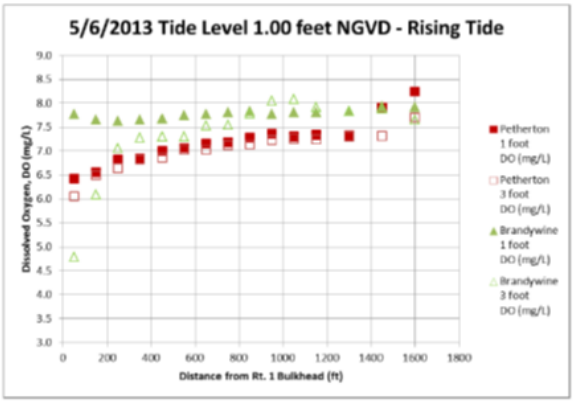
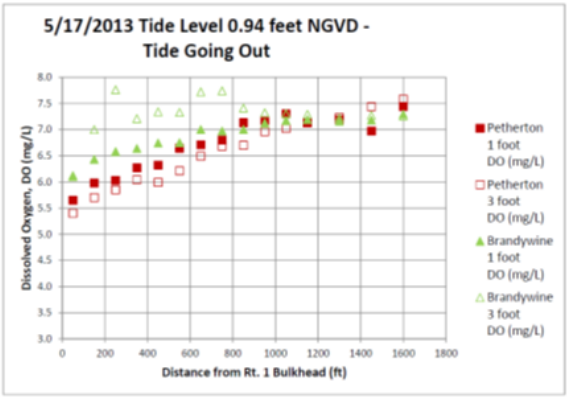
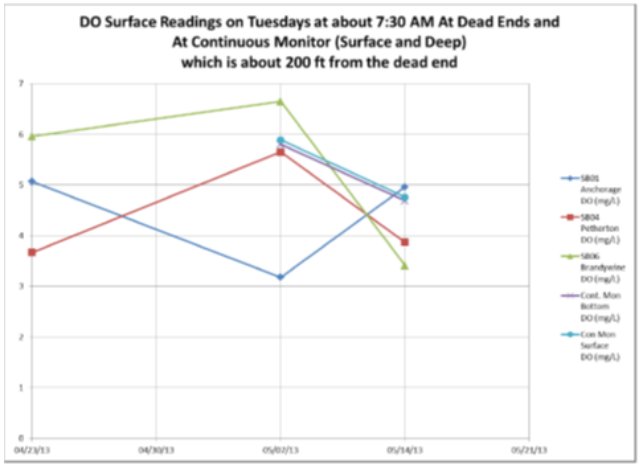
TOWN OF SOUTH BETHANY

Minutes – Canal Water Quality Committee Meeting
May 24, 2013 (10:00am) at the South Bethany Police Station

- **Meeting Called to Order At 10:00 am** – Members present were George Junkin, Dave Wilson, Al Allenspach, Frank McNeice, Pat Voveris and Gene Hendrix, Al Rae.
- **Minutes from May 18, 2012 Meeting – George Junkin** – The minutes were reviewed.
- **Diffuser Project – DO monitoring of Petherton & Brandywine – George Junkin**







- **Canal Water Quality Monitoring – Dave Wilson**

Team Members

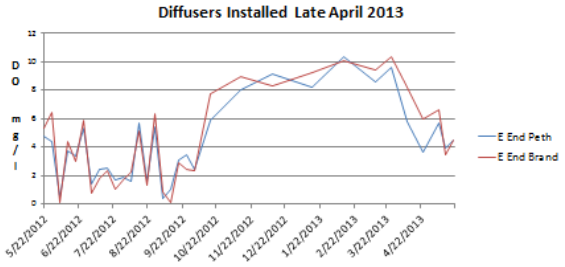
- Canal Sites
  Bryant Hopkins
  Dick Oliver
  Sue Callaway
  Glenn Dallas
  Jack Whitney
  Frank McNiece
  Dave Wilson

Little Assawoman Bay
George Junkin
Jay Headman
Frank McNiece
Ron Wuslich

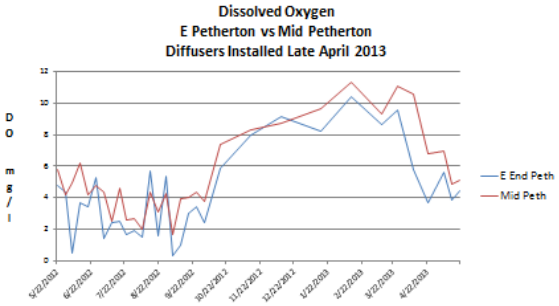
Changes for 2013

- Six diffusers installed in Petherton in late April 2013
  - Using approx 20kwh/day (~$72/month)
- Continuous Monitor moved from Anchorage Canal to Petherton Canal (106 Petherton) in early May 2013
- Control site added at East end of Brandywine Canal (SB06) May 22, 2012
  - Bacteria sample also collected

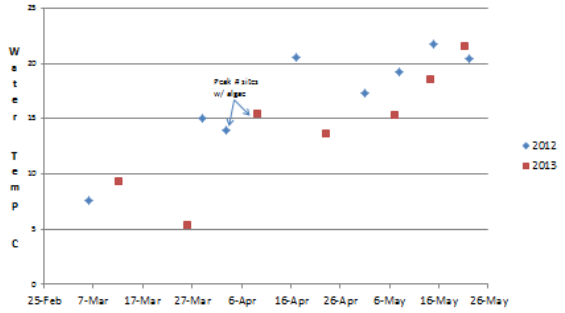
DO Comparable for E Ends of Petherton and Brandywine Before Diffusers



Mid Petherton DO Approximately 1 mg/l Higher than East End



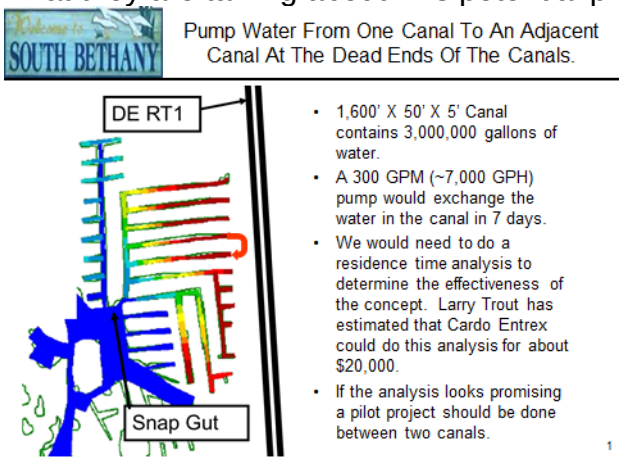
Spring 2013 Cooler than Spring 2012

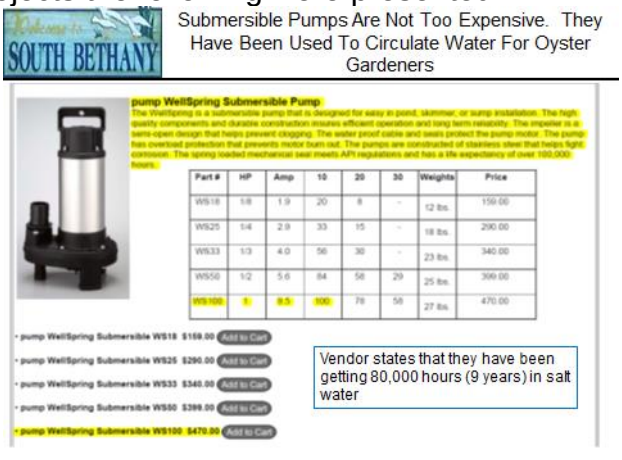


- **Oyster Gardening – Allan Allenspach** More people want to be oyster gardeners. Al will get their names to E.J. Calabala. They are phasing out the Taylor floats. During Sandy a lot of floats were deposited on dry land after the water receded. They are hanging the baskets now. New spat should be arriving in June. John Ewart from U of D will get them onto shells. People should get their oysters in July. You do not need to be there to get them. They just come and take the mature oysters and leave you new

oysters. Al noted the oyster gardening requires no maintenance, and a committee member suggested to get this word out. If people realize they can participate without maintenance more will step up in this effort.

- **East Side Bio-Retention Areas – George Junkin** George talked to Bart Wilson at the SLR Advisory Committee meeting on May 23. Bart says that Cardo Entrex will be the contractor for the East Side Project and that Cardo Entrex will subcontract to Larry Trout. Bart is trying to set up a meeting with the CIB, Doug Janiec of Cardo Entrex, Larry Trout, South Bethany, Middlesex, DelDOT and Susan Barton, sometime within the next two weeks.
- **Home Owner Education Program**
    - **Voluntary Disconnection of Outside Showers & Rain Water Down Spouts Flyer – mail to homeowners with pipes –** There will be a boat survey on the morning of June 8 to identify homeowners that have pipes going into the canals. Al Rae and Pat Voveris volunteered to go with George on the boat. Others are welcome. After homeowners have been identified we will first try to talk to them face to face to discuss the issue. Face to face will save the mailing costs of flyers and personalize the message for more effectiveness. Once pipes are modified or known to not allow passage of water into the canals, a committee member suggested they be color coded to identify this.
    - **Impervious Surfaces Flyer – mail to all homeowners**
    - **Turf Lawn Flyer – mail to homeowners who live on canals**
- **"Volunteers for Cleaner Canals" Program – Clean Up Trash & Debris** Jack Whitney has volunteered to continue this effort. We need to get from Jack a list of who the volunteers are and which canals each volunteer is covering.
- **CIB CCMP Objective 5 Action D. Examine dead-end canals to determine if any could benefit from low-cost solutions to increase flushing – George Junkin** The CIB has identified this as an issue that they want to address. A low-cost solution does not mean a Tidal Pump. George will set up a meeting with the CIB to assess just what they are talking about. As potential projects the following were presented.





Additional Pump Details

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Time to Empty 1,600 Ft. Long Canal

Cubic feet		Gallons	Days To Empty	Pump Required (GPM)	Pump Required (GPH)
400,000	7.48	2,992,000	7	297	17,810
		3,000,000	7	298	17,857

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Pump Performance

HP	Watts	GPH	Watts/GPH	kW-hr/30 days	Cost @ $0.15/kWhr
0.50	840	6,420	0.13	605	90.72
1.00	1,150	7,260	0.16	828	124.2

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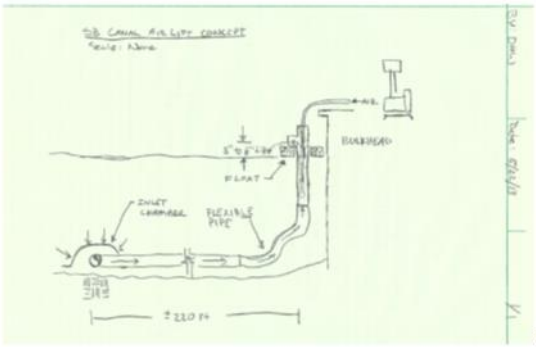
Alternate Proposal from David Whitney



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ecoSOLUTIONS

April 12, 2013

Subject: Canal Improvements – South Bethany, DE

Dear Sir or Madam,

To begin further investigations into these possibilities, I propose conducting a "proof of concept" air lift demonstration on a single canal where system performance can be easily and economically evaluated. The goal of this demonstration project would be the following:

1. Demonstrate airlift capabilities in an individual canal using a low horse-power pump and HDPE or PVC pipe.
2. Determine the appropriate air lift pipe sizing;
3. Determine the optimal air injection pump size, depth and installation options;
4. Measure air flow, lift height, water flow and power consumption;
5. Determine DO results from the demonstration (Dissolved oxygen concentrations will be measured by others).

Attached are pics of an airlift system designed and installed for a pond in Westford Vermont. This pond is fed by storm water runoff and is located below a cattle feeding area, so there were lots of nutrients in it. Initially it was filled with cattails and mud. It is now healthy and functions as a self sustaining ecosystem.

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The cost for this "proof of concept" demonstration project is as follows:

1. Blower Unit - $1,500
2. Air Flow Monitoring - $500
3. Water Flow Monitoring - $1,000
4. Miscellaneous Piping - $500
5. Labor and Analysis - $2,500

Total Cost = $6,000 (Electrical fees required to run the equipment during the proof of concept testing period will be billed separately and are not included in this cost estimate.)

David has completed an airlift project here to circulate water in a pond. The length of the installed airlift section is about 200 feet. I will try to send you a photo tomorrow, if it is not raining here, of the project he has completed. The pump he is using lifts the water between 3 to 6 inches above the surface and moves the water at rate of about 100 CFM. If we did this with a 60 foot wide canal averaging 5 feet in depth, the 100% water changeover for each 200 foot long section could be accomplished is as little as 3 days. A smaller volume of water moved or a canal with a bigger cross section would increase the number of days for a complete flush. The proof of concept would be necessary to determine the quantities of water which could be moved with various sizes of pipe and various sizes of pumps. 9

- **Funding Allocated to CWQ Committee from the FY 2014 Budget – George Junkin**
  $1,000 is allocated to Oyster Gardening,
  $260 is allocated to putting stand pipes in catch basins
  $725 is allocated to putting check valves into storm water pipes that drain into canals
  $2,548 is allocated to diffuser maintenance and energy use.
  $10,000 is allocated for match for the east side project grant.
- **Meeting Adjourned at about Noon**

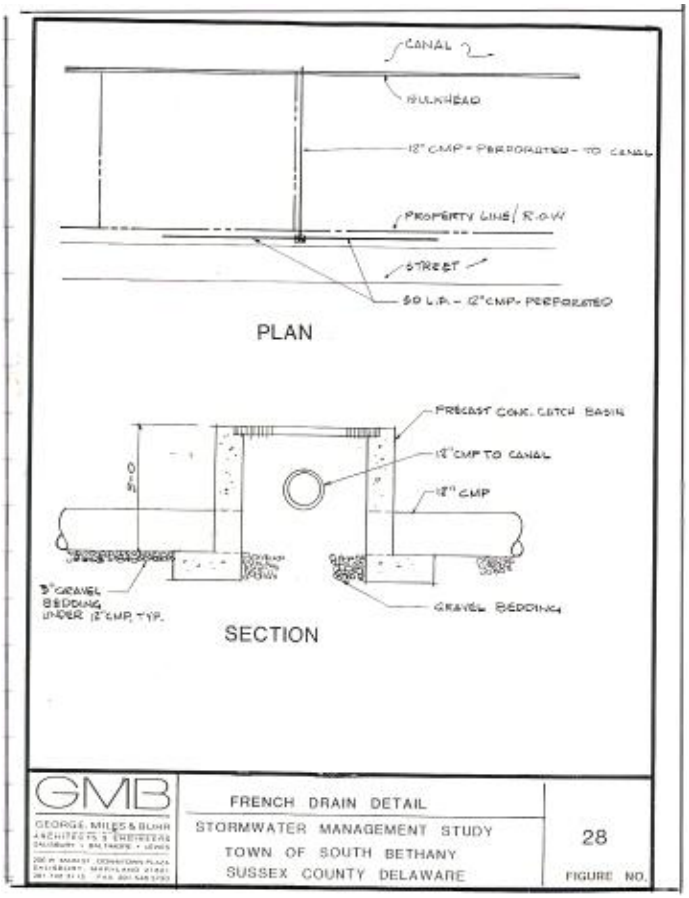


Figure 28 – Recommendation from GMB Report

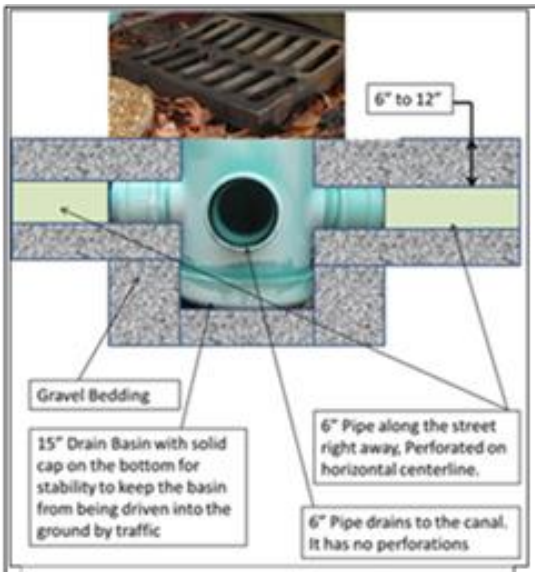
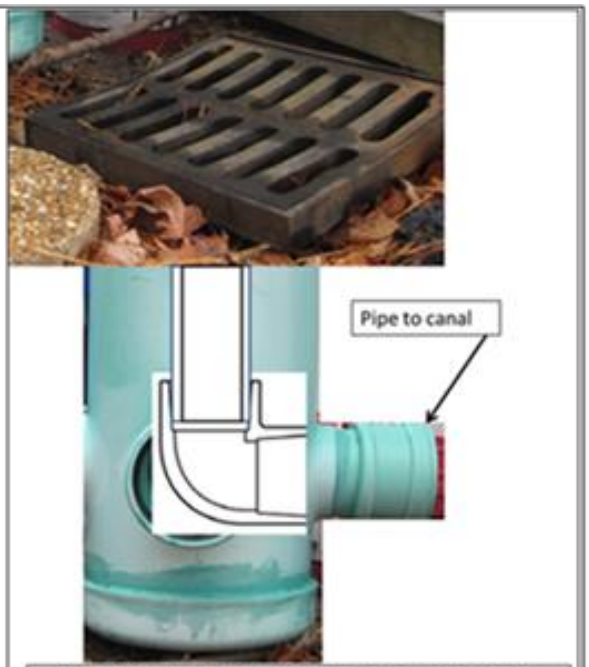


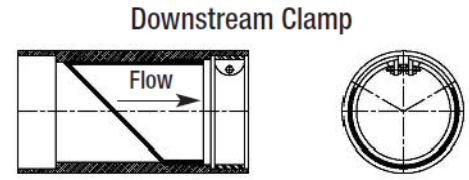
Figure 2 Most Recent Storm Drain Retrofits

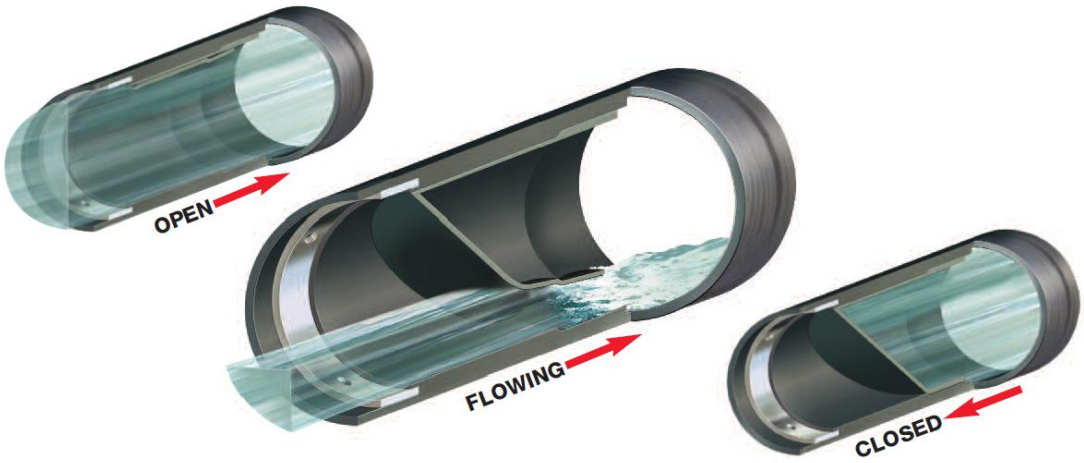


- Retrofit the inside of existing drain basins with a 4" elbow and pipe so that the entry to the canal pipe is just below the existing grate.
- Drill large holes in the bottom of the existing drain basins so that water can drain into the soil.

Figure 3 Recommended Improvement to the Recent Retrofits

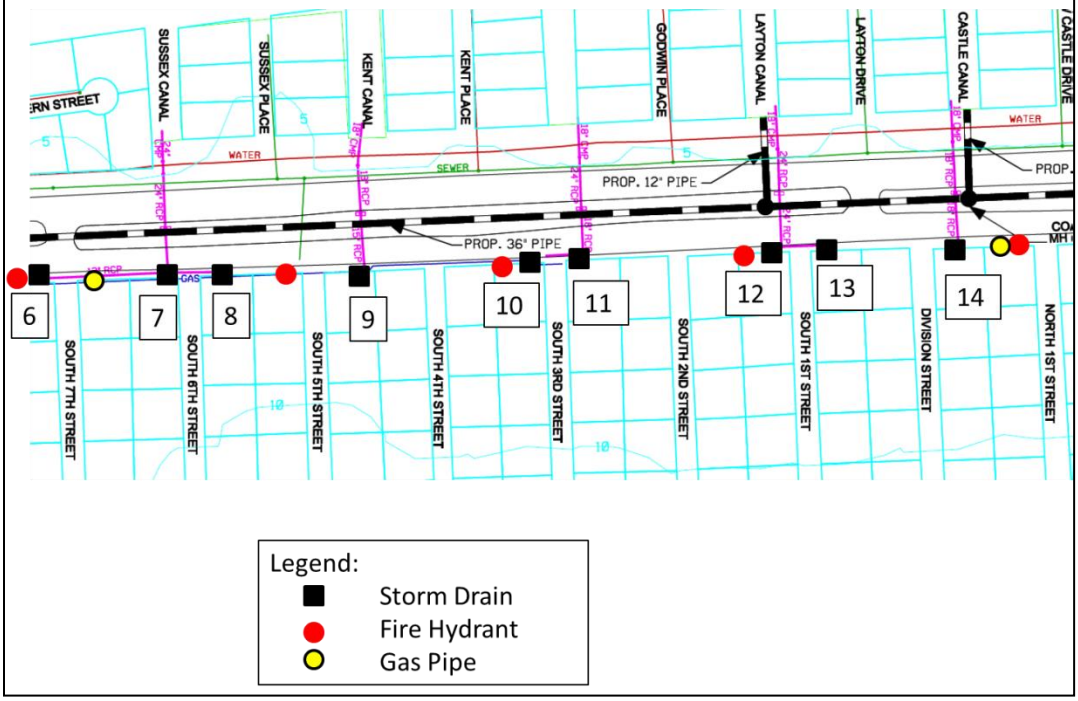
The Checkmate Valve designed for inline service fits inside the existing pipe and does not protrude into the canal. Its cracking pressure is less than 2 inches of head pressure.





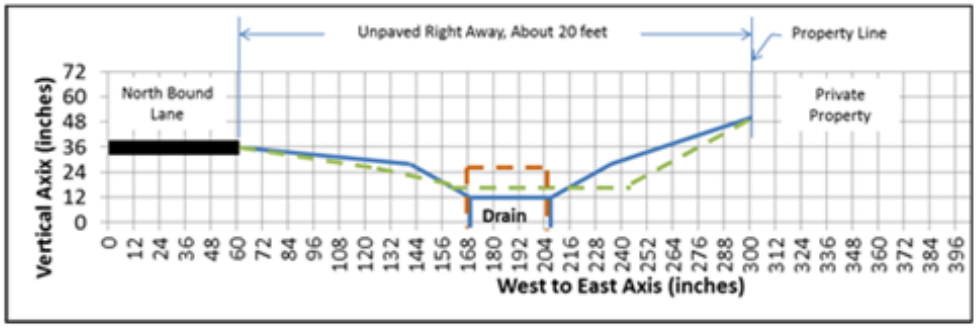
East Side Route 1 Bioretention Areas –There are 23 storm drains in the DE Route 1 east side right away. The charts below are typical, showing the concept to retrofit the east side to improve water quality.

Strom Drain Locations, East Side Right Away on Route 1. Plan View (2 of 3)



Typical Section at Each Storm Water Drain That is Close to an Intersection
Vertical Dimensions are Very Approximate

Potential Excavation That Could Create Bioretention Basins in the East Side, Unpaved Right Away



Existing Contour
Potential Proposed Contour
Proposed Raised Drain

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF WATERSHED STEWARDSHIP
89 Kings Highway
DOVER, DELAWARE 19901

OFFICE OF THE
DIRECTOR

PHONE: (302) 739-9921
FAX: (302) 739-6724

April 26, 2012

Mr. Ronald Wuslich
130 Petherton Drive
South Bethany, Delaware 19930

Dear Mr. Wuslich:

Thank you for your e-mail correspondence dated April 17, 2012, regarding the massive algae growth that currently exists in the lagoons of South Bethany and the overall water quality of our Inland Bays. Governor Markell and Secretary O'Mara appreciate you sharing your thoughts with them on these important issues. Secretary O'Mara has asked me to respond directly to your concerns.

The major factors contributing to the algae bloom in South Bethany are the unseasonably warm water temperatures due to the mild winter and favorable water clarity conditions, which allow the algae to grow using nutrients that have accumulated in the lagoons for many years. The Department's Macro-algae Harvesting Team began harvesting operations in South Bethany on Monday and will continue until the current problem is alleviated. Later this spring when the water temperatures rise, the remaining macro-algae growth will most likely be stymied by a microscopic bloom of algae that will cloud the water in the lagoons and prevent light from reaching the bottom, thereby depriving the algae of light that it needs to grow.

With regard to the overall water quality conditions of the Inland Bays, you are correct in that the Bays and many of the streams draining into them are impaired by excessive levels of nitrogen and phosphorus and these nutrients contribute to nuisance algal blooms. DNREC, along with our partners at the University of Delaware, have been monitoring these conditions for years and have documented the impairments in our watershed assessment reports to the EPA. As you are aware, Total Maximum Daily Loads (TMDLs) for both nitrogen and phosphorus were established in the Inland Bays watershed in 1998 (for the Rehoboth Bay, Indian River, and Indian River Bay) and 2005 (for Little Assawoman Bay and the tributaries and ponds draining to all three of the Bays).

Over the course of more than a decade, a Pollution Control Strategy (PCS) was developed for the Inland Bays Watershed and it outlines numerous voluntary and regulatory actions to reduce nutrient inputs. While the buffer portion of the PCS regulations was deemed void and unenforceable through a court decision, the stormwater and onsite wastewater (septic) portions of those regulations are in effect and are being implemented. In addition, both the *Sediment and Stormwater Regulations* and the *Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems* are currently being revised. Pollution reduction actions developed in the Inland Bays watershed have been refined and in some cases, strengthened, in both sets of these proposed statewide regulations.

The Inland Bays PCS also heavily relies on the voluntary implementation of many best management practices, especially in the agriculture sector. Some progress has been made on this front, but the current economic climate has resulted in limited resources for cost share programs and grants for various types of implementation projects. More education and outreach is also needed to inform residents and visitors alike of the cost effective actions that can be taken to improve the condition of the Inland Bays, so that they remain a tourist destination and support the local economy. The Center for the Inland Bays has long been a leader on these fronts and we look forward to continuing to work with that organization as well as the new Inland Bays Foundation to advance the water quality improvement efforts.

Our recent work developing a Watershed Implementation Plan (WIP) for the Chesapeake Bay watershed has introduced us to some new tools and processes that could be implemented in other parts of the state. In that watershed, the Chesapeake Bay Program jurisdictions agreed to implement all practices necessary to achieve water quality goals by 2025, essentially setting an ultimate end date. The jurisdictions also agreed to assess progress by setting 2-Year Milestones in order to assure progress occurs in a timely fashion and allows for adaptive management if progress does not proceed as anticipated. The Chesapeake WIP also describes the roles of local partners and establishes who will do what and when so that all parties are aware of their responsibilities and will maintain accountability. Again, it would be our hope that we can work with partners in the Inland Bays watershed to adopt these approaches that will hopefully accelerate progress.

Thank you again for your e-mail. Please contact me if you have any additional questions or concerns regarding these matters. My staff and I will be happy to assist you. I can be reached at 739-9921 or via e-mail at Frank.Piorko@state.de.us.

Sincerely,

Frank M. Piorko
Director

cc: The Honorable Jack Markell, Governor
Collin O'Mara, Secretary, DNREC
John Schneider, DNREC, Division of Watershed Stewardship
Jennifer Volk, DNREC, Division of Watershed Stewardship
Chuck Williams, DNREC, Division of Watershed Stewardship
Ariane Nichols, DNREC, Division of Watershed Stewardship