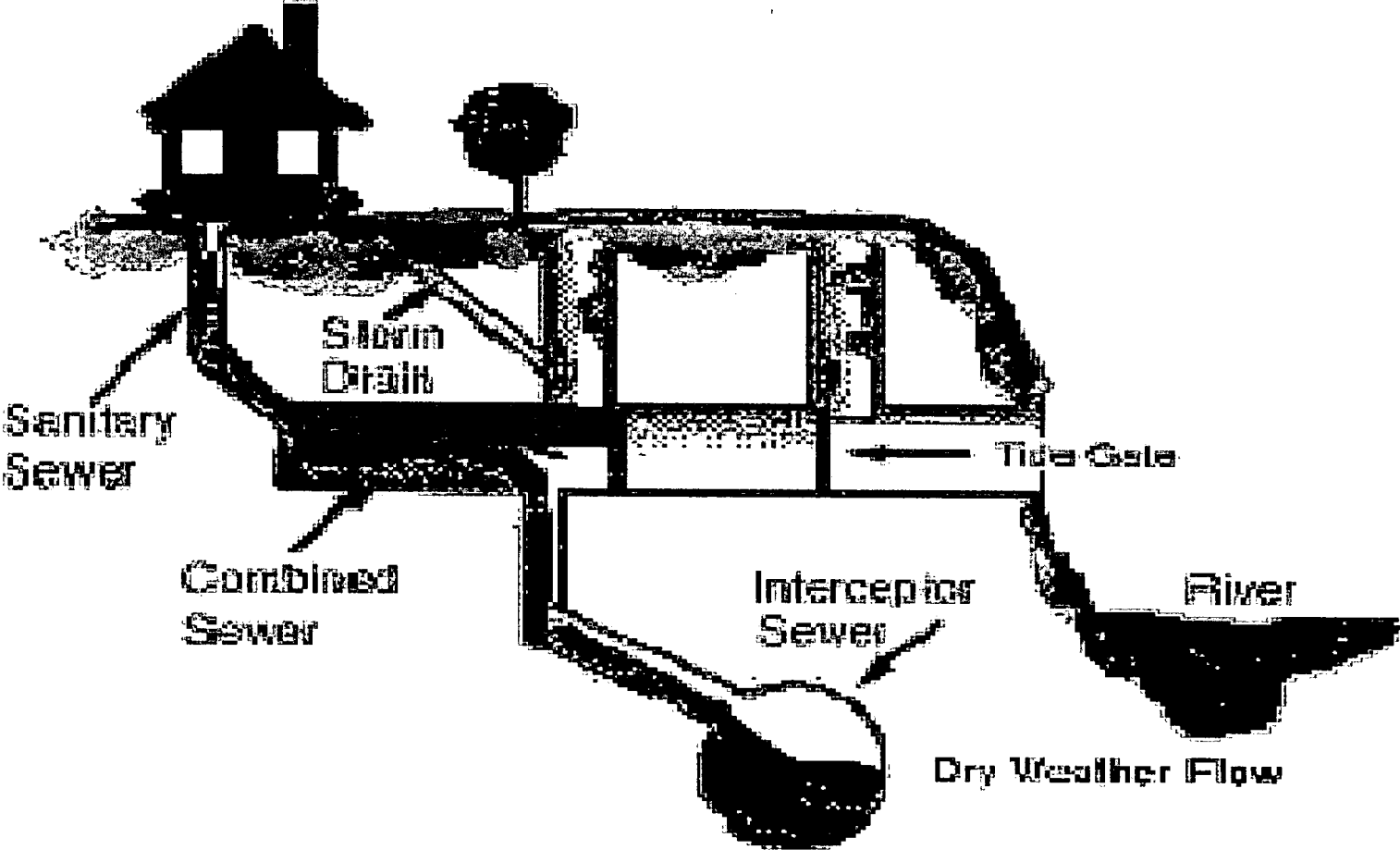
\*7 activations

\*7.4MG

*(CSO volume)*

This would be an 84% reduction in CSO discharge and comparable percentage reductions in fecal coliform and suspended solids. Additional benefits: flood mitigation, water quality protection

# COMBINED SEWER OVERFLOWS



# PROJECT ELEMENTS

- Complete sewer separation of CAM004
- New stormwater outfall: 3-acre detention basin
- Construction of ~1900 foot berm

# PROJECT ELEMENTS

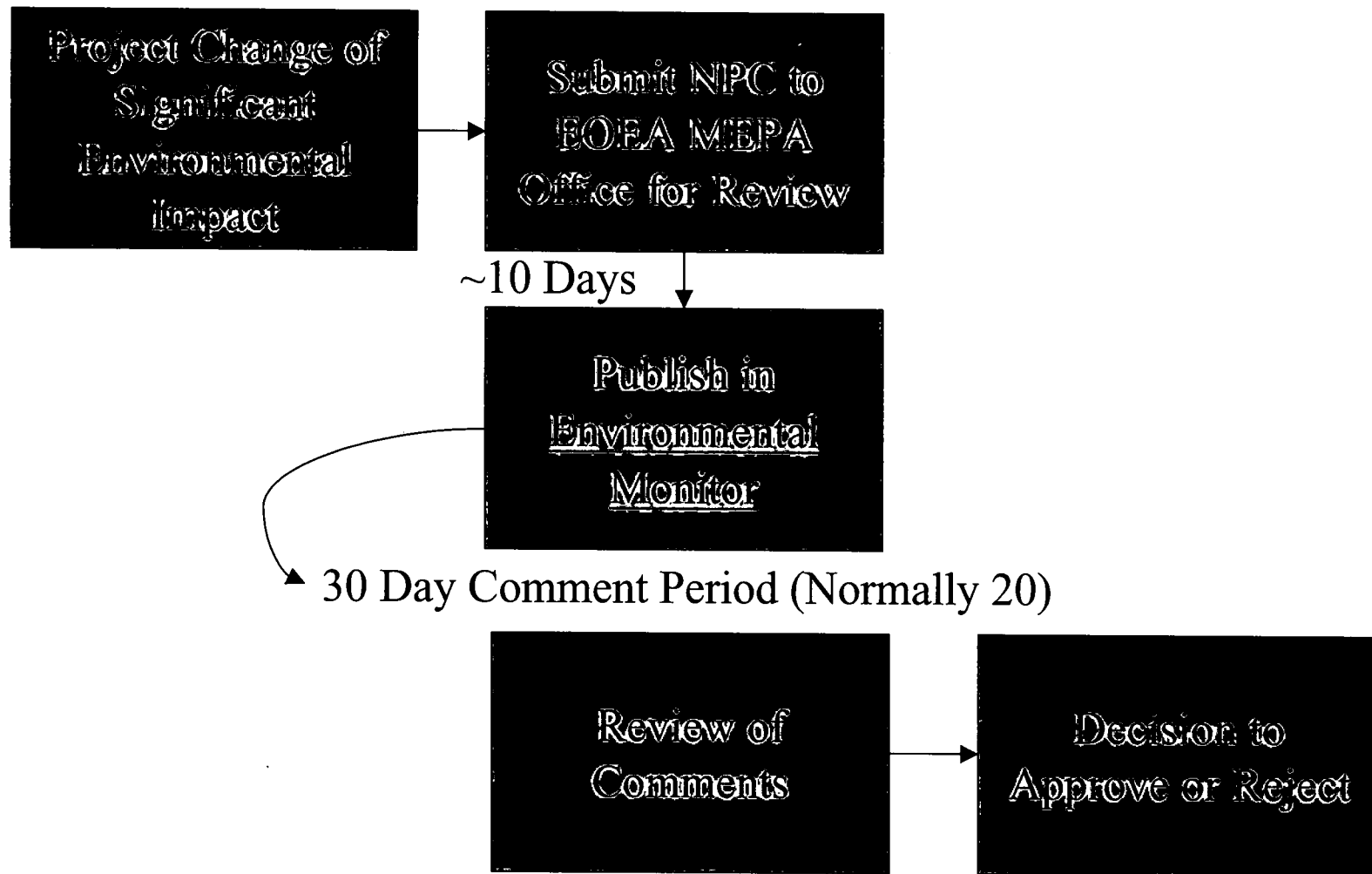
- Complete sewer separation of CAM400
- Relief of dry weather flow connections at CAM002, 401B, SOM1A and siphon at end of Ridge Ave.
- Installation of a modulating gate

# Public Involvement



- Massachusetts Environmental Policy Act (MEPA) Notice of Project Change Process
- Federal and State CSO Policies
- Watershed Stewardship Fundamentals



# Notice of Project Change



# Federal and State CSO Policies

-  **EPA** United States Environmental Protection Agency
  - “8. [Provide] public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts;
-  **Environmental Protection**
  - “DEP strongly encourages permittees to have extensive public participation...”