Barnstable County
Department of
Health and Environment

Database Management Program for
Innovative/Alternative
On-site
Sewage Treatment Systems
What’s our issue with I/As?

- Barnstable County, comprised of the 15 towns on Cape Cod, currently has approximately 1000 individual on-site I/A systems permitted
  - Majority at single family homes
  - Some at condos, motels, congregate living, restaurants, commercial facilities
  - All have design flows <10,000 gpd
    (design flows >10,000 gpd are permitted and regulated by DEP, not by towns)

What are IAs

Provide a level of wastewater treatment beyond a T5 system

Permitted by DEP, under General, Provisional, Remedial, and Pilot

Most on Cape Cod are installed with an expectation of nitrogen removal
Why so many?

- State-defined Nitrogen Sensitive Areas (Zone II’s to public supply wells and lots with wells and septic systems)
- Upgrade situations where owner cannot meet setbacks to wells or wetlands
- Concerns over nitrogen loading to coastal waters
Massachusetts Estuaries Program

- Has been studying most of Cape Cod’s estuaries
- Will be issuing TMDLs for nitrogen for these estuaries, and sub-embayments, over the next few years
- Has spurred towns to begin Comprehensive Wastewater Management Planning process
- What role will individual on-site I/As play in the future?
I/A systems have O&M and sampling requirements

- Each system must have an operator
- Systems must be monitored, usually quarterly, to ensure all components are operating properly
- System water quality must be monitored, often quarterly, to ensure it meets required standards
- System operators must report results to Boards of Health and DEP
Local Boards of Health often impose additional requirements

- More frequent monitoring
- Monitoring for a longer period of time than required by DEP
- Additional nitrogen monitoring
What does this add up to?

- Many systems
- Randomly geographically installed
  - I/As often installed at time of system upgrade
  - Lack of coordinated wastewater planning in most cases
- Variability in O&M and sampling requirements due to
  - Permitting under different DEP approval levels
  - Local requirements imposed by BOH
Labor intensive for local health departments to manage

Local Health Departments often do not have adequate staff to oversee IA systems to ensure:
- Systems are being inspected and sampled as required
- To provide follow up when systems are not inspected or do not meet effluent standards
In recognition of this problem, and to assist towns, Barnstable County Department of Health and Environment in 2001 created a preliminary database to track I/A systems.

Uniqueness of Barnstable County Department of Health and Environment, ability to play this role
**Original database**

- System operators reported results of O&M and sampling to BOH
- BCDHE periodically collected results from each town
- Results got manually entered into BCDHE database
- BCDHE prepared summary performance reports for each town
- Still labor intensive
- No time left over for compliance efforts or data analysis

RECOGNIZED THAT WE NEEDED TO DO SOMETHING MORE EFFICIENT
BCDHE created a new management program to assist towns
- Web-based database
- Operators report directly to database via web
- Paperless
- Contract with Carmody Data Systems Inc. web-based database

Recognized need to go to more efficient method
Started program just about 1 yr ago
Has taken us the past year to get the database customized
Why did we choose Carmody?

- Database is customized to Barnstable County and local needs
- **Flexible**
  - Capabilities can be expanded or altered as necessary in the future as needs and program changes
- User friendly
  - Training provided for operators and health staff
- Inexpensive, *no cost to towns*
What does the database do?

- Tracks maintenance and inspection events for individual systems
- Provides alerts that inspections or sampling are needed or when these events are missed
- Tracks effluent testing results and provides alerts when effluent does not meet limits
- Tracks compliance actions (enforcement letters, phone calls, etc.)
Database features

- Automatically creates a system service history for each system
  - System history includes information on:
    - maintenance events
    - sampling results
    - compliance actions
- Provides real time information on individual systems
- Data transfer capabilities to Excel and GIS
TO BEGIN, YOU CAN SEE BARNSTABLE COUNTY’S HOME PAGE AND THE ALERTS IT PROVIDES
DATABASE LISTS ALL SYSTEMS OF EVERY TECHNOLOGY TYPE. IF YOU CLICK ON ANY OF THE NUMBERS, IT WILL GENERATE A LIST OF ALL THE ASSOCIATED SYSTEMS.

NOTE ALSO THAT THIS INCLUDES SAMPLE REPORTS AND MAINTENANCE CONTRACTS.

SO YOU CAN SEE THE HOME PAGE SHOWS US THAT THERE ARE SEVERAL SYSTEMS DUE FOR INSPECTION IN THE NEXT 30 DAYS.

It also shows us the systems that are 30, 60, and 90 days over due for inspection.

It ALSO SHOWS US HOW MANY SYSTEMS ARE OVERDUE FOR SAMPLING, AND SYSTEMS WHOSE O&M CONTRACT HAS LAPSED.

THIS SYSTEM WORKS BECAUSE WE CAN CUSTOM SET FLAGS FOR EACH SYSTEM when we set up its permit.
Each component is set up individually and gets its own custom schedule.

Every time a report is filed, the Last Service Date field is updated, and the Due Date—which triggers the FLAGGING system—is similarly updated based on the calendar term selected.
SOME OF THE MOST USEFUL FEATURES OF THE DATABASE

- Message Boards
- Compliance Tracking
- Correspondence tracking
- Ability to easily access water quality data
General message board

Operators send messages about cancelled contracts, change of owner, changes in testing etc. Very useful to help us keep database updated
We can edit notes as needed. Notes can stay on the message board as long as we need to keep them there while we follow up. When done, they can be saved to system history.
MAINTENANCE VERIFICATION BOARD LETS US KNOW IF THE OPERATOR ENCOUNTERED PROBLEMS DURING INSPECTION

MESSAGES ARE AUTOMATICALLY GENERATED WHEN OPERATOR FILES A REPORT, IF HE CANNOT COMPLETE THE INSPECTION, OR A COMPONENT NEEDS FOLLOW UP OR REPAIR
**Maintenance Verification Message Board**

<table>
<thead>
<tr>
<th>Assigned Service Provider</th>
<th>Tracking #</th>
<th>Name</th>
<th>Age</th>
<th>Date Created</th>
<th>Subject</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.R. Mahony &amp; Associates, Inc.</td>
<td>MAGre0090Amp</td>
<td>Nurnan, Nancy</td>
<td>50</td>
<td>2/2/0508 12:14:03 PM</td>
<td>The System Needs Follow Up Service (Component Replacement or Service, Components Made Accessible for Inspection or Sampling, System Pumping, etc.)</td>
<td>Clear Edit Save</td>
</tr>
<tr>
<td>Wastewater Treatment Services, Inc.</td>
<td>MAWt1055AS</td>
<td>Lucca, Christian</td>
<td>50</td>
<td>2/2005 05:23:24 PM</td>
<td>All Required Inspection Activities Were Performed for This System</td>
<td>Clear Edit Save</td>
</tr>
<tr>
<td>Wastewater Treatment Services, Inc.</td>
<td>MAWt1055AS</td>
<td>costa, John</td>
<td>106 Wateline Drive</td>
<td>2/2005 05:00:02 AM</td>
<td>All Required Inspection Activities Were Performed for This System</td>
<td>Clear Edit Save</td>
</tr>
</tbody>
</table>

**Maintenance Verification**

This message board serves as a place where we can park systems that are in need of follow-up, until we are satisfied. How are these messages generated?
THEY ARE AUTOMATICALLY GENERATED WHEN AN OPERATOR SUBMITS THE INSPECTION REPORT

NOTE THAT THE REPORT KNOWS WHAT TECHNOLOGY IS BEING REPORTED ON, AND BRINGS UP ALL THE QUESTIONS THAT ARE SPECIFIC TO THAT TECHNOLOGY
REPORT INCLUDES DEP’S NEW FIELD TESTING QUESTIONS
AS OF JAN 2006, DEP ALLOWS SYSTEM WITH GENERAL AND REMEDIAL USE TO BE INSPECTED AND FIELD TESTED ONLY ONCE PER YEAR. IF THE SYSTEM PASSES FIELD TEST, NO FURTHER SAMPLING IS REQUIRED.
OPERATOR FILLs OUT REPORT. ALL QUESTIONS SPECIFIC TO HIS TECHNOLOGY ARE ON THE REPORT. SHOULD ALSO NOTE THAT WHEN THIS REPORT IS PRINTED, IT WILL LOOK EXACTLY LIKE THE DEP REQUIRED REPORT FORM
## EQUIPMENT OPERATION

### Electrical Panel(s)
- **Were the Electric Panels checked?**
  - [ ] Yes
  - [ ] No
- **Visual Alarm Operating**
  - [ ] Yes
  - [ ] No
- **Audio Alarm Operating (if present)**
  - [ ] Yes
  - [ ] No
- **Detailed Comments of Site Conditions - Maintenance performed or Required for the above items**

### Blower(s):
- **Were the Blowers checked?**
  - [ ] Yes
  - [ ] No
- **Air Inlet Filter Clean?**
  - [ ] Yes
  - [ ] No
- **Blower hood vents clean?**
  - [ ] Yes
  - [ ] No
- **Excessive Noise**
  - [ ] Yes
  - [ ] No
- **Excessive Vibration**
  - [ ] Yes
  - [ ] No
- **Detailed Comments of Site Conditions - Maintenance Performed or Required for the above items**

(225 character limit for printing)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (Standard Units) (LIMIT: 6-9 S.U.)</td>
<td>Result</td>
</tr>
<tr>
<td>Color (LIMIT: Clean)</td>
<td>Result</td>
</tr>
<tr>
<td>Temperature (Result)</td>
<td>Result</td>
</tr>
<tr>
<td>Dissolved Oxygen (LIMIT: 2 mg/L)</td>
<td>Result</td>
</tr>
<tr>
<td>Odor (LIMIT: Slightly musty odor (not septic))</td>
<td>Result</td>
</tr>
</tbody>
</table>

**Detailed Comments of Site Conditions - Maintenance performed or Required for the above items**

*(225 character limit for printing)*

**All Required Inspection Activities Were Performed for This System**
- Yes
- No

**The System Needs Follow Up Service (Component Replacement or Service, Components Made Accessible for Inspection or Sampling, System Pumping, etc.)**
- Yes
- No

MANDATORY QUESTIONS, IF ANSWER TO FIRST QUESTION IS NO, OR ANSWER TO 2ND QUESTION IS YES, AUTOMATICALLY GENERATES MESSAGE TO MESSAGE BOARD
THIS MESSAGE BOARD AUTOMATICALLY ALERTS US WHEN A WATER SAMPLE EXCEEDS LIMITS
IF WE CLICK ON IT, WE GET THE LIST
### Sample Reports

<table>
<thead>
<tr>
<th>Assigned Service Provider</th>
<th>Tracking #</th>
<th>Name</th>
<th>Age</th>
<th>Date Created</th>
<th>Subject</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gift Barn, Inc.</td>
<td>EP1cam780FAS</td>
<td>Cape Cod Marsh</td>
<td>0</td>
<td>Service Date: 2/8/2006 8:00:00 AM</td>
<td>63 mg/L exceeded the limit of 30 mg/L for BOD5 Amount: 62 mg/L exceeded the limit of 19 mg/L for TKN Amount: 82.1 mg/L exceeded the limit of 18 mg/L for Total Nitrogen: 92 mg/L exceeded the limit of 30 mg/L for TSS Amount</td>
<td>Clear</td>
</tr>
<tr>
<td>Coastal Engineering Co., Inc.</td>
<td>HPLc65G8Bio</td>
<td>Cape Cod Harbor</td>
<td>2</td>
<td>Service Date: 1/28/2006 12:00:00 PM</td>
<td>22 mg/L exceeded the limit of 18 mg/L for Nitrate Amount: 22.1 mg/L exceeded the limit of 18 mg/L for Total Nitrogen</td>
<td>Clear</td>
</tr>
<tr>
<td>Wastewater Treatment Services, Inc.</td>
<td>YAST641FAS-B</td>
<td>Cape Cod Tower</td>
<td>18</td>
<td>Service Date: 1/9/2006 11:46:00 AM</td>
<td>68.0 mg/L exceeded the limit of 18 mg/L for Nitrate Amount: 74.3 mg/L exceeded the limit of 18 mg/L for Total Nitrogen</td>
<td>Clear</td>
</tr>
</tbody>
</table>

**THESE MESSAGES ARE AUTOMATICALLY GENERATED WHEN THE OPERATOR FILES HIS SAMPLE REPORT**
Submit Sampling Report

Service Report - Sampling Report

BARNSTABLE County, Massachusetts ~ Susan Rask ~ 2/20/2006

Permit: DEC04146FAS (tracking #)
Name: Banas, Michael
Address: 146 Old Wharf Road, Cottage 7
DENNISPORT, MA
Management Level: General with Nitrogen Requirements

Assign Reporting Agent
- Most Recent Wastewater Treatment Services, Inc.
- Used in the past - Select One -
- In County - Select One -
- Regulators - Select One -

Report Filed By: Susan Rask
Select System component(s) that were sampled:
- FAST
- Sample Report (Effluent)

Date & Time Serviced: 2/02/2006 @ [ ]:[ ]:

Notes/Comments/Message or Other Observations:
Because different systems have very different sampling requirements, we needed to be able to customize the report form to specify what parameters have to be sampled. Total nitrogen auto sums, and if it or any other parameter exceeds limit it generates a message to message board. We set limits in system permit.
IN THE PROPERTY INFORMATION/PERMIT PAGE, WE CAN CUSTOM SET UPPER AND LOWER LIMITS FOR EACH WATER QUALITY PARAMETER.

If the report filed exceeds these LIMITS, A MESSAGE IS AUTOMATICALLY SENT TO MESSAGE BOARD.
System History

- All of the above messages are stored in each individual system’s history,
- We can quickly see
  - how a system has performed over time
  - if it has had recurring maintenance problems
  - If it has had recurring water quality violations
ON HOME PAGE, CHOOSE PROPERTY INFO AND SEARCH BY OWNER, THEN VIEW HISTORY
THIS SHOWS ALL INSPECTION AND SAMPLING EVENTS,
PLUS COMMENTS FILED BY OPERATORS WHEN THEY SUBMIT THEIR REPORTS
YOU CAN ALSO SEE MESSAGES WE’VE SAVED FROM THE MESSAGE BOARD

<table>
<thead>
<tr>
<th>Date Entered</th>
<th>Date Pumped</th>
<th>Gallons Pumped</th>
<th>Recorded By</th>
<th>Report Type</th>
<th>Disposal Site</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/22/2005</td>
<td>11:30 AM</td>
<td>5,100</td>
<td>Coastal Engineering Co., Inc.</td>
<td>Sampling Report</td>
<td>Using The Web Site</td>
<td>Test results show that the system is not treating.</td>
</tr>
<tr>
<td>5/22/2005</td>
<td>1:15 PM</td>
<td>5,100</td>
<td>Coastal Engineering Co., Inc.</td>
<td><strong>Sampling Report</strong></td>
<td>System operating properly.</td>
<td></td>
</tr>
<tr>
<td>5/22/2005</td>
<td>1:15 PM</td>
<td>5,100</td>
<td>Coastal Engineering Co., Inc.</td>
<td><strong>Sampling Report</strong></td>
<td>System operating properly.</td>
<td></td>
</tr>
<tr>
<td>5/22/2005</td>
<td>1:15 PM</td>
<td>5,100</td>
<td>Coastal Engineering Co., Inc.</td>
<td><strong>Sampling Report</strong></td>
<td>System operating properly.</td>
<td></td>
</tr>
<tr>
<td>5/19/2005</td>
<td>2:50 PM</td>
<td>5,100</td>
<td>Coastal Engineering Co., Inc.</td>
<td><strong>Sampling Report</strong></td>
<td>System operating properly.</td>
<td></td>
</tr>
</tbody>
</table>
END OF MESSAGE BOARDS
NEXT: COMPLIANCE
We wanted to be able to design a way to track these actions in the database

Compliance

- BCDHE does follow-up and enforcement for towns:
  - expired O&M contract
  - failure to inspect or sample
  - water quality does not meet limits
Compliance Tracking

- Database has been customized to create comprehensive compliance history for each system
  - Log of all compliance actions: correspondence and phone calls with owners, operators and Boards of Health
  - Correspondence can be written and stored in database
  - Printed correspondence can be scanned into database
Compliance Tracking

- Database can be queried to find systems based on type of non-compliance
  - Contract cancelled
  - Sampling not performed
  - Sampling exceeds limits
  - System not inspected

- Shows number of times an individual system has been out of compliance, so we can rapidly identify “chronic offenders”
Compliance message board is how we track systems as we work to bring them into compliance.

WE PLACE SYSTEMS ON THIS MESSAGE BOARD OURSELVES, FOR OUR OWN USE.

IF WE CLICK ON THIS, WE GET A LIST OF ALL NON-COMPLIANT SYSTEMS.
List of Non-Compliant systems

Customer Status
BARNSTABLE County, Massachusetts ~ Susan Rask ~ 3/1/2006

Non-Compliance

<table>
<thead>
<tr>
<th>Property</th>
<th>Assigned Service Provider</th>
<th>No. Of Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Cod</td>
<td>J.C. Ellis Design Co., Inc.</td>
<td>2</td>
</tr>
<tr>
<td>[Address]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnstable</td>
<td>OMNI Environmental Systems, Inc.</td>
<td>2</td>
</tr>
<tr>
<td>[Address]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash-Lynette</td>
<td>OMNI Environmental Systems, Inc.</td>
<td>2</td>
</tr>
<tr>
<td>[Address]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnstable</td>
<td>OMNI Environmental Systems, Inc.</td>
<td>2</td>
</tr>
<tr>
<td>[Address]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McIntosh, Sandra Ann</td>
<td>OMNI Environmental Systems, Inc.</td>
<td>2</td>
</tr>
<tr>
<td>[Address]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mullane, Thomas and Marsha</td>
<td>Wastewater Treatment Services, Inc.</td>
<td>2</td>
</tr>
<tr>
<td>[Address]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

THIS TELLS US THE NUMBER OF TIMES A SYSTEM HAS BEEN NON-COMPLIANT
HOW DOES THE SYSTEM KNOW?
GO INTO SYSTEM PERMIT, CHOOSE COMPLIANT OR NON-COMPLIANT. CHOOSING NON-COMPLIANT SENDS THE SYSTEM TO THE MESSAGE BOARD, WHERE WE CAN PARK IT FOR FOLLOW UP. Database is able to count the number of times a system has moved in and out of compliance and display this for us in several places.
DATABASE WILL SHOW TALLIED NUMBER OF NON-COMPLIANCE EVENTS FOR EACH SYSTEM WHEN YOU GO TO SUBMIT A REPORT FOR THAT SYSTEM
COMPLIANCE
Tracking correspondence

- Database has been customized to be able to track all correspondence we send and receive for a system
  - Letters
  - Phone calls

- Correspondence shows as part of system history, so that it can be easily tracked and viewed
Click on correspondence
CORRESPONDENCE HISTORY SHOWS 2 DATES: DATE THE LETTER OR PHONE CALL WAS PLACED, AND DATE ENTERED IN DATABASE

ALSO SHOWS SENDER, RECIPIENT, SUBJECT AND TYPE OF CORRESPONDENCE

VERY CONCISE HISTORY OF ALL COMMUNICATION AND ENFORCEMENT ACTIONS THAT HAVE BEEN TAKEN

EACH RECORD CAN BE INDIVIDUALLY VIEWED BY CLICKING ON VIEW BUTTON
AN EXAMPLE OF A RECORD FOR AN INDIVIDUAL PIECE OF CORRESPONDENCE.

NOTE THE COMMENT BOX

CERTIFIED LETTER HAS BEEN Uploaded TO THE DATABASE AND CAN BE RETRIEVED BY CLICKING THE ICON
December 28, 2005

Earl Cash
17 Cash’s Trail
East Falmouth, MA 02536-7800

RE: I/A septic system operation and maintenance contract for 17 Cash’s Trail, Falmouth

Dear Mr. Cash,

On December 19, 2005, I attempted to reach you by telephone regarding your OMNI 2000 Innovative/Alternative septic system. I left a message asking you to call me and to date have received no response from you.

We have been informed by OMNI Environmental Systems, your last service provider of record, that your operation and maintenance contract with them for your OMNI 2000 system expired or was canceled July 19, 2005.

I am writing to remind you that the Massachusetts Department of Environmental Protection (MA DEP) requires you keep an operation and maintenance (O&M) contract in effect at all times for your system. These requirements may be found on MA DEP’s website at http://www.mass.gov/dep/water/wastewater/techsum.htm.

My department oversees innovative/alternative septic system management and compliance efforts for the Board of Health in your town. We are authorized by your Board of Health to contact you to inform you of the above requirement and to request your compliance. Accordingly, please contact me within seven (7) days of receipt of this letter to inform me whether you have an active O&M contract in effect and who this contract is with. If you do not have an O&M contract in effect, please contact me within seven (7) days of receipt of this letter to inform me who you intend to contract with and the date this contract will become effective. For your convenience, I am enclosing a list of wastewater operators we are aware of that do business in Barnstable County. The firms listed operate multiple types of I/A technologies and are not associated with any particular technology or vendor.

Please be advised that if you do not respond within 7 days of your receipt of this letter, I will refer your property to the Board of Health for further enforcement action.

I can be reached at (508) 375-6888; my Fax number is (508) 362-2603. I can also be reached via email at bciatech@cape.com. Thank you for your prompt attention to this matter.

Sincerely,

Chris Burt
Information Specialist

CC: Falmouth Board of Health
CERTIFIED MAIL
WE CREATE A RECORD OF EACH CORRESPONDENCE BY SUBMITTING IT AS THOUGH IT WERE A REPORT TO THE DATABASE
WE CAN FILL OUT DATE ON WHICH THE ACTION WAS TAKEN, SENDER, RECIPIENT, SUBJECT, CORRESPONDENCE TYPE.
There is also a field to add any explanatory comments.
WE CAN ALSO SEARCH THE DATABASE FOR VARIOUS TYPES OF NON-COMPLIANCE ISSUES.
CAN SEARCH BY TOWN AND BY DATE RANGE
<table>
<thead>
<tr>
<th>Tracking Number</th>
<th>Property Owner</th>
<th>Mail Address</th>
<th>Subject</th>
<th>Correspondence</th>
<th>Sender</th>
<th>Receiver</th>
<th>Action</th>
<th>Action Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>FABer04/2006/10</td>
<td>Timothy Cotter</td>
<td>46 Blum Hill Circle Truro, MA 02666</td>
<td>Contract canceled by owner</td>
<td>Phone</td>
<td>Chris @ BCCHE</td>
<td>Owner family</td>
<td>NONE</td>
<td>11/20/2006 11:20:00 AM</td>
</tr>
<tr>
<td>FAKal12/05/2006</td>
<td>James McGill</td>
<td>P.O. Box 1327 West Falmouth, MA 02541-1327</td>
<td>Contract canceled by owner</td>
<td>Phone</td>
<td>Chris @ BCCHE</td>
<td>Answering machine</td>
<td>NONE</td>
<td>12/30/2006 12:00:00 AM</td>
</tr>
<tr>
<td>FAKal12/05/2006</td>
<td>James McGill</td>
<td>P.O. Box 1327 West Falmouth, MA 02541-1327</td>
<td>Contract canceled by owner</td>
<td>Phone</td>
<td>Chris @ BCCHE</td>
<td>Answering machine</td>
<td>NONE</td>
<td>12/30/2006 12:00:00 AM</td>
</tr>
<tr>
<td>FABer04/10/2006</td>
<td>Charles Minnion</td>
<td>8 Eri Road NORTH EASTON, MA 02356-1306</td>
<td>Contract canceled by owner</td>
<td>Phone</td>
<td>Chris @ BCCHE</td>
<td>Wrong number</td>
<td>NONE</td>
<td>11/30/2006 11:30:00 AM</td>
</tr>
</tbody>
</table>

Generates report based on search criteria selected.
Can also be downloaded in Excel.
Major focus is data analysis

- Database is very flexible and allows us to retrieve many types of data in many ways

- Data can be downloaded as Excel spreadsheets
We can search and download many types of information

- List of all systems of a particular technology type
- List of all systems of a particular DEP approval type
- Lists of all systems in a particular town
<table>
<thead>
<tr>
<th>Town</th>
<th>Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnstable</td>
<td>47</td>
</tr>
<tr>
<td>Bourne</td>
<td>88</td>
</tr>
<tr>
<td>Brewster</td>
<td>17</td>
</tr>
<tr>
<td>Chatham</td>
<td>73</td>
</tr>
<tr>
<td>Dennis</td>
<td>121</td>
</tr>
<tr>
<td>Eastham</td>
<td>80</td>
</tr>
<tr>
<td>Falmouth</td>
<td>125</td>
</tr>
<tr>
<td>Harwich</td>
<td>23</td>
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<tr>
<td>Mashpee</td>
<td>215</td>
</tr>
<tr>
<td>Orleans</td>
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</tr>
<tr>
<td>Provincetown</td>
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<td>Sandwich</td>
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</tr>
<tr>
<td>Truro</td>
<td>11</td>
</tr>
<tr>
<td>Wellfleet</td>
<td>64</td>
</tr>
<tr>
<td>Yarmouth</td>
<td>67</td>
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</table>

<table>
<thead>
<tr>
<th>Town</th>
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<tbody>
<tr>
<td>Mashpee</td>
<td>215</td>
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<td>Falmouth</td>
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<td>Dennis</td>
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<td>Orleans</td>
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<tr>
<td>Brewster</td>
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<tr>
<td>Truro</td>
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</tbody>
</table>
Sampling data can also be downloaded many ways

- By technology type
- By town or all systems in County
- By DEP approval level
- By date range

- Or any combination of the above
### Select Report Criteria

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Sampling Reports</th>
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<tbody>
<tr>
<td>Detail Level</td>
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<td>Eastham</td>
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<td>Component Type</td>
<td>Bioremediation</td>
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<tr>
<td>MA DEP Approval Type</td>
<td>Provisional</td>
</tr>
<tr>
<td>Date Range</td>
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</table>

[View Report]
For example, This is an excel file of all sample data for 2005 for all Biocleres installed under Provisional Approval in Eastham
### System History

**Choose Sample Reports**
A VERY NICE FEATURE IS THE ONE BUTTON DATA DUMP:
GO INTO AN INDIVIDUAL SYSTEM’S HISTORY AND CLICK THIS BUTTON TO
DOWNLOAD ALL SAMPLE DATA ASSOCIATED WITH THAT SYSTEM
HEALTH AGENTS REALLY LIKE THIS
What can we use this data for?

- Reports to towns on how individual system, or a technology type, is performing
Total Nitrogen Results
172 Capt. Nickerson Rd., Yarmouth

Sample event

TN, mg/L

Nitrate (effluent)
Nitrite (effluent)
TKN (effluent)
Ammonia (effluent)
Total Nitrogen (effluent)
Large data sets representing multiple years of sampling for individual systems

- Allow us to look at how an individual system is performing over the long term
- Allow us to look at aggregate data to see how a technology is performing under “real world” conditions
Mass Estuaries Project asked question: what is average total nitrogen in effluent from I/A systems?

Downloaded results for all systems with Provisional Approval—because these are the ones we know are trying hardest to prove nitrogen reduction capability and should be meeting a 19 mg/L TN standard.

Over 400 individual samples from 2000 thru October 2005.
Total Nitrogen in Effluent
Data frequency distribution

Average TN=20.8  Median TN = 17.0 mg/L

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<th>Bin</th>
<th>Frequency</th>
<th>calc % of total</th>
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39% > 20 mg/L TN
Residential Systems with Provisional Approval
2000-2005

Effluent Total Nitrogen, Residential Provisional Systems
2000-2005, Non-Performing Systems and Start-up Data Removed

Average TN = 17.7; median TN = 15.3 mg/L
What might we use the database for in the future?

- Track system pumping and waste disposal
- Track real estate transfer septic inspections
- Import data into GIS so it can be worked with graphically and geographically
Benefits for owners

- Better data and County management may result in DEP reducing monitoring requirements for systems, resulting in lower owner costs.
- System performance will be enhanced, due to better oversight of operations.
- System longevity may be increased.
Benefits for operators

- Entering report to database is:
  - Paperless
  - Nothing to mail
  - BCDHE will forward required reports to BOH and DEP
  - Operators can use PDAs at inspection site and upload data to database
Benefits for Boards of Health

- Real time data on all systems
- Health agents can log on to database to check system status and results
- BOHs can manage their own systems if they choose, using the database
- BCDHE will manage data and reporting and do enforcement for non-compliant systems if desired

WE ASK HEALTH AGENTS TO FILL OUT PERMIT SUMMARY INFO SHEETS
CHRIS HAS RECENTLY POSTED THIS ON THE COUNTY WEBSITE, SO IT CAN BE FILLED OUT ON LINE AND AUTOMATICALLY EMAILED TO CHRIS
WHEN HEALTH AGENTS LOG ON, THEY SEE ALL THE SYSTEMS IN THEIR TOWN, AND CAN VIEW SYSTEM HISTORY AND PERMITS
Benefits of using web-based database

- Web-based reporting maximizes efficiency and allows BCDHE to focus efforts on
  - analyzing system performance
  - working with owners and operators for better system compliance

- Increased oversight and active, ongoing enforcement efforts will help us develop a working relationship with system operators, which will result in better system performance.
Benefits for Barnstable County

- Use information to assist towns with wastewater planning efforts
  - Which systems perform best
  - What is the proper maintenance and oversight for each technology?
  - Do systems produce effluent that will meet nitrogen loading goals needed to protect our embayments?
  - In what situations are individual or cluster IAs the correct solution to wastewater issues?