TOWN OF SANDWICH
THE OLDEST TOWN ON CAPE COD

OFFICE OF THE TOWN ENGINEER
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(155)

2004 APR 30 P 10: 23

April 28, 2004

United States Environmental Protection Agency
Water Technical Unit
PO Box 8127
Boston, Massachusetts 02114

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

Subject: Annual Update - NPDES Phase II General Permit
Town of Sandwich Stormwater Management Plan

Dear U.S. EPA and MaDEP:

As required under the NPDES Stormwater General Permit, the Town of Sandwich hereby submits this annual update of the Town's the Stormwater Management Plan.

Year 1 Update
Two uncontrollable occurrences over the past year have altered the Town of Sandwich's Stormwater Management Plan (SMP). The loss of the Engineering Department's secretary position due to budget cuts and the absence of the Town's Web-site specialist due to active duty in Iraq have required minor changes to the timeline of goals proposed in the Six Control Measures. Nevertheless, the Town has been very active in implementing its SMP this past year.

The Town has fallen short on some of it's goals yet at the same time has accomplished other goals well in advance of the expected timeline. In some cases, new goals were added to the program. Overall, the Town believes it has exceeded its objectives for the first year. A summary of actions taken in Year 1 is shown below.

Major First Year Accomplishments (2003-2004)
Below is a list of some of the significant accomplishments conducted over the past year:

• Stormwater Management Plan – The Town is developing a Stormwater Management Plan to identify stormwater impacts and methods to mitigate these impacts. The SMP

16 JAN SEBASTIAN DRIVE
SANDWICH, MASSACHUSETTS 02563

includes detailed descriptions of each goal proposed in the Six Control Measures. The plan is 90% complete.

• Water Festival – The Town held a daylong Water Festival at the Wing Elementary School to educate young students about stormwater impacts and active roles they can take to alleviate these impacts.

• Catch Basin & Outfall Identification & Mapping – The Town, with assistance from AmeriCorps Cape Cod, has identified and collected data for over 2,300 catch basins and outfalls using GPS. This information is currently being transferred to GIS and will be used by the Town for maintenance, repairs and installation of BMP's in the future. Details on the 2,3000 locations have been assembled in a report called "Sandwich Drainage Study".

• With assistance from the Cape Cod Commission (CCC), several town representatives have formed a Stormwater Committee to discuss stormwater issues and develop educational information to distribute to the public. Through this process, the Town of Sandwich will distribute 5,000 door hangers and install 1,000 storm drain markers.

New Programs/Goals
Below is a list of new goals that have been added to the Town's SMP:

• The Engineering Department made a Stormwater presentation at two Senior High School Environmental Science classes. In addition, the Department interacted with students, assisted them with their current projects and involved them in data collections as part of the Town's SMP.

•The Town has completed a "Tree Inventory and Management Plan" for Sandwich Village. This plan will enable the Town to monitor and maintain trees in the Village, which will have a positive impact on stormwater in the Village.

• Through the development review process, the Town has required new subdivisions to develop an inspection and maintenance plan for drainage systems on private property and roads.

Status of Goals for Year 1
Similar to the original table submitted for the NPDES General Permit, the attached table shows goals proposed for all Six Control Measures. This updated table reflects new goals and the status of Year 1 goals. The yellow highlighted blocks represent goals scheduled in each season for Year 1. Words highlighted in red represent goals that have not yet been reached in Year 1. New goals mentioned earlier have also been included in the table.

The Appendix attached with this submittal shows several of the actions performed by the Town to meet the goals listed in the table.

Conclusion

The Town of Sandwich's accomplishments over the past year meet or exceed most of the scheduled goals. We trust that these accomplishments will satisfy the Massachusetts Department of Environmental Protection and the United States Environmental Protection Agency requirements. Please contact Paul Tilton of the Engineering Department if you have any questions or require further information related to the Year 1 Annual Update.

Sincerely,

Paul S. Tilton
Assistant Town Engineer

Attachments: Year 1 Status Table
Town Actions in Year 1

Cc: Peter J. Tancredi, PE, DPW Director/Town Engineer

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit Notice of Intent
for Discharges from Small Municipal Separate Stormwater Sewer Systems (MS4's)
F. Storm Water Management Program TIME FRAMES

Transmittal Number: W035665

Facility ID (if known): _____

BMP ID #	PERMIT YEAR ONE Spring 03	Summer 03	Fall 03	Winter 03-04	STATUS Goals	Comments
5.1: Public Education & Outreach						
1a					Current Educational Brochures	Brochures available at Town buildings and were distributed at Water Festival and High School.
1b					Development Review	Continue to enforce stormwater and erosion regulations during development review.
1c					Public Display of Stormwater Mgmt Plan	Stormwater Management Plan (SMP) is 90% complete. Will display when finished.
1d					Public Meeting	Will schedule once SMP is complete to allow public a chance to review.
1e					Proposed Educational Brochure	Have developed and purchased 5,000 door hangers & 1,000 CB markers w/ CCC assistance.
1f					Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,300 CB's and outfalls w/ GPS. Report is available. Maps soon.
1g					Web Site Information	Not Applicable This Year
1h					Educational Festival	Organized Water Festival at Elementary School w/ County and AmeriCorps.
1i					Educate DPW Employees	Not Applicable This Year
1j					Educational Video	Not Applicable This Year
1k					Catch Basin Stencils	Developed and purchased 1,000 storm drain markers. Will glue to CB's w/ AmeriCorps.
1l					Stormwater Posters	Displayed Stormwater Construction poster in Town building.
1m					Student Involvement	Made Stormwater Presentation at two Environmental Science Classes at High School.
1n					Stormwater Committee	Formed Cape-wide group w/ CCC to develop & distribute educational info related to stormwater
5.2: Public Involvement & Participation						
2a					Development Review	Continue to enforce stormwater and erosion regulations during development review.
2b					Public Meeting	Will schedule once SMP is complete to allow public a chance to review.
2c					Public Display of Stormwater Mgmt Plan	Stormwater Management Plan (SMP) is 90% complete. Will display when finished.
2d					Proposed Educational Brochure	Have developed and purchased 5,000 door hangers & 1,000 CB markers w/ CCC assistance.
2e					Illicit Discharge Identification	Performed inspections during CB and outfall data collection. Have begun inspecting shorelines.
2f					Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,300 CB's and outfalls w/ GPS. Report is available. Maps soon.
2g					Water Monitoring Program	Not Applicable This Year
2h					Educational Video	Not Applicable This Year
2i					Educational Festival	Not Applicable This Year
2j					Student Involvement	Taught HS class, interacted w/ students on projects & involved them with data collection.
2k					Stormwater Committee	Formed Cape-wide group w/ CCC to develop & distribute educational info related to stormwater
5.3: Illicit Discharge Detection & Elimination						
3a					Household Hazardous Waste Program	Continue to distribute info and schedule household hazardous waste collection days w/ County.
3b					Sandwich Village Stormwater Assessment	Continue to sample water quality and apply for grants to minimize stormwater impacts in Village.
3c					Illicit Discharge & Dumping Identification	Began inspections of illicit discharges. Will develop form & database to record this info.
3d					Catch Basin Cleaning	Continue to clean & monitor CB conditions. Currently mapping all town-owned CB's on GIS.
3e					Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,300 CB's and outfalls w/ GPS. Report is available. Maps soon.
3f					Educational Information	Displayed posters & distributed brochures to public & developers. On WEB site in future.
3g					Allowable Non-Stormwater Discharges	Will continue to search for non-stormwater discharges that may be significant polluters.
3h					Town Bylaw - Illegal Disposal	Not Applicable This Year
3i					Water Sampling	Town is currently sampling Mill Creek in Village for future BMP grants.

Note: Many of the BMP's above will continue beyond the 5-year permit period.

[ ] = Goals anticipated to be completed in the season & year shown above. Words in Red = goals not yet accomplished under year shown above.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit Notice of Intent
for Discharges from Small Municipal Separate Stormwater Sewer Systems (MS4's)
F. Storm Water Management Program TIME FRAMES

Transmittal Number: W035665

Facility ID (if known): _____

BMP ID #	PERMIT YEAR ONE Spring 03	Summer 03	Fall 03	Winter 03-04	STATUS Goals	Comments
5.4: Const. Stormwater Runoff Control						
4a					Town Bylaw - Driveway Regulation	Continue to enforce driveway regulations to minimize stormwater impacts.
4b					Existing Laws & Regulations	Continue to enforce stormwater and erosion regulations and will evaluate need for updates.
4c					Educational Info & Public Participation	Distributed & displayed educational information & will obtain public input once SMP is complete
4d					Development Review	Continue to enforce stormwater and erosion regulations during development review.
4e					Consideration of Public Information	Town will solicit input from the public once SMP and WEB info is complete.
4f					Site Inspections	Town officials continue to inspect & enforce regulations related to stormwater & erosion control.
4g					Recommended BMP's	Have required use of BMP's thru development review. Will develop list of recommended BMP's.
4h					Zoning Bylaw - Erosion Control	Not Applicable This Year
4i					Erosion Control Guidelines	Not Applicable This Year
4j					Subdivision Rules & Regulations	Town has proposed changes to stormwater regulations in the Subdivision Rules & Regulations.
4k					Water Sampling	Town is currently sampling Mill Creek in Village for future BMP grants.
4l					Stormwater Posters	Displayed Stormwater Construction poster in Town building.
5.5: Post-Construction Stormwater Management						
5a					Growth Incentive Zones - Stormwater Plans	Working with CCC on Growth Centers and Local Comprehensive Plan to address these issues.
5b					Existing Laws and Regulations	Continue to enforce stormwater and erosion regulations and will evaluate need for updates.
5c					Educational Info & Public Participation	Distributed & displayed educational information & will obtain public input once SMP is complete
5d					Development Review	Continue to enforce stormwater and erosion regulations during development review.
5e					Catch Basin Cleaning	Continue to clean & monitor CB conditions. Currently mapping all town-owned CB's on GIS.
5f					Recommended BMP's	Have required use of BMP's thru development review. Will develop list of recommended BMP's.
5g					Zoning Bylaw - Erosion Control	Not Applicable This Year
5h					Erosion Control Guidelines	Not Applicable This Year
5i					Subdivision Rules & Regulations	Town has proposed changes to stormwater regulations in the Subdivision Rules & Regulations.
5j					Water Sampling	Town is currently sampling Mill Creek in Village for future BMP grants.
5k					Stormwater Posters	Displayed Stormwater Construction poster in Town building.
5.6: Pollution Prevention & Good Housekeeping in Municipal Operations						
6a					Stormwater Mitigation w/ BMP's	The Town continues to apply for grants for Stormwater Mitigation using BMP's.
6b					Pollution Control & Mitigation Measures	Town currently is addressing septic, salt storage & other issues to reduce potential impacts.
6c					BMP Projects on Town-Owned Land	The Town continues to apply BMP's to townwide projects.
6d					DPW: On-Site Stormwater Containment	Town recently inspected DPW stormwater system and will continue to do so.
6e					DPW Environmental Audit - EPA Program	The Town continues to work towards the Salt Shed and Interior washing area in DPW Garage.
6f					DPW Maintenance Program	GIS mapping w/ attributes for monitoring DPW operations is being developed by a consultant.
6g					DPW Training	Employees are trained regarding the need to minimize or prevent stormwater impacts.
6h					Tree Planting Program	Town has completed a Tree Inventory and Management Plan for Sandwich Village.
6i					DPW Brochures	Not Applicable This Year

Note: Many of the BMP's above will continue beyond the 5-year permit period.
[ ] = Goals anticipated to be completed in the season & year shown above. Words in Red = goals not yet accomplished under this year.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit Notice of Intent
for Discharges from Small Municipal Separate Stormwater Sewer Systems (MS4's)
F. Storm Water Management Program TIME FRAMES

Transmittal Number: W035665

Facility ID (if known): _____

BMP ID #	PERMIT YEAR ONE Spring 03	Summer 03	Fall 03	Winter 03-04	STATUS Goals	Comments
5.7: BMP's for Meeting TMDL						
7a					Identification & Mapping of Outfalls & CB's	W/ AmeriCorps, identified over 2,300 CB's and outfalls w/ GPS. Report is available. Maps soon.
7b					Water Sampling	Town is currently sampling Mill Creek in Village for future BMP grants.
7c					BMP Mitigation	The Town continues to apply for grants for Stormwater Mitigation projects using BMP's.
7d					Public Education & Participation	Distributed & displayed educational information & will obtain public input once SMP is complete
7e					DPW Maintenance, Cleanup &	DPW inspects, maintains and records any information related to stormwater impacts.
					Identification of Illegal Disposals	

Note: Many of the BMP's above will continue beyond the 5-year permit period.
[ ] = Goals anticipated to be completed in the season & year shown above. Words in Red = goals not yet accomplished under this year.

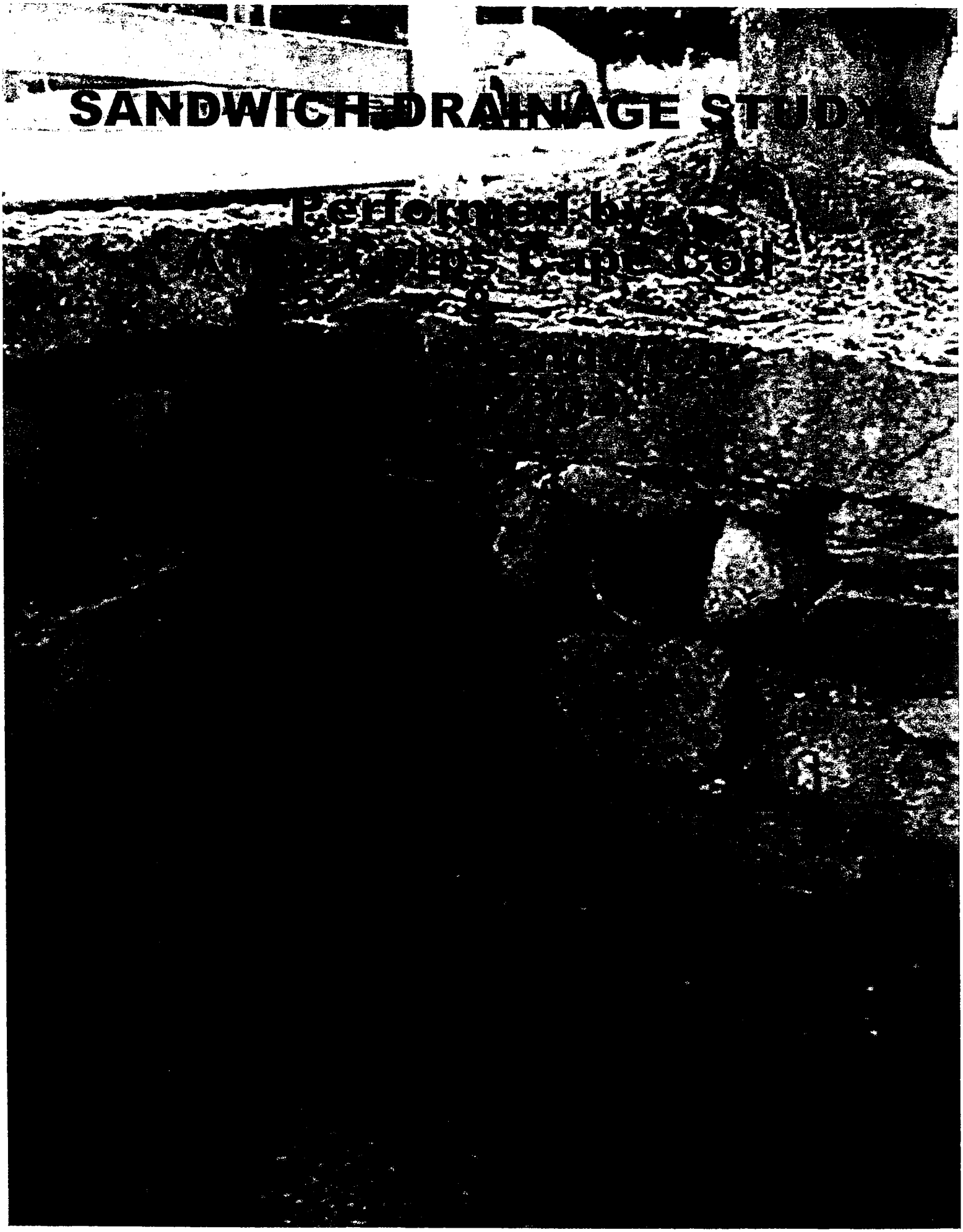
APPENDIX

SAMPLE OF TOWN ACTIONS – YEAR 1

SANDWICH DRAINAGE STUDY

Performed by

[illegible] Cape Cod



Team ID_____
Team Members_____
_____

SURVEY OF THE TOWN OF ~~BOURNE~~ SANDWICH
STORMWATER INFRASTRUCTURE

Fieldform: CATCHBASINS

Catchbasin ID: C73-5 Latitude: N 41° 45.483'

PhotoID:_____ Longitude: W 70° 29.784'

Date: 4/28/03 GPS ID: 214

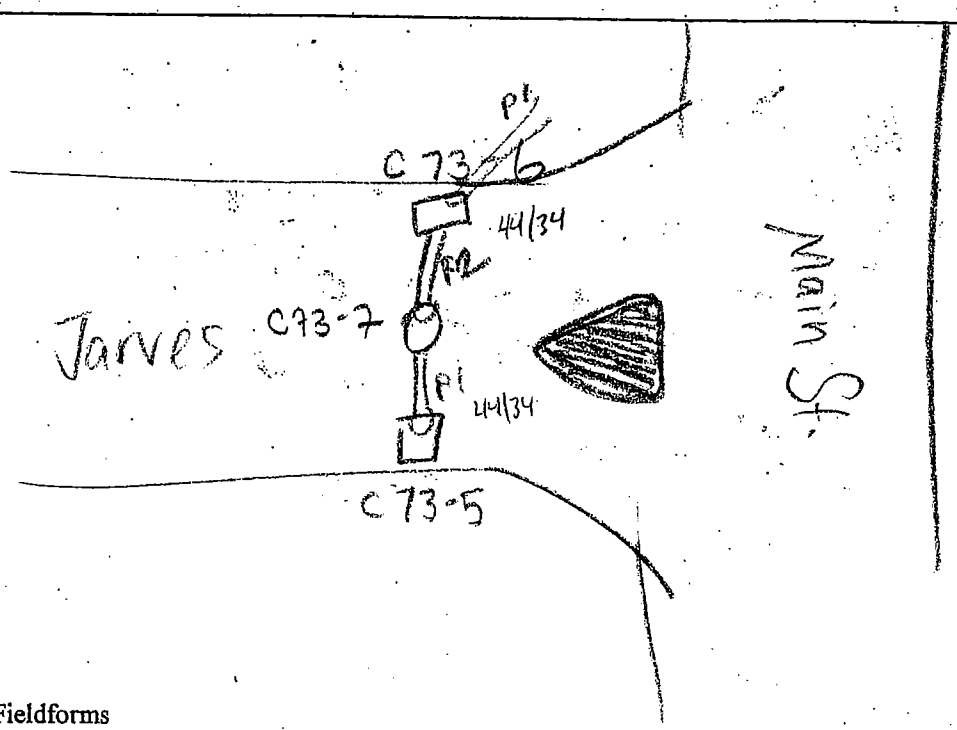
Street: Jarves

Condition of Catchbasin:
- Sediment in catchbasin? (Y) N
- Amount and Description: ton of sand
- Water in catchbasin? (Y) N
- Running water? Y (N)
- Describe flow path:_____ (ex. pipe 1 to pipe 2)
- Describe condition: muddy (color, smell etc.)
- Depth of water: not covering bottom 2" — invert = 41"
- Approx. Flow rate: N/A

lip on sidewalk side

37" invert to top of

Diagram of Catchbasin: (include pipes in and out, give each pipe a number, and give orientation to the street).



Team ID_____
Team Members_____
_____

SURVEY OF THE TOWN OF ~~BOURNE~~ SANDWICH
STORMWATER INFRASTRUCTURE

Fieldform: OUTFALLS

Outfall ID: O 82-1

Latitude: 41° 45. ~~633~~ 636

PhotoID: _____

Longitude: 70°29. ~~569~~ 571

Date: 4-14-03

GPS ID: ~~675~~ 205

Street: off Church

Condition of Outfall:

Structural problems? _____
_____ (broken, bent, corroded, etc.)

Filled with sediment? Y N

Amount and Description: _____

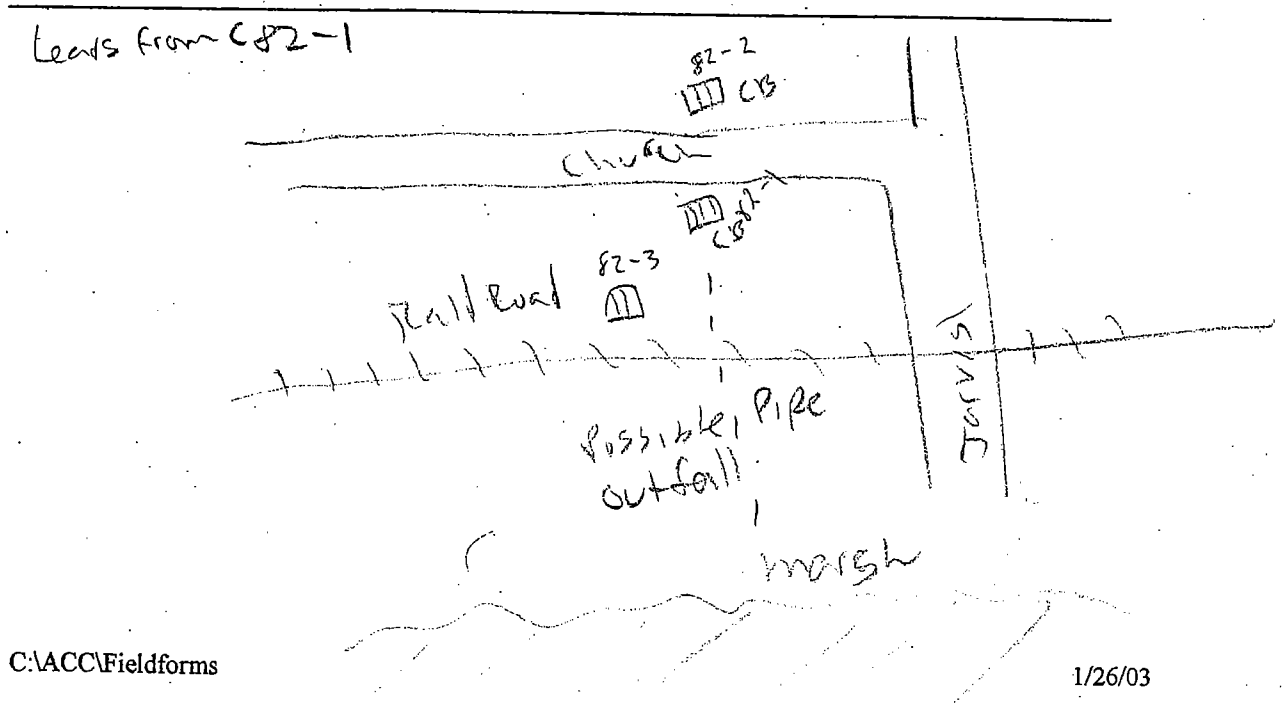
Running water? Y N

Describe condition: _____ (color, smell etc.)

Approx. Flow rate: _____

Describe flow path: _____
_____ (ex:.Outfall 1 to 2 or from street etc.)

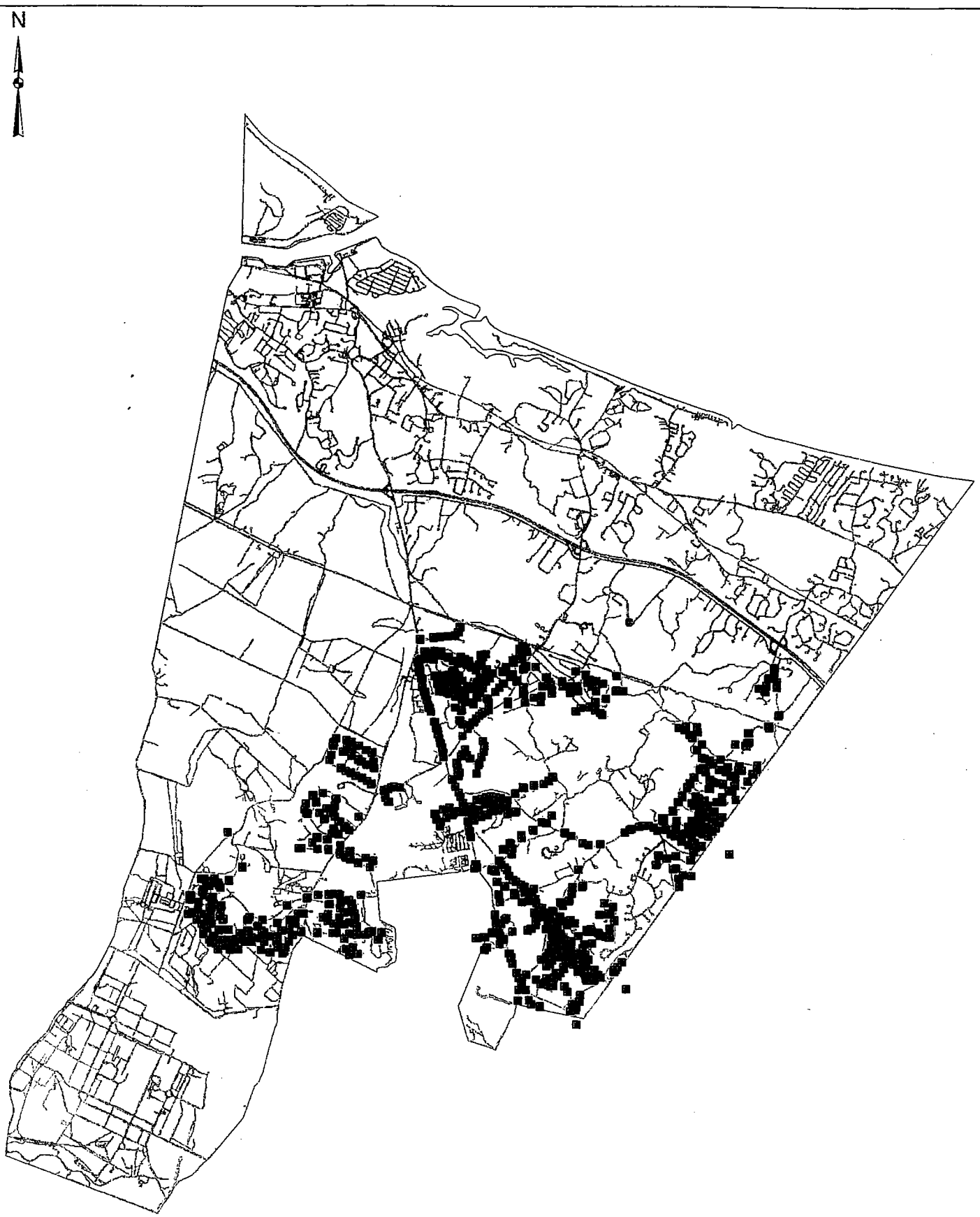
Diagram of Outfall: (orientation to street and connectivity to catchbasins).



SANDWICH CATCH BASINS - 10

LOCATION		ASSESSORS		FEATURE	COORDINATES		
S #	STREET	LOT #	MAP #	ID	LATITUDE	LONGITUDE	NOTES
3	Uphill Road	131	5	C5 - C24	N41° 40.731	W070° 31.710	
9	Spruce Tree Lane	221	5	C5 - C25	N41° 40.730	W070° 31.714	
8	Spruce Tree Lane	215	5	C5 - C26	N41° 40.719	W070° 31.704	
8	Hillside Road	208	5	C5 - C27	N41° 40.667	W070° 31.701	
7	Hillside Road	213	5	C5 - C28	N41° 40.670	W070° 31.703	
4	Hillside Road	210	5	C5 - C29	N41° 40.637	W070° 31.749	
5	Hillside Road	212	5	C5 - C30	N41° 40.638	W070° 31.751	
8	West Crossfield Road	233	5	C5 - C31	N41° 40.630	W070° 31.787	
3	Hillside Road	211	5	C5 - C32	N41° 40.631	W070° 31.785	
7	Spruce Tree Lane	220	5	C5 - C33	N41° 40.709	W070° 31.741	
8	Spruce Tree Lane	215	5	C5 - C34	N41° 40.705	W070° 31.739	
3	West Crossfield Road	227	5	C5 - C35	N41° 40.669	W070° 31.814	
2	West Crossfield Road	236	5	C5 - C36	N41° 40.705	W070° 31.868	
1	West Crossfield Road	226	5	C5 - C37	N41° 40.706	W070° 31.865	
11	West Crossfield Road	187	5	C5 - C38	N41° 40.604	W070° 31.793	
11	West Crossfield Road	187	5	C5 - C39	N41° 40.583	W070° 31.797	
1	Knolltop Road	190	5	C5 - C40	N41° 40.533	W070° 31.731	
	Weeks Pond Drive	191	5	C5 - C41	N41° 40.566	W070° 31.677	
6	Weeks Pond Drive	148	5	C5 - C42	N41° 40.569	W070° 31.670	
11	Weeks Pond Drive	199	5	C5 - C43	N41° 40.615	W070° 31.620	
12	Weeks Pond Drive	145	5	C5 - C44	N41° 40.612	W070° 31.620	
11	Weeks Pond Drive	199	5	C5 - C45	N41° 40.621	W070° 31.615	
14	Weeks Pond Drive	144	5	C5 - C46	N41° 40.619	W070° 31.611	
19	Weeks Pond Drive	203	5	C5 - C47	N41° 40.707	W070° 31.569	
22	Weeks Pond Drive	140	5	C5 - C48	N41° 40.708	W070° 31.567	

ID Notation: Digits prior to dash =Chart #. After dash C = Catch Basin, O = Outfall, W = Waterway etc.



Catch Basins
Town GPS Data
Sandwich, Massachusetts

ENVIRONMENTAL EYI
SENIOR ENVIRONMENT CORPS NEWSLET'
elder services of Cape Cod and the Islanc
Volume 2 UPPER CAPE EDITION March, 200
access / service / advocacy

SEC - How We Work

The mission of the SEC is to use the skills and knowledge of a lifetime to make a positive impact on the fragile environment of Cape Cod and the Islands while helping to foster an ethic of community service among all generations.

The SEC has approximately 50 AmeriCorps members plus additional RSVP (Retired and Senior Volunteer Program) volunteers located throughout Cape Cod and Martha's Vineyard. Members are placed with non-profit organizations and local, state and federal government agencies. AmeriCorps members serve for 450 hours over a one year term. Hours served range from 8-12 each week. They receive a small stipend. RSVP members do not have to meet any hour requirements and they serve without any compensation.

SEC members are retired professionals with varied backgrounds such as; engineering, technical writing, counseling, carpentry, gardening, teaching, biology, chemistry, marketing, and law.

Members who have an interest or expertise in any project may become **project leaders**. They are responsible for becoming familiar with the service partner's mission and objectives and identifying community need. They meet with the service partner prior to beginning the project to be certain that they have a total understanding of what is required to accomplish the task. They also need a thorough understanding of the protocols, procedures and techniques in completing a task and must adhere to the schedule and timetable commitment arranged by the service partner. Project leaders are also responsible for maintaining complete and accurate records relative to time, field data colleting and analysis and reporting and SEC member participation. Project leaders also recruit volunteers and coordinate activities and training with team members in the field so that a project is completed in an accurate and efficient manner.

When organizations need help on an environmental project, or if a member finds an organization in need of assistance, a **Fieldwork Coordinator** arranges a member's placement together with a supervisor at the job site. A service contract is then developed. Members can be assigned to one site for their entire term of service or to several short term projects lasting a few days, weeks or months.

Senior Environment Corps Fieldwork Coordinators represent the SEC in Cape Cod communities and serve as its primary spokespersons. They identify service partners and projects that fulfill the mission of the SEC.

Working with partners to define goals and project activities, they negotiate service partner agreements. They evaluate and approve individual service activities and monitor and approve the input of service hours for volunteer members.

The Coordinators establish priorities for resource allocations of volunteers and equipment and arrange for volunteer placement with service partners. They appoint project leaders to oversee the execution of each project and they also recruit and train new volunteers. They solicit in kind donations that support projects and define and organize technical and project specific training to enhance the SEC volunteer's capability to serve the community. Fieldwork Coordinators monitor volunteer's performance of service while tracking and evaluating the output of projects. They then report the results to the Service Partners and Elder Services.

SEC Fieldwork Coordinators:

Arthur Neill - Upper Cape
508-968-5125

Marybeth Madison Mid and Lower Cape
508-394-4630 - X175

Mary Nichols - Martha's Vineyard
508-696-9010

(OVER)

WBNERR Goals: (continued from pg.2)

The fundamental goals of the Waquoit Bay Reserve are to:

*Sponsor applied research on the natural and human processes within the Waquoit Bay Watershed,

*Translate research results to policy-makers and the public to encourage informed decisions on coastal management issues,

*Practice long term resource protection in this representative area,

*Promote stewardship and estuarine awareness through outreach activities designed to inform and involve the local citizenry, and

*Serve as a model to other coastal communities.

Storm Water Drainage Project

By Fred McDonald

Since the passage of the Clean Waters Act of 1972 the nation's waters have improved measurably. Still, many water bodies and estuaries are impaired by pollution. Verified by the EPA's 2000 National Water Quality Inventory do not meet water quality standards.

- -30% of assessed river and stream miles
- -46% of assessed lake acres
- -51% of assessed estuarine square miles.

Topping the list of impairments are turbidity, nutrients, bacteria, metals (i.e. mercury) and oxygen-depleting substances. The leading source of these impairments is urban/suburban storm water and construction site runoff. To address this problem, the EPA put into place a program to regulate certain storm water discharges.

In 1990, the EPA adopted Phase I of its storm water program under the National Pollutant Discharge Elimination System (NPDES) which addressed storm water runoff from medium and large municipal separate storm sewer systems (MS4's) that:

- -Serve populations of 100,000 or more
- -Have construction activity that disturbs 5 or more acres.
- -Have 10 categories of industrial activity.

In 1999, Phase II was put into motion.

This phase:

- -Regulates discharges from small MS4's located in communities under 100,000.
- -Regulates construction activity that disturbs between 1-5 acres.

The purpose of Phase II is to identify illicit discharges into the storm water system (direct septic releases, waste water from dishwashers and clothes washers, industrial and business discharges and construction runoff). When illicit discharges are found, water quality sampling will be conducted to determine the types of pollutants and bacteria that are present.

Trained teams from the SEC at the MMR have been providing support for the town of Sandwich as they move through this process. Our mission has been to provide the exact location of all storm drains and outfalls (using GPS latitude/longitude readings) that are on town roads or streets. Private roads and streets were not part of the survey due to legal constraints.

The outfalls will be the most critical part of Phase II as they are, almost always, discharging into ponds, streams, wetlands, estuaries, or low spots. All of the testing of suspected outfall will be completed after a dry period of 48-72 hours.

The Storm Water Drainage project has now extended into Mashpee. Unlike Sandwich, however, Mashpee's drainages consist primarily of catch basins with dry wells. Pollutants deposited into this system may work their way to underground water sources. There are known discharge pipes along the Mashpee coastal wetlands. Depending on the sources of these pipes, these could be a significant cause of high nitrogen levels in costal waters in the Mashpee area.

Our goal is to be able to hand to the towns a complete package of the location of all storm drains, outfalls and any possible problems with any of them. All the GPS information will be loaded into a Geographic Information System (GIS) database, which will be of great value to the town in helping to clear up this very urgent problem.

The SEC feels confident that they have performed a worthwhile service and saved the taxpayers of Sandwich and Mashpee a large sum of money.

SEC Member Profile:

Fred McDonald

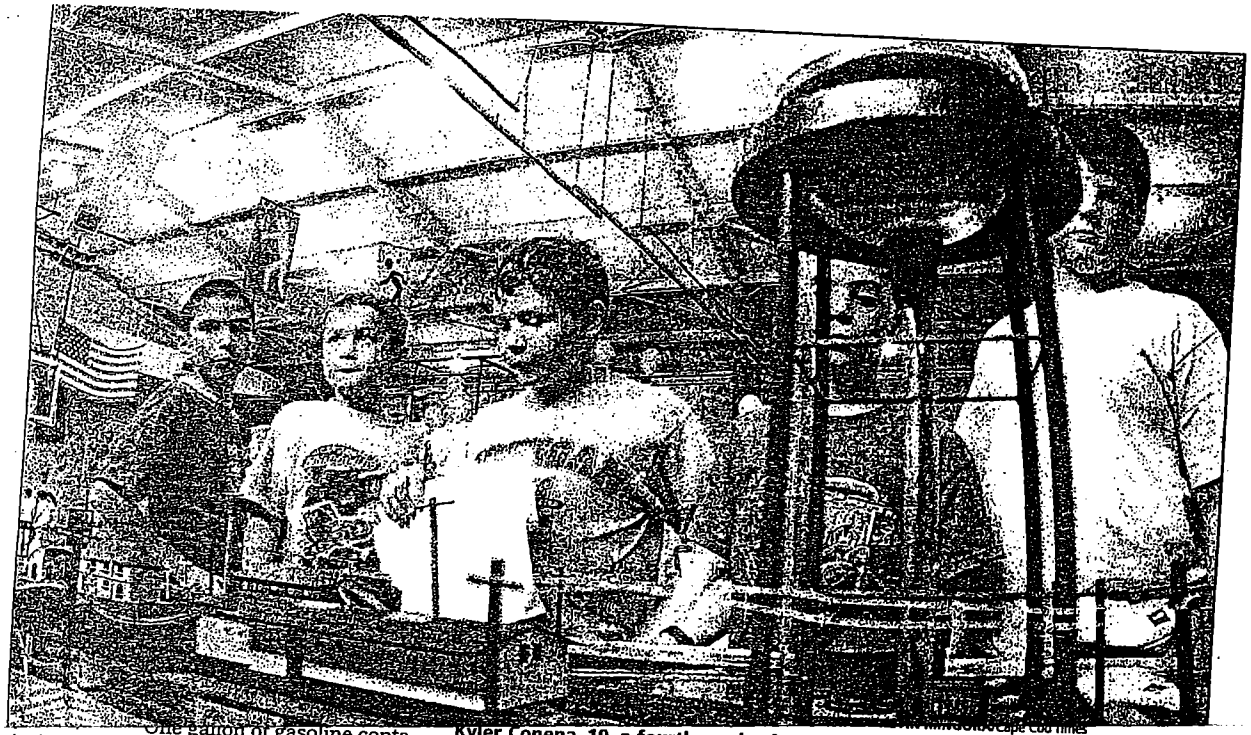
Fred McDonald attended high school in Bristol, Connecticut. He continued his education in the Army and graduated from the Sergeants Major Academy in Fort Bliss. After retiring from the military, Fred worked for Adult Probation Department in Connecticut and became the Program Coordinator for an at risk youth program in Niantic, Connecticut. Fred was appointed as the Executive Director and boxing instructor for the Vernon Police Athletic League in Vernon, Connecticut. He was also the President of the Northeast Airborne Ranger Infantry Companies of the Korean War.

Fred enjoys downhill skiing, biking, kayaking, boxing and spending time with his grandchildren. His area of interest in the Senior Environment Corps is the Storm Drainage Project.

(OVER)

		PROJECT WET WATER FESTIVAL CONCEPTS AND PRESENTERS		
	ACTIVITIES	CONCEPTS	AM	PM
1	**Enviroscape** Model Watershed and Land Use	Movement of water in a watershed: how land use affects water quality.	CCC Tom Cambareri:J. Erickson/K. Lynch	T. Mayberry/ K. Baird
2	**The Flow Below** Groundwater Flow Model	Physical model of wells, lakes, landfills; groundwater flow and contaminant transport.	AFCEE:Dan Miller & John Swartzbaugh	AFCEE:Dan Miller & John Swartzbaugh
3	**Great Grates** Storm Drain Stenciling	Stormwater runoff and mitigation.	Samdwich Engineer: Paul Tilton/ M. Mills	Samdwich Engineer: Paul Tilton/M. LaPerrier
4	**Flush the Kids** Crawl through a septic system model	Components of a septic system and how it works to treat waste.	Sandwich Board of Health: Dave Mason	Sandwich Board of Health: Dave Mason
5	**Bog in a Cup** Build your own cranberry bog	Bogs and their water supplies; cranberries and their cultivation.	M. Schumacher/J. Bergman	K. Gusmano/M. Ours
6	**Living in Water** Touch Tank/ microscope station	Wetand habitat and function	Thorton Burgess:	Thorton Burgess:
7	**Edible Aquifer** A delicious model of a groundwater aquifer, well, and contamination plume	Groundwater vocabulary and basic hydrologic principles.	K. Gusmano/M. Ours	D. Lenco/M. Song
8	**Raindrop Journey** Follow a raindrop from sky to well	Vocabulary and configuration of groundwater on Cape Cod.	D. Lenco/M. Song	M. Schumacher/J. Bergman
9	**Water Cycle Bracelet** A wearable way to remember the water cycle	Vocabulary and concepts of the water cycle.	M. LaPerriere	T. Meyers
10	**Pipe Works** Build a water distribution system	Structure and operation of public water supply delivery system	Sandwich Water Department	Sandwich Water Department
11	**Oil Slick**	Effect of Oil Spill on Marine Life	MA CZM: Steve McKenna	MA CZM: Steve McKenna
12	**Watershed Twister** Playing area is watershed to Lewis Bay.	Watershed concepts, maps skills, habitat.	T. Meyers	S. Herzig
13	**Water Willie's Electronic Quiz Board** Test your water knowledge	Water quality and water use facts.	S. Herzig	J. Snorek
14	**Water Olympics**	Physical properties of water explored.	N. Jaikumer	M. Mills
15	**Bubble Booth** See the world from inside a bubble.	Impact of soap on surface tension.	K. Baird	C. Milkey
16	**Tooth Booth** Compare water use.	Home water use and water conservation	J. Snorek/T. Mayberry	K. Battaglia/ K. Murray
17	**Ponds in Peril** Volunteer lake and pond monitoring Secchi disc design	Ponds in Barnstable, water quality monitoring demonstration	CCC/ Ed Eichner	CCC/ Ed Eichner
18	**Face painting** Water creatures	Habitat identification	M. Lerman	B.Smith
19	**Where Rivers meet the Sea** Saltwater interface experiment	How freshwater floats on saltwater.	WBNERR/ S. Vitelli/ B. Smith/ C. Milkey	D. Blickstein/ T. Gill
20	**Weather Watchers**	Rain Gauge Measurements, Data Collection, Spatial Variability, Drought Indicators	NOAA: Nicole Belk	NOAA: Nicole Belk
21	**Pucker Effect**	Groundwater quality exploration	D. Blickstein/ T. Gill	J. Erickson/K. Lynch
22	**Turbidity or Not Turbidity**	Compare turbidity of muddy and clear water and investigate ways to reduce it.	K. Battaglia/ K. Murray	N. Jaikumer./ K. Bairs

CAPE COD TIMES
MAY 31, 2003



Kyler Conena, 10, a fourth-grader from Henry T. Wing School in Sandwich, is encased in a giant bubble by Cathy Milkey, Barnstable County AmeriCorps-Cape Cod member.

demonstrate to students at the Henry T. Wing School how pollution spreads from farms into rivers.

One gallon of gasoline contaminates 750,000 gallons of water," AmeriCorps volunteer Margaret Song told children at the "Edible Aquifer" booth.

Before her, each child held a cup filled with ice, which represented rocks and soil.

Song added lime soda, which substituted for rain settling on top of the ice, becoming the aquifer.

Next she scooped ice cream, which represented the coarse sand of earth.

Children were instructed to pump the water by drinking through a straw. Then, she added a dot of red dye, or gasoline, to the top of the ice cream.

Song poured more lime soda to show what happens when it rains. The red dye expanded, staining a large part of the aquifer.

Students were left with a pink milkshake and knowledge of how groundwater pollution can spread.

Over at the "Enviroscape" booth, Tom Carbareri, water resources program manager for the Cape Cod Commission, sprayed water on top of little bits of cocoa powder.

The powder was on a plastic mold of what could be the landscape of many American towns.

The cocoa represented cow dung from a farm. When the rain came, the cocoa mixed with pesticides from the farmer's fields, mud from a construction site, old paint from a nearby factory, and oil from a neighboring race car.

The rainbow of toxic chemicals flowed into storm drains and emptied into th

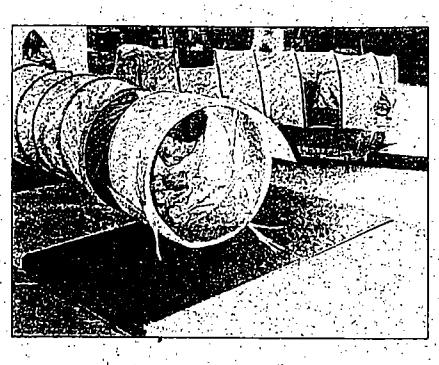
The festival may have seemed whimsical with all the ice cream and cocoa goop flowing, but the intent was serious.

"Here on Cape Cod, wells have been shut down, streams have been harmed, shellfish don't grow in some beds anymore," Carbareri told the children.

The Groundwater Guard Tea n puts on about three water programs a year. They are funded by a $20,000 annual grant from Barnstable County and a $3,000 grant from Project WET, a national group that advocates water education.

"Here on Cape Cod, wells have been shut down, streams have been harmed, shellfish don't grow in some beds anymore."

Groundwater Guardian Team's Water Festivals Head to Sandwich and Truro Schools



You'll probably never have the dubious pleasure of crawling through a residential septic system, but several hundred children from Sandwich and Truro schools will do just that this spring, and it's likely to be an experience they'll never forget—which is exactly the point.

Twenty different activities such as the mock septic-system affectionately called "Flush the Kids" (pictured above) and a test called "Willy's Water Quiz Board" (pictured at right) will be the spotlight of two water education festivals organized by Cape Cod's Groundwater Guardian Team. The first will be held on May 30, 2003, at the Henry T. Wing School in Sandwich, and the second will be held on June 9, 2003, at the Truro Central School. Funding is provided by Barnstable County.

The Sandwich festival, cosponsored with the Town of Sandwich and the Sandwich Water District, will introduce about 200 fourth- and fifth-grade students and their teachers to the properties of water—particularly Cape Cod's surface and groundwater—and efforts to protect these resources. More than 40 professionals from environmental agencies on Cape Cod and in Massachusetts, including Barnstable County's AmeriCorps Cape Cod members, have volunteered to work at the all-day festival.

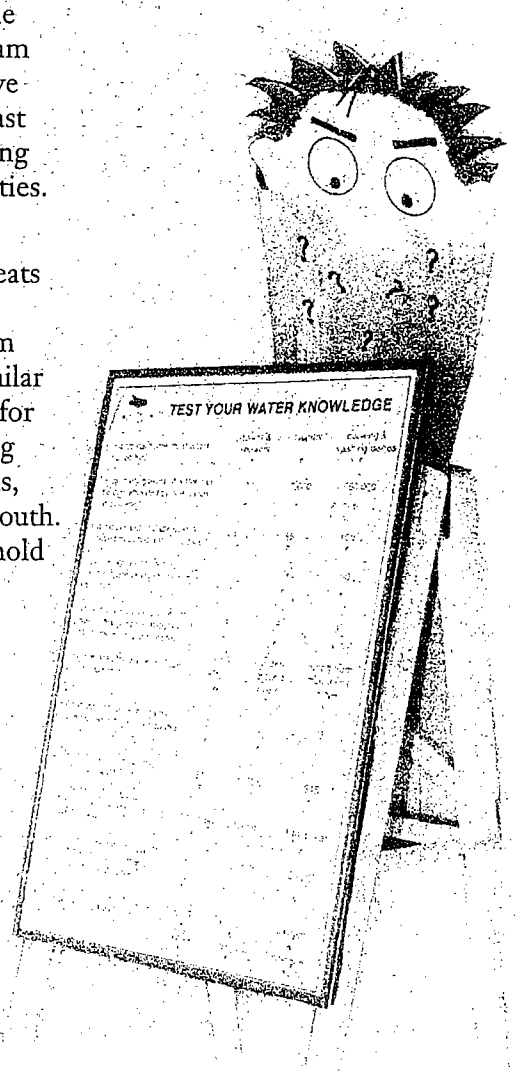
The June water festival at the Truro Central School will engage the entire student body—130 children from pre-kindergarten through sixth grade. This festival, although sponsored by the Cape Cod Groundwater Guardian Team, will be staffed primarily by the members of Barnstable County's AmeriCorps program housed in Wellfleet, who have worked the festivals in the past and are well trained in running the many, high-energy activities.

This year's Sandwich and Truro water festivals are repeats of festivals sponsored by the Groundwater Guardian Team in past years. They follow similar and highly successful events for other Cape schools, including Barnstable, Chatham, Dennis, Harwich, Mashpee, and Yarmouth. In September, the team will hold a water festival for 400 fifth- and sixth-grade students in Orleans.

All Cape Cod Groundwater Guardian festivals aim to educate students and their teachers through hands-on activities with catchy names, such as:

- Raindrop Journey
- Weather Watchers
- Enviroscapes
- Water Cycle Bracelets
- Bubble People
- Edible Aquifer
- Where Rivers Meet the Sea

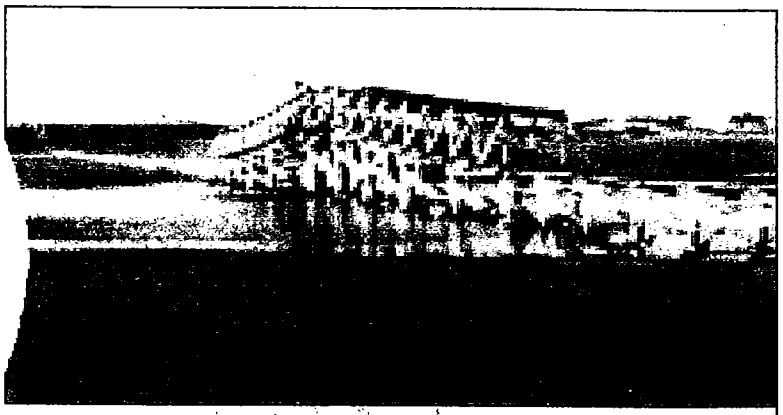
For more information, contact Hydrologist Gabrielle Belfit, one of the coordinators of the Cape Cod Groundwater Guardian Team, at the Cape Cod Commission: (508) 362-3828.



Sandwich, Massachusetts
Old Village Center

TREE INVENTORY AND MANAGEMENT PLAN

April, 2004



Prepared for

TOWN OF SANDWICH
Department of Public Works
500 Route 130
Sandwich, Massachusetts 02563

By

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Sandwich *Falmouth* *Bourne* *Mashpee* *Sandwich* *Falmouth*

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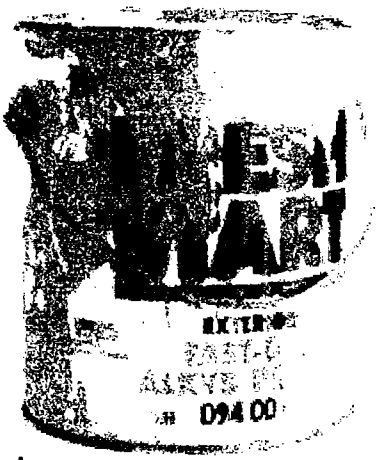

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Bring your thermostats, switches, thermometers containing mercury *and receive a free digital thermometer in exchange from American Ref-Fuel Company of SEMASS.*

Businesses must make arrangements to participate

Proof of Residence Required. For Information and Directions, call:
Barnstable County Hazardous Materials Program **800-319-2783**

For Bourne, Falmouth, Mashpee, Sandwich and Coast Guard Air Station Cape Cod residents.

Cape Cod Groundwater Guardian Team

PO Box 226
3225 Main Street
Barnstable, MA 02630
Telephone: (508)362-3828 • Facsimile: (508)362-3136
E-mail: water@cape.com

Participating agencies:

- *Association for the Preservation of Cape Cod*
- *Barnstable County Dept. of Health and the Environment*
- *Barnstable County Water Utilities Association*
- *Cape Cod Commission*
- *Cape Cod Cooperative Extension*
- *Cape Cod Cranberry Growers' Association*
- *League of Women Voters*
- *Waquoit Bay National Estuarine Research Reserve*

To: Paul Tilton, Town of Sandwich
From: Gabrielle Belfit
Date: February 17, 2004
RE: Stormwater Markers

Dear Paul;

I have ordered the custom stormdrain markers and door hangers. Your order for 1000 markers ($2,100) and 5000 door hangers ($575) and 25 tubes of adhesive ($200.25 comes to a total of $2,938.75 including your share of the shipping charges ($63.50). Please send a check payable to Barnstable County for this amount and please note that the check is to be paid to the Groundwater Guardian account.
Thank you.

Gabrielle

STORM DRAIN MARKERS

DOOR HANGERS

WHEN IT RAINS IT DRAINS!

A HOMEOWNER'S GUIDE TO UNDERSTANDING STORMWATER POLLUTION

Did you know your neighborhood drains to Cape Cod waters? A little effort on everyone's part goes a long way toward keeping our waters clean!

For more information:

Why should I care about stormwater pollution?

Stormwater is rain that falls on driveways, roads, and lawns. As stormwater travels over the land, it picks up contaminants not naturally found in our waterways. This water is carried away by stormwater pipes and drains. It eventually ends up in our groundwater, rivers, ponds, estuaries and the ocean. Pollution of our waterways can kill plants and animals that live in the water and make it unpleasant or even unsafe to boat, swim or fish.

What is in stormwater pollution?

Animal and yard waste	Septic system overflow
Oil and grease	Motor vehicle fluids
Sediments	Fertilizers and pesticides
Litter	Car washing detergents

What can I do to keep Cape Cod waters clean?

- Never dump anything into or near storm drains.
- Use fertilizers sparingly and avoid pesticides.
- Sweep up driveways, sidewalks and roads.
- Compost your yard waste.
- Water the lawn, not driveways or streets.
- Instead of washing the car in the driveway - wash it on the lawn or, better yet, go to a carwash that recycles.
- Check your car for oil, antifreeze and transmission leaks and make immediate repairs if needed.
- Never dump oil or antifreeze on the ground; recycle it instead at a designated recycling center.
- Pick up after your pet.
- Pump and inspect your septic tank regularly.

Helpful Websites:

www.epa.gov/npdes/stormwater
www.state.ma.us/dep/brp/stormwtr/stormpub.htm
www.capecodgroundwater.org

ATTENDED BY ALAN MACKAY, ENGINEERING TECHNICIAN
ALAN TRAINS ALL NEW EMPLOYEES

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Invite you to attend mercury handling training session

What You Will Learn

- Hazards associated with mercury
- Mercury exposure routes
- Alternatives to mercury products
- Applicability of the Massachusetts Universal Waste Rule to mercury devices
- Applicability of Massachusetts Hazardous Waste Rules to mercury devices
- Types of materials that contain mercury
- Proper handling and storage of mercury
- Options for disposal of mercury
- How to clean up mercury spills

When, Where, Cost, How to Register?

- Thursday, January 8, 2004 – 9:30 a.m. – 12 (noon) at the SEMASS Facility
141 Cranberry Hwy., W. Wareham, MA 02576

OR

- Thursday, January 22, 2004 – 9:30 a.m. – 12 (noon) in Waltham
165 Lexington St., between Police & Fire Departments, parking on the street
- Please call Sidi Mateo at 508.291.4427 to reserve a seat – seating is limited, you must reserve your seat
- Refreshments will be served
- The training is being sponsored by SEMASS and is free

Who will be doing the training? Why attend?

- Leo Traverse – HAZMATEAM, Inc.
Leo is very well versed in mercury issues within the state
- All municipalities who handle mercury-bearing items are strongly encouraged to have trained personnel on their sites

Stakeholder meetings:

- An opportunity to discuss the potential new activities which maybe included in the new Plan slated to begin July 1, 2004; as well as the past activities
- Thursday, January 8, 2004 at SEMASS-141 Cranberry Hwy, W. Wareham – 1:30 p.m.–4 p.m.
- Tuesday, January 27, 2004 in Hyannis -Courtyard Marriott–707 Route 132, Hyannis– 9 a.m. – 11:30 a.m.
- Seating is limited so you must call Sidi Mateo at 508.291.4427 to reserve a space

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

RECEIVED
MAR 21 2003
TOWN OF SANDWICH
ENGINEERING DEPT.

March 18, 2003

Paul S. Tilton
Assistant Town Engineer
16 Jan Sebastian Drive
Sandwich, MA 02563

RE: RE: Stormwater Management Program, Sandwich, MHC #RC.32569

Dear Mr. Tilton:

Thank you for submitting information to the Massachusetts Historical Commission regarding the proposed project referenced above. Staff of the MHC have reviewed the information you submitted and have the following comments.

The Town of Sandwich includes more than 60 properties listed in the National and State Registers of Historic Places, as well as more than 20 recorded archaeological sites.

MHC understands that the proposed stormwater management plan does not include any demolition or new construction at this time. Although implementation of the proposed stormwater management plan may involve new construction, specific projects have not yet been designed. Therefore, MHC staff have determined that the proposed project is unlikely to affect significant historic or archaeological resources at present. If implementation of the plan should entail new construction or demolition, MHC requests the opportunity to review project plans in order to assess the likelihood that historic properties may be located within project impact areas in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) and Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 71). If you have any questions concerning this review, please feel free to contact me at this office.

Sincerely,

Eric S. Johnson
Archaeologist/Preservation Planner
Massachusetts Historical Commission

xc: Jeannie Brochi, EPA
Sandwich Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc