

# IMPLEMENTATION OF THE INLAND BAYS CCMP

The background of the cover is a composite image. The upper portion shows a bright blue sky with scattered white clouds. Below the sky, a man in a green polo shirt and a grey cap is standing in shallow water, surrounded by tall green reeds. He is leaning forward, interacting with a group of children. One child is wearing a pink floral skirt. In the foreground, a large, detailed image of a crab is superimposed over the scene. The crab is positioned horizontally, with its legs and claws visible. The overall scene is set in a natural, marshy environment with a body of water in the background.

WORK PLAN FOR THE PERIOD  
OCTOBER 1, 2011 - SEPTEMBER 30, 2012

DELAWARE CENTER FOR  
THE INLAND BAYS, INC.

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# Implementation of the Delaware Inland Bays CCMP

## Abstract

The Delaware Center for the Inland Bays, Inc. will implement the Inland Bays Comprehensive Conservation and Management Plan (CCMP) through a series of new and ongoing projects in FY 2012. These projects implement various CCMP Action Plans and Tactics and may include, but are not limited to the following:

## Completed

- CIB09-003 Statistical Analysis of Environmental Indicators with Application to Delaware's Inland Bays
- CIB09-007 Benthic diatoms as indicators of water quality in Delaware's Inland Bays
- CIB09-008 Eelgrass Planting Project in Delaware's Inland Bays
- CIB09-013 Volunteer Intensive and Representative Condition Assessment of the Bays (VIRCAB)
- CIB10-001 Sensitive Shallow Water Area Markings
- CIB10-003 Aquaculture Charette
- CIB11-002 Anchorage Canal Drainage Area Stormwater Retrofit Project Phase 1: Seacolony Ditch to Wetswale

## On-going

- CIB09-002 Acreage and Condition Trends for Marshes of Delaware's Inland Bays as an Environmental Indicator and Management Tool (USEPA RARE GRANT)
- CIB09-004 Long-term continuous saltmarsh monitoring in the Inland Bays
- CIB09-005 Center for the Inland Bays Environmental Indicators Project
- CIB10-002 James Farm Kiosk & Educational Signage
- CIB10-004 1000 Raingardens for the Inland Bays
- CIB10-005 Hard Clam Density and Distribution Survey
- CIB11-001 Inland Bays CCMP Project Management & Oversight
- CIB11-003 Eelgrass Habitat Suitability Mapping Project
- CIB11-004 Bethany Lakes Alternative Shoreline Stabilization Project
- CIB11-005 West Millsboro Wetland Enhancement Project
- CIB11-006 Baltimore Aquarium Partnership/Display
- CIB11-007 Massey's Landing Dredge Spoil Project
- CIB11-008 Martins Way Shoreline Stabilization
- CIB11-009 Headwater stream restoration project
- CIB11-010 Mini Oyster Demonstration Reef
- CIB11-011 Bethany Beach Nature Center
- CIB11-012 Schoolyard Habitats in the Inland Bays Watershed
- CIB11-013 Shorezone Fish Community Volunteer Monitoring Program
- CIB11-014 Anchorage Canal Drainage Area Stormwater Retrofit Implementation Project # 2: Highway Median Bioretention Areas
- CIB11-015 Seaweed Monitoring, Method Calibration, and Long Term Trend Analysis
- CIB11-016 Effects of Suburban Development on Shallow Groundwater Quality
- CIB12-001 Inland Bays Clean Up
- CIB12-002 Oyster Spat Setting
- CIB12-003 Delaware Envirothon
- CIB12-004 Oyster Gardening Program
- CIB12-005 Stormwater Maintenance & Open Space Management Seminars
- CIB12-006 Resource Protection Area Plan Development

CIB12-007 Colonial Nesting Bird Survey  
CIB12-008 Inland Bays Island Restoration  
CIB12-009 Land Acquisition  
CIB12-010 Landowner Habitat Technical Assistance  
CIB12-011 Inland Bays Habitat Restoration Strategy Comparison to Draft CIB Habitat Plan  
CIB12-012 Volunteers for the Bays  
CIB12-013 Annual Inland Bays Horseshoe Crab Survey  
CIB12-014 Children in Nature- Environmental Literacy Plan for Delaware  
CIB12-015 Citizens Advisory Committee Speakers Bureau  
CIB-12-016 Gardening for the Bays Native Plant Sale  
CIB12-017 Bays in Your Backyard Campaign  
CIB12-021 Update of the Inland Bays Comprehensive Conservation & Management Plan

## **Proposed**

CIB12-018 Burton's Island Toxic Leachates Assessment  
CIB12-019 Rehoboth Water Quality Changes Associated with Wastewater Management  
CIB12-020 Eelgrass planting in Delaware Inland Bays

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## Preface

This document is written to meet EPA requirements for an annual work plan for award of funds pursuant to Section 320 of the Clean Water Act. This Work Plan serves as an agreement between the Center for the Inland Bays and the U.S. Environmental Protection Agency for work to be carried out during Fiscal Year 2012 (October 1, 2011 through September 30, 2012). The focus of this Work Plan is the implementation of the Delaware Inland Bays Comprehensive Conservation and Management Plan via research, demonstration, education/outreach, and habitat restoration activities.

## Introduction

Delaware's Inland Bays and their encompassing watershed have been the subject of study since 1969. Since 1988, the Inland Bays have been part of the National Estuary Program, established under the Federal Clean Water Act and administered by the Environmental Protection Agency. This estuary program effort has culminated in a Comprehensive Conservation and Management Plan for the Inland Bays, which is in the implementation phase. To support this implementation effort and to ensure that an open and collaborative process continues for future conservation efforts in the watershed, the Center for the Inland Bays, Inc. was established by the Delaware General Assembly in 1994 under the auspices of the Inland Bays Watershed Enhancement Act.

The purposes of the Center are:

1. To build, maintain, and foster the partnership among the general public, the private sector, and local, state, and federal governments, which is essential for establishing and sustaining policy, programs, and the political will to preserve and restore the resources of the Inland Bays watershed;
2. To sponsor and support educational activities, restoration efforts, and land acquisition programs that lead to the present and future preservation and enhancement of the Inland Bays watershed; and
3. To serve as a neutral forum where Inland Bays watershed issues may be analyzed and considered for the purposes of providing responsible officials and the public with a basis for making informed decisions concerning the management of the resources of the Inland Bays watershed.

The mission of the Center is:

to promote the wise use and enhancement of Delaware's Inland Bays and their watersheds.

Year Reported 2011

Date : 07/14/2011

Completed



# Project Report

**Project Name:** *Statistical Analysis of Environmental Indicators with Application to Delaware's Inland Bays*

**Lead Contractor:** University of Delaware -- College of Earth, Ocean, and Environment

**Responsible Partners, Contact Info, and Roles:** Doug Miller, Principal Investigator / Project Manager Partner  
 Cannon Marine Laboratory  
 College of Marine and Earth Studies  
 700 Pilottown Road  
 University of Delaware  
 Lewes, DE 19958

**Project Status:** Completed

**Work Pan ID :** CIB09-003

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> AG-A	<b>Primary Action Plan ID Title :</b> Continue conservation planning through the Sussex Conservation District
<b>CCMP Goal Objective ID :</b> G1	<b>Primary Goal Objective ID Title :</b> Establish and Implement a comprehensive nonpoint source pollution control program

### CCMP/Work Plan Goal:

This project satisfies a number of CIB priority Work Plan goals including, 1) improving the utility of existing environmental indicators, (2) facilitating the development of new diagnostic indicators, and (3) enhancing the reliability and presentation of indicator-based decisions regarding environmental quality in the Inland Bays.

**CWA Program Implementation:** Controlling Nonpoint Source  
 Pollution on a Watershed Basis,  
 Improving Water Quality  
 Monitoring

### Overview:

Environmental indicators are often used to summarize and present environmental data. Their utility derives from the ability to capture in a simple, single value the complexities and interrelationships of multivariate physical-chemical, ecological and biological data. A summary of many such factors can then be presented on a scale that is both easily interpreted and directly related to an expert judgment of system state and health.

In 2004, the CIB Scientific and Technical Advisory Committee (STAC) reported<sup>2</sup> on eleven key environmental

indicators of particular utility to Delaware's Inland Bays. Over the past several months, the STAC has begun a process of reviewing both these existing measures and entertaining potentially new condition indicators. A special emphasis is being given to indicators that are diagnostic, i.e., indicative of a causal relationship between the environmental parameters and potential stressors. The STAC review process is deliberately incremental in order to garner as much perspective and input from as wide an audience as possible.

Factors critical to the selection of useful indicators have been outlined in a recent EPA report<sup>3</sup> (and extended as part of the STAC update process), and these include: type of question, spatial scale, temporal scale, and environmental context (i.e., landscape and land use). Since questions of scale, acquisition of data and ensuing analysis are necessarily quantitative in nature, the effective and reliable use of these metrics should be guided by statistical principles. In practice, multiple indicators are typically used simultaneously to assess overall environmental condition, and thus use of indicators is inherently multivariate in nature. Effective interpretation and presentation of such indicators will greatly benefit from methods, techniques and tools of multivariate statistics.

The overall goal of this project is to assist the CIB and its STAC in their re-evaluation of environmental indicators for the Inland Bays. While the final choice will be guided by the collective wisdom of the STAC, it must also be statistically sound, address as many dimensions of the environment and possible stressors as possible (but avoiding redundancy and correlation), and be easily computable and readily explainable to a wide variety of audiences. Multivariate analyses are routinely employed in environmental and ecological research studies supporting management decisions, and they are starting to appear in materials intended for a wider audience, for example, the multidimensional scaling plot of chlorophyll, macroalgae and isotope ratios in a recent newsletter<sup>4</sup>.

Over the next year, the overall goal of this project will be met through statistical consultation that is coordinated and guided by the STAC indicator evaluation process. The proposed effort will begin with an evaluation of existing and candidate indicators with respect to established criteria<sup>3</sup> and especially their statistical properties combined with the working table used by the STAC, resulting in a preliminary ranking. This will be followed by workshops in statistical methods, techniques and interpretation as needed by the STAC and the CIB staff. These will be led by the PI/PM Miller and a graduate assistant well-versed in all aspects of programming and data analysis. Possible topics include: overall principles of statistical inference, hand-on tutorials on standard statistical packages, and overviews of sampling designs for field studies, tests, regressions and correlations, time series and spatial data, multivariate analyses (ordination by PCA, MDS, biplots), and display and exploratory data analysis.

Additional presentations and recommendations may also be made on specific topics as communicated through the STAC and CIB staff, and possibilities include: utility of various macrobenthic indices, recommendation of resource and reference materials, evaluation of particular software or statistical applications, or review of technical reports published by or submitted to the CIB. Throughout the project period, the PI/PM will be on site one day per month (or biweekly for mornings or afternoons) to provide walk-in assistance as needed. The timetable of this project intentionally mirrors the STAC review process in order to provide input as needed throughout the effort.

While the suite of recommended indicators and chosen methods of analysis and presentation will be determined specifically for the Inland Bays, environmental indicators and multivariate analyses are used widely and should be evaluated within that broad context. Continuity of existing, proven indicators, use of historical data, and congruence of Inland Bays indicators with others used in the region is highly desirable.

#### Primary Objectives/Opportunity

- To improve the utility of existing environmental indicators
- To facilitate the development of new diagnostic indicators
- To enhance the statistical reliability and effective presentation of indicator-based decisions regarding environmental quality in the Inland Bays.

To achieve these objectives, we will:

- Provide statistically based comparison of candidate indicators, both existing and new, and review sampling designs to ensure maximum utility of collected data



- Conduct multivariate analysis to identify correlated (or redundant) environmental variables and ensure efficient use of field sampling and data collection efforts

- Support the CIB, its STAC and funded researchers with statistical consultation as indicators are recorded and developed

- Offer statistical analysis workshops, hands-on experience with standard and multivariate statistical packages, graphical presentation, and walk-in consulting services.

#### Intended Results:

1. Development and provision of unified water quality database.
2. SOPs for data transfer to database procedures.
2. Statistical support and analyses in support of water quality index development.

#### Outputs/Deliverables:

1. Development and provision of unified water quality database.
2. SOPs for data transfer to database procedures.
2. Statistical support and analyses in support of water quality index development.

#### Milestones:

1. QAPP (Completed: January, 2009)
2. Introductory water quality subcommittee meetings (Completed: November, 2009)
3. Standardize and merge water quality databases (Completed: November, 2009)
4. Completed statistical analyses to support indicator development (Completed: August, 2010)
5. Provision of SOPs for all database and statistical procedures (Target: November 2010)

#### Short-Term Outcomes

Increased understanding of water quality status of inland bays over period 1998 to 2009. Increased cooperation between University and DNREC scientists. Increased statistical capacity of CIB Science program. Increased public understanding of bay condition. Increased understanding of effectiveness of chemical and physical waterquality standards to facilitate restoration of desired biological endpoints.

#### Intermediate Outcomes:

Increased understanding of Inland Bays ecological trends, increased understanding and a learning tool for resource managers involved in planning protection and restoration strategies.

#### Long-Term Outcomes:

Enhance monitoring capabilities of partner programs and agencies. Potential for increased resource condition due to increased public awareness.

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## Project Progress

#### Progress To Date:

1. Reached agreement on project direction and focus.
2. Participated in project WQI meetings.
3. Developed statistical approach.
4. Completed 100% of QAPP.
5. Received and began analysis of UDCMP and partial DNREC dataset.
6. Successfully merged UDCMP, DNREC, and CISNET dataset.
7. Completed development of DO subindex.
8. Began development of sampling scheme

9. Received final report.

**Additional Project Information**

**Project Financing**

Funding Determination : RFP

Amendment:

Amendment Source:

CIB FUNDS: \$10,000.00

OTHER FUNDS:

MATCHING FUNDS: \$1,160.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$11,160.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

Restoration

QAPP

Habitat Type :

Date Completed : 6/21/2009

Restoration type :

Date Approved : 6/21/2009

Acreage :

Location : CIB and UDCMES

Partners :

Completion Date:

Cost :



# Project Report

**Project Name:** *Benthic diatoms as indicators of water quality in Delaware's Inland Bays*

**Lead Contractor:** UDCMES

**Responsible Partners, Contact Info, and Roles:** Kathryn J. Coyne, Assistant Professor  
 University of Delaware, College of Marine and Earth Studies  
 700 Pilottown Rd., Lewes, DE 19958  
 Phone: 302-645-4236, FAX: 302-645-4007  
 kcoyne@udel.edu

**Project Status:** Completed

**Work Pan ID :** CIB09-007

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G8,G8C,G9	<b>Primary Goal Objective ID Title :</b> Ensure, to the maximum extent possible, all planning and management activities related to the Inland Bays involve public participati, ininformation and education e
<b>CCMP/Work Plan Goal:</b> This project satisfies a number of CIB priority Work Plan goals including, (1) facilitating the development of new diagnostic indicators, and (2) enhancing the reliability and presentation of indicator-based decisions regarding environmental quality in the Inland Bays.	

**CWA Program Implementation:** Improving Water Quality Monitoring

### Overview:

Benthic diatoms are excellent indicators of environmental change in aquatic ecosystems and are routinely used to monitor water quality in freshwater ecosystems in the US and Europe (e.g. Potapova and Charles 2007). Diatoms have several attributes which make them ideal for water quality assessments (summarized from McCormack and Cairns 1994):

1. Diatoms are ubiquitous and biologically relevant. Diatoms are components of virtually every aquatic habitat and many species are globally distributed. As primary producers, diatoms are also vital members of aquatic ecosystems

and function at the interface between biotic and abiotic components of the food web. In addition, diatom assemblages generally contain a large number of species, so that changes in population structure provide an “information-rich” system for ecological analysis.

2. Diatom assemblages provide excellent continuity through time and space. Although seasonal changes in diatom populations occur, community-level characteristics are maintained throughout the year. Furthermore, the ubiquity of diatom assemblages within a geographical region provides spatial continuity for fine-scale resolution of environmental impacts.

3. Diatoms are sensitive to a broad range of environmental stressors over small temporal and spatial scales. Benthic diatoms have relatively high growth rates and respond rapidly and predictably to alterations in water chemistry. When compared to minimally-impacted reference sites, the ecological conditions of other sites along a gradient are reflected by differences in diatom abundance and diversity.

4. Diatom indicators provide information about ecosystem health that is complementary to information provided by other indicator organisms. As direct recipients of increased nutrient loading, changes in diatom community structure are reliable indicators of changes in trophic status. Other commonly used indicators, such as invertebrate and fish populations, respond better to changes in their physical habitat, such as increased sediment loading or temperature.

5. Sampling protocols for diatoms have little impact on the environment. While sampling higher organisms may be destructive to the environment or detrimental to indigenous populations, diatom sampling rarely impacts the environment or other trophic levels.

6. Diatoms indicators are cost effective. In contrast to indicators species from higher trophic levels, large numbers of benthic samples can be easily collected and rapidly processed for molecular analysis of diatom species.

Although the value of diatom indices for water quality assessment in freshwater ecosystems has long been recognized, recent research has also demonstrated the utility of benthic diatoms as reliable indicators of water quality within marine systems (e.g., Frankovich et al, 2006; Weckstrom and Juggins 2005; Webber et al., 2005; Marshall et al., 2003). In Delaware's Inland Bays (DIB), however, there has been only one study of benthic diatoms, as paleoecological indicators of climate change (Beasley, 1987). This investigation revealed an increase in diatom diatom abundance and decrease in diversity with increased agricultural activities (and nutrient input) over time. In the most recent sediments, Beasley (1987) also identified diatom species indicative of nitrogen pollution with declining oxygen levels. A study of representative salt marsh habitats in nearby Canary Creek, Lewes, DE also investigated the effects of nutrient enrichment on diatom assemblages and found that long-term exposure to nutrient stress resulted in a shift in community structure and a decrease in diatom diversity (Sullivan 1976). These results, along with the considerable amount of data provided in studies on other systems, suggest that diatom assemblages in Delaware's Inland Bays may be useful indicators of environmental conditions over a range of temporal and spatial scales.

#### Intended Results:

- Explore the impact of nutrients in structuring benthic diatom assemblages in Delaware's Inland Bays.
- Evaluate tolerance of potential indicator species within diatom assemblages to nutrient input.
- Make recommendations for appropriate diatom indicators to CIB and DNREC.

#### Outputs/Deliverables:

1. Analyze archived DNA from sediments, statistical analysis of results (Fall '08)
2. Sequence DNA for species identification (Fall '08/Winter '09)
3. Develop and test high-throughput assays (Winter '09/Spring '09)
4. Collect and analyze sediments from selected sites of interest (Spring '09/Summer '09)
  - Mesocosm experiments (Summer '09)
  - Analyze and evaluate results mesocosm experiments (Summer '09)
  - Write reports, make recommendations for diatom indicator species (Summer '09/Fall '09)

**Milestones:**

1. Complete data analysis (Target: September 2010. Completed: JAN 2010).
2. Complete final report with recommendations for indicator (Initiated: 2009, Target: August 2010, Extended: SEP 2010. Completed January 2010).

**Short-Term Outcomes**

New Inland Bays environmental indicator.

**Intermediate Outcomes:**

Increased understanding of Inland Bays ecological and water quality trends; increased understanding and a learning tool for resource managers involved in planning protection and restoration strategies.

**Long-Term Outcomes:**

Potential enhancement of monitoring capabilities of partner programs and agencies.

**Project Progress****Progress To Date:**

1. Final report received, reviewed, and revised.
2. Project successfully completed with the identification of a few species of diatoms that are weak candidates for indicators of eutrophic conditions.
3. Identified differences in diatom community between the Delaware Coastal Bays and the Maryland Coastal Bays that suggested different candidate species.
4. Research continues on this topic through the UD Seagrant award to Kathy Coyne.

**Additional Project Information****Project Financing**

Funding Determination : RFP

Amendment:

Amendment Source:

CIB FUNDS: \$17,395.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$17,395.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Indian River Bay, Rehoboth Bay

Latitude:

Longitude:

**Project Leveraging Role**

Significant

**Report Information**

Report Title:

Author :

Abstract :

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<b>Restoration</b> <input type="checkbox"/>	<b>QAPP</b> <input checked="" type="checkbox"/>	
<b>Habitat Type :</b>	<b>Date Completed :</b> #####	
<b>Restoration type :</b>	<b>Date Approved :</b> 10/20/2008	
<b>Acreage :</b>	<b>Location :</b> Center for the Inland Bays	
<b>Partners :</b>		
<b>Completion Date:</b>		
<b>Cost :</b>		

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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** Eelgrass Planting Project in Delaware's Inland Bays

**Lead Contractor:** DNREC - DSWC - SWMS

**Responsible Partners, Contact Info, and Roles:** Ariane K. Nichols, Environmental Scientist II  
Division of Soil and Water Conservation  
Shoreline and Waterway Management Sec.  
89 Kings Highway  
Dover, Delaware 19901  
(302) 739-9921

**Project Status:** Completed

**Work Pan ID :** CIB09-008

## Project Description

### Strategic Alignment:

**CCMP Action Plan ID :** HP-A  
**Primary Action Plan ID Title :** Create a Resource Protection Area management plan

**CCMP Goal Objective ID :** G2,G2A  
**Primary Goal Objective ID Title :** Promote recurrence of submerged aquatic vegetation

### CCMP/Work Plan Goal:

This project directly correlates with the objectives of the CCMP, Habitat Protection Action Plan. Within this Action Plan it is stated that: "There are presently no substantial SAV beds in the Inland Bays; potential habitat may currently be limited and existing habitat is marginal. For these reasons, and because of other concurrent uses of the Bays, protecting areas where planting is being attempted is both feasible and desirable. If SAV is to become re-established, it must be protected. Healthy SAV beds will become primarily shellfish spawning sanctuaries and finfish nursery areas."

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The proposed project involves collecting eelgrass seeds from plants within Virginia's Chesapeake Bay, storing these seeds in a controlled storage tank, and distributing the seeds into areas within the Inland Bays that are deemed likely to support the growth of these seeds. This project would also involve surveying the areas within the Inland Bays that have existing eelgrass beds. Information that will be gathered at these sites will include water depths, salinity, and dissolved oxygen. This information will then be used to determine where the best sites are for establishing new eelgrass beds.

Collection of the seeds would be done manually with human labor collecting the seeds by hand in the spring.

Collecting the seeds would be done in coordination with Virginia's SAV restoration program and done in a manner to reduce any damage to the established plants within the Chesapeake Bay.

After the seeds were collected they would be divided into two halves. Half of the seeds would be dispersed in the spring using a floating tethered bag method shortly after the seeds are collected. The other half of the seeds would be placed in a pool and maintained in a cool and dark area to reduce the chances of any algal growth within the pool. This pool will be located at the Division of Soil and Water Conservation's new facility in Lewes, Delaware. These seeds that will be kept in the pool through the summer will then be broadcast by hand in the fall, shortly before germination of the seeds will occur. Monitoring of the seeds will occur throughout the year to determine the success of the planting efforts.

#### Intended Results:

- to increase the population of eelgrass within the Inland Bays
- provide for increased benthic habitat because eelgrass beds provide habitat for juvenile fisheries species.
- to survey the existing eelgrass beds within the Bays and gather information on characteristics of these areas that support the growth of these beds
- to establish a system for eelgrass seed collection, dispersal, and monitoring that will become an annual program within the Department and Division.

#### Outputs/Deliverables:

Survey of existing eelgrass beds  
 Collect seeds in Chesapeake Bay, disperse half of the seeds in tethered floating bag method, place half of seeds in a monitored pool.  
 Monitor pool with eelgrass seeds.  
 Hand dispersal of seeds that have been in pool.  
 Monitor data on seed dispersal areas for germination.

#### Milestones:

- Updated after project setbacks in 2009.
1. Information transfer meeting with DNREC, CIB (Target: February, 2010)
  2. Setup of storage tanks for eelgrass seeds (Initiated June, 2010. Target: April, 2010)
  3. Collection of eelgrass seeds (Completed: June, 2010)
  4. Complete distribution of seeds (Target: October, 2010)
  5. Germination monitoring (Target: April, 2011)
  6. Final Report (Target: May, 2011)

#### Short-Term Outcomes

Transfer of institutional knowledge of Inland Bays SAV restoration efforts to new group of practitioners. Development of relationships necessary to secure seed source for restoration.

#### Intermediate Outcomes:

Exploration of an alternative SAV restoration methodology.

#### Long-Term Outcomes:

Increase in acres of SAV and associated water quality improvements.

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## Project Progress

### Progress To Date:



a. Contacts are being made with representatives from other areas that have an establish eelgrass population to make arrangements for seed procurement. Eelgrass beds within the Inland Bays are being monitored to determine if seeds will be available from those plants. When a time for harvesting seeds has been determined, the necessary equipment will be purchase for this harvesting and storage needs.

b. Dates are being scheduled and coordinated with the Soil and Water survey team to map the boundaries of existing eelgrass bed.

c. A building has been secured to be used for the storage of seeds through the summer months for the next two years. An area within the Soil and Water Lewes facility is being identified for the building of a structure to store seeds and continue restoration initiatives in future years.

D. Project timeline for 2010 set up.

E. Eelgrass seeds collected from Maryland Coastal Bays in June 2010 for summer storage in UD facility.

**Additional Project Information**

**Project Financing**

Funding Determination : RFP

Amendment:

Amendment Source:

CIB FUNDS: \$4,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$4,000.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$8,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Indian River Bay

Latitude:

Longitude:

**Project Leveraging Role**

Significant

**Report Information**

Report Title: NA

Author : NA

Abstract : NA

Restoration

QAPP

Habitat Type : subtidal

Date Completed :

Restoration type : Re-establishment

Date Approved :

Acreage :

Location :

Partners :

Completion Date:

Cost : \$0.00



# Project Report

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**Project Name:** *Volunteer Intensive and Representative Condition Assessment of the Bays (VIRCAB)*

**Lead Contractor:** University of Delaware Seagrant Citizen Monitoring Program

**Responsible Partners, Contact Info, and Roles:** Joseph G. Farrell, UD SGMAS Marine Resource Management Specialist, and Program Manager, UD Citizen Monitoring Program  
University of Delaware, College of Marine and Earth Studies  
204H Cannon Laboratory, 700 Pilottown Road, Lewes, DE 19958  
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Dover, DE 19903  
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**Project Status:** Completed

**Work Pan ID :** CIB09-013

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## Project Description

**Strategic Alignment:**

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
ED-A	Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G2	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality Monitoring

**Overview:**

The UD Citizen Monitoring Program has been collecting water quality data in the Inland Bays since 1991, primarily from shoreline bulkheads, docks or piers in tributaries and the main bays.

Our data provides valuable trend information over 17 years. In general, our coverage is more comprehensive in the tributaries than the main bays where we have recruited volunteers from the many tributary based waterfront communities. On the other hand, the existing suite of environmental water quality indicators have been based on the habitat requirements of Eelgrass (*Zostera marina*), the keystone species of submerged aquatic vegetation (SAV) for the Inland Bays, and as such, they are only applicable to the main bays (Secchi depth, Chlorophyll a, Total Suspended Solids, Dissolved Inorganic Nitrogen and Phosphorus).

Over the years, our volunteers have expressed interest in boat sampling. To be effective, this effort would require additional oversight and modified sampling design. It would, however, provide a new dimension to our Citizen Monitoring Program effort and offer the potential benefit of an additional data source for an SAV indicator.

This pilot project will extend our monitoring capabilities to sample open water bay sites by boat, and will provide sequential monthly assessments from May through September that will be reported to the public on our web page. The project will offer comparisons to previous research on the habitat requirement of Eelgrass in the Inland Bays done by researchers at the UD CMES and DNREC.

In addition, other pertinent indicators will also be included in the study, such as Dissolved Oxygen, the abundance of Macroalgae and Harmful Phytoplankton blooms, and the levels of fecal bacteria that are used as an indicator of the safety of recreational contact (Total Enterococcus).

In the past, the Center for Inland Bays has supported our previous pilot efforts, including the Phytoplankton Monitoring Program, which has become a highly successful core program.

**Intended Results:**

- To form a small group of volunteers (6 boats, with teams of 2-3 volunteers per boat) committed to using their personal vessels to collect water quality samples from the main bays on a monthly basis during summer 2009.

- To focus on measuring parameters that are core diagnostic environmental indicators for Eelgrass habitat requirements (\*), or other indicators routinely used by EPA or DNREC (\*\*i.e. things for which standards exist).

Parameters measured by volunteers on boat: Secchi Depth\* and Water Depth, Water Temperature and Salinity, Dissolved Oxygen, Macroalgae abundance (by grapple hook), Parameters measured by laboratory analysis: Chlorophyll a\* and Total Suspended Solids, Dissolved Inorganic Nitrogen\* and Phosphorous, HAB identification and enumeration, Total Enterococcus\*\*

- To compare data from the main bays to data collected from existing shoreline sites which largely are in the tributaries.
- To compare results to previous environmental indicator studies, and to form a low cost option of continuing sampling of the bays by volunteers with boats in future years.

#### Outputs/Deliverables:

- October 1, 2008 to April 30, 2009- Coordination, Planning and Training of Volunteers
- May 1, 2009 to September 30, 2009- Sampling, Analysis and Reporting

#### Milestones:

Updated milestones after project extension to 2010

1. Produce new project timeline (Initiated: January 2010, Target: March 2010).
2. Produce final report (Completed: March 2011).

#### Short-Term Outcomes

expand citizens' monitoring effort

#### Intermediate Outcomes:

provide additional monitoring data sets

#### Long-Term Outcomes:

enhance monitoring capabilities of partner programs and agencies

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## Project Progress

#### Progress To Date:

1. A complete year of mainstem sample runs were completed in 2010.
2. The feasibility of enhanced seaweed monitoring from shore was tested and determined to not be feasible for the Program.
3. A final project report was accepted.

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## Additional Project Information

**Project Financing**

Funding Determination : RFP

Amendment:

Amendment Source:

CIB FUNDS: \$25,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$25,000.00

**Project Location**

Municipality : Ocean View

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

Significant

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input checked="" type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Sensitive Shallow Water Area Markings*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** E.J. Chalabala -- Project Manager  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
(302) 226-8105  
restoration@inlandbays.org

**Project Status:** Completed

**Work Pan ID :** CIB10-001

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,HP-A,HP-C	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2A,G2F,G3,G3B,G6,G6D,G9,G9F	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality Monitoring

### Overview:

Boating on the bays may cause a number of environmental impacts, including increasing the amount of turbidity in the bays. These impacts, though not often visible, can impact bottom-dwelling plant and animal communities. Existing boating regulations in the Inland Bays include restricting boat speed in designated areas (no-wake zones), which include some shoreline shallow areas. However, many shallow water sensitive areas remain unmarked and susceptible to impacts of watercraft. In addition, educational materials (Inland Bays Boaters' Guide) are available, which inform the public about shallow water impacts, but they may not be reaching all pertinent boaters. The Inland Bays Water Use Plan Implementation Committee (WUPIC) has identified marking sensitive shallow water areas as a

priority action. The WUPIC will collaborate with the Department of Natural Resources & Environmental Control and the USCG to inventory and map sensitive shallow water areas (e.g. resource protection areas or habitat restoration sites) in the bays. Subsequently, appropriate signage will be created and installed near these sensitive shallow water areas to restrict speed of craft in sensitive areas, not just for safety or property concerns, but to protect living resources as well.

#### Intended Results:

1. Evaluate and document the progress towards implementation of the Inland Bays Water Use Plan.
2. Suggest plausible strategies to ensure achieving successful execution of the plan.

#### Outputs/Deliverables:

1. Inventory and map of shallow water areas
2. Developed signs.
3. Installed signs.

#### Milestones:

1. Inventory and map sensitive shallow water areas (e.g. resource protection areas or habitat restoration sites) in the bay.
2. Develop and install appropriate signage near sensitive shallow water areas to restrict speed of craft in sensitive areas, not just for safety or property concerns, but to protect living resources as well.

#### Short-Term Outcomes

Awareness that people are paying attention to water use needs. Promotes the CIB in collaboration with DNREC

#### Intermediate Outcomes:

#### Long-Term Outcomes:

1. Minimize environmental impacts, avoid user conflicts, and improve conditions related to water use activities in Delaware's Inland Bays.

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## Project Progress

#### Progress To Date:

In collaboration with the Division of Fish & Wildlife/Enforcement Section, the Inland Bays Water Use Plan Implementation Committee (WUPIC) evaluated areas where boating safety and environmental impacts are a serious concern. The navigable channel known as Massey's Ditch, which connects Rehoboth Bay and Indian River Bay, was identified as a priority area because of heavy boat congestion and boat wake impacts on colonial-nesting waterbird habitat. In response, the WUPIC recommended actions, including extending the "Shallow- No Wake" zone past Middle Island in Indian River Bay and establishing a new navigable channel around Lynch Thicket. A bathymetric survey was completed by the Department of Natural Resources & Environmental Control/Dredge Section, which confirmed that sufficient depth exists for a marked channel. CIB staff has contacted a local marine construction company to obtain quotes for the installation of navigational markers in the new channel. It is anticipated that markers will be produced and installed before the end of summer 2010.

18 channel markers were put in to mark a bypass channel around Massey's Ditch. This keeps boaters off of sensitive shallow sand bars and alleviates congestions in the Massey's Ditch channel.

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## Additional Project Information

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$5,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$5,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Aquaculture Charette*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** EJ Chalabala -- Project Manager

**Project Status:** Completed

**Work Pan ID :** CIB10-003

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
ED-A	Implement the Comprehensive Public Participation and Education Plan

<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G6,G6A,G6D,G9,G9C	Identify existing use patterns and develop preferred use areas

**CCMP/Work Plan Goal:**

**CWA Program Implementation:** Improving Water Quality Monitoring

### Overview:

Over the past several years, the CIB, in collaboration with the University of Delaware's Marine Advisory Program and Delaware State University, has successfully demonstrated the viability of growing shellfish in the Inland Bays using a variety of aquaculture techniques and methods. These include the off-bottom culture of oysters using Taylor floats and other commercial aquaculture gear. In response to recent inquiries regarding the potential for commercial shellfish aquaculture operations in Delaware's Inland Bays, the CIB proposes to organize and host a one-day charrette to explore the feasibility of shellfish aquaculture operations in Delaware's Inland Bays. Invited guests will include technical experts, resource managers, and policy and decision –makers. Proceedings from the charrette will be published and distributed to local policy and decision-makers as key findings concerning this emerging issue.

**Intended Results:**

Successful execution of a charette to examine the feasibility of aquaculture operations in the Inland Bays and transfer of the results to policy makers.

**Outputs/Deliverables:**

1. Charrette
2. Charette proceedings and summary for decision makers.

**Milestones:**

1. Plan, develop, and schedule a one-day charrette on commercial aquaculture in the Inland Bays
2. Host one-day charrette at a preferred location in the Inland Bays watershed
3. Compile data, record comments/notes and publish the proceedings from the charette
4. Distribute published proceedings to key policy and decision-makers.

**Short-Term Outcomes**

1. Increase awareness about the potential for and feasibility of establishing commercial shellfish aquaculture ventures in Delaware's Inland Bays.

**Intermediate Outcomes:**

Increase awareness about the potential for and feasibility of establishing commercial shellfish aquaculture ventures in Delaware's Inland Bays.

Getting legislators familiar with oysters in our Inland Bays in hopes they can prepare to speak about it to others.

**Long-Term Outcomes:**

Gaining more attention to shellfish in the Inland Bays. Getting legislature passed to allow citizens to commercially harvest oysters in our Inland Bays.

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**Project Progress**

**Progress To Date:**

Monthly meetings being conducted to plan for workshop.  
Location and date have been determined.  
Speakers and Agenda have been confirmed.  
White paper being composed.  
Brochure has been designed and printed.  
Workshop to be held on June 18th 2011 and the findings from that workshop will be published.

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**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$3,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$3,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Indian River Bay, Indian River Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Anchorage Canal Drainage Area Stormwater Retrofit Project Phase 1: Seacolony Ditch to Wetswale*

**Lead Contractor:**

**Responsible** Chris Bason, CIB, 302 226-8105  
**Partners, Contact** Jay Headman, Town of South Bethany, (302) 537-6541  
**Info, and Roles:** Marianne Walch, DeIDOT, (302) 760-2195  
Larry Trout, JMT  
John Gilbert, Seacolony  
Susan Barton, UD College of AG & NR

**Project Status:** Completed

**Work Pan ID :** CIB11-002

## Project Description

**Strategic Alignment:**

<b>CCMP Action Plan ID :</b> IMS-A	<b>Primary Action Plan ID Title :</b> Meet the nutrient reduction goals of the Pollution Control Strategy
<b>CCMP Goal Objective ID :</b> G1,G1A,G1E,G2,G2E,G9	<b>Primary Goal Objective ID Title :</b> Establish and Implement a comprehensive nonpoint source pollution control program
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis,  
Improving Water Quality  
Monitoring

**Overview:**

In 2008, the Center for the Inland Bays (CIB), the Town of South Bethany, and DeIDOT formed a partnership to develop a stormwater retrofit assessment and strategy with other communities in the drainage area. The Center for Watershed Protection (CWP) has produced a draft strategy that conceptualizes and prioritizes retrofit projects. The primary goal of the strategy is to reduce nitrogen and phosphorus loads entering the Canal and LAB by 40% through retrofits in accordance with the PCS. We propose to begin implementation of the strategy by retrofitting an existing

ditch within the DeIDOT right of way adjacent to the Sea Colony high-rise complex. The project will convert an existing ditch to a wet swale with a sediment control forebay, check dams, and vegetated filter strips to incrementally improve treatment of runoff from residences, businesses, roads, and a large area of the Sea Colony parking lot. The Town of South Bethany's monitoring committee will measure anticipated changes in nutrients and dissolved oxygen concentrations within the Canal by continuing its program of continuous and spot-sample data collection. This data meets federal standards for citizen monitoring through EPA approved QA plans through the CIB and the University of Delaware Citizen's Monitoring Program. The project will also achieve significant public outreach and will have continued community cooperation and informal education on stormwater impacts and treatment.

The project seeks additional funds from the CIB to implement additional study, design, and installation either within the southern portion of the Sea Colony ditch, or within the DeIDOT highway medians. Additional funding will improve project efficiencies particularly in design and mobilization costs and increase pollutant reductions.

#### **Intended Results:**

The project will convert an existing ditch to a wet swale with a sediment control forebay, check dams, and vegetated filter strips to incrementally improve treatment of runoff from residences, businesses, roads, and a large area of the Sea Colony parking lot.

#### **Outputs/Deliverables:**

1. Installation of sediment control forebay at northern end of sea colony ditch.
2. Conversion of northern end of the ditch to a wet swale with vegetated filter strips and sediment control forebays.
3. Continued dissolved oxygen monitoring data and reports for the Anchorage Canal forebay area.
4. Project amendments from other sources will optionally increase a) scope of retrofit design to the southern portion of the Sea Colony ditch, b) scope of design and installation on southern portion of the ditch, c) scope of design and installation to incorporate a section of DeIDOT highway median.

#### **Milestones:**

1. Select contractor (Target: MAY 2010. Completed MAY 2010)
2. Final study design review and approval meeting (Target: NOV 2010. Completed: FEB 2011.)
3. Finish construction (Target: FEB 2011. Completed: MAY 2011.)
4. Final Report (Target: APR 2011, Extended: JULY 2011)

#### **Short-Term Outcomes**

1. Increased cooperation among CIB and communities within drainage to reduce pollution to LAB.
2. Increased knowledge of general public about impacts to Bays from urban stormwater runoff.
3. Improved attitude among communities to involving resources in pollution control.

#### **Intermediate Outcomes:**

1. Continued willingness of communities within the drainage and nearby to address stormwater pollution coming from their properties.
2. Contribution of match and effort to implement pollution control.

#### **Long-Term Outcomes:**

1. Remove an estimated 12.2 lbs of total nitrogen and 0.78 lbs of total phosphorus per year from 31 urban acres with 85% impervious cover.
2. Filter strips will remove approximately 72% of total suspended solids.
3. Ancillary benefits to bacteria loads to LAB.
4. Ancillary benefits to community beautification and use of native species.

**Project Progress**

**Progress To Date:**

1. All construction and planting designs and permits approved and completed.
2. Revised construction agreement completed.
3. Maintenance agreement completed.
4. Construction and planting completed with minor modifications to the sediment forebay due to a water main that was not properly identified.
5. Project is estimated to remove 3.4 lbs of phosphorus and 23.7 lbs of nitrogen per year by treating 35 acres of mostly impervious surfaces.
6. Sea Colony contributed \$50,500 for planting and irrigation.

**Additional Project Information**

**Project Financing**

Funding Determination : RFP

Amendment:



Amendment Source: CE9939900

CIB FUNDS: \$20,000.00

OTHER FUNDS: \$56,000.00

MATCHING FUNDS: \$95,886.00

AMENDMENT FUNDS: \$20,000.00

TOTAL: \$191,886.00

**Project Location**

Municipality : Bethany Beach, Middlesex Beach, South Bethany Beach

Watershed/Waterbody : Little Assawoman Bay, Little Assawoman Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

Restoration

QAPP

Habitat Type :

Date Completed :

Restoration type :

Date Approved :

Acreage :

Location :

Partners :

Completion Date:

Cost :

Year Reported 2011

Date : 07/14/2011

On-going





CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Acreege and Condition Trends for Marshes of Delaware’s Inland Bays as an Environmental Indicator and Management Tool (USEPA RARE GRANT)*

**Lead Contractor:** University of Delaware -- Center for Remote Sensing

**Responsible Partners, Contact Info, and Roles:** Chris Bason, CIB, (302) 226-8105  
Amy Jacobs, DNREC (302) 672-1153  
Marty Chintala, EPA, (401) 782-3090  
Richard Field, UDCMES

**Project Status:** On-going

**Work Pan ID :** CIB09-002

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,HP-D,HP-F,LU-B	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G1,G1E,G2,G2E,G2F,G3,G3B,G7,G7A,G7B,G7E,G9	<b>Primary Goal Objective ID Title :</b> Integrate projected sea level rise into shoreline planning and activities
<b>CCMP/Work Plan Goal:</b> Develops information to guide CCMP shoreline and wetland management goals. Addresses climate change impacts.	

**CWA Program Implementation:** Improving Water Quality Monitoring

### Overview:

This project will integrate remote sensing tools including historical and contemporary aerial photography and satellite imagery at different spatial resolutions to provide a comprehensive history of acreage and condition change in the Inland Bays watershed and attempt to identify the major factors influencing these rates. Rates and causes will allow informed predictions about marsh acreage and condition in the future and lead to the development of management strategies for the resource. The study’s methodology and results will be directly transferable to other mid-Atlantic watersheds and communicated at science and technical meetings such as NEP meetings, Society of Wetland Scientists, and the Estuarine Research Federation.

**Intended Results:**

1. Spatially explicit rates of marsh loss and change in condition
2. An assessment of the factors influencing these rates with a particular focus on the sudden wetland dieback event of 2006.
3. Informing state policy and restoration strategies with this information.
4. Development of an established and affordable environmental indicator for the Inland Bays.
5. Potential map of marsh migration rates for state and county landuse planning purposes.

**Outputs/Deliverables:**

1. Full research quality management project plan
2. Final report of data assemblage and analysis leading to a comprehensive history of acreage and condition change in the Inland Bays watershed and analysis of potentially influential factors
3. Arranged data sharing agreement (possible data transfer on harddrive as solution).
4. Marsh acreage and condition environmental indicator results and SOP
5. Management and research recommendations

**Milestones:**

1. Acquisition of imagery and preprocessing (Initiated: April 2010. Completed: APR 2011)
2. Imagery analysis and database development (Initiated: August 2010)
3. Historical analysis of aerial photography (Target: August 2011)
4. Begin Analysis of process factors (Target: August 2011)
5. Complete factor and time series analyses (Target: August 2012)
6. Complete interview process (Target: August 2012)
7. Final Report (Target: January 2013)

**Short-Term Outcomes**

Increased scientific understanding of the rates of saltmarsh acreage and condition change and factors influencing these changes.

**Intermediate Outcomes:**

Increased public understanding of trends in acreage and condition for a valuable public resource. Increased understanding and a learning tool for resource managers involved in planning protection and restoration strategies for wetlands.

**Long-Term Outcomes:**

Probable reduction in wetland loss due to better informed planning and policy. Potential for higher level of protection for saltmarsh resources in this and other watersheds of the State.

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**Project Progress****Progress To Date:**

1. Interviewing project technical cooperators.
2. Selected UD Center for Remote Sensing as cooperator
3. Completed project proposal and application package to USEPA.
4. Received and addressed peer reviewer comments on proposal.
5. Awaiting award from EPA promised by end of fy09.
6. Upon delayed EPA funding developed a Prelude Project agreement and began data acquisition work.
7. Hired GIS specialist PhD candidate.
8. Completed QAPP
9. Data Acquisition Complete

- 10. Initial wetland change results presented.
- 11. Year one progress report submitted.
- 12. Additional funds pursued to integrate 2010 NWI datalayer into analysis.

### Additional Project Information

#### Project Financing

Funding Determination : RFP

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$60,000.00

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$60,000.00

#### Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

#### Project Leveraging Role

Primary

#### Report Information

Report Title:

Author :

Abstract :

Restoration

QAPP

Habitat Type :

Date Completed : 4/1/2010

Restoration type :

Date Approved : 4/1/2010

Acreage :

Location : CENTER  
FOR THE  
INLAND  
BAYS

Partners :

Completion Date:

Cost :



# Project Report

**Project Name:** *Long-term continuous saltmarsh monitoring in the Inland Bays*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Chris Bason -- CIB: Project Coordination, Data Collection, Data Analysis and Reporting  
Amy Jacobs -- DNREC, WAS, WMAP: Project Coordination  
Bart Wilson -- DNREC, CP: Monitoring Setup and Partial Data Analysis and Reporting

**Project Status:** On-going

**Work Pan ID :** CIB09-004

## Project Description

### Strategic Alignment:

**CCMP Action Plan ID :** ED-A  
**Primary Action Plan ID Title :**

**CCMP Goal Objective ID :** G2,G2E,G3,G7,G7B,G7E,G9  
**Primary Goal Objective ID Title :** Enhance monitoring and response strategies

### CCMP/Work Plan Goal:

Enhancing Inland Bays monitoring by developing a continuous program for rapidly changing resource responding to climate change. Builds capacity for decision making CCMP goals related to shoreline and wetland management.

**CWA Program Implementation:** Improving Water Quality Monitoring

### Overview:

A long-term continuous monitoring site is being managed in a representative fringing saltmarsh of the Inland Bays to gather baseline data on weather, hydrology, chemistry, and marsh elevation and to relate these parameters to each other, sea level rise, and any potential new sudden wetland dieback events that may occur in this or other marshes of the Inland Bays. Two continuous monitoring stations will record ground water and surface water depth, pH, salinity and water temperature. Regular chemistry sampling will also occur for selected parameters. Three sediment elevation tables will be installed. One weather station is installed. The project will provide needed background data on the natural variation in the above parameters and their interactions. The project will attempt to relate these parameters to each other, sea-level rise and potential new sudden wetland dieback events to better understand the stressors affecting the highly impacted saltmarshes of the inland Bays.

**Intended Results:**

1. Purchase and install all monitoring instruments (partially completed).
2. Collect data and maintain instruments.
3. Develop long-term monitoring plan.
4. Summarize and publish data at regular intervals for the scientific community.
5. Pursue funding to expand the site to a continuous monitoring network for Inland Bays saltmarshes.
6. Opportunity to use information in formulation of wetland protection and restoration strategy for the Inland Bays.

**Outputs/Deliverables:**

1. Fully operational, long-term, continuous hydro-metro marsh monitoring site
2. Baseline monitoring data on marsh processes
3. Capacity for continuous monitoring data during SWD event.
4. Network of 4 marsh elevation monitoring stations in the Inland Bays.
5. Monitoring data to inform wetland management.

**Milestones:**

1. Initial monitoring station setup (Completed: September 2009)
2. Begin and maintain data collection (Ongoing)
3. Initial data analysis (Ongoing)
4. Complete installation of additional Sediment Elevation Tables (Target: March 2011. Completed: DEC 2010)
5. First data report (Target: February 2011. Initiated: MAY 2011.)

**Short-Term Outcomes**

Increased knowledge of local saltmarsh hydrophysiochemistry and marsh elevation using continuous monitoring techniques.

**Intermediate Outcomes:**

Increased knowledge of local saltmarsh hydrophysiochemistry using continuous monitoring techniques. Technical transfer to larger scientific community. Increased understanding of inter-relation of study parameters.

**Long-Term Outcomes:**

Increased knowledge of local saltmarsh hydrophysiochemistry using continuous monitoring techniques. Increased understanding of inter-relation of study parameters. Use of this information in future restoration projects and in restoration and protection strategy for Inland Bays saltmarshes.

**Project Progress****Progress To Date:**

1. Completed installation of additional SET tables at Slough's Gut and Piney Point.
2. Completed Spring sampling of SET tables.
3. Continued water level monitoring and data analysis.
4. Retired the weather station due to reduction in project effort. Retired one pH monitor due to failure.
5. Investigating inability of pH monitor to collect accurate data.
6. Presented elevation and water level data to wetlands workgroup.

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$2,500.00

OTHER FUNDS: \$25,800.00

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$28,300.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Rehoboth Bay

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title: NA

Author : NA

Abstract : NA

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input checked="" type="checkbox"/></p> <p>Date Completed : 12/1/2008</p> <p>Date Approved : 12/1/2008</p> <p>Location : Center for the Inland Bays</p>	
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# Project Report

**Project Name:** *Center for the Inland Bays Environmental Indicators Project*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Chris Bason -- CIB, 302 226-8105, Project Coordination  
 Sally Boswell -- CIB, Outreach and Publication Assistance  
 CIB STAC subcommittees, Project Support and publication review

**Project Status:** On-going

**Work Pan ID :** CIB09-005

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,IMS-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2E,G3,G8,G8C,G9,G9 F	<b>Primary Goal Objective ID Title :</b> Enhance monitoring and response strategies
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
 Pollution on a Watershed Basis,  
 Improving Water Quality  
 Monitoring

### Overview:

The CIB STAC will update and assess the current environmental indicators, explore the need for and identify new indicators, and develop a strategy to effectively collect and report this information over time to the public and policy makers. This initiative will also include a comprehensive assessment of progress made towards implementing the CCMP. The purpose of this process is to develop the Inland Bays Environmental Indicators into the most complete and coherent explanation of the current ecological condition of the Bays and their watershed, and to relate this to the progress towards their restoration in a manner that regularly informs and involves the public.

**Intended Results:**

1. Develop and implement a plan to revise and expand the existing environmental indicators into the most complete and coherent explanation of the current condition of the Inland Bays and their watershed.
2. Relate stressors and management actions to changes in bay health.
3. Develop and implement a long term indicator reporting strategy.

**Outputs/Deliverables:**

- Review and update existing environmental indicators (completed).
- Select and conceptually develop new environmental indicators (ongoing).
- Develop and implement an environmental indicators reporting strategy.

**Milestones:**

1. Review and update existing environmental indicators (Completed: January 2011)
2. New indicator release (Interim Timeperiod): Recreational Water Quality and Wetland Condition (Completed December 2010)
3. Indicator release 2010 (Target: 3 Individual releases throughout 2010, Initiated: Recreational Water Quality Report 2nd ed. June 2010).
4. Final Indicator Report (Target: January 2011.)

**Short-Term Outcomes**

Increased stakeholder understanding about trends in watershed health over time. Increased resource manager understanding of the interrelations between watershed stressors and condition.

**Intermediate Outcomes:**

Expected significantly more informed expectant attitudes in general public and policy makers for increased and maintained pollution control.

**Long-Term Outcomes:**

Overall improved environmental condition (chemical and biological) in response to increased action from provision of easily understandable condition assessment.

**Project Progress****Progress To Date:**

1. Completed 95% of analysis of indicator data and preparation.
2. Contracted the data analysis of the impervious surface indicator with the UD IPA and developed indicator report.
3. Contracted the data analysis of the cropland buffer indicator with the UMBC and developed indicator report.
4. Discovered DNREC EL ammonium analysis error and worked to resolve this error which has delayed project completion.
5. Reanalyzing the nitrogen concentration data and related water quality index data.
6. Expected completion in early summer 2011.

**Additional Project Information**



**Project Financing**

**Funding Determination :** Sole Source

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$10,000.00

**OTHER FUNDS:** \$0.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$10,000.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays

**Latitude:**

**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** James Farm Kiosk & Educational Signage

**Lead Contractor:** Center for the Inland Bays

**Responsible** Sally Boswell -- Project Manager

**Partners, Contact** E.J. Chalabala

**Info, and Roles:** Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
(302) 226-8105  
outreach@inlandbays.org

**Project Status:** On-going

**Work Pan ID :** CIB10-002

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G9,G9C,G9F	<b>Primary Goal Objective ID Title :</b> Ensure, to the maximum extent possible, all planning and management activities related to the Inland Bays involve public participati, ininformation and education e
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality Monitoring

### Overview:

The James Farm Ecological Preserve is owned by Sussex County and managed by the Center for the Inland Bays. It is open to the public every day of the year from sun up to sun down. In addition to thousands of visits by residents and visitors each year, James Farm is host to about 1,000 7th and 8th grade middle school students who come to the Farm for a full day of instruction each school year. A kiosk was built next to the parking lot as a point for providing information to visitors, but permanent signage, waterproof 'cabinets' for posting information, and waterproof brochure

racks need to be designed, built and installed to make the kiosk functional for its intended use.

**Intended Results:**

Improve the education of visitors to the James Farm through an updated educational kiosk.

**Outputs/Deliverables:**

Improved educational kiosk at the James Farm.  
Permanent trail markers to direct students and visitors

**Milestones:**

- 1. Assess and evaluate current information provided on signage at the James Farm Target: Summer 2010
- 2. Contract with sign fabricator for design and fabrication of new signage for the James Farm Ecological Preserve Target: Spring 2011
- 3. Install new signage and complete needed improvements on existing kiosk (Target: \_\_\_\_\_)

**Short-Term Outcomes**

- 1. Provide citizens and students with timely, seasonal information about conditions and opportunities at the James Farm Ecological Preserve.

**Intermediate Outcomes:**

- 1. Change the behavior of visitors through education and awareness regarding their impact on the Ecological Preserve and the watershed.

**Long-Term Outcomes:**

- 1. Provide a 'satellite location' for watershed education and citizen awareness.
- 2. Increase in watershed education for residents and out of state visitors

**Project Progress**

**Progress To Date:**

Trail markers  
 Contractor has been identified to produce trail markers  
 Location of trail markers has been determined  
 Design of trail markers has been completed and approved

Kiosk  
 Evaluation of kiosk content needs has been completed.  
 Designer has been selected

Trail markers have been delivered  
 Trail markers have been installed  
 Program for kiosk has been completed

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$5,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$5,000.00

**Project Location**

Municipality : Ocean View

Watershed/Waterbody : Indian River Bay, Indian River Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** 1000 Raingardens for the Inland Bays

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Sally Boswell -- Project Manager  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
(302) 226-8105  
outreach@inlandbays.org

**Project Status:** On-going

**Work Pan ID :** CIB10-004

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G1,G1C,G1E,G2,G3	<b>Primary Goal Objective ID Title :</b> Adopt the most effective Best Management Practices's to provide maximum ground and surface water protection
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The CIB, in collaboration with EPA Region III, will engage in an ambitious three year initiative to create 1,000 rain gardens in the Inland Bays watershed. Preliminary activities have already started in the spring of 2009 with the launch of the Center for Inland Bays local campaign. This will be followed by intensive efforts to promote and install rain gardens in 2010 and 2011.

**Intended Results:**

1. Coordination with other partnerships and stakeholders with activities such as programs such as the Delaware Nature Society's Backyard Habitat program, Project NEMO, etc.
2. Increased community and neighborhood involvement in improving water quality
3. Promotion of low-impact development
4. Dissemination of information about rain gardens and green solutions
5. Promotion of native plants and local biodiversity
6. Training for partners and participants
7. Education of students, Scouts, clubs, and related groups
8. Rain garden registration and monitoring
9. Marketing through the media
10. Outreach at farmers' markets, fairs, and festivals
11. Friendly cross-jurisdictional competitions,
12. Special outreach efforts to reach youth, at-risk youth, the elderly, the disabled and foreign-language communities
13. Adoption of policies and/or ordinances that promote green best management practices to prevent pollution and mitigate stormwater run-off to our Estuaries

**Outputs/Deliverables:**

1. Creation of the Millville Town Hall Demonstration Rain Garden
2. Partnerships with churches, town halls, libraries and schools to create demonstration habitats on public land throughout the Inland Bays watershed.
3. Creation of rain gardens on private property through outreach and education events and speaking engagements that inform and educate homeowners about the benefits of rain gardens for on site management of storm waterer
4. Develop a power point presentation that CAC Outreach members and DNS Habitat Stewards can take to community groups

**Milestones:**

## Coordination and Collaboration:

1. Continue to convene Partners Forum to assist in Campaign design and implementation
2. Identify funding and technical partners to building a demonstration rain gardens at town halls and other public locations in the watershed
2. Identify sponsors and fundraising opportunities

## Education and Outreach:

1. Update/distribute outreach/marketing materials, as needed
2. Maintain Campaign website
3. Update media packets
4. Conduct training workshop (by request)

## Implementation:

1. Identify partners and sites for demonstration rain gardens and seek needed authorities and permission to install them
2. Provide education/how to materials at demonstration sites
3. Work with willing local governments to integrate 'green design' into policies and programs
4. Initiate a Corporate Lands RG focus in coordination w/partners working w/corporations (DNS, etc.)
5. Develop incentives: Initiate a Rain Garden Competition (Estuary – wide)

**Short-Term Outcomes**

1. educate property owners, businesses, developers, and students about water quality, native plants, and green solutions
2. engage citizens in practical "backyard" solutions for water quality improvement

**Intermediate Outcomes:**

- 1. increased community and neighborhood involvement in improving water quality
- 2. adoption of policies and/or ordinances that promote green best management practices to prevent pollution and mitigate stormwater run-off

**Long-Term Outcomes:**

- 1. Increase in the number of rain gardens implemented in the Inland Bays watershed
- 2. Decrease in nutrient contributions to the Inland Bays

**Project Progress**

**Progress To Date:**

- Interpretive signs for demonstration rain garden were designed
- Interpretive sign was produced and has been installed at the demonstration rain garden at Millville Town Hall
- Interpretative sign has been produced and will be installed at the demonstration rain garden in Town Park in Dagsboro-May 14, 2011
- Design and engineering plans have been completed for the Bethany Beach Nature Center Demonstration Rain Garden.
- Contract signed for work to commence on May 26 the Bethany Beach Nature Center Demonstration Rain Garden
- 1000 Rain Gardens for the Inland Bays Registry was designed and put on the CIB website

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$10,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$10,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Watersheds

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Hard Clam Density and Distribution Survey*

**Lead Contractor:** DNREC - WAS

**Responsible Partners, Contact Info, and Roles:**  
Mike Bott -- Project Manager  
DNREC - WAS

Chris Bason -- Project QA Manager  
Center for the Inland Bays

Seasonal Intern -- Research Assistant  
Center for the Inland Bays

Rick Cole -- Data Modeler  
DNREC -- FWS

**Project Status:** On-going

**Work Pan ID :** CIB10-005

## Project Description

### Strategic Alignment:

**CCMP Action Plan ID :** ED-A  
**Primary Action Plan ID Title :** Implement the Comprehensive Public Participation and Education Plan

**CCMP Goal Objective ID :** G2,G2B,G2E,G3,G3D  
**Primary Goal Objective ID Title :** Enhance monitoring and response strategies

**CCMP/Work Plan Goal:**

**CWA Program Implementation:** Improving Water Quality  
Monitoring

### Overview:

This two year project will resurvey the Inland Bays for hard clam and other shellfish density and distribution. Hard clams are the bays most valuable commercial and recreational fishery and have not been surveyed since the 1980s. Their biomass, year class, and distribution will be repeat surveyed in Rehoboth Bay in 2010 and in Indian River and

Little Assawoman Bay in 2011. Data will be compared with previous measurements and provided to the DNREC FWS for use in management models and the Inland Bays Shellfish Management Plan. Final report and a report for public consumption will be prepared. Data will be used as an environmental indicator. Data is necessary for any aquaculture practices to occur.

### Intended Results:

1. Biomass and distribution survey of hard clam resource in the Inland Bays.
2. Ancillary information on other shellfish species in the Inland Bays.
3. Scientific and public reports.

### Outputs/Deliverables:

1. Final report
2. Full data delivery to DNREC FWS
3. Public education product/indicator product
4. Potential scientific journal article.

### Milestones:

1. Develop QAPP (Initiated: October, 2009; Target: March, 2010, Completed: March, 2010)
2. Finalize Inland Bays Boat use procedures (Initiated: October 2009; Target: March 2010, Completed: March, 2010).
3. Complete sampling for Rehoboth Bay (Initiated: May 2010, Target: October 2010, Extended: July, 2011)
4. Complete data analysis and preparation for Rehoboth Bay (Target: April, 2011, Extended: October, 2011)
5. Complete sampling for Indian River and Little Assawoman Bay (Target: October, 2011). LAB sampling may be dropped or Target moved to October 2012.
6. Complete data analysis and preparation for Indian River and Little Assawoman Bay (Target: April, 2012)

### Short-Term Outcomes

1. Increased understanding of the status of hard clam resource by resource managers and decision makers.
2. Increased awareness by public of the economic and environmental importance of hard clam resource.

### Intermediate Outcomes:

1. Development of improved hard clam management models using new data through contemporary information that can set limits for sustainable harvest and other management goals
2. Improved monitoring capacity for hard clams.
3. Information necessary to decide on feasibility of aquaculture operations.

### Long-Term Outcomes:

NA

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## Project Progress

### Progress To Date:

1. A full season of sampling was completed with Rehoboth Bay 2/3 completed.
2. QAQC procedures completed.
3. Exploration of a reduced sampling scheme that would still allow comparability to previous data sets for Indian River Bay is being explored by Richard Wong with DFWS.
4. Preparation for the second sampling season is under way.

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## Additional Project Information

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source: CE9939900

CIB FUNDS: \$10,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \$5,500.00

TOTAL: \$15,500.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input checked="" type="checkbox"/></p> <p>Date Completed : 3/1/2010</p> <p>Date Approved : 3/1/2010</p> <p>Location : CIB</p>	
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# Project Report

**Project Name:** *Inland Bays CCMP Project Management & Oversight*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, DE 19971  
 (302) 226-8105

Edward A. Lewandowski  
 Executive Director  
 director@inlandbays.org

**Project Status:** On-going

**Work Pan ID :** CIB11-001

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> IMS-A	<b>Primary Action Plan ID Title :</b> Meet the nutrient reduction goals of the Pollution Control Strategy
<b>CCMP Goal Objective ID :</b> G1,G1A,G1E,G2,G2E,G9	<b>Primary Goal Objective ID Title :</b>
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis, Developing Total Maximum Daily Loads, Improving Water Quality Monitoring, Strengthening National Pollutant Discharge Elimination System Permits, Strengthening Water Quality Standards, Supporting Sustainable Wastewater

## Infrastructure

**Overview:**

The Center for the Inland Bays, Inc. is an innovative management approach to watershed restoration and protection. Critical to the success of CCMP implementation activities is effective research and demonstration project oversight, grant development and management, contract administration, and coordination with organizations responsible for various work elements as well as tracking and communication of progress. The Board of Directors, the office of the Executive Director and other appropriate staff, will be responsible for these tasks.

The Delaware Inland Bays National Estuary Program was established in 1988 through a Congressional designation and is under the administration of the U.S. Environmental Protection Agency/Office of Water/Office of Wetlands, Oceans & Watersheds/Oceans & Coastal Protection Division/Coastal Management Branch. The non-profit Center for the Inland Bays, Inc., enabled by the Delaware General Assembly in July 1994, oversees implementation of the Inland Bays Comprehensive Conservation and Management Plan.

The CIB is administered by a nine member Board of Directors consisting of the following members: Secretary of the Department of Agriculture, Secretary of Dept of Natural Resources & Environmental Control, a representative from the Sussex Conservation District, the Sussex County Council, a representative from the Sussex County Association of Towns, the Chair of the Scientific and Technical Advisory Committee, the Chair of the Citizens Advisory Committee, a designee of the President Pro-Tem of the Delaware State Senate, and a designee of the Speaker of Delaware State House of Representatives. The EPA is an Ex-Officio member.

**Intended Results:**

- Provide for effective project management and oversight
- Engage in restoration, research/demonstration, education & outreach projects and the development of sound public policy
- Coordinate with responsible organizations and partners
- Track and communicate progress

**Outputs/Deliverables:**

CCMP inclusive

**Milestones:**

Task 1: Secure state funding and other match sources to support the Section 320 grant and CIB Work Plan

Task 2: Prepare and distribute program updates and associated progress reports to the Board of Directors and EPA (quarterly)

Task 3: Hire and/or retain appropriate support staff as needed (on-going).

Task 4: Monitor budgetary and financial reconciling procedures; secure annual A-133 audit; report results to Environmental Protection Agency and Board of Directors

Task 5: Provide administrative (meeting arrangements, notifications, minutes, etc) support for the Board of Directors, Scientific and Technical Advisory Committee, Citizen's Advisory Committee and other CIB committees (on-going).

Task 6: Provide communication documents, including the Inland Bays Journal (three times per annum-spring/summer/fall), to public and private groups/individuals, state, county, and local governments.

Task 7: Publish a CIB annual report and distribute to select audiences, including the Delaware General Assembly, as required by HB540- the Inland Bays Watershed Enhancement Act.

Task 8: Facilitate implementation and monitor/track the progress of lead agencies responsible for implementation of

CCMP tactics (on-going).

Task 9: Provide educational programs to schools, homeowners, and other publics to show better management practices within the Inland Bays watershed; methods will include programs, lectures, slide shows, seminars, as well as media interaction (radio, TV, news articles, etc).

Task 10: Continue to support the promulgation of Inland Bays Pollution Control Strategy regulations in cooperation with the Delaware Department of Natural Resources & Environmental Control.

Task 11: Continue restoration initiatives at the James Farm Ecological Preserve as well as other public and private sites.

Task 12: Serve on state-wide and regional committees and task-forces to promote sound environmental policies based on best available science.

Task 13: Continue oversight and management of the Inland Bays Shellfish Restoration Program in cooperation with the College of Marine Studies (U.D.) and Delaware State University

Task 14: Travel to national and regional EPA meetings and estuary-related conferences; provide technical assistance to other programs.

Task 15: Serve in an advisory capacity to elected officials, public policy makers and civic leaders.

Task 16: Organize and host special events, such as the Governor's Wade-In, the Native Plant Sale, the Inland Bays Clean-up, and other public outreach activities.

Task 17: Augment the CIB's membership program and sustain opportunities for volunteer participation.

Task 18: Collaborate with the Inland Bays Water Use Plan Implementation Committee to develop strategies to reduce user conflicts and protect/restore habitats

Task 19: Collaborate with the Inland Bays Citizens' Advisory Committee to expand the activities of its Outreach and Public Policy subcommittees

Task 20: Diversify sources of non-federal income to support the CIB's programs and activities.

**Short-Term Outcomes**

CCMP inclusive

**Intermediate Outcomes:**

CCMP inclusive

**Long-Term Outcomes:**

CCMP inclusive

**Project Progress**

**Progress To Date:**

Task 1: Secured \$190,000 in State of Delaware funding in the FY'11 Grant-in-Aid bill  
 Task 2: Prepare and distribute program updates and associated progress reports to the Board of Directors and EPA (quarterly)- successfully completed

Task 3:HiCIB hired a P/T Environmental Policy Coordinator Successfully completed

Task 4:Required A-133 Audit produced- Successfully completed

Task 5:Provide administrative (meeting arrangements, notifications, minutes, etc) support for the Board of Directors, Scientific and Technical Advisory Committee, Citizen's Advisory Committee and other CIB committees- Successfully completed

Task 6:Provide communication documents, including the Inland Bays Journal (three times per annum- spring/summer/fall), to public and private groups/individuals, state, county, and local governments- Successfully completed

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Task 7:Publish a CIB annual report and distribute to select audiences, including the Delaware General Assembly, as required by HB540- the Inland Bays Watershed Enhancement Act- Successfully completed

Task 8:Facilitate implementation and monitor/track the progress of lead agencies responsible for implementation of CCMP tactics (on-going)- Successfully completed

Task 9:Provide educational programs to schools, homeowners, and other publics to show better management practices within the Inland Bays watershed; methods will include programs, lectures, slide shows, seminars, as well as media interaction (radio, TV, news articles, etc)- Successfully completed

Task 10:Continue to support the promulgation of Inland Bays Pollution Control Strategy regulations in cooperation with the Delaware Department of Natural Resources & Environmental Control- Successfully completed

Task 11:Continue restoration initiatives at the James Farm Ecological Preserve as well as other public and private sites- 24-acre marsh restoration successfully completed

Task 12: Serve on state-wide and regional committees and task-forces to promote sound environmental policies based on best available science- Successfully completed

Task 13: Continue oversight and management of the Inland Bays Shellfish Restoration Program in cooperation with the College of Marine Studies (U.D.) and Delaware State University- Successfully completed

Task 14: Travel to national and regional EPA meetings and estuary-related conferences; provide technical assistance to other programs- Successfully completed

Task 15: Serve in an advisory capacity to elected officials, public policy makers and civic leaders- Successfully completed

Task 16: Organize and host special events, such as the Governor's Wade-In, the Native Plant Sale, the Inland Bays Clean-up, and other public outreach activities- Successfully completed

Task 17:Augment the CIB's membership program and sustain opportunities for volunteer participation- Successfully completed

Task 18: Collaborate with the Inland Bays Water Use Plan Implementation Committee to develop strategies to reduce user conflicts and protect/restore habitats - Successfully completed

Task 19: Collaborate with the Inland Bays Citizens' Advisory Committee to expand the activities of its Outreach and Public Policy subcommittees- Successfully completed

Task 20:  Diversify sources of non-federal income to support the CIB's programs and activities- Successfully completed

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$598,800.00

OTHER FUNDS: \$232,000.00

MATCHING FUNDS: \$830,800.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$1,661,600.00

**Project Location**

Municipality : Bethany Beach, Middlesex Beach, South Bethany Beach

Watershed/Waterbody : Little Assawoman Bay, Little Assawoman Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :





# Project Report

**Project Name:** *Eelgrass Habitat Suitability Mapping Project*

**Lead Contractor:**

**Responsible Partners, Contact Info, and Roles:** Chris Bason, CIB -- Project Coordinator  
 Bart Wilson, DNREC CP -- Sediment Mapping  
 Eva Marie Koch, UMD -- Potential Contractor  
 E

**Project Status:** On-going

**Work Pan ID :** CIB11-003

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> AG-B,HP-A	<b>Primary Action Plan ID Title :</b> Develop nutrient utilization and distribution alternatives
<b>CCMP Goal Objective ID :</b> G2,G2A	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis

### Overview:

The most basic objective of the Inland Baysmanagement plan is to reverse eutrophication and habitat loss. Submerged vascular plant (SVP) meadows are keystone species of coastal lagoons and are signature habitats for fish and shellfish. They also control water qauality and bottom sediment movement. The Total Maximum Daily Loads and the Pollution Control Strategy for the Inland Bays were developed in part to achieve conditions that allow for the growth and re-establishment of SVPs. Eelgrass and widgeon grass meadows may once have covered a majority of Rehoboth Bay and much of Indian River Bay. Unfortunately, the Inland Bays is nearly devoid of these keystone species after disease and eutrophic conditions caused their extirpation.

A concerted restoration initiative in the late 1990s and early 2000s was succesful in restoring one known acre of

eelgrass in Indian River Bay. Water quality data suggest that eutrophic conditions have subsided to the extent that SVP could re-establish. The limiting factor for their self re-establishment is likely the lack of a sufficient seed source. Interest exists to renew a SVP restoration program in the Inland Bays. However, information is needed to identify the locations within the Bays that would most likely allow re-establishment. The primary factors affecting re-establishment include water clarity and sediment type. Water clarity is determined by suspended sediment and phytoplankton concentrations and water depth. Sediment type varies by location within the Bays. Water velocity and macroalgal accumulation have a secondary effects on re-establishment and growth. In the Maryland Coastal Bays, habitat suitability maps for eelgrass have been generated using these variables.

This project proposes to develop eelgrass habitat suitability maps for the Inland Bays using existing data sources including bathymetry, water clarity, suspended solids concentrations, and chlorophyll concentrations; and sediment type for which data is needed. The maps will be used to 1.) identify and prioritize areas for eelgrass restoration projects, 2.) develop an ecologically relevant long-term goal for eelgrass restoration and coverage, 3.) develop an environmental indicator for eelgrass that communicates bay condition and program success, and 4.) inform the selection and establishment of resource protection areas (RPAs) in the Inland Bays. The project will primarily focus on eelgrass about which the most is known and could be continued to develop maps for widgeon grass.

#### Intended Results:

1. Aggregation of existing data relevant to SVP habitat suitability.
2. Cooperation with DNREC to map sediment type within Rehoboth and Indian River Bay. ELIMINATED.
3. Production of habitat suitability maps for eelgrass.
4. Development of a restoration goal (acreage) and environmental indicator.
5. Inform RPA selection.
6. Exploration of mapping for widgeon grass.

#### Outputs/Deliverables:

1. GIS project with aggregated data on eelgrass habitat suitability.
2. Sediment type data for Rehoboth and Indian River Bay
3. Final report and suitability maps.
4. Environmental indicator draft for eelgrass.

#### Milestones:

1. Explore avenues for collecting sediment type data with DNREC CP or other agencies (Target: February 2011, Extended: July 2011).
2. Solicit contractor to prepare maps (Target: February 2011, Extended: September 2012).
3. Project partner meeting (Target: March 2011. Eliminated.)
4. Begin aggregation and provision of existing data (Target: March 2011, Extended January 2013).
5. Begin map construction (Target: April 2011, Extended: JAN 2013).
6. Complete sediment type mapping (Target: October 2011 potentially Summer 2012).
7. Complete final maps and reports (Target: January 2013, Extended: SEP 2013)
8. Complete environmental indicator (Target: January 2013, Extended: JAN 2013)

#### Short-Term Outcomes

1. Increased understanding of areas within the Bays that are suitable for eelgrass re-establishment.
2. Increased awareness within the DNREC Coastal Programs of the goals and objectives of the CIB.
3. Increased understanding of the public and CIB partners about the importance of SVP.
4. Updated understanding of the sediment dynamics within the Inland Bay by CIB STAC and other scientists.

#### Intermediate Outcomes:

1. Improve the efficiency and success of SVP restoration efforts.
2. Better informed establishment of Resource Protection Areas.

3. Potential for shoreline practices that are conducted with more sensitivity towards eelgrass restoration goals.

**Long-Term Outcomes:**

1. Should lead to the more successful restoration of SVP and thus improved water quality, less variable sediment dynamics, increased fish diversity, and improved shellfish habitat.

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**Project Progress**

**Progress To Date:**

1. Conversations with DNREC Coastal Programs revealed they did not have enough available effort to form a partnership on this project.
2. It was later discovered that sub-aqueous soils data collected from the Bays by NRCS but never published could be sufficient for use in the project.
3. This data was requested in early April and is still pending delivery for inspection.
4. Bathymetry data from 2004 was finally obtained from DNREC after many months of requesting.
5. The water quality data layers are complete and ready for inclusion.
6. Delays in this project combined with less available effort than planned have caused target dates to be significantly pushed back. The project is now targetted for completion by end of FY2012.

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**Additional Project Information**

**Project Financing**

**Funding Determination :** RFP  
**Amendment:**   
**Amendment Source:**  
                   **CIB FUNDS:** \$20,000.00  
                   **OTHER FUNDS:**  
                   **MATCHING FUNDS:**  
                   **AMENDMENT FUNDS:** \_\_\_\_\_  
                   **TOTAL:** \$20,000.00

**Project Location**

**Municipality :** All Coastal Communities  
**Watershed/Waterbody :** Indian River Bay, Rehoboth Bay  
**Latitude:**  
**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**  
**Author :**  
**Abstract :**

<b>Restoration</b> <input type="checkbox"/> <b>Habitat Type :</b> <b>Restoration type :</b> <b>Acreage :</b> <b>Partners :</b>  <b>Completion Date:</b> <b>Cost :</b>	<b>QAPP</b> <input type="checkbox"/>  <b>Date Completed :</b> <b>Date Approved :</b> <b>Location :</b>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Bethany Lakes Alternative Shoreline Stabilization Project*

**Lead Contractor:** Delaware Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl  
EJ Chalabala  
Delaware Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, Delaware 19971

Robert Collins, HOA Rep.  
Bethany Lakes Subdivision

**Project Status:** On-going

**Work Pan ID :** CIB11-004

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-F	<b>Primary Action Plan ID Title :</b> Promote natural alternatives to bulkheading
<b>CCMP Goal Objective ID :</b> G1,G1E,G2,G7	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The goal of the project is to stabilize 600 linear feet of eroding shoreline to protect active Great Blue Heron nesting habitat. Coir fiber logs and vegetative plantings will be used to stabilize the shoreline.

**Intended Results:**

- 1. Reduce shoreline erosion.
- 2. Promote the use of alternative shoreline stabilization techniques.
- 3. Protect nesting habitat for Great Blue Heron.
- 4. Enhance water quality through sediment reduction.

**Outputs/Deliverables:**

- 1. 600 linear feet of stabilized shoreline.
- 2. Aquatic vegetation established on 600 linear feet of shoreline.

**Milestones:**

- 1. October 2010-Secure landowner permission.
- 2. November 2010-Submit cost-share request and state permits.
- 3. February 2011-Begin construction.
- 4. March 2011-Begin plantings.
- 5. April 2011-Project plantings complete.

**Short-Term Outcomes**

- 1. Residents and project visitors will be made aware of alternatives to using bulkheads and rip-rap.

**Intermediate Outcomes:**

- 1. Through exposure to the project, those undertaking shoreline stabilization projects will implement alternative shoreline stabilization techniques in lieu of more 'hardened' techniques.

**Long-Term Outcomes:**

- 1. Water quality enhancement due to a decrease in erosion and sedimentation.
- 2. 600 linear feet of shoreline properly stabilized.
- 3. Upland (Great Blue Heron) nesting habitat protected from loss through erosion

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**Project Progress**

**Progress To Date:**

Transfer of land ownership caused delay but current landowner has given permission to proceed with project. Meeting with new landowner was held during this quarter. State permitting agency (DNREC Water Resources) site visit pending to grant authorization to apply for state cost-share funding for the project.

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**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$2,500.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$2,000.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$4,500.00

**Project Location**

Municipality : Bethany Beach

Watershed/Waterbody : Indian River Bay

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

**Project Name:** *West Millsboro Wetland Enhancement Project*

**Lead Contractor:** Delaware Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl  
 Delaware Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, Delaware 19971

Kurt Anderson  
 Ducks Unlimited  
 34 Defense Highway  
 Suite 200  
 Annapolis, Maryland 21401

Richard McCorkle  
 U.S. Fish & Wildlife Service  
 2610 Whitehall Neck Road  
 Smyrna, Delaware 19977

**Project Status:** On-going

**Work Pan ID :** CIB11-005

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> AG-C	<b>Primary Action Plan ID Title :</b> Manage and plant forested/vegetative buffers
<b>CCMP Goal Objective ID :</b> G2,G3,G3B,G7,G7B	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis



**Overview:**

The goal of this project is to enhance approximately one-half acre of marginal farmed wetlands and to enhance approximately one-half acre of adjacent upland area. Enhancement will be accomplished through plantings, water diversion, and other projects based on site conditions.

**Intended Results:**

1. Enhance wetland habitat for important wildlife species.
2. Enhance upland habitat for important wildlife species.
3. Protect nesting habitat for Great Blue Heron.
4. Enhance water quality by enhancing degraded wetlands.

**Outputs/Deliverables:**

1. One-half acre of degraded wetlands enhanced.
2. One-half acre of upland wildlife habitat enhanced or restored.

**Milestones:**

1. October 2010-Secure landowner permission.
2. November 2010-Submit cost-share request.
3. March 2011-Begin upland habitat plantings.
4. June 2011-Begin work on wetland enhancement.
5. September 2011-Complete wetland plantings.

**Short-Term Outcomes**

1. Project visitors will be made aware of the restoration potential of degraded wetlands and farmed upland areas.

**Intermediate Outcomes:**

1. Those seeking to enhance or restore degraded habitats on their property will implement appropriate practices learned by visiting this project.

**Long-Term Outcomes:**

1. Water quality will be improved.
2. Wetland and upland wildlife habitat will be improved.
3. One acre of combined wetland and upland habitat will be enhanced.

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**Project Progress****Progress To Date:**

Six sites were visited in early April to evaluate their potential. DNREC Watershed Stewardship and Fish and Wildlife and/or Ducks Unlimited participated in site visits. All six sites have limited potential due to their current land use/condition, flow pattern, or soils onsite. Additional sites are undergoing preliminary evaluation (aerial interpretation/soils/landowner identification).

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**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$12,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$1,000.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$13,000.00

**Project Location**

Municipality : Millsboro

Watershed/Waterbody : Indian River Bay, Indian River Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

**Project Name:** *Baltimore Aquarium Partnership/Display*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Edward A. Lewandowski  
 Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, DE 19971  
 (302) 226-8105

**Project Status:** On-going

**Work Pan ID :** CIB11-006

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> AG-C	<b>Primary Action Plan ID Title :</b>
<b>CCMP Goal Objective ID :</b> G2,G3,G3B,G7,G7B	<b>Primary Goal Objective ID Title :</b>
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The National Aquarium Conservation Center (NACC) recently identified Coastal and Estuarine Conservation as a target in its revised Action Plan. The National Estuary Program (NEP) has been operating for more than two decades to protect and restore ocean and coastal ecosystems by promoting watershed-based coastal management, preventing pollution of the marine environment, monitoring and assessing coastal conditions, and establishing effective partnerships. The NEP is an ideal partner for the NACC as it is the U.S. Environmental Protection Agency’s “flagship” watershed effort to restore and protect coastal waters and “estuaries of national importance.”

Since the National Aquarium in Baltimore already has the communication channels in place to implement an enhanced outreach effort, an interactive display at the Aquarium that features the NEP and also highlights two local

estuaries- Delaware's Inland Bays and Maryland's Coastal Bays- would be an ideal vehicle for expressing a collective coastal conservation message. Major emphasis in the region is on the resources of the Chesapeake Bay, and deservedly so. However, the smaller estuarine systems along the Delaware and Maryland coasts attract millions of tourists annually and are also of national significance. These systems also deserve the attention necessary to ensure that their economic viability is maintained as well as the guarantees that they can continue to be productive ecosystems. In return, the National Estuary Program offers the National Aquarium in Baltimore an opportunity to diversify its message and further increase its national profile by having access to a broad range of stakeholder representation in 28 estuaries in eighteen states and Puerto Rico.

### Intended Results:

- 1.To establish a collaborative partnership between the National Estuary Program and the NACC/National Aquarium in Baltimore
- 2.To develop and disseminate a shared conservation message concerning coastal and estuarine resources

### Outputs/Deliverables:

- 1.An attractive exhibit/display focusing on the National Estuary Program and highlighting both Delaware's Inland Bays and Maryland's Coastal Bays
- 2.Press release to highlight the partnership and opening of the National Estuary Program display
- 3.An "Estuaries Day" at the National Aquarium as part of its 30th anniversary celebration/activities.
- 4.Public presentation(s) at the aquarium concerning Delaware's Inland Bays and Maryland's Coastal Bays

### Milestones:

### Short-Term Outcomes

- 1.Raise the profile and capabilities of the partners
- 2.An education/outreach presence for the National Estuary Program at the National Aquarium in Baltimore
- 3.Increase public understanding and knowledge about the fragile Delaware Inland Bays and Maryland Coastal Bays ecosystems
- 4.Increase awareness about both the ecological and economic importance of healthy estuaries
- 5.Increase citizen interest in local estuary restoration efforts
- 6.Increased public support for policies that restore and protect estuaries of national importance

### Intermediate Outcomes:

### Long-Term Outcomes:

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## Project Progress

### Progress To Date:

Exploratory/conceptual meetings between CIB/MCBP and National Aquarium conducted in Baltimore and at the CIB Scope of Work drafted and adopted

Project MOA developed and executed

Design estimate received

Model development and testing initiated

Invoices sent to Tillamook, NY/NJ Harbor, Long Island Sound Study, and Casco Bay NEPs

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## Additional Project Information

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$20,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$20,000.00

**Project Location**

Municipality : Millsboro

Watershed/Waterbody : Indian River Bay, Indian River Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

**Project Name:** *Massey's Landing Dredge Spoil Project*

**Lead Contractor:** Delaware Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl  
 Delaware Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, Delaware 19971

Chuck Williams  
 Delaware Department of Natural Resources and Environmental Control  
 Division of Soil & Water Conservation  
 89 Kings Highway  
 Dover, Delaware 19901

**Project Status:** On-going

**Work Pan ID :** CIB11-007

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-G	<b>Primary Action Plan ID Title :</b> Review, update, and codify the Inland Bays Dredge Plan
<b>CCMP Goal Objective ID :</b> G2,G2B,G2F,G6,G6D	<b>Primary Goal Objective ID Title :</b> Enhance and restore impacted shallow and nearshore habitats
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis

### Overview:

The goal of this project is to restore or enhance a shallow-water or intertidal area near Massey's Landing through the beneficial re-use of dredge spoil. The project accomodates public use of the waterway while creating or enhancing habitat for birds and reptiles.

**Intended Results:**

1. Protect and restore underwater and shallow water habitat areas.
2. Promote the beneficial re-use of dredge spoil.
3. Enhance upland habitat for colonial nesting bird species.
4. Enhance boating safety.

**Outputs/Deliverables:**

1. A safe, navigable channel will be re-established.
2. Beneficial re-use of dredge spoil will be promoted.
3. Underwater and shallow water habitat areas will be protected.
4. Upland and inter-tidal habitat will be restored or enhanced.

**Milestones:**

1. October 2010-Secure landowner permission.
2. November 2010-Refine scope project.
3. November 2010 thru February 2011-prepare state and federal permits.
4. Fall 2011/Winter 2012-Complete project dredging.
5. Spring 2012-Complete plantings if required.

**Short-Term Outcomes**

1. A safe, navigable channel will be re-established.
2. Project visitors will see that there are beneficial uses for dredge spoils.

**Intermediate Outcomes:**

1. Aquatic habitat areas will be protected from boat groundings and prop scarring.
2. Habitat for reptiles and nesting birds will be restored or enhanced.

**Long-Term Outcomes:**

1. Key species numbers will be enhanced through protected nesting and breeding areas.

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**Project Progress****Progress To Date:**

A small workgroup has been established to evaluate/guide the process for a beneficial re-use project at Massey's Landing. Two site visits occurred in March and April with DNREC Watershed Stewardship-Dredge Program staff. Engineering and project materials assistance has been requested from the State of Delaware and private material suppliers. Sediment sampling is pending. Additional input on project details is pending from workgroup members.

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**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$15,700.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$80,000.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$95,700.00

**Project Location**

Municipality : Millsboro

Watershed/Waterbody : Rehoboth Bay

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

**Project Name:** *Martins Way Shoreline Stabilization*

**Lead Contractor:** Mike Lewis HOA

**Responsible** Mike Lewis

**Partners, Contact**

**Info, and Roles:** E.J. Chalabala  
DE Center for the Inland Bays  
302-228-8954

**Project Status:** On-going

**Work Pan ID :** CIB11-008

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,HP-F	<b>Primary Action Plan ID Title :</b> Promote natural alternatives to bulkheading
<b>CCMP Goal Objective ID :</b> G2,G2C,G2F,G3,G3B,G4, G4E	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Strengthening Water Quality Standards

### Overview:

- Stabilization of salt marsh bank using a blend of materials, mainly Coir logs and Stone Sill
- Install approximately 800 linear feet of 16" diameter Coir Logs. Install per manufacturers recommendations with input from the DNREC, the CIB and local biologists.
- At the end of Whites Creek canal, install 100' of marsh toe rip-rap to protect the exposed end of the marsh on the south sid of the canal.

-At the west end of the bulk headed side of the canal, on north side, install a 50' jetty to protect th ancillary channel as well as to protect the salt marsh.

-Plant spartina behind bio log (2nd phase)

**Intended Results:**

- 1. Reduce shoreline erosion
- 2. Promote the use of alternative shoreline techniques
- 3. Increase amount of functioning wetlands.
- 4. Enhance water quality through sediment reduction.
- 5. Protecting wetlands from wave energy and storm events

**Outputs/Deliverables:**

- 1. 800 Linear Feet of shoreline stabilized
- 2. 1 acre of wetlands protected
- 3. Increase wetlands and vegetation

**Milestones:**

February 2010- tour and come up with design of project  
 March 2010- finalize design and call manufacturers for pricing  
 April 2010- bring DNREC and experts out for a site visit and ask about permitting  
 May 2010- send in information to be permitted  
 Sep 2010- begin project  
 Oct 2010- final project

**Short-Term Outcomes**

- 1. Residents and project visitors will be made aware of alternatives to using bulkheads and rip-rap.
- 2. Wave energy will be dicipated immensely

**Intermediate Outcomes:**

- 1. People that are thinking about doing these types of project will have an example showing an alternative to bulkheads and rip-rap.

**Long-Term Outcomes:**

- 1. 800 Linear feet or shoreline stabilized
- 2. 1 acre of wetlands protected
- 3. 1/2 acre of wetlands created and vegetized
- 4. Increased habitat for nesting birds
- 5. lcreased water quality from the stabilization of sediment

**Project Progress**

**Progress To Date:**

Permits applied for  
Spartina source found

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$1,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$40,000.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$41,000.00

**Project Location**

Municipality : Ocean View

Watershed/Waterbody : Indian River Bay, Indian River Bay WS

Latitude:

Longitude:

**Project Leveraging Role**

Support

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Headwater stream restoration project*

**Lead Contractor:** DE CIB

**Responsible** E.J. Chalabala

**Partners, Contact** Eric Buehl

**Info, and Roles:** DE Center for the Inland Bays

**Project Status:** On-going

**Work Pan ID :** CIB11-009

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> AG-B,AG-C,HP-F,IMS-A	<b>Primary Action Plan ID Title :</b> Manage and plant forested/vegetative buffers
<b>CCMP Goal Objective ID :</b> G2,G2F,G3,G3B,G4,G4E,G5,G5C	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
Monitoring, Strengthening Water  
Quality Standards

### Overview:

A degraded headwater stream would be identified and assessed for functionability. Pre and post project water sampling would occur to justify and compare the work that was done.

The goal of this project is to restore, enhance and demonstrate how a headwater stream and it's immediate surroundings can be improved to better habitat and water quality.

This can be as inexpensive or expensive as we want to go. From just allowing a mowed edge to grow, to reducing erosoin of the channel using bio logs and plantings. Also the eradication of non-native species will be done.

We hope to make this a public demonstration project that will have good public visibility.

**Intended Results:**

- 1. Increase water quality at a head water stream
- 2. Increase beneficial habitat for wildlife and aquatic species
- 3. Obtain baseline data for water quality before and after project implementation
- 4. Serve as a public demonstration project for stream channel restoration

**Outputs/Deliverables:**

- 1. Approx 300 feet for headwater stream restored to a more natural state
- 2. 1+ acres of riparian/vegetative buffer restored
- 3. Water quality improvements and erosion control
- 4. Creating a more natural stream and environment
- 5. Demonstration project and public awareness

**Milestones:**

- October 2010- Secure landowner permission
- November-December 2010- Refine scope of project and determine needs and availability of partners
- March 2011- asses location and begin water quality monitoring
- April 2011- Begin actual planting and improving project
- June-Sept 2011- Monitor water quality

**Short-Term Outcomes**

- 1. The public will see and be made aware how important it is to maintain our headwater streams.
- 2. Transforming unproductive buffer
- 3. Improve erosion

**Intermediate Outcomes:**

- 1. The public will get an idea of how beautiful the natural environment can be.
- 2. Increased understanding and a learning tool for resource managers involved in planning protection and restoration strategies for wetlands and buffers.
- 3. Basline data to help understand how buffers around headwater streams help water quality.

**Long-Term Outcomes:**

- 1. Headwater stream protection and better water quality
- 2. Wildlife, plants, and aquatic organism habitat
- 3. Water quality data to be used in determining future headwater stream restoration
- 4. A public awareness and demonstration project.
- 5. Solidifying partnerships

---

**Project Progress**

**Progress To Date:**

- Site visits conducted
  - Site chosen
  - Partnering with DNREC's wetland restoration program for expertise and dirt moving work
  - Draft plan created showing weir dams, diversion pipes and channel realignments
-

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$10,000.00

OTHER FUNDS: \$5,000.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$15,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays, All Watersheds

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

**Project Name:** *Mini Oyster Demonstration Reef*

**Lead Contractor:** DE Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** E.J. Chalabala  
DE Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302-228-8954

**Project Status:** On-going

**Work Pan ID :** CIB11-010

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> AG-B,HP-F,IMS-A	<b>Primary Action Plan ID Title :</b> Develop nutrient utilization and distribution alternatives
<b>CCMP Goal Objective ID :</b> G2,G2B,G2F,G3,G3B,G4,G9,G9F,G9G	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
Monitoring, Strengthening Water Quality Standards

### Overview:

This project will use oyster gear (cages/racks) to grow oysters in a suitable location to further demonstrate how well our bays can produce healthy oysters. With hopes to promote natural recruitment. A safe location will be determined that has good water flow and quality.

### Intended Results:

1. Establish a productive off bottom oyster reef
2. Document and demonstrate how well oysters can grow in our Inland Bays
3. Provide beneficial habitat for numerous organisms
4. Document natural recruitment

**Outputs/Deliverables:**

1. Approx 100 feet of off bottom oyster reef with approx 15 bushels of oysters
2. Approx 100 feet of aquatic habitat
3. Gallons? Of water being filtered
4. Large, healthy oysters with the potential for natural recruitment
5. Prove that off bottom reef can be beneficial

**Milestones:**

- October 2010- locate optimal spot for establishment  
November 2010- refine scope of project  
December-March 2010/2011- Design and build structure for oysters  
April-June 2011- Distribute oysters and document (size, weight, cluster?)  
Aug-??- Document size, weight

**Short-Term Outcomes**

1. Aquatic habitat
2. Substantial amount of oysters in location than ever before
3. Public outreach and awareness

**Intermediate Outcomes:**

1. Increased understanding of Inland Bays ecological trends, increased understanding and a learning tool for resource managers involved in planning protection and restoration strategies.

**Long-Term Outcomes:**

Enhance monitoring capabilities of partner programs and agencies. Potential for increased resource condition due to increased public awareness. Healthy oysters grown in an 'unhealthy' part of our bays. Prove that oysters can grow on reefs in the Inland Bays.

---

**Project Progress**

**Progress To Date:**

Site chosen in January  
Shell collection/curing continued

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**Additional Project Information**



**Project Financing**

**Funding Determination :**

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$0.00

**OTHER FUNDS:** \$3,000.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$3,000.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays, All Watersheds

**Latitude:**

**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Bethany Beach Nature Center*

**Lead Contractor:** CIB

**Responsible Partners, Contact Info, and Roles:** Sally Boswell, Project Manager  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971

Cliff Gravier & Lisa Daisey  
Bethany Nature Center  
Garfield Parkway  
Bethany Beach, DE 19930  
(302) 537-7680

**Project Status:** On-going

**Work Pan ID :** CIB11-011

## Project Description

### Strategic Alignment:

**CCMP Action Plan ID :** ED-A  
**Primary Action Plan ID Title :** Implement the Comprehensive Public Participation and Education Plan

**CCMP Goal Objective ID :** G2,G2A,G9,G9C,G9F  
**Primary Goal Objective ID Title :** Promote education of out-of-state users and visitors

**CCMP/Work Plan Goal:**

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The Bethany Beach Nature Center is located at the heart of the Inland Bays watershed in a rapidly developing area. It is the largest parcel of undeveloped land within the Town of Bethany Beach and includes 3 acres of forested uplands, 9.6 acres of federal jurisdictional wetlands and 13.8 acres of Delaware-designed wetlands.

In 2006, the CIB partnered with the Town of Bethany Beach to create a native plant demonstration garden at the Center to educate long time local residents, new residents, and the thousands of annual visitors to the watershed about the environmental benefits of gardening and landscaping with species indigenous to the coastal area.

In 2007, the town sought our assistance in creating an Inland Bays interactive exhibit for the Nature Center. Out of that work, the CIB formed a formal partnership with the Town of Bethany Beach at their Bethany Beach Nature Center to have a point of contact for education and outreach in the southern resort area of the Inland Bays watershed to reach residents and visitors to the coastal area of our watershed.

### Intended Results:

To provide resources and programming to educate and inform residents and visitors about the unique coastal habitats that have been preserved and protected at the Bethany Beach Nature Center

### Outputs/Deliverables:

1. Develop a partnership with the Town of Bethany Beach at the Bethany Nature Center
2. Develop and deliver a weekly children's program that incorporates watershed education
3. Develop and deliver summer programs for visitors to the watershed

### Milestones:

1. Assist the town manager in identifying a director for the Bethany Beach Nature Center
  2. Assist with developing exhibits to tell the Inland Bays story
  3. Provide brochures and other materials for distribution at the BBNC
  4. Hire a CIB Lead Teacher to develop watershed-focused educational activities and assist with children's programs
- Provide CIB teacher volunteers to lead and assist with programs

### Short-Term Outcomes

1. Raise awareness about the work of the CIB through our identification with and presence at the Bethany Beach Nature Center.
2. Development of Inland Bays exhibits and displays at the BBNC

### Intermediate Outcomes:

1. Provide a location for distribution of Inland Bays outreach/education materials to residents and tourists who visit BBNC.
2. Launch of programs for children and adults that highlight watershed education and inform and educate these residents and visitors

### Long-Term Outcomes:

1. An on-going outreach/education center in the south coastal area of the watershed through partnership with a local municipality.
2. A center for outreach to summer visitors to the watershed.

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## Project Progress

### Progress To Date:

-Continue our year-around Saturday morning program for children and families focusing on watershed education/activities. The program continues to grow in attendance and now regularly serves from 15-45 children and their families each week.

-Completed design and obtained funding through 'Rain Gardens for the Bays' for a demonstration rain garden at the BBNC. The children and community will participate in a planting day in early June.

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS:

OTHER FUNDS: \$3,000.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$3,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays, All Watersheds

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

Restoration

QAPP

Habitat Type :

Date Completed :

Restoration type :

Date Approved :

Acreage :

Location :

Partners :

Completion Date:

Cost :



# Project Report

**Project Name:** *Schoolyard Habitats in the Inland Bays Watershed*

**Lead Contractor:** Sally Boswell, Project Coordinator

**Responsible Partners, Contact Info, and Roles:** Center for the Inland Bays  
Indian River School District

**Project Status:** On-going

**Work Pan ID :** CIB11-012

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2A,G9,G9E	<b>Primary Goal Objective ID Title :</b> Ensure, to the maximum extent possible, all planning and management activities related to the Inland Bays involve public participati, inilnformation and education e
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

In 2006, CIB created a partnership with the Indian River School District to bring a Schoolyard Habitat Program (SHP) to every district school in the watershed so that watershed education becomes a part of every student's learning experience throughout the entire school year. As of spring 2010, Cib will have introduced this program to ten (10) schools. In 2009, with the support of a grant from the Chichester duPont Foundation to build capacity for this growing program, CIB hired a part-time Schoolyard Habitat Coordinator. Responsibilities for this position include overseeing introduction of the program to new schools; working with existing SHP schools and their graduating students on legacy programs each spring to expand the habitats; developing curriculum-aligned activities for each grade level for outdoor experiential education; and, providing oversight of volunteer educators and community volunteers who assist teachers and their students in these activities. A supplemental grant from the Chichester duPont Foundation in 2010

allowed CIB to continue to build capacity to support the growth of this successful program. Because Foundation support is not likely to be sustained beyond 2010, CIB needs to support this position from its operating funds so that additional schools can be added and existing schools can continue to grow their schoolyard habitats.

### Intended Results:

1. To develop and implement schoolyard habitat programs at every school in the Inland Bays watershed
2. To bring watershed awareness and education to teachers/students
3. To create awareness within the schools of their connection to the watershed and their impacts on the Inland Bays

### Outputs/Deliverables:

1. Habitat enhancement at schools in the watershed
2. Greater awareness of stormwater management and stormwater impacts at schools
3. Increased opportunities for watershed education for students

### Milestones:

1. Create schoolyard habitat wetlands at two schools each spring to begin their SHP
2. Develop leadership within the SHP
3. Develop and pilot curriculum-aligned activities for each grade level in support of watershed education for use in outdoor learning
4. Create a Legacy Program at each school and work with graduating students to expand the footprint of their schoolyard habitat

### Short-Term Outcomes

Through engagement of the teachers, students, administrators and groundskeepers, create awareness of stormwater management on the school property; create a wetland habitat; remove non native plant species and introduce a diversity of native plant species.

### Intermediate Outcomes:

Provide students with experiential outdoor learning opportunities by working with teachers to introduce curriculum-aligned lesson plans on water quality, habitat diversity, and other ecological concepts for use in the habitats

### Long-Term Outcomes:

Change the culture of schools and the awareness of students to regard the school and its grounds as the schoolyard habitat so that understanding of their place in the watershed and the impacts of their decisions and actions at their schools is part of their every day experience.

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## Project Progress

### Progress To Date:

-Creating Schoolyard Habitats at three schools in the watershed; John C. Clayton Elementary in Dagsboro, North Georgetown Elementary School and Millsboro Middle School.  
 -The opportunity to participate in Water Monitoring Day Program was offered to all schools in the Indian River School District to raise awareness about water quality and to give students the opportunity to collect water quality data at local sites. Data from the 2010 monitoring activities in IRSD schools has been added to the international database and serves as a baseline for future monitoring activities at each of the submitted sites.  
 -"What in the World "Programs-We are presenting programs on careers in entomology in the Delaware's Business, Industry and Education (BIE) Alliance Program at IRSD Schools, this spring at the Southern Delaware School of the Arts. In addition to career information, students are introduced to insects common to their Schoolyard habitats and those inhabiting and migrating through the watershed of the Inland Bays.

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$20,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$20,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :



CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Shorezone Fish Community Volunteer Monitoring Program*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Chris Bason -- CIB Project Lead  
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Ron Kernehan -- CIB Volunteer Project Coordinator  
9 Clayton Ave  
Lewes, DE 19958-1025  
(302) 645-6254  
rkernehan@earthlink.net

**Project Status:** On-going

**Work Pan ID :** CIB11-013

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2E,G9	<b>Primary Goal Objective ID Title :</b> Enhance monitoring and response strategies
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
Monitoring

### Overview:

This is a long-term volunteer monitoring program to study the shorezone fish community of the Inland Bays. The shorezone fish community has its own unique characteristics and responses to water quality. In the past it has been



studied sporadically, but no long term data exists to analyze for trends in community composition. This study will use volunteers supervised by the Center's scientist to accomplish long-term monitoring of this important community. The volunteer project coordinator is a fish biologist who will work with the Deputy Director to develop a sampling plan and implement the plan using volunteer labor. Volunteers will use beach seines to capture fish and enumerate them by species and size at approximately one dozen sites spanning a gradient of water quality around the Bays and their tributaries. Data will be entered, analyzed, and reported, by the project leads. Analyses will focus on fish diversity and numbers in relation to estuarine conditions. Data will be compared to past studies and analyzed for trends when enough data years have been collected. The project will have an education and outreach component.

#### Intended Results:

1. Development of long-term shorezone fish community monitoring plan.
2. Implementation of long-term shorezone fish community monitoring plan.
3. Outreach to general public through volunteer involvement and education of local public.

#### Outputs/Deliverables:

1. Long-term shorezone fish community monitoring plan.
2. Monitoring database.
3. Annual monitoring reports and presentation.
4. Pubic outreach through informal communication, formal presentation, and distribution of study educational brochures.

#### Milestones:

1. Consult science advisory committee. INITIATED: JAN 2011. COMPLETED: JAN 2011
2. Develop monitoring plan. INITIATED: JAN 2011. TARGET: APR 2011. DRAFT COMPLETED: MAY 2011.
3. Purchase study supplies. INITIATED: JAN 2011. TARGET: APR 2011. COMPLETED: APR 2011.
4. Develop volunteer corps. INITIATED: MAR 2011. TARGET: APR 2011. COMPLETED: APR 2011
5. Complete first year of data collection and analysis. TARGET: MAY 2011. ONGOING

#### Short-Term Outcomes

1. Increased scientific understanding of the shorezone fish community.
2. Increased public awareness of the diversity of natural resources of the Inland Bays.

#### Intermediate Outcomes:

1. Increased consideration of natural resources when making decisions on shoreline modification, dredging, and other landuse decisions.
2. Increased awareness of the Center for the Inland Bays and its mission among the general public.

#### Long-Term Outcomes:

1. Potential for related gains or reduction in losses of a balanced and diverse shorezone fish community.

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## Project Progress

#### Progress To Date:

1. Science advisory committee assembled and met providing valuable input.
2. Supplies purchased.
3. Candidate sites identified, visited, and verified.
4. Site sampling permissions and permits are 75% completed.
5. Volunteer kickoff meeting was successfully conducted.
6. Press outreach successful.

- 7. QAPP is underway.
- 8. Educational brochure still to be developed.

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$10,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$10,000.00

**Project Location**

Municipality : Bethany Beach, South Bethany Beach

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

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**Project Name:** *Anchorage Canal Drainage Area Stormwater Retrofit Implementation Project # 2: Highway Median Bioretention Areas*

**Lead Contractor:** DE Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Chris Bason -- Project Manager  
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Dave Wiecking -- Project Partner Lead  
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15dune@middlesexbeach.org

George Junkin -- Project Partner Lead  
Town of South Bethany  
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(302) 541-5340  
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Sharon Webb -- Funding Agency Contact  
DNREC -- Nonpoint Source Program  
89 Kings Highway  
Dover, DE 19901  
(302) 739-9922  
Sharon.Webb@state.de.us

**Project Status:** On-going

**Work Pan ID :** CIB11-014

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## Project Description

**Strategic Alignment:**

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
IMS-A	Meet the nutrient reduction goals of the Pollution Control Strategy
<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G1,G1C,G1E,G2	Develop and implement a comprehensive stormwater management program
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

**Overview:**

This project will construct bioretention and infiltration areas in the State Highway One median strips that lie within the anchorage canal drainage area and further south within the Town of South Bethany for the purposes of treating polluted runoff from the highway and connected areas of impervious surface. These retrofits were identified as the highest priority projects in the Anchorage Canal Drainage Area Pollution and Stormwater Control Strategy. Additional work designed 7 of the areas that lie within the drainage area and estimated their pollution removal which ranged from 0.16 to 0.39 lbs of phosphorus and 1.35 to 3.22 lbs of total nitrogen per year. Additional areas will be constructed as funds allow. The project partners will work together towards standardization of the design and maintenance among the communities. The project contributes towards the Inland Bays pollution control strategy goal of 4,500 acres of stormwater retrofits for pre-1990 development.

**Intended Results:**

1. Construction of at least 7 bioretention and infiltration areas to treat polluted runoff from highway one and areas of connected impervious surface.
2. Established Maintenance Agreements for the facilities

**Outputs/Deliverables:**

1. Planting plans and additional survey as needed.
2. Construction of at least 7 bioretention and infiltration areas.
2. Established maintenance agreement for the facilities

**Milestones:**

1. Conduct kickoff meeting. TARGET: APR 2011. COMPLETED: MAY 2011.
2. Solicit and hire work contractor. TARGET: MAY 2011.
3. Finalize designs and planting schemes. TARGET: JULY 2011.
4. Hold preconstruction meeting. TARGET: OCT 2011.
5. Finish Construction and planting. TARGET: OCT 2011.

**Short-Term Outcomes**

1. Increased awareness of general public and participating communities of stormwater impacts to water quality and their remediation.
2. Potential site for BMP effectiveness monitoring.

**Intermediate Outcomes:**

- |   |
|---|
| 1. Potential for increased interest from other communities to construct stormwater retrofits. |
|---|

**Long-Term Outcomes:**

- |   |
|---|
| <ol style="list-style-type: none"> <li>1. Estimated 30 year reduction of nitrogen loads to Little Assawoman Bay of 429 lbs.</li> <li>2. Estimated 30 year reduction of phosphorus loads to Little Assawoman Bay of 50.7 lbs.</li> <li>3. Reduction of pathogen and hydrocarbon loads to Little Assawoman Bay.</li> <li>4. Progress towards restoration of less-flashy flow regime to Little Assawoman Bay.</li> </ol> |
|---|

**Project Progress**

**Progress To Date:**

- |   |
|---|
| <ol style="list-style-type: none"> <li>1. DNREC Non-point source program funds allocated.</li> <li>2. Commitments from Education and Outreach Coordinator to contribute signage.</li> <li>3. Kickoff meeting with project partners held on May 13, 2011.</li> </ol> |
|---|

**Additional Project Information**

**Project Financing**

**Funding Determination :** Sole Source

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$15,000.00

**OTHER FUNDS:**

**MATCHING FUNDS:** \$44,297.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$59,297.00

**Project Location**

**Municipality :** Bethany Beach, South Bethany Beach

**Watershed/Waterbody :** Little Assawoman Bay, Little Assawoman Bay WS

**Latitude:**

**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Seaweed Monitoring, Method Calibration, and Long Term Trend Analysis*

**Lead Contractor:** DNREC -- Division of Water

**Responsible Partners, Contact Info, and Roles:** Robin Tyler -- DNREC Principal Investigator  
DNREC -- Division of Water  
Environmental Laboratory  
89 Kings Hwy  
Dover, DE 19901  
(302) 739-9294  
robin.tyler@state.de.us

Chris Bason -- CIB Principal Investigator  
Delaware Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302 226-8105  
chrisbason@inlandbays.org

**Project Status:** On-going

**Work Pan ID :** CIB11-015

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2E	<b>Primary Goal Objective ID Title :</b> Enhance monitoring and response strategies
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality Monitoring

**Overview:**

This is joint research project between DNREC and CIB will determine the community composition and abundance of seaweeds at established monitoring locations within the Inland Bays and calibrate two seaweed sampling methods which will allow an analysis of trends in seaweed composition and abundance from 1969 to 2011. Seaweeds, or macroalgae, are often an important and sometimes the dominant primary producers in the Inland Bays, yet they are often overlooked when assessing changes in the condition of the estuary. Seaweed abundance is a good indicator of eutrophication. The amount of seaweed locally controls habitat quality and can prevent the reestablishment of bay grasses -- a major restoration goal. This project will allow the assessment of a long term dataset on seaweed abundance and composition. Twelve fixed stations will be sampled once a month from April to November while including an exercise to statistically calibrate the previously used dredge sled sample method to the currently used hook sample method. Short term and long term changes in composition and abundance will be analyzed, related to changes in nutrient loads and other potentially influential factors, and reported. This project intends to result in a peer reviewed publication.

**Intended Results:**

1. Seaweed monitoring data for 2011.
2. Statistical calibration of the dredge sled seaweed monitoring method results to the hook method results.
3. Long term trend analysis of macroalgae biomass and composition.
4. Final report and peer reviewed journal article publication.

**Outputs/Deliverables:**

1. Final report.
2. Presentation to STAC.
3. Peer Reviewed Journal article.

**Milestones:**

1. Hire seasonal research assistant. INITIATED: JAN 2011. TARGET: APR 2011. COMPLETED: MAR 2011.
2. Refine monitoring QAPP. TARGET: APR 2011. EXTENDED: JUNE 2011.
3. Complete sampling and method calibration. TARGET: NOV 2011.
4. Analyze data and produce final report. TARGET: MAR 2012.
5. Complete manuscript for journal submission and present data at STAC: JUN 2012.

**Short-Term Outcomes**

1. Understanding of the long term trends in seaweed composition and abundance.
2. Potential identification of potential relationship between changes in the seaweed community and estuarine condition.

**Intermediate Outcomes:**

1. Potential for formalized inclusion of a seaweed monitoring program by DNREC.

**Long-Term Outcomes:**

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**Project Progress****Progress To Date:**

1. Scope of work and contract with DNREC EL completed.
2. Supplies purchased, CIB boat prepared, and CIB seasonal support hired.
3. First round of sampling complete.
4. An updated QAPP will be completed by second round of sampling.



5. Established agreement for statistical analysis with DNREC FWS.

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$7,000.00

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$7,000.00

**Project Location**

Municipality : Bethany Beach, South Bethany Beach

Watershed/Waterbody : Indian River Bay, Rehoboth Bay

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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# Project Report

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**Project Name:** *Effects of Suburban Development on Shallow Groundwater Quality*

**Lead Contractor:** USGS

**Responsible Partners, Contact Info, and Roles:** Judy Denver -- USGS Principal Investigator  
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Joanna York -- UD CEOE Principal Investigator  
University of Delaware College of Earth Ocean and Environment  
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Josh Kasper -- DNREC Principal Investigator  
DNREC -- Division of Water  
Groundwater Discharges Section  
89 Kings Highway  
Dover, DE 19901  
(302) 739-9945  
joshua.kasper@state.de.us

**Project Status:** On-going

**Work Pan ID :** CIB11-016

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## Project Description

**Strategic Alignment:**

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
AG-E	Continue research to determine relationship between nutrient movement and poultry houses
<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G1,G1A,G1D,G1E	Manage urban and rural applications and handling of fertilizers, pesticides, herbicides, manure, sediment, animal carcasses, and other contaminants
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis,  
Developing Total Maximum Daily  
Loads

**Overview:**

This joint USGS-DNREC-UDCEO research project will compare shallow groundwater quality between suburban development and agricultural lands in the well drained region of the Inland Bays watershed. The comparison aid in quantifying differences in pollutant loading to groundwater from different landuses which can help to improve loading models and pollutant reduction management strategies. The Inland Bays watershed has recently undergone extensive landuse changes whereby agricultural lands, forests, and wetlands are converted to developments. These changes are planned to continue in the future as defined by the Sussex County Landuse Plan. Various types of shallow groundwaters in Winding Creek Village, a development on Guinea Creek in the well drained Rehoboth Bay watershed, will be quantified for major nutrients and ions. Groundwater types include those influenced by septic, lawns influenced by previous agriculture, lawn fertilization, no lawn fertilization, and wooded developments. Isotopic analysis of nitrogen species will help to characterize the sources of groundwater under the development. The Center for the Inland Bays is supporting the data collection, analysis, and reporting of the nitrogen isotopic portion of the project.

**Intended Results:**

1. Quantification of differences in shallow groundwater quality between landuse types.
2. Quantification of differences in shallow groundwater quality within a development served by septic systems.
3. Identification of sources of nitrogen under development using both major ion characterization and isotopic analyses.
4. Relation of findings to pollution loading models, management strategies, and timing of changes in groundwater quality after landuse conversion.

**Outputs/Deliverables:**

1. Final project report.

**Milestones:**

1. Complete QAPP. TARGET: APR 2011. INITIATED: APR 2011. COMPLETED: APR 2011.
2. Obtain permissions to sample. TARGET: MAR 2011. INITIATED: MAR 2011. COMPLETED: MAR 2011.
3. Complete Sampling. TARGET: JUNE 2011. ONGOING.

4. Complete Report. TARGET: JANUARY 2012.

**Short-Term Outcomes**

1. Improved quantification of the variation within suburban development's effect on shallow groundwater quality by the scientific and management community.
2. Potential improvement in understanding of the timing of effects of landuse changes on groundwaters delivered to the estuary.

**Intermediate Outcomes:**

1. Improvement in accuracy of pollutant loading models.
2. Potential improvement in management decisions to meet TMDLs.

**Long-Term Outcomes:**

1. Potential for improvement in management decisions to improve pollutant reduction to the Bays.

**Project Progress**

**Progress To Date:**

1. Scope of work developed and agreements finalized.
2. QAPP completed.
3. Sampling permissions obtained.
4. Sampling initiated.

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS:

OTHER FUNDS:

MATCHING FUNDS:

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: #Type!

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Rehoboth Bay, Rehoboth Bay  
WS

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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# Project Report

**Project Name:** *Inland Bays Clean Up*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** E.J. Chalabala  
 DE Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, DE 19971  
 302-228-8954

**Project Status:** On-going

**Work Pan ID :** CIB12-001

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,HP-C	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2C,G4,G4D,G6,G8,G8C,G9,G9F	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Strengthening Water Quality Standards

### Overview:

The annual Inland Bays Clean-up is a partnership between the CIB's Water Use Plan Implementation Committee, the Division of Fish & Wildlife's Enforcement Section, and Delaware State Parks. Volunteers are encouraged to join the host agencies for a one-day clean-up of Delaware's three Inland Bays. Fish & Wildlife Enforcement Agents, CIB staff, and volunteer boat captains transport participants to selected areas around the Inland Bays for targeted clean up. Staging areas are the public boat ramps at Massey's Landing between Rehoboth and Indian River Bay and Mulberry Landing at the Assawoman Wildlife Area.

Since 2005 the event has attracted more than 500 volunteers, who collected a large quantity of debris, including soda

bottles and cans, tires, hot water heaters, and a lot of plastic. Participants identified and recorded the debris that was collected for reporting to the National Marine Debris Monitoring Program. Numerous local businesses and organizations provided financial support for the event. Local delegates from the Delaware General Assembly also contributed grant assistance to fund the clean-ups.

### Intended Results:

1. Engage the public in an effort to clean our bays.
2. Collect and record as much trash as we possibly can.

### Outputs/Deliverables:

Public Awareness for the future  
 Completed trash collection data sheets  
 At least 40 cubic yards of trash and debris collected  
 A cleaner, healthier Inland Bays

### Milestones:

- Maintain a total of 2 sites to work out of. One in the upper bays and one in the lower bay.
- Strive for 150 volunteers per year
- Fill a 30 yard dumpster and a 10 yard dumpster with trash and debris found throughout the Inland Bays

### Short-Term Outcomes

The clean-up raises awareness about the need for waste minimization and pollution reduction.

### Intermediate Outcomes:

Decreases the potential for the dumping of trash, junk and debris by residents and visitors in the Inland Bays.

### Long-Term Outcomes:

The Inland Bays Clean-up is set to continue for the years to come. It such a positive event that yields significant results.

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## Project Progress

### Progress To Date:

2004 was the very first Inland Bays Clean Up

2004-2011

- Consistently have two sites to work from (Massey's Landing and Little Assawoman Wildlife Area)
- First few years it took place in May. Now always in June.
- Planning done through the Water Use Plan Implementation Committee
- Strive for 20 boats and 150 volunteers
- At least 40 cubic yards of trash and debris collected every year

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## Additional Project Information

**Project Financing**

**Funding Determination :** Sole Source

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$1,000.00

**OTHER FUNDS:** \$1,000.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$2,000.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays

**Latitude:**

**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Oyster Spat Setting*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** E.J. Chalabala -- Project Co-Manager  
Center for the Inland Bays  
39375 Inlet Road  
302-226-8015  
restoration@inlandbays.org

John Ewart -- Aquaculture Specialist  
University of Delaware Sea Grant Program  
700 Pilottown Road  
Lewes, DE 19958  
(302) 645-4060  
ewart@udel.edu

**Project Status:** On-going

**Work Pan ID :** CIB12-002

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,HP-A,HP-F,IMS-A	<b>Primary Action Plan ID Title :</b> Meet the nutrient reduction goals of the Pollution Control Strategy
<b>CCMP Goal Objective ID :</b> G2,G2B,G4,G4E,G5,G5D, G9,G9F	<b>Primary Goal Objective ID Title :</b> Restore finfish and shellfish populations
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
Monitoring, Strengthening Water  
Quality Standards

**Overview:**

Every other year we get one million eyed oyster larvae from Rutgers University to ultimately produce 250 bags of spat on shell for our oyster gardening program. This larvae gets disease tested, placed in a 10,000 gallon aerated flow through tank, fed and cared for until a 10mm size spat set on shell is reached. The "spat bags" are then removed and immediately taken to oyster gardeners for distribution.

**Intended Results:**

1. Produce 250 bags of spat on shell that average 150 animals per bag
2. Produce a new age class of oysters to replace and older class of oysters that will be used for restoration purposes
3. Supplement our successful oyster gardening program

**Outputs/Deliverables:**

Produces oysters for the public to raise and ultimately use for restoration purposes to clean and filter the Inland Bays

**Milestones:**

- A process that lets us plant an average of 60 bushels of oysters per year in our Inland Bays
- Complete and report disease testing results
- The ability to produce oyster spat "In House"

**Short-Term Outcomes**

- Being able to supplement oysters for our gardeners.
- Tremendous public awareness component
- Having the ability to produce and manage our own spat production.

**Intermediate Outcomes:**

- Using oysters for their habitat and filtering purposes at personal docks and dead end lagoons.

**Long-Term Outcomes:**

- Having the ability to produce oysters for restoration purposes
- Helping to carry along a very successful oyster gardening program

**Project Progress****Progress To Date:**

- We set oyster spat every other year beginning in 2007
- Use a 10,000 gallon flow through tank held at the College of Earth, Ocean and Environment.
- Partner with Delaware Sea Grant
- Get 1,000,000 eyed oyster larvae from Rutgers University
- Place larvae and 200 bags of raw oyster shell in the tank
- Take oysters out when they reach 10mm, and distribute to our oyster gardeners

**Additional Project Information**

**Project Financing**

**Funding Determination :** Sole Source

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$300.00

**OTHER FUNDS:** \$700.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$1,000.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays

**Latitude:**

**Longitude:**

**Project Leveraging Role**

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** Delaware Envirothon

**Lead Contractor:** DNREC

**Responsible Partners, Contact Info, and Roles:** Michelle Jacobs  
Community Relations Officer  
DNREC - Division of Watershed Stewardship  
89 Kings Highway, Dover, DE 19901  
302-739-9921 Phone  
302-739-6724 Fax

E.J. Chalabala -- Committee Lead  
DE Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302-228-8954

**Project Status:** On-going

**Work Pan ID :** CIB12-003

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G2,G2A,G9,G9D,G9F	<b>Primary Goal Objective ID Title :</b> Provide education programs statewide
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
Monitoring, Strengthening Water  
Quality Standards

### Overview:

The ENVIROTHON provides students with an integrated approach to exploring five natural resource categories. It

tests their creativity, analytical thinking, and team-building skills in a competitive format. ENVIROTHON is a 'day-in-the-field' where teams visit testing stations for problem solving opportunities in:

AQUATIC ECOLOGY  
 FORESTRY  
 ORAL PRESENTATION  
 SOIL/LAND USE  
 WILDLIFE  
 CURRENT ENVIRONMENTAL ISSUE  
 AIR QUALITY - new for 2011

Written questions and hands-on activities at each station are developed by resource conservation experts. Agencies and interested groups help devise, time, and monitor testing stations during the day of the challenge.

#### DELAWARE STATE ENVIROTHON CHALLENGE...

Themes, written questions and problem-solving tasks will be site specific to that year's event. Each ENVIROTHON will be new and different. When the teams arrive at the event, they will register, confirm pre-registration information, and receive an orientation briefing on contest format, rules, and scoring.

Teams will be assigned a test station rotation. At each station, the category experts or specialists will provide an overview of that particular station. Each team will complete one collective answer sheet for each test station. Cooperative decision making, free exchange of ideas, and information pooling are desirable and give ENVIROTHON much of its unique appeal.

All test stations are staffed by resource specialists who have helped prepare the test challenges in their field of expertise. Each test station requires approximately 25-30 minutes. Completed test sheets are graded either at the station or off-site and scores rechecked.

After the competition and scoring is completed, all participants assemble for results, announcements, and award presentations. The top team is announced and plans begin to send them to the Canon ENVIROTHON to represent Delaware. This is a challenging four-day event. The Delaware ENVIROTHON Planning Committee will work closely with this team to help prepare them for the National contest and for trip arrangements.

#### Intended Results:

- Promote environmental awareness and stewardship.
- Develop students' critical thinking, cooperative problem solving, and decision-making skills.
- Present balanced options for management of our renewable and non-renewable natural resources.
- Provide awareness of and accessibility to resource organizations offering assistance in environmental issues.

#### Outputs/Deliverables:

- Educate High School students about Delaware's renewable and non-renewable natural resources
- Organize a one day competition where a winner is declared and sent to the National Competition

#### Milestones:

- Have at least 15 High School teams in the competition
- Complete training days for each topic with all teams present
- Send the winning team to the National Competition to compete for first place

**Short-Term Outcomes**

-Get High School students and their professors interested in learning about Delaware's ecosystems.  
-Bring resource agencies together to discuss Delaware's environments and how they can be used to educate students

**Intermediate Outcomes:**

-Train High School students about what they need to know regarding Delaware's ecosystems and have a competition where they are tested on what they know/learned.  
-Fundraiser opportunities by making this competition known to the public

**Long-Term Outcomes:**

-A winner will be declared after the State Competition is over.  
-The winner will go to the National Competition as the Delaware representative  
-Public Awareness

**Project Progress**

**Progress To Date:**

-CIB began participating in 2008  
-Monthly planning meetings  
-One training session per year  
-15 high school teams compete  
-1 winner goes on to national competition

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$30,000.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$30,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

Support

**Report Information**

Report Title:

Author :

Abstract :

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Oyster Gardening Program*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** E.J. Chalabala -- Project Manager  
Center for the Inland Bays  
39375 Inlet Road  
302-226-8105  
restoration@inlandbays.org

**Project Status:** On-going

**Work Pan ID :** CIB12-004

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A,IMS-A	<b>Primary Action Plan ID Title :</b> Meet the nutrient reduction goals of the Pollution Control Strategy
<b>CCMP Goal Objective ID :</b> G2,G2B,G2C,G4,G4E,G5, G5D,G6,G6D,G9,G9F	<b>Primary Goal Objective ID Title :</b> Restore finfish and shellfish populations
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
Monitoring, Strengthening Water  
Quality Standards

### Overview:

Oyster gardening is the nursery culture of small, hatchery-produced oysters, called “seed” or “spat” to a larger “juvenile” size. This larger size is preferred for stocking artificial oyster reefs and for other shellfish restoration projects. Experience shows that larger oysters generally have better predator survival rates. The bigger the oyster, the more difficult it is for crabs and other natural predators to have them for lunch.

The Oyster Gardening Program, initiated during the summer of 2003, is a cooperative effort among the Delaware Center for the Inland Bays (CIB), the Delaware Sea Grant Marine Advisory program, Delaware State University and



citizen volunteers living along the waterfront on one of Delaware's three coastal or "Inland" Bays: Rehoboth, Indian River and the Little Assawoman. Volunteer gardeners support the program by caring for small 0.25 inch spat attached to old oyster shell by holding them in baskets placed in Taylor floats tied to their docks. The gardeners keep the oyster spat clean and protected from predators. Oysters held off the bottom have better conditions for growth - increased water flow and greater access to particulate food - so they reach a planting size of 1-2 inches much more rapidly than oysters on the bottom. Losses to predators are greatly reduced resulting in larger and hardier oysters for field planting and for other restoration work. During the 2007 season more than 150 volunteer oyster gardeners helped to grow oysters at over 95 locations around the three Inland Bays.

Oysters used in the gardening program are hatchery produced using broodstock lines bred for resistance to MSX and Dermo disease. In the hatchery, a million or more microscopic oyster larvae are exposed to bags of aged oyster shell to imitate the natural "setting" or attachment process that occurs annually in the bay. During early to mid-summer, the bags of oyster shell now with fingernail sized spat (see photo at left) are then distributed throughout the Inland Bays to the gardeners for grow-out in their Taylor Floats until the end of the season in late October and November. From deploying oysters at locations all around the Inland Bays we have learned that oysters grow well throughout the estuary and that seasonal growth ranges from good to excellent depending on location. This includes the Little Assawoman Bay where native oyster populations no longer exist. Juvenile oysters produced by the gardening program are kept in the floats for two seasons to give them a chance to mature and spawn before transplantation to an oyster reef established at the James Farm during summer 2002 or to other Inland Bay locations.

Besides their value to commercial and recreational fisheries, oysters, hard clams and other bivalve shellfish feed by filtering bay water to remove phytoplankton and other suspended particles. By serving as natural biological filters they perform an important ecological service to maintain water clarity and quality and to re-cycle nitrogen and phosphorous, two nutrients responsible for over-enrichment of the Inland Bays. Oysters and the shell clusters they form (above and left) provide habitat that attracts communities of small bottom dwelling organisms like grass shrimp and worms which in turn support populations of crabs, larger fish and other predators. Developing annually spawning adult oyster populations improves the potential for natural recruitment. Increased filtration of plankton by healthy shellfish populations can also help to keep Harmful Algal Blooms (HAB) from occurring.

#### Intended Results:

1. Prove that oysters can grow anywhere in our Inland Bays
2. Improve the habitat and water quality of our Inland Bays
3. Engage the public in a program that involves them "hands on" in our/their Inland Bays
4. Restore the native oyster population to our Inland Bays

#### Outputs/Deliverables:

- Plant an average of 60 bushels of oysters per year in our Inland Bays
- A total of 130 site locations with over 200 volunteers
- Hold 1-3 orientation meetings per year
- Produce 250 bags of spat every other year
- Have identified locations where natural spat set has occurred from OUR oysters
- Numerous thesis projects have been published
- 49 species of fish and invertebrates has been documented living in the gear

#### Milestones:

- Program has doubled the number of volunteers since 2003 and has leveled off in the last two years
- Plant numerous bushels of oysters in the Inland Bays each year

#### Short-Term Outcomes

- Public Awareness and contribution
- Create habitat for fish and invertebrates

**Intermediate Outcomes:**

-Producing market size oysters in less than two growing seasons to be used for restoration purposes  
-Making new partnerships with numerous organizations

**Long-Term Outcomes:**

-Restoring native oysters to our Inland Bays  
-Educating the public about the importance of oysters in our Inland Bays and getting them known to the CIB  
-Proving oysters can grow anywhere in our Inland Bays  
-Identifying many financial contributors  
-Improving the quality of our waters through the filtering effect of these oysters

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

**Funding Determination :**  
**Amendment:**   
**Amendment Source:**  
**CIB FUNDS:** \$10,000.00  
**OTHER FUNDS:** \$20,000.00  
**MATCHING FUNDS:** \$0.00  
**AMENDMENT FUNDS:** \_\_\_\_\_  
**TOTAL:** \$30,000.00

**Project Location**

**Municipality :** All Coastal Communities, Millville  
**Watershed/Waterbody :** All Bays  
**Latitude:**  
**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<b>Restoration</b> <input type="checkbox"/> <b>Habitat Type :</b> <b>Restoration type :</b> <b>Acreage :</b> <b>Partners :</b>  <b>Completion Date:</b> <b>Cost :</b>	<b>QAPP</b> <input type="checkbox"/>  <b>Date Completed :</b> <b>Date Approved :</b> <b>Location :</b>	
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# Project Report

**Project Name:** Stormwater Maintenance & Open Space Management Seminars

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
 E.J. Chalabala, Restoration Coordinator  
 Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, DE 19971

Jessica Watson, Program Manager  
 Sussex Conservation District  
 23818 Shortly Road  
 Georgetown, DE 19947

**Project Status:** On-going

**Work Pan ID :** CIB12-005

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
ED-A,LU-B	Implement the Comprehensive Public Participation and Education Plan

<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G1,G1C,G8,G8C,G9,G9F	Promote education of out-of-state users and visitors

**CCMP/Work Plan Goal:**

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis

### Overview:

Presentation(s) will be provided at a centrally-located facility for representatives from local Homeowners' Associations (HOA). Information will be provided about the need for stormwater facility inspection and maintenance requirements and options to manage their open space areas.

**Intended Results:**

Educate Communities and/or their Homeowners' Association concerning stormwater maintenance issues and open space management options.

**Outputs/Deliverables:**

- 1. Output would include a well-attended seminar(s).
- 2. Packets include information on stormwater maintenance requirements, native plants, and other information sources for HOA members to draw upon.

**Milestones:**

- 1. Coordinate with the Sussex Conservation District to select date(s) and location(s) for HOA seminar(s) (Winter 2011/2012).
- 2. Prepare presentations and packets of information (Spring 2012).
- 3. Hold seminar(s) (Spring/Summer 2012).

**Short-Term Outcomes**

- 1. Providing HOA members with information to share with other homeowners in their respective subdivision.

**Intermediate Outcomes:**

- 1. Implementation of a stormwater maintenance program and open space management projects that benefit wildlife habitat and water quality.

**Long-Term Outcomes:**

- 1. Improved water quality and wildlife habitat resulting in an increase in the abundance and diversity of plant and animal species.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

**Funding Determination :**  
**Amendment:**   
**Amendment Source:**  
                   **CIB FUNDS:** \$0.00  
                   **OTHER FUNDS:** \$0.00  
                   **MATCHING FUNDS:** \$0.00  
**AMENDMENT FUNDS:** \_\_\_\_\_  
                   **TOTAL:** \$0.00

**Project Location**

**Municipality :** All Coastal Communities  
**Watershed/Waterbody :** All Watersheds  
**Latitude:**  
**Longitude:**

**Project Leveraging Role**

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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# Project Report

**Project Name:** *Resource Protection Area Plan Development*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971

**Project Status:** On-going

**Work Pan ID :** CIB12-006

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-A	<b>Primary Action Plan ID Title :</b> Create a Resource Protection Area management plan
<b>CCMP Goal Objective ID :</b> G2,G2B,G3,G3B	<b>Primary Goal Objective ID Title :</b> Restore finfish and shellfish populations
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

Work with the Center's Water Use Plan Implementation Committee (WUPIC) to develop the framework for a Resource Protection Area (RPA) strategy and plan.

### Intended Results:

Development of a Resource Protection Area Management plan.

### Outputs/Deliverables:

1. Resource Protection Area Management Plan.

**Milestones:**

1. Prepare background materials required for decision-making processes (Fall 2011).
2. Convene WUPIC 'Working Group' to aid in RPA plan development (Fall 2011).
3. Acquire additional information or call on additional resource experts as required (Winter 2011/2012).
4. Develop draft RPA strategy (Spring/Summer 2012).
5. Prepare recommendations for STAC review and comment (Summer 2012).
6. Make final RPA recommendation to CIB Board (Fall 2012).

**Short-Term Outcomes**

1. Increased awareness by working-group members on critical bay habitats.
2. Acceptance of the need to protect key habitat areas.

**Intermediate Outcomes:**

1. Approval by STAC and CIB Board of the RPA Management Plan.
2. Implementation of priority RPAs.

**Long-Term Outcomes:**

1. Increase in species abundance and diversity due to RPA implementation.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

**Funding Determination :**

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$0.00

**OTHER FUNDS:** \$0.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$0.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays, All Watersheds

**Latitude:**

**Longitude:**

**Project Leveraging Role**

**Report Information**

**Report Title:**

**Author :**

**Abstract :**



<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** Colonial Nesting Bird Survey

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971

Matthew Bailey, Biologist  
DNREC Division of Fish & Wildlife  
89 Kings Highway  
Dover, DE 19901

**Project Status:** On-going

**Work Pan ID :** CIB12-007

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-A	<b>Primary Action Plan ID Title :</b> Create a Resource Protection Area management plan
<b>CCMP Goal Objective ID :</b> G2,G2E	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

Provide assistance to the DNREC Division of Fish & Wildlife's Heritage Program in monitoring the nesting success of avian species such as American Oystercatcher, Black Skimmer, and Terns.

**Intended Results:**

Increase the knowledge base regarding key species of birds that nest on islands in the Inland Bays.

**Outputs/Deliverables:**

- 1. Data prepared by DNREC made available to regional avian workroups(s).
- 2. Summary report from DNREC to CIB.

**Milestones:**

- 1. Identify nesting locations (Spring 2012).
- 2. Monitor nesting success (Spring/Summer 2012).
- 3. Tag fledglings (Spring 2012).
- 4. Tag adults (Summer 2012).

**Short-Term Outcomes**

- 1. Increase in knowledge of nesting success.

**Intermediate Outcomes:**

- 1. A better understanding about the species distribution and survival rate.

**Long-Term Outcomes:**

- 1. Development of strategies (by others) on how best to protect the species and/or enhance habitat.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Indian River Bay, Rehoboth Bay

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Inland Bays Island Restoration*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971

DNREC  
Division of Watershed Stewardship  
Division of Water Resources  
Coastal Management Program  
89 Kings Highway  
Dover, DE 19901

**Project Status:** On-going

**Work Pan ID :** CIB12-008

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-G	<b>Primary Action Plan ID Title :</b> Review, update, and codify the Inland Bays Dredge Plan
<b>CCMP Goal Objective ID :</b> G2,G6	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

Evaluate the potential to re-establish or enhance islands in the Inland Bays watershed and determine the feasibility of using dredge spoil on projects.

**Intended Results:**

The development of a strategy to restore or enhance islands in the Inland Bays and determine if dredge spoils are a feasible source of material to be used on certain projects.

**Outputs/Deliverables:**

1. A project list of feasible island restoration and enhancement projects that benefit key wildlife species.

**Milestones:**

- 1. Develop screening criteria for enhancement and re-establishment projects (Fall 2011).
- 2. Evaluate the use of dredge spoil on restoration projects (Fall/Winter 2011).
- 3. Develop a project list based on previous milestones Winter/Spring 2012).

**Short-Term Outcomes**

1. Development of a project list and increased awareness about the beneficial re-use of dredge materail.

**Intermediate Outcomes:**

1. Implementation of a demonstration project.

**Long-Term Outcomes:**

1. The beneficial re-use of dredge material becomes a standard practice.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Year Reported 2011

Date : 07/14/2011

**Author :**

**Abstract :**

<b>Restoration</b> <input type="checkbox"/>	<b>QAPP</b> <input type="checkbox"/>	
<b>Habitat Type :</b>	<b>Date Completed :</b>	
<b>Restoration type :</b>	<b>Date Approved :</b>	
<b>Acreage :</b>	<b>Location :</b>	
<b>Partners :</b>		
<b>Completion Date:</b>		
<b>Cost :</b>		



CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Land Acquisition*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971

Kurt Anderson, Biologist  
Ducks Unlimited  
34 Defense Highway #200  
Annapolis, MD 21401

**Project Status:** On-going

**Work Pan ID :** CIB12-009

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-E	<b>Primary Action Plan ID Title :</b> Expand public land acquisition, protection, and access
<b>CCMP Goal Objective ID :</b> G6,G6G	<b>Primary Goal Objective ID Title :</b> Implement an aggressive program to acquire public access lands
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

Acquire lands through fee simple purchase for habitat and open space protection, education, and public use and enjoyment.



**Intended Results:**

The fee simple purchase of land for open space and/or habitat protection as well as the education and use and enjoyment by the public.

**Outputs/Deliverables:**

1. Fee simple ownership of key property in the watershed that showcases open space/habitat protection and public use and access.

**Milestones:**

1. Acquire a key property to be used to leverage additional purchases (Spring/Summer 2012).  
2. Promote property to showcase CIB's ability to purchase and protect open space (Summer/Fall 2012).

**Short-Term Outcomes**

1. Protection of valuable habitat and open space.

**Intermediate Outcomes:**

1. Emergence of CIB as a viable organization for land protection.

**Long-Term Outcomes:**

1. Enhancement of water quality and increases in wildlife and plant species diversity and abundance.  
2. Increase in public access to land for educational purposes.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

Funding Determination :  
Amendment:   
Amendment Source:  
CIB FUNDS: \$0.00  
OTHER FUNDS: \$0.00  
MATCHING FUNDS: \$0.00  
AMENDMENT FUNDS: \_\_\_\_\_  
TOTAL: \$0.00

**Project Location**

Municipality : All Coastal Communities  
Watershed/Waterbody : All Bays, All Watersheds  
Latitude:  
Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Landowner Habitat Technical Assistance*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
Center for the Inland Bays  
39375 Inlet Road  
Rehoboth Beach, DE 19971

**Project Status:** On-going

**Work Pan ID :** CIB12-010

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G1,G1A,G1E,G2,G8,G8C	<b>Primary Goal Objective ID Title :</b> Manage urban and rural applications and handling of fertilizers, pesticides, herbicides, manure, sediment, animal carcasses, and other contaminants
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

Upon request, meet with landowners that express a desire to protect, restore, or enhance wildlife habitat on their property. This may include private land, public land, or land in community open space.

### Intended Results:

Meet with willing landowners and provide them with information and/or resources to protect, enhance, or restore wildlife habitat on their property.

**Outputs/Deliverables:**

1. Packets of relevant information will be delivered to landowners based on their individual request or need.

**Milestones:**

1. Meet with willing landowners upon request or as the need arises (Fall 2011 thru Fall 2012).

**Short-Term Outcomes**

1. Increased awareness by landowners about issues affecting wildlife habitat.

**Intermediate Outcomes:**

1. Protection, restoration, or enhancement of wildlife habitat.

**Long-Term Outcomes:**

1. An increase in the abundance and diversity of native plant and animal species.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

**Funding Determination :**

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$0.00

**OTHER FUNDS:** \$0.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$0.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Watersheds

**Latitude:**

**Longitude:**

**Project Leveraging Role**

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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# Project Report

**Project Name:** *Inland Bays Habitat Restoration Strategy Comparison to Draft CIB Habitat Plan*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Eric Buehl, Habitat Coordinator  
 Center for the Inland Bays  
 39375 Inlet Road  
 Rehoboth Beach, DE 19971

**Project Status:** On-going

**Work Pan ID :** CIB12-011

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> HP-A	<b>Primary Action Plan ID Title :</b> Create a Resource Protection Area management plan
<b>CCMP Goal Objective ID :</b> G2	<b>Primary Goal Objective ID Title :</b> Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

When work is completed on the multi-agency Inland Bays Habitat Restoration Strategy, a comparative analysis will be performed on the Strategy and the Draft CIB Plan to make necessary revisions/updates as needed and appropriate.

### Intended Results:

Work being done on the Inland Bays Habitat Restoration Strategy has identified areas and goals similar to those in the Draft CIB Habitat Plan. The development of the goals and objectives in the Strategy utilized GIS and by comparing and updating the Draft CIB Plan, additional confidence and support can be gained.

**Outputs/Deliverables:**

1. Revised/Updated CIB Habitat Plan.

**Milestones:**

- 1. Initiate comparative analysis of Strategy and Draft Plan (Winter 2011).
- 2. Develop recommended revisions to CIB Draft Plan (Spring/Summer 2012).
- 3. Update Draft CIB Plan (Fall 2012).

**Short-Term Outcomes**

1. Updated CIB Habitat Plan.

**Intermediate Outcomes:**

1. Increases in wildlife habitat protection, restoration, and enhancement projects being completed throughout the watershed.

**Long-Term Outcomes:**

1. Increases in the abundance and diversity of wildlife and habitat.

**Project Progress**

**Progress To Date:**

None

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays, All Watersheds

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Volunteers for the Bays*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Sally Boswell  
CIB  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302-226-8105  
outreach@inlandbays.org  
Project Director

**Project Status:** On-going

**Work Pan ID :** CIB12-012

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G9,G9C,G9F	<b>Primary Goal Objective ID Title :</b> Ensure, to the maximum extent possible, all planning and management activities related to the Inland Bays involve public participati, inilnformation and education e
<b>CCMP/Work Plan Goal:</b>	

### CWA Program Implementation:

#### Overview:

Volunteers for the Bays is a public participation program to provide opportunities for citizen involvement in all areas of the CIB mission. Through this program, citizens actively support the research, education, restoration, and public policy efforts of the CIB.

Volunteers bring their life experience and skills, and through their engagement, gain in knowledge about issues affecting water quality in the Inland Bays and become better informed and empowered to act on their concerns as

citizens in the watershed. The work of volunteers increases our capacity, extending our reach and into communities throughout the watershed.

Science and Research: Volunteers provide both leadership and support to projects such as our annual Horseshoe Crab Survey and the Inland Bays Fish Study

Restoration: Volunteers assist with native planting projects, oyster gardening and schoolyard wetlands  
Education and Outreach programs: Volunteers represent us at community events, assist with creation of demonstration rain gardens and serve on our Speakers Bureau

### Intended Results:

To create a formal Volunteers for the Bays program that provides an opportunity for citizen participation in the work of the CIB mission, that extends our reach into the watershed and raises the awareness and knowledge about Inland Bays issues among all residents and visitors to the Inland Bays watershed.

### Outputs/Deliverables:

1. A corp of volunteers trained and available to serve in all areas of the CIB mission
2. Establishment of a volunteer Speakers Bureau
3. Increase in the number of annual community events that we can participate in around the watershed

### Milestones:

1. Create the organizational structure for the Volunteers for the Bays program.
  2. Recruit and train a volunteer Volunteer Coordinator
  3. Create a database and enter information on all CIB volunteers regarding their interests, their experience, their availability and other data that will help us to match them successfully to work that is beneficial to CIB and satisfying to the volunteer. Create an email file so that volunteers can be grouped and contacted about events and assignments.
  4. Create job descriptions of CIB work needs that volunteers could assist with.
  5. Recruit and interview volunteers
  6. Create training modules for volunteers
  7. Create an Annual Volunteer Recognition Event
- e have a volunteer opportunity sheet which lists volunteer opportunities by project, site, and time of year and frequency needed.

### Short-Term Outcomes

1. As volunteers participate in training and assist with projects, they increase their knowledge about the issues affecting the Bays.
2. Volunteers take the CIB message to neighbors, friends and civic groups throughout the watershed
3. Volunteers assume leadership on outreach/education events and citizen science projects.

### Intermediate Outcomes:

1. Many more citizens are informed about the Inland Bays as volunteers represent the CIB at community events
2. Volunteers grow in their knowledge about water quality in the Inland Bays as they work with us on citizen science and restoration projects
3. New citizen science projects are established with the leadership and assistance of trained, knowledgeable volunteers.

### Long-Term Outcomes:

1. The indicators for the State of the Inland Bays are showing improved water quality as citizens and visitors become more informed about their impact on the Inland Bays and work with us in the attainment of our mission.
2. Hundreds of citizens participate in every area of the mission who have a high level of understanding about the Inland Bays watershed and who are participating as citizen scientists and outreach ambassadors.

## Project Progress

### Progress To Date:

- About 100 volunteers are actively participating in two citizen science research projects this spring. The Inland Bays Horseshoe Crab Survey and the Inshore Fish Monitoring project. This is a high level of participation that requires training and which results in volunteers who are much more knowledgeable about the Inland Bays and informed about our mission.

-For the sixth year, the annual Gardening for the Bays Native Plant Sale was planned by a volunteer committee of ten and chaired by a volunteer. Approximately 50 volunteers will work on the day of the sale.

-About 30 volunteers are involved in assisting with the schoolyard habitat projects, including many retired teachers; assisting in planting days and SYH outdoor classroom activities.

About fifty volunteers will represent the CIB this spring at education and outreach events in the community including the Horseshoe Crab Shorebird Festival, the Rehoboth Farmers Market, the Lewes Garden Tour and our own Diamondback Dash.

-Over a hundred volunteers will participate in the Inland Bays Clean Up event in June.

-Ten volunteers are participating in the CIB Speakers Bureau, taking our message to civic clubs and homeowner organizations throughout the watershed

## Additional Project Information

### Project Financing

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

### Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays, All Watersheds

Latitude:

Longitude:

### Project Leveraging Role

### Report Information

Report Title:

Author :

Abstract :

<b>Restoration</b> <input type="checkbox"/>	<b>QAPP</b> <input type="checkbox"/>	
<b>Habitat Type :</b>	<b>Date Completed :</b>	
<b>Restoration type :</b>	<b>Date Approved :</b>	
<b>Acreage :</b>	<b>Location :</b>	
<b>Partners :</b>		
<b>Completion Date:</b>		
<b>Cost :</b>		



CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** Annual Inland Bays Horseshoe Crab Survey

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Sally Boswell  
CIB  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302-226-8105  
outreach@inlandbays.org  
Project Director  
Dr. Doug Miller  
UD College of EOE  
Lewes, DE

**Project Status:** On-going

**Work Pan ID :** CIB12-013

## Project Description

### Strategic Alignment:

**CCMP Action Plan ID :** ED-A  
**Primary Action Plan ID Title :** Implement the Comprehensive Public Participation and Education Plan

**CCMP Goal Objective ID :** G2,G2E,G9,G9C  
**Primary Goal Objective ID Title :** Enhance monitoring and response strategies

**CCMP/Work Plan Goal:**

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

In 2008, the CIB in partnership with Dr. Doug Miller at University of Delaware, EOE in Lewes began an annual Inland Bays Horseshoe Crab Survey modeled after the Delaware Bay program to . The surveys are conducted by CIB volunteers at seven sites on all three bays. Surveys are done for three nights around the New Moon and Full Moons in May and June for a total of twelve surveys. There are seven volunteer site leaders and about 45 volunteers

involved in the survey.

### Intended Results:

Evidence of spawning, egg-laying and larval development definitely suggests that James Farm's and other sandy shorelines in the Inland Bays are important mating and nesting sites. But more data was needed to confirm this tentative conclusion.

### Outputs/Deliverables:

1. Posting of horseshoe crab protection area signs on productive spawning beaches throughout the Inland Bays.
2. Training of a corp of volunteers with knowledge and experience to conduct citizen-science on the Inland Bays
3. Annual publicity about the Survey each year in local media when volunteers are recruited and the results of the annual survey are reported

### Milestones:

1. Design a survey based on the Delaware Bay horseshoe crab survey program and initiate an annual Inland Bays Horseshoe Crab Survey- Spring 2009
2. Identify sites on all three Inland Bays to conduct the surveys- Spring 2009
3. Recruit volunteers to serve as site leaders and data collectors- Spring 2009
4. Train volunteers to conduct surveys-Spring 2009
5. Add additional survey sites- yearly

### Short-Term Outcomes

1. Creation of inform and trained CIB volunteers about this species and the habitats required for its protection
2. Greater public awareness about horseshoe crabs in the Inland Bays and the impact of hardened shorelines such as bulkheading and rip rap on species such as the horseshoe crab that are dependent on sandy beach habitats

### Intermediate Outcomes:

1. Establishment of posted horseshoe crab conservation areas on surveyed beaches around the Inland Bays.
2. Expansion of the survey and available data as new survey sites are added.

### Long-Term Outcomes:

1. Use data on horseshoe crab spawning on Inland Bays beaches to support conservation of sandy beach habitats on the Inland Bays
2. Use data from the Inland Bays and Delaware Bays to better manage the resource for protection of horseshoe crabs and shorebird populations

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## Project Progress

### Progress To Date:

-Surveys of horseshoe crab spawning were conducted by approximately fifty volunteers at the six original survey locations on the Inland Bays on twelve nights around the new moons and full moons in May and June: Tower Road and Camp Arrowhead on Rehoboth Bay; James Farm, Holts Landing and Bay Colony on Indian River Bay and at Coastal Kayak on Little Assawoman Bay.

-A new survey location was added this year at the Peninsula community on Indian River Bay.

- In addition to the horseshoe crab spawning survey, volunteers are also recording weather conditions, water and air temperatures and collecting a water sample to test for salinity.

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

<p>Restoration <input type="checkbox"/></p> <p>Habitat Type :</p> <p>Restoration type :</p> <p>Acreage :</p> <p>Partners :</p> <p>Completion Date:</p> <p>Cost :</p>	<p>QAPP <input type="checkbox"/></p> <p>Date Completed :</p> <p>Date Approved :</p> <p>Location :</p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Children in Nature- Environmental Literacy Plan for Delaware*

**Lead Contractor:** DNREC

**Responsible  
Partners, Contact  
Info, and Roles:**

**Project Status:** On-going

**Work Pan ID :** CIB12-014

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
ED-A	Implement the Comprehensive Public Participation and Education Plan

<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G9,G9D,G9E	Provide education programs statewide

**CCMP/Work Plan Goal:**

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

In April 2010, the Delaware Secretary of the Department of Natural Resources and Environmental Control and the Delaware Secretary of Education The mission of the Children in Nature in Delaware initiative is to improve environmental literacy, create opportunities for children to participate in outdoor experiences, promote healthy lifestyles and provide better access to green space through schools and community programs.

Objective: To create a comprehensive plan with recommendations to the Secretary of Education and the Secretary DNREC. Deliverables to include: Draft a 'Children in Nature' Executive Order; Inventory existing research/data, initiatives, program and best practices; Develop a recommendation report to include measurable goals and performance measures; Support the DOE in the development of an Environmental Literacy plan for the State of DE as required in the re-authorization of the Elementary and Secondary Education Act; Identify potential funding for implementation; Identify messages and marketing strategies for Children in Nature.



I was asked to chair the 'Greener Schools' sub-committee. The scope of the 'Greener Schools' sub-committee is to further the CIN mission by proposing a model 'Greener Schools for Delaware' statewide program to encourage and recognize schools that become models of greener management and practices; to create opportunities for all children from pre-school to graduation to participate in outdoor experiences at their schools; and demonstrate the connection between healthy living and healthy environment.

#### Intended Results:

The Greener Schools Committee under the CIN initiative seeks to further the CIN mission by encouraging and recognizing schools that become models of greener management and practices; that create opportunities for all children from pre-school to graduation to participate in outdoor experiences at their schools; that demonstrate the connection between healthy living and healthy environment.

1. To create opportunities for children to go outside as part of their school day experience by creating and maintaining 'schoolyard habitats'; a natural outdoor environment for experiential learning at schools throughout Delaware;
2. To
3. To reward schools for their participation in a "Greener Schools for Delaware" program; so that our

#### Outputs/Deliverables:

- 1, Propose a Greener Schools for Delaware program that is right for Delaware.
2. Propose a 'clearinghouse' web-based library of curriculum-aligned activities for teachers, that get students outside, connecting with nature and learning by discovery

#### Milestones:

- 1. Identify model programs for green school practices, schoolyard habitats and schoolyard gardens inside and outside of Delaware
- 2. Inventory curriculum-aligned activities, teacher training and other existing resources around the state; consider how a 'resource bank' could be created
- 3. Identify community partners and funding resources for these programs
- 4. Assemble the research to make the case: greener schools promote improved student achievement
- Evaluate gaps and barriers to implantation of a Greener Schools for Delaware program; what needs to be SWOTed? (Strengths, Weaknesses, Opportunities and Threats/Challenges)

#### Short-Term Outcomes

1. Publicity about the Children in Nature initiative raises awareness of the general public about the importance of 'outdoor time' for children
2. Environmental organizations work together to identify programs and resources that can be shared and disseminated
3. Teachers and administrators are informed about resources available to them for 'greener schools'

#### Intermediate Outcomes:

1. A Greener School program is sanctioned by the Governor and the Department of Education
2. A Greener School program provides incentives and encouragement for schools to create schoolyard habitats, recycling programs, to conduct energy audits, manage stormwater and manage their facilities in a manner that protects the health of students and the watershed.

#### Long-Term Outcomes:

Schools become places where students learn ecological principles by example and practice, and understand stewardship of the environment.

### Project Progress

#### Progress To Date:

January: Initial meetings of the five sub-committees are scheduled  
 March: First meeting of the 'Greener Schools' sub-committee. Review and input on Committee Scope-Goals-Tasks and Committee Charter  
 April: Second meeting: Presentations on three 'greener schools' programs in Delaware  
 Review and input on Committee Scope-Goals-Tasks  
 Brainstorm: "What could this committee do in the next 6 months to create Greener Schools in Delaware?"  
 May: Third meeting: Review and input on Committee Scope-Goals-Tasks  
 Presentation: 'Healthy Foods for Healthy Kids' - DE program  
 Presentations: Greener Schools national model program- Eco-Schools  
 Presentation: Research/Studies on greener schools- Impact on student achievement and health: Brief report on preliminary findings

### Additional Project Information

#### Project Financing

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

#### Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

#### Project Leveraging Role

#### Report Information

Report Title:

Author :

Abstract :

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Citizens Advisory Committee Speakers Bureau*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Sally Boswell  
CIB  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302-226-8105  
outreach@inlandbays.org  
Project Director

**Project Status:** On-going

**Work Pan ID :** CIB12-015

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G8,G8C,G9,G9A,G9C	<b>Primary Goal Objective ID Title :</b> Establish a speakers bureau
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

To create a Center for the Inland Bays Speakers Bureau with the Outreach Committee of the Citizens Advisory Committee, made up a corp of CIB volunteers, to represent the CIB at speaking engagements throughout the watershed to raise awareness about the CIB and its mission.

### Intended Results:

1. To raise awareness about the CIB
2. To educate citizens about issues, concerns and opportunities for participation in the work to restore and protect the Inland Bays
3. To promote citizen action in support of our mission through direct contact with homeowners associations and civic organizations throughout the watershed.

#### **Outputs/Deliverables:**

1. An annual schedule of speaking engagements at homeowners organizations and civic associations is established and executed
2. Information about the CIB and our mission is disseminated to citizens throughout the watershed
3. Nearly 1,000 stakeholders in the watershed were reached by the Speakers Bureau in its first year-2010

#### **Milestones:**

1. Develop a powerpoint for the use of the speakers bureau- Fall 2009
2. Recruit and train volunteers to use the equipment and power point Fall- 2009
3. Identify organizations in the watershed to take the CIB message. Fall 2009 and ongoing

#### **Short-Term Outcomes**

1. Volunteers serving on the Speakers Bureau explain their knowledge of the CIB and the Inland Bays as they prepare to inform fellow citizens.
2. Organizations and associations throughout the watershed become more aware of the CIB and its mission as they are contacted by the Speakers Bureau
- 3.

#### **Intermediate Outcomes:**

1. Civic organizations and homeowners associations are informed in greater detail about issues and needs on second visits by the Speakers Bureau
2. Civic organizations and homeowners associations become members of the CIB, becoming investors in our mission and program and receive invitations to events, opportunities to assist on projects, regular news and information from the CIB about the Inland Bays

#### **Long-Term Outcomes:**

1. As more and more citizens are reached, awareness of the condition of water quality in the Inland Bays by more stakeholders leads to increased support for initiatives to improve water quality in the Inland Bays, more financial support of our mission, and enhanced understanding of what citizen's individually can do to help the Bays.

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## **Project Progress**

#### **Progress To Date:**

1. Identifying and training new volunteers to join the Speakers Bureau
  2. Planning for a new powerpoint to include the 'State of the Bays' report information
  3. Continuing to maintain a schedule of speaking engagements throughout the watershed
- 

## **Additional Project Information**

**Project Financing**

**Funding Determination :**

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$0.00

**OTHER FUNDS:** \$0.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$0.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays, All Watersheds

**Latitude:**

**Longitude:**

**Project Leveraging Role**

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<b>Restoration</b> <input type="checkbox"/>	<b>QAPP</b> <input type="checkbox"/>	
<b>Habitat Type :</b>	<b>Date Completed :</b>	
<b>Restoration type :</b>	<b>Date Approved :</b>	
<b>Acreage :</b>	<b>Location :</b>	
<b>Partners :</b>		
<b>Completion Date:</b>		
<b>Cost :</b>		



CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** Gardening for the Bays Native Plant Sale

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Sally Boswell  
CIB  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
302-226-8105  
outreach@inlandbays.org  
Project Director

**Project Status:** On-going

**Work Pan ID :** CIB-12-016

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
ED-A	Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G2,G9,G9C,G9F	Develop programs involving senior citizens and other special interest groups

### CCMP/Work Plan Goal:

G1A Manage urban and rural applications and handling of fertilizers, pesticides, herbicides, manure, sediment, animal carcasses, and other contaminants

G1E: Adopt the most effective Best Management Practices to provide maximum ground and surface water protection

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis

### Overview:

An annual event established in 2005 to inform and educate citizens about the importance of using native plants in landscaping to improve habitat and water quality in the Inland Bays watershed. Previously, no native plant sale or event existed in the watershed or in Sussex County.

One of our outreach objectives is to identify activities and events that can be a "point of entry" for citizens to becoming informed and involved in the watershed-wide work to protect the Inland Bays. In the last decade, tens of thousands of people have moved into the watershed and are making landscaping decisions at their new homes. Most of these

new residents are retirees and many of them are part time residents. This initiative seeks to reach new residents and gardeners to show them how "going native" can be good for their gardens and good for the Inland Bays. Through this event, we have reached many people who have not had contact with our organization before.

### Intended Results:

1. A "point of entry" for citizens to becoming informed and involved in the watershed-wide work to protect the Inland Bays
2. To increase the use of native plants in home landscaping and discourage the use of invasive species in the Inland Bays watershed.
3. To involve local nurseries and demonstrate to them the interest and market for native plants
4. To have an annual forum for education and outreach about fertilizers and pesticides and their impact on the Inland Bays.

### Outputs/Deliverables:

1. Increased understanding about the role of native plants in our watershed inspires volunteers to assist us in planting demonstration gardens and on habitat restoration projects.
2. Experts exhibiting at our annual sale provide information and advice to gardeners new to native planting.
3. Thousands of native plants are sold each year at the annual sale and are planted in gardens throughout the watershed

### Milestones:

1. Establish the first annual Gardening for the Bays Native Plant Sale-Spring 2005
2. Invited local nurseries, master gardeners, garden clubs, native plant organizations, land conservation organizations and others to participate and share information with visitors to the annual sale. Spring 2005 and annually
3. Develop a watershed-wide initiative, 1000 Rain Gardens for the Inland Bays, to citizens, municipalities, churches, schools, home owners associations, garden clubs and others to create media attention and broad participation in 'going native.'
4. Establish a volunteer Native Plant Sale Planning Committee to involve more people in the planning of the event 2007-2011

### Short-Term Outcomes

1. Expands the interest in and market for native plants by homeowners and gardeners
2. Publicity in local media about native plants and the annual sale raises the awareness of the general public about the role of native plants in protecting and restoring native habitats and the destructive role of invasive species.
2. Increased awareness created by the annual sale prompts garden clubs and other organizations to request speakers for their meetings to learn more about native plants

### Intermediate Outcomes:

1. Homeowners in the watershed, many of whom have moved here from the Piedmont areas of MD, VA, DC, DE and PA, learn about the native flora of the Inland Bays watershed and choose native plants that are well-adapted to our soils and climatic conditions
2. Raised awareness among local nurseries about the interest in and market for native plants among homeowners
3. Increased knowledge about the role of native plants in our habitats raises awareness about their importance to native fauna, especially pollinators.
4. New active volunteers working on other Inland Bays projects who began their involvement with the native plant sale

### Long-Term Outcomes:

1. Increased interest in native plants from customers at nurseries
2. More availability of native plants at local nurseries



- 3. More media coverage locally of native plants and native plant gardening
- 4. Greater understanding the role of native plants in the health of habitats in our watershed leads to greater support for conservation of open space, elimination of invasive species, and selection of native species for landscaping.

## Project Progress

### Progress To Date:

- 1. A committee of ten volunteers, led by a volunteer chair worked on the planning of the 7th Annual Gardening for the Bays Native Plant Sale
- 2. Five nurseries brought thousands of native trees, shrubs, grasses and herbaceous plants to be sold at the sale
- 3. Several non profits participated in the sale to provide information to attendees
  - The Master Gardeners from Sussex County distributed information on "Plants for a Livable Delaware," a brochure that offers native alternatives to popular non-native plants, and sold soil testing kits.
  - The Delaware Nature Society presented their Backyard Habitat Program to show homeowners how they can create a certified "Backyard Habitat."
  - We focused on the importance of pollinators this year and invited the DE Department of Agriculture and the Delaware Beekeepers Association to bring exhibits to educate and enlighten the public about the role of pollinators.
- We distributed 88 rain barrels to residents of the watershed as part of our 1000 Rain Gardens for the Inland Bays campaign to raise awareness about stormwater pollution
- About 400 people attended the event

## Additional Project Information

### Project Financing

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

### Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Watersheds

Latitude:

Longitude:

### Project Leveraging Role

### Report Information

Report Title:

Author :

Abstract :

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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# Project Report

**Project Name:** *Bays in Your Backyard Campaign*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Sally Boswell  
 CIB  
 39375 Inlet Road  
 Rehoboth Beach, DE 19971  
 302-226-8105  
 outreach@inlandbays.org  
 Project Director

**Project Status:** On-going

**Work Pan ID :** CIB12-017

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G9,G9F	<b>Primary Goal Objective ID Title :</b> Ensure, to the maximum extent possible, all planning and management activities related to the Inland Bays involve public participati, ininformation and education e
<b>CCMP/Work Plan Goal:</b>	
G9	Ensure, to the maximum extent possible, all planning and management activities related to the Inland Bays involved public participation information and education
G9C	Develop programs involving senior citizens and other special interest groups
G9D	Provide education programs statewide
G9F	Promote education of out-of-state users and visitors

**CWA Program Implementation:** Controlling Nonpoint Source Pollution on a Watershed Basis

### Overview:

The Bays in Your Backyard Campaign was created to capture the energy and concern that was generated by the Gulf Aid Event in the aftermath of the Gulf Oil Disaster, and deploy it for the benefit of our own Inland Bays---the Bays in our Backyard.

An outreach campaign to build on the momentum created by the highly successful Gulf Aid Event with residents and

visitors to the Inland Bays watershed. Attended by about 3,000 people, with many more reached through advertising, publicity, and social marketing media, this event created a high awareness of the importance of and fragility of wetlands and estuaries with the age 20-40 demographic group. The objective of the campaign is to raise awareness within this group of our own wetlands and estuary as the Bays in Your Backyard

#### Intended Results:

1. Increased name recognition for the Inland Bays
2. Greater participation and support of our work by businesses in the watershed
3. Increase in the number of community partners working with the CIB
4. Increase in the number of age 25-45 demographic participating and supporting Inland Bays work

#### Outputs/Deliverables:

1. Design and produce Bays in Your Backyard brochure
2. Develop "Bays in your Backyard" exhibit for use at community events 2010 theme of CIB Coast Day
3. Produce 'Bays in your Backyard' kiosks/brochure racks for use at businesses throughout the watershed
4. Develop and implement a billboard campaign
5. Implement a monthly 'Bays in your Backyard' Email Blast...this month's special place
6. Post "the Bays in your Backyard...this month's special place on Facebook
7. Produce videos for use on website and upload to Youtube
8. Develop at public radio campaign on our local stations to raise awareness

#### Milestones:

1. Create print materials for the campaign
2. Create exhibit for use at community events
3. Increase presence on local public radio station
4. Present the exhibit at community events and farmer's markets throughout the watershed
5. Implement a social marketing campaign using our website, Facebook account, YouTube and email blasts
6. Schedule the "Bays in your Backyard" exhibit for displays at all libraries in the watershed: Lewes, Rehoboth, South Coastal, Georgetown, Millsboro, Frankford, Selbyville
7. Plan and implement a billboard campaign...the Inland Bays...the Bays in your Backyard

#### Short-Term Outcomes

1. Build awareness and name recognition among local residents, homeowners and visitors about the Inland Bays...the 'bays in their backyard'
2. Attract new community partners to the work of protecting and restoring the Bays

#### Intermediate Outcomes:

1. Increase awareness of the Inland Bays; more familiarity with their attributes and amenities; increase in participation in low impact use such as hiking and paddling.
2. Increase awareness and support of the Inland Bays among businesses in the watershed

#### Long-Term Outcomes:

1. Create connection and familiarity with our Bays that translates to a sense of ownership and responsibility for our bays in our backyard that results in increased public participation in public policy issues affecting the Inland Bays.

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## Project Progress

### Progress To Date:

1. The Bays in Your Backyard Exhibit was the theme of our CIB exhibit at the annual Green Fair at Epworth UM Church this spring
2. The Bays in Your Backyard Exhibit was the theme of our CIB exhibit at the 7th Annual Gardening for the Bays Native Plant Sale in May

**Additional Project Information**

**Project Financing**

Funding Determination :

Amendment:

Amendment Source:

CIB FUNDS: \$0.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$0.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : All Watersheds

Latitude:

Longitude:

**Project Leveraging Role**

**Report Information**

Report Title:

Author :

Abstract :

Restoration

Habitat Type :

Restoration type :

Acreage :

Partners :

Completion Date:

Cost :

QAPP

Date Completed :

Date Approved :

Location :



CENTER FOR THE INLAND BAYS  
Rehoboth Indian River Little Assawoman

# Project Report

**Project Name:** *Update of the Inland Bays Comprehensive Conservation & Management Plan*

**Lead Contractor:** Center for the Inland Bays

**Responsible Partners, Contact Info, and Roles:** Roy Miller  
Environmental Policy Coordinator  
CIB  
39375 Inlet Road  
Rehoboth Beach, DE 19971  
(302) 226-8105

**Project Status:** On-going

**Work Pan ID :** CIB12-021

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b> Implement the Comprehensive Public Participation and Education Plan
<b>CCMP Goal Objective ID :</b> G3,G3C,G3E,G9,G9B	<b>Primary Goal Objective ID Title :</b> Coordnatemanagement decisions among all levels of government
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The current Inland Bays Comprehensive Conservation & Management Plan (CCMP) was adopted more than 15 years ago. The Inland Bays watershed has undergone dramatic change during this period as a result of expansive residential growth. In addition, new and emerging issues such as climate change and sea level rise were not emphasized in the current document. An update of the CCMP is long overdue. Language proposed in a recent bill to reauthorize the National Estuary Program would require an update of the CCMP to be completed every five years.

**Intended Results:**

An updated and revised CCMP that clearly defines the purpose and articulates the goals of the CCMP for the next five years  
A management plan for the CIB that prioritizes and narrows the scope of the organization's efforts to increase effectiveness

**Outputs/Deliverables:**

CCMP tracking and evaluation matrix tool  
Updated report on research findings and publications during past 15 years  
Updated CCMP

**Milestones:**

Assemble Steering Committee  
Create CCMP tracking and evaluation matrix tool  
Assess CCMP implementation progress during the past 15 years  
Host public listening session to obtain critical feedback from stakeholders about CCMP progress  
Review recommended actions with implementation partners  
Write draft version of updated CCMP for public consumption  
Organize public forum to review draft CCMP  
Design/publish draft updated CCMP  
Seek Board, State and Environmental Protection Agency approval  
Host CCMP Reaffirmation Ceremony

**Short-Term Outcomes**

An updated management plan for Delaware's Inland Bays with measurable goals and objectives that address the identified priority problems

**Intermediate Outcomes:**

Reengaged stakeholders and renewed commitment from implementation partners

**Long-Term Outcomes:**

Improved water quality and restored habitats

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**Project Progress**

**Progress To Date:**

1. Research into CCMP accomplishments underway.
2. Steering Committee assembled and two meetings have been held.

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**Additional Project Information**

**Project Financing**

**Funding Determination :** Sole Source

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$0.00

**OTHER FUNDS:** \$0.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$0.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** All Bays

**Latitude:**

**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<b>Restoration</b> <input type="checkbox"/>	<b>QAPP</b> <input type="checkbox"/>	
<b>Habitat Type :</b>	<b>Date Completed :</b>	
<b>Restoration type :</b>	<b>Date Approved :</b>	
<b>Acreage :</b>	<b>Location :</b>	
<b>Partners :</b>		
<b>Completion Date:</b>		
<b>Cost :</b>		



Year Reported 2011

Date : 07/14/2011

Proposed



# Project Report

**Project Name:** *Burton's Island Toxic Leachates Assessment*

**Lead Contractor:** Inland Bays Citizens Advisory Committee

**Responsible Partners, Contact Info, and Roles:** Bill Zak, Chair  
 7 Deerfield Drive  
 Lewes, DE 19958

**Project Status:** Proposed

**Work Pan ID :** CIB12-018

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
ED-A	
<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G2,G2C,G8,G8A	G2C
<b>CCMP/Work Plan Goal:</b>	

**CWA Program Implementation:** Improving Water Quality  
 Monitoring, Strengthening  
 National Pollutant Discharge  
 Elimination System Permits

### Overview:

Burtons Island on Indian River has been used as a coal ash disposal site for the Indian River Generating Station since the 1950s. Although the State of Delaware has investigated heavy metal/toxics contamination in the area, limited sampling and monitoring have been conducted to assess impacts on local fish and shellfish resources. The Inland Bays Citizens Advisory Committee has requested funding to support fish and shellfish tissue sampling for heavy metals contamination near and around the Burton's Island Coal Ash Landfill.

### Intended Results:

Assessment of Inland Bays fish and shellfish populations near the Burtons Island coal ash disposal site for toxics (arsenic, mercury, etc.) contamination  
Evaluate whether a localized public fish consumption advisory is necessary.

**Outputs/Deliverables:**

**Milestones:**

Collect and analyze water and sediment samples for heavy metals

**Short-Term Outcomes**

**Intermediate Outcomes:**

**Long-Term Outcomes:**

**Project Progress**

**Progress To Date:**

Study conceptual development in progress.

**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source

Amendment:

Amendment Source:

CIB FUNDS: \$15,000.00

OTHER FUNDS: \$0.00

MATCHING FUNDS: \$0.00

AMENDMENT FUNDS: \_\_\_\_\_

TOTAL: \$15,000.00

**Project Location**

Municipality : All Coastal Communities

Watershed/Waterbody : Indian River Bay

Latitude:

Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

<b>Restoration</b> <input type="checkbox"/> <b>Habitat Type :</b> <b>Restoration type :</b> <b>Acreage :</b> <b>Partners :</b>  <b>Completion Date:</b> <b>Cost :</b>	<b>QAPP</b> <input type="checkbox"/>  <b>Date Completed :</b> <b>Date Approved :</b> <b>Location :</b>	
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# Project Report

**Project Name:** Rehoboth Water Quality Changes Associated with Wastewater Management

**Lead Contractor:** Inland Bays Scientific & Technical Advisory Committee

**Responsible Partners, Contact Info, and Roles:** Dr. William Ullman  
University of Delaware  
College of Earth, Ocean & Environment  
228 Cannon Labs  
700 Pilottown Road  
Lewes, DE 19958

**Project Status:** Proposed

**Work Pan ID :** CIB12-019

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b> ED-A	<b>Primary Action Plan ID Title :</b>
<b>CCMP Goal Objective ID :</b> G2,G2B,G2C,G2E,G4,G4A, G4C,G8,G8A	<b>Primary Goal Objective ID Title :</b> Enhance monitoring and response strategies
<b>CCMP/Work Plan Goal:</b> This project was proposed by the Strategic Planning Committee in consultation with the Inland Bays Scientific & Technical Advisory Committee.	

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis,  
Improving Water Quality  
Monitoring

### Overview:

It's been eight years since the Rehoboth Beach Wastewater Treatment Plant (RBWTP) modified its treatment processes in order to substantially reduce its discharge of phosphorus (P) to the northern section of Rehoboth Bay through the Lewes-Rehoboth Canal. Prior to 2002, discharge from the RBWTP represented a substantial fraction of the total P load to Rehoboth Bay and a relatively minor source of N (compared to agricultural inputs from the Inland Bays watershed). Since 2002, annual P loads have averaged about 1/3 of the P load prior to the improvements.

Since 2008, there have been anecdotal reports of improvements in water quality in northern Rehoboth Bay, including improved water clarity, changes in benthic flora, and a lack of noxious or harmful algal blooms. However, there have been no systematic surveys of nutrient concentrations to demonstrate that these improvements can be related to improvements in treatment technology at RBWTP.

A two-year survey (2012 & 2014) of nutrient levels in Rehoboth Bay is proposed, which is modeled after the CISnet project (1999-2002). Samples will be collected in the open waters of Rehoboth Bay, the Lewes-Rehoboth Canal, and in the major tributary creeks during the estuarine growing season. Prior to 2002, the waters of northern Rehoboth Bay were often characterized by low N/P ratios, consistent with N limitation due to high loads of P from RBWTP. The proposed sampling is designed to document a change in nutrient concentrations and potential limitation (higher N/P ratios) driven by the improvements in wastewater processing at RBWTP.

In 2014, the effluent from the RBWTP will be rerouted to an ocean outfall. The presently proposed nutrient sampling will also serve as a baseline to evaluate improvements in water quality associated with the complete removal of this discharge from the poorly flushed waters of Rehoboth Bay. An additional survey of nutrient concentrations and ratios should be planned for a period beginning a few years after effluent removal from Rehoboth Bay.

#### **Intended Results:**

Updated nutrient (N & P) concentration data set for Rehoboth Bay  
Water quality assessment for Rehoboth Bay that verifies anecdotal observations that changes have occurred  
Baseline nutrient concentrations to assess potential improvements in water quality following removal of an Inland Bays point-source discharge

#### **Outputs/Deliverables:**

Final report  
Presentation to Scientific & Technical Advisory Committee

#### **Milestones:**

Scope of work completed- April 2012  
Year 1 sampling and analysis completed- AU 2012  
Year 2 sampling and analysis completed- AUG 2014  
Publication of dataset and assessment to be integrated into water quality index for Inland Bays- DEC 2014

#### **Short-Term Outcomes**

Enhanced nutrient sampling and monitoring capabilities for Rehoboth Bay

#### **Intermediate Outcomes:**

Increased scientific understanding of the water quality and ecological conditions of Rehoboth Bay

#### **Long-Term Outcomes:**

Increased understanding of the effects of improvements to centralized wastewater treatment processes on estuarine water quality

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## **Project Progress**

#### **Progress To Date:**

1. Study development in progress.

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**Additional Project Information**

**Project Financing**

**Funding Determination :** Sole Source

**Amendment:**

**Amendment Source:**

**CIB FUNDS:** \$15,000.00

**OTHER FUNDS:** \$0.00

**MATCHING FUNDS:** \$0.00

**AMENDMENT FUNDS:** \_\_\_\_\_

**TOTAL:** \$15,000.00

**Project Location**

**Municipality :** All Coastal Communities

**Watershed/Waterbody :** Indian River Bay

**Latitude:**

**Longitude:**

**Project Leveraging Role**

Primary

**Report Information**

**Report Title:**

**Author :**

**Abstract :**

<p><b>Restoration</b> <input type="checkbox"/></p> <p><b>Habitat Type :</b></p> <p><b>Restoration type :</b></p> <p><b>Acreage :</b></p> <p><b>Partners :</b></p> <p><b>Completion Date:</b></p> <p><b>Cost :</b></p>	<p><b>QAPP</b> <input type="checkbox"/></p> <p><b>Date Completed :</b></p> <p><b>Date Approved :</b></p> <p><b>Location :</b></p>	
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# Project Report

**Project Name:** Eelgrass planting in Delaware Inland Bays

**Lead Contractor:** Center for the Inland Bays

**Responsible** E.J. Chalabala -- Project Manager

**Partners, Contact** Center for the Inland Bays

**Info, and Roles:** 39375 Inlet Road

**Project Status:** Proposed

**Work Pan ID :** CIB12-020

## Project Description

### Strategic Alignment:

<b>CCMP Action Plan ID :</b>	<b>Primary Action Plan ID Title :</b>
HP-A	Create a Resource Protection Area management plan

<b>CCMP Goal Objective ID :</b>	<b>Primary Goal Objective ID Title :</b>
G2,G2A	Promote recurrence of submerged aquatic vegetation

### CCMP/Work Plan Goal:

This project directly correlates with the objectives of the CCMP, Habitat Protection Action Plan. Within this Action Plan it is stated that: "There are presently no substantial SAV beds in the Inland Bays; potential habitat may currently be limited and existing habitat is marginal. For these reasons, and because of other concurrent uses of the Bays, protecting areas where planting is being attempted is both feasible and desirable. If SAV is to become re-established, it must be protected. Healthy SAV beds will become primarily shellfish spawning sanctuaries and finfish nursery areas."

**CWA Program Implementation:** Controlling Nonpoint Source  
Pollution on a Watershed Basis

### Overview:

The proposed project involves various stages of eelgrass lifecycle to end up with planted seeds in our Inland Bays at a suitable desired location.

Seed will be collected manually during late spring 2012 from healthy beds in Chincoteague Bay, MD. Reproductive stalks will be pulled from the plant, held in mesh bags in ambient seawater, and transferred for storage. Harvested stalks will be stored in flowing seawater at ambient temperatures until the seeds have ripened and dropped to the bottom of the storage tanks. We will then collect the seeds from the tanks, remove detritus and non-viable seeds, and store in bottom sediment in a flow through tank until treatment (October 2012).

After storage in bottom sediment, seeds will be thoroughly washed in ambient Bay water and coated using a mixture of clay, binders, fertilizers, and germination enhancing agents. This process is well established in agricultural



practices, both to enhance seed germination, but also for ease of handling and distribution. This model has been proven for terrestrial applications and preliminary trials suggest that it will work well with aquatic seeds.

We will plant seeds in a suitable location in the Inland Bays in October or November 2012, covering an area of approximately 1 acre with a planned density of 100,000 seeds/acre. During planting we will take ambient water quality measurements (dissolved oxygen, salinity, temperature and turbidity) at mid-column depth using a YSI © 56 multiprobe system and Hach Turbidimeter at each grid site for a full picture of conditions at each site.

Following the winter season, we will return to the site in the spring (April 2013) to begin bimonthly monitoring for germination and growth through the summer growing season (May – August 2013). Ten randomly selected 1-m<sup>2</sup> plots will be measured to determine areal coverage, shoot abundance, and shoot length of eelgrass in the restoration area. Water quality and habitat use by fish and invertebrates will be monitored seasonally and compared to unrestored control sites near Pasture Point Cove to determine changes in habitat resulting from the restoration planting. Monitoring will continue through November 2013.

#### Intended Results:

- to increase the population of eelgrass within the Inland Bays
- provide for increased benthic habitat because eelgrass beds provide habitat for juvenile fisheries species.
- to establish a successful system for eelgrass seed collection, dispersal, and monitoring that can become an annual program with the CIB, DNREC...etc.

#### Outputs/Deliverables:

- Collection of seed stalks from healthy beds in MD.
- Harvested stalks will be stored in flowing seawater at ambient temperatures until the seeds have ripened and dropped to the bottom of the storage tanks.
- After storage in bottom sediment, seeds will be thoroughly washed in ambient Bay water and coated using a mixture of clay, binders, fertilizers, and germination enhancing agents. This process is well established in agricultural practices, both to enhance seed germination, but also for ease of handling and distribution. This model has been proven for terrestrial applications and preliminary trials suggest that it will work well with aquatic seeds.
- Plant seeds in the Inland Bays (Oct-Nov 2012)
- Return to site in April 2013 for monitoring.....Ten randomly selected 1-m<sup>2</sup> plots will be measured to determine areal coverage, shoot abundance, and shoot length of eelgrass in the restoration area. Water quality and habitat use by fish and invertebrates will be monitored seasonally and compared to unrestored control sites near Pasture Point Cove to determine changes in habitat resulting from the restoration planting. Monitoring will continue through November 2013.

#### Milestones:

1. Seed stalks will be collected manually during late spring 2012 from healthy beds in Chincoteague Bay, MD.
2. Harvested reproductive stalks will be stored in mesh bags in flowing seawater (spring 2012)
3. Seeds that have dropped from the bags will then be collected, remove detritus and non-viable seeds, and store in bottom sediment in a flow through tank until treatment (October 2012).
4. Seeds will then be planted in October-November of 2012 at pre determined suitable location.
5. Bimonthly monitoring for germination and growth through the summer growing season (May – August 2013).

#### Short-Term Outcomes

- Form partnerships with Chincoteague Bay folks.
- Showing interest in planting eelgrass so others may follow.

#### Intermediate Outcomes:

- Collecting eelgrass seed and becoming familiar with the correct methods.
- Implementing a new method of encapsulating eelgrass seed.

-Actually planting an acre of eelgrass in our Inland Bays.

**Long-Term Outcomes:**

-Restore 1 acre of eelgrass which in turn provides beneficial benthic habitat for many organisms.  
-Prove methods that can be used for restoring eelgrass successfully.  
-Prove an encapsulation method for eelgrass seed works.

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**Project Progress**

**Progress To Date:**

-Partnership for expertise and seed stock identified  
-Proposal finalized and accepted  
-Locations throughout the Bays visited and sample planting sites determined  
-Collection of seeds from Sinepuxent Bay to be done in Late June

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**Additional Project Information**

**Project Financing**

Funding Determination : Sole Source  
Amendment:   
Amendment Source:  
CIB FUNDS: \$10,000.00  
OTHER FUNDS: \$0.00  
MATCHING FUNDS: \$0.00  
AMENDMENT FUNDS: \_\_\_\_\_  
TOTAL: \$10,000.00

**Project Location**

Municipality : All Coastal Communities  
Watershed/Waterbody : All Bays  
Latitude:  
Longitude:

**Project Leveraging Role**

Primary

**Report Information**

Report Title:

Author :

Abstract :

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<b>Restoration</b> <input checked="" type="checkbox"/>	<b>QAPP</b> <input type="checkbox"/>
<b>Habitat Type :</b> subtidal	<b>Date Completed :</b>
<b>Restoration type :</b> Re-establishment	<b>Date Approved :</b>
<b>Acreage :</b> 1	<b>Location :</b>
<b>Partners :</b> sss	
<b>Completion Date:</b>	
<b>Cost :</b> \$0.00	

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DE CENTER FOR THE INLAND BAYS  
EPA Travel 2010  
10/1/2009 - 9/30/2010

Source Code	Effective Date	Name	TRAVEL REPORT CE993990-10-0 - 10-1-2009 - 9/30/2010	Account	Expenditures
1075	10/6/2009	Edward Lewandowski	E Lewandowski local mileage, Sept 09, 221 miles @ .55	\$	121.55
1075	10/6/2009	Chris Bason	C Bason local mileage, Sept 09, toll \$4, 520 miles @ .55	\$	290.00
1075	10/6/2009	Eric H. Buehl	E Buehl local mileage, Sept 09, 295.1 miles @ .55	\$	162.31
1075	10/6/2009	E.J. Chalabala	E J Chalabala local mileage, Aug 09, 339.3 miles @ .55	\$	186.62
1075	10/27/2009	Eric H. Buehl	E Buehl, local mileage, Oct 09, 385.4 miles @ .55	\$	211.97
1075	11/2/2009	Loretta Smith	L Smith local mileage, Oct 09, 112.3 miles @ .55	\$	61.77
1075	11/3/2009	Edward Lewandowski	E.Lewandowski local mileage, Oct 09, 646 miles @ .55	\$	355.30
1075	11/17/2009	E.J. Chalabala	E Chalabala, local mileage, Oct 09, 758.3 miles @ .55 (split )	\$	8.80
1075	12/8/2009	Chris Bason	C Bason local mileage Nov 09 520 miles @ .55	\$	142.12
1075	12/8/2009	E.J. Chalabala	E J Chalabala local mileage Nov 09 73 miles @ .55	\$	40.15
1075	12/22/2009	Chris Bason	C Bason local mileage Dec 09, 362 miles@.55, \$4 toll	\$	203.10
1075	12/22/2009	Loretta Smith	L Smith local mileage Dec 09, 43.6 miles @ .55	\$	23.98
1075	1/11/2010	E.J. Chalabala	E J Chalabala local mileage, Dec 09, 154 miles @ .55	\$	84.70
1075	1/11/2010	Association of Natl Estuary Pr	2010 ANEP National mtg Registration Arlington, VA, E Lewandowski, 2-21-2-24	\$	150.00
1075	1/29/2010	Edward Lewandowski	E Lewandowski local mileage, Jan 2010, 554 miles@ .50: toll 2.50	\$	277.00
1075	1/29/2010	Loretta Smith	L Smith local mileage, Jan 2010, 70.3 miles@ .50	\$	35.15
1075	2/12/2010	Chris Bason	C Bason local mileage, Jan 2010, 105 miles @ .50	\$	52.50
1075	2/25/2010	Chase Inc	E J Chalabala, DRPS Conf, Rehoboth .Beach DE, Feb-24-25/ Aquaculture Conf San Diego CA, Airfare, March-1-5	\$	725.80
1075	2/25/2010	Chase Inc	E.Lewandowski, AERS Conf, Atlantic City, N.J. Hotel, 3-3-5-10	\$	142.44
1075	2/25/2010	Edward Lewandowski	E Lewandowski, Wash DC, ANEP, Miles 190@.50: Meals, toll, Metro Feb-21-24	\$	192.43
1075	3/2/2010	Edward Lewandowski	E Lewandowski, local mileage, 230 miles @.5, Feb 2010	\$	115.00
1075	3/9/2010	Edward Lewandowski	E Lewandowski, AERS Mtg, Atlantic Cty, NJ, 115miles@.5 :meals, tolls	\$	185.59
1075	3/23/2010	Chase Inc	E J Chalabala, Aquaculture Conf, San.Diego,CA,meals, parking, hotel, shuttle,Air baggage fee, March 1-5.	\$	1,569.86
1075	3/23/2010	Chase Inc	E Lewandowski, AERS Conf, Atlantic City, NJ, Ferry, 3-3-5, ANEP, Wash DC, Feb 21-24, Hotel, parking	\$	761.75

DE CENTER FOR THE INLAND BAYS  
EPA Travel 2010  
10/1/2009 - 9/30/2010

Funding Source Code	Effective Date	Name	Travel Report			
			CE993990-10-0	10-1-09 - 9-30-2010		
1075	4/5/2010	Edward Lewandowski	E.L.,Local Mileage, March 2010, 486 miles @ .50, Tolls \$4		\$	247.00
1075	4/6/2010	E.J. Chalabala	Local Mileage, March 2010 , 308miles @ .50		\$	154.00
1075	4/30/2010	Loretta Smith	Local Mileage, April 2010 , 132.7 miles( split) @ .5		\$	63.09
1075	4/30/2010	Edward Lewandowski	Local mileage, April 2010 , 389 miles @ .5		\$	194.50
1075	4/30/2010	Chris Bason	Local Mileage, April 2010- 207 miles @ .5		\$	103.50
1075	5/5/2010	EJ Chalabala	Local Mileage, Apr 2010, 132miles @ .5		\$	66.00
1075	5/18/2010	Edward Lewandowski	Region III EPA States mtg, Gettysburg,Va,May 12-13, mileage 298miles @ .5, Toll-\$2.50, meals 22.43		\$	173.93
1075	5/26/2010	Beau Croll	Local Mileage May 2010, 96 miles @ .5		\$	48.00
1075	6/1/2010	Loretta Smith	Local mileage May 2010, 126.1 miles @ .5		\$	63.05
1075	6/1/2010	Edward Lewandowski	Local mileage May 2010, 513 miles @ .5		\$	256.50
1075	6/1/2010	Chris Bason	Local Mileage May 2010 399 miles @ .5		\$	199.50
1075	6/7/2010	E.J. Chalabala	E.J.Chalabala local mileage, May 2010, 256 miles @ .5		\$	128.00
1075	6/23/2010	Chase Inc.	E Lewandowski, EPA States Mtg, Hotel, Gettysburg, PA, 5-12-13, 2010		\$	126.55
1075	6/29/2010	Beau Croll	B.Croll, local mileage June 2010, 148miles @ .5		\$	74.00
1075	6/30/2010	Edward Lewandowski	E. Lewandowski local mileage, June 2010, 618miles @ .5, toll \$2.50		\$	311.50
1075	7/8/2010	Chris Bason	C Bason local mileage, June 2010, 125 miles @ .5		\$	62.50
1075	7/8/2010	Loretta Smith	L. Smith, local mileage, June 2010, 69 miles @ .5		\$	34.50
1075	8/4/2010	Edward Lewandowski	E Lewandowski, local mileage, July 2010, 142 miles @ .5		\$	71.00
1075	8/4/2010	Eric Buehl	E Buehl, local mileage, July 2010, 14.96 miles @ .5		\$	7.48

DE CENTER FOR THE INLAND BAYS  
EPA Travel 2010  
10/1/2009 - 9/30/2010

Funding Source Code	Effective Date	Name	Travel Report			
			CE993990-10-0	10-1-09 - 9-30-2010		
1075	8/4/2010	Loretta Smith	L Smith local mileage, July 2010, 100.2 miles @ .5		\$	50.10
1075	8/16/2010	E.J. Chalabala	E Chalabala local mileage, July 2010, 117 miles @ .5		\$	58.50
1075	8/16/2010	Sally Boswell	S Boswell local mileage June 2010, 194.72 miles @ .5		\$	97.36
1075	8/23/2010	Chase Inc.	E Lewandowski, 7-20, Thibodaux,LA, BTNEP field visit, Air fare		\$	335.40
1075	8/24/2010	Beau Croll	B Croll local mileage Aug 2010, 160 miles @ .5		\$	80.00
1075	8/24/2010	Interstate Aquaculture Seminar	E J Chalabala, Sept 14-16, Ocean City, MD, Registration		\$	90.00
1075	8/30/2010	Eric Buehl	E Buehl, local mileage, Aug 2010, 356.7 miles @ .5, Toll \$2.00		\$	180.35
1075	8/30/2010	Loretta Smith	L Smith local mileage, Aug 2010, 55.4 miles @ .5		\$	27.70
1075	8/30/2010	Chris Bason	C Bason local mileage, July 2010, 104 miles @ .5		\$	52.00
1075	9/8/2010	Edward Lewandowski	E Lewandowski, local mileage August 2010, 433 miles @ .5, tolls \$2.50		\$	219.00
1075	9/8/2010	Chris Bason	C Bason local mileage, August 2010, 185 miles @ .5		\$	92.50
1075	9/8/2010	E.J. Chalabala	E Chalabala local mileage, August 2010, 130 miles @ .5		\$	65.00
1075	9/21/2010	Chase Inc.	E Lewandowski, ANEP Mtg, Charlott Hrbr, FL, Airfare		\$	246.80
1075	9/27/2010	Association of National Estuary Program	E Lewandowski & S. Boswell, ANEP registration,Charlt Hrbr,FL, 11-8-11		\$	600.00
<b>TOTAL</b>					<b>\$</b>	<b><u>10,679.20</u></b>

# ADMINISTRATIVE

## Staff Descriptions

The **Executive Director**, under the supervision of the Board of Directors, is the administrative head of the Center charged with the responsibility of the day to day operations and business of the Center, and has responsibilities required by the Inland Bays Watershed Enhancement Act, including but not limited to: 1) Board Administration and Support -- Supports operations and administration of Board and its committees by advising and informing members, interfacing between Board and staff, and supporting Board's evaluation of CIB performance; prepares and provides an annual/activity report and quarterly progress reports to the Board and Environmental Protection Agency, 2) Implementation of the *Inland Bays Comprehensive Conservation & Management Plan* -- Determines priorities for restoration, enhancement, and protection of resources in the watershed; prepares an annual plan of action in accordance with EPA guidance for approval by the Board of Directors; oversee efforts to implement the Program's annual work plan, including the development of partnerships with key stakeholders; tracks and monitors progress towards implementation of the CCMP, 3) Financial, Tax, Risk and Facilities/Properties Management -- Prepares and recommends annual budget for Board approval and prudently manages the Program's resources within those budget guidelines according to current laws and regulations; monitor budgetary and financial reconciling procedures to ensure that generally accepted accounting practices are being followed; engage accountants and auditors to examine and report on financial status of the organization and prepare required tax documents; provide for effective care of CIB facilities and real properties, 4) Human Resource Management -- Effectively manages the human resources (personnel, salaries & benefits) of the organization according to authorized personnel policies and procedures that fully conform to current laws and regulations; hire and/or retain appropriate support staff as needed, 5) Community and Public Relations -- Assures the organization and its mission, programs, and services are consistently presented in a strong, positive image to relevant stakeholders; facilitates an ongoing dialogue on issues concerning Inland Bays protection; provides communication documents to public, private groups/individuals, state, county, and local government; serves on state-wide and regional committees and task-forces to promote sound environmental policies based on best available science; travels to national and regional EPA meetings, estuary-related conferences and meetings; provides technical assistance to other programs; serves in an advisory capacity to elected officials, policy makers, resource managers, and civic leaders; performs duties associated with the Board of Directors of the Association of National Estuary Programs, and 6) Fundraising & Membership -- Responsible for procurement and administration of federal, state and private monies to fulfill the responsibilities pursuant to implementation of the Inland Bays CCMP; oversees fundraising planning and implementation, including identifying resource requirements, researching funding sources, establishing strategies to approach funding partners, and management of endowment fund and investments; identifies and cultivates individual donors for major gifts; in conjunction with the Finance Committee, develops an annual fundraising plan;



leads efforts to position CIB in the community and attract new members and volunteers

The **Deputy Director** serves the Executive Director by defining the research, reporting and analytical needs of the CIB and developing a vision to deliver against these requirements. The Deputy Director will also work in close collaboration with the Executive Director to manage priority issues and align project outcomes with organizational goals and objectives. In addition, the Deputy Director will actively promote the mission of the CIB externally and maximize the potential impacts of key partnerships and opportunities. With guidance from the Executive Director, the Deputy Director will work collaboratively with the CIB's professional staff to develop and implement internal systems to ensure efficient and effective delivery of critical programs and services. In keeping with the mission of the CIB, the Deputy Director will interact with the CIB's Board and Committee members to sustain an empowering environment and will serve as a leader in the effort to foster a results-oriented atmosphere among members and staff. The Deputy Director is also the default contact for the assorted committees and other bodies that need to interact with the CIB

The **Administrative Assistant** serves the Executive Director and provides program and office administrative services including development, reconciliation, and tracking of the operation budget; managing payroll and benefits packages; managing financial requirements for federal, state, and local assistance awards; maintaining membership and mailing lists; answering phones; drafting general letters and correspondence; ordering basic supplies; faxing; copying; maintaining program calendars and scheduling; filing; mailing; processing and tracking paperwork for staff travel authorizations and reimbursements; taking minutes of meetings; and other duties as assigned by the Executive Director.

The **Education and Outreach Coordinator** serves the Executive Director of the Center for the Inland Bays by managing the activities of the Inland Bays Comprehensive Public Participation and Education Plan component of the Inland Bays Comprehensive Conservation and Management Plan; Directs and supervises the on-going James Farm Education Program for middle school students in Indian River School District; recruits and trains teachers; maintains equipment and secures new equipment and supplies as needed; evaluates the program; coordinate school participation; maintains a partnership with the administration and schools to correlate our watershed/estuary education activities with the curriculum goals of the Delaware State Education Standards; Directs and supervises the part time Schoolyard Habitat Coordinator and manages the grant that supports the program; works with the superintendent, principals teachers and staff at Schoolyard Habitat Schools to promote the growth of their habitats and develop curriculum-based activities for use in the Habitats; identifies schools to bring into the program; works with partners to bring the program to the school; provides Schoolyard Habitat outreach plan, planning of Wetlands training/plants in the classrooms, and oversees the design and planting of the new Habitats; identifies CIB volunteers to support each Schoolyard Habitat Project; Directs and supervises the part time (volunteer) Volunteer Coordinator; works with her to recruit and interview new volunteers; places volunteers according to their skills, experience and interests; maintains regular contact with volunteers; develops and promotes volunteer participation and training opportunities, maintains volunteer records, plans the annual Volunteer recognition/thank you event; Responsible for CIB 'branding' to promote CIB name recognition and to raise awareness of the mission and work of the organization; works with a graphic designer to insure that new promotional products reinforce the brand in the graphic messages going out to the public; Editor of the Inland Bays Journal, published three times yearly; oversees distribution of the Inland Bays Journal to members, contributors, visitor centers and chambers of commerce, libraries, schools and community events; develops content, edit and publish the Annual Report; Oversees the Inland Bays website; works with the web consultant on design and updates as

needed, develops new content and maintains the site; Produces and publishes brochures, flyers, postcards, exhibits, display elements, signage and other education/outreach tools and materials as needed; Serves as primary press liaison; develops and distributes press releases on CIB activities; invites the press to meetings and events; provides information and sources to them as needed; Coordinates CIB's participation in community events throughout the watershed and oversees the planning of the annual *Gardening for the Bays Native Plant Sale*; Provides presentations to community groups throughout the watershed as requested; Serves as staff liaison/advisor to the CAC Outreach Sub-committee; serves as staff advisor and coordinator of the Citizens' Advisory Committee Speakers Bureau; Assists with other projects and duties as assigned by the Executive Director

The **Habitat Coordinator** serves the Executive Director by managing the Habitat Protection Action Plan component of the Inland Bays Comprehensive Conservation and Management Plan. Primary responsibilities include the development and implementation of a watershed-wide habitat restoration plan which includes developing a plan consistent with the goals of the Comprehensive Conservation and Management Plan (CCMP) and development of programmatic infrastructure to secure funding and oversee project implementation to meet the goals stated in the plan; coordinating program and planning efforts of federal, state, county, and local governmental agencies and other non-governmental agencies and groups related to habitat and habitat restoration within the watershed with an emphasis on keeping Inland Bays habitat and environmental issues at the forefront of other agency/group planning and consideration; representing the CIB at meetings convened by federal, state, county, and local governmental agencies and other non-governmental agencies and groups for the purposes of addressing Inland Bays and other environmental issues which include but are not limited to the Delaware Invasive Species Council, Sussex County/DelDOT Transportation Plan Committees, USDA-Delaware State Technical Committee, CIB Habitat Plan Development Committee, the State Biodiversity Initiative Committee and related subcommittees, and on the CIB Finance Committee; Soliciting, identifying and developing grant proposals to pursue financial assistance to fund habitat restoration projects sponsored by the CIB; managing grant funded projects as awarded; Serving as assistant liaison the Citizens Advisory Committee, which includes preparing and announcing meeting agendas, facility preparation, and scheduling regular meetings; Assisting with outdoor learning activities at the James Farm Ecological Preserve, as requested; Submitting regular habitat and special topic articles to the Education and Outreach Coordinator for the quarterly newsletter and other program publications, including brochures, technical reports, and issue papers; Developing and submitting press releases related to habitat to the Education and Outreach Coordinator for local media distribution, as necessary; Submitting information to the Education and Outreach Coordinator for use on CIB's web site, DISC web site, and CIB tracking system; Planning and developing topics of interest for participation in weekly radio broadcasts as scheduled; Attending to a variety of special support projects and other duties as assigned by the Executive Director.

The **Restoration Coordinator** serves the Executive Director and works in conjunction with the Habitat Coordinator to implement actions in the Habitat Protection Action Plan; The Restoration Coordinator manages and oversees the day to day operation of the James Farm Ecological Preserve; monitors the James Farm Ecological Preserve for various wildlife activities, identifying key animal and plant species as a base line for future comparative studies and also for comparison to historical data; replenishes species by learned management techniques; helps to coordinate internships at the Center for the Inland Bays; manages the Inland Bays Shellfish Restoration Program, including the oyster gardening program; coordinates with the State Forest Service to implement the Urban and Community Forestry Program in the Inland Bays watershed; represents the Center on committees including the State Forestry Council and the Board of Directors of the

Delaware Quality Deer Management Association; participates in public relation/outreach activities sponsored by the CIB; represents the CIB at meetings convened by county, state, and federal agencies or organizations for the purposes of addressing Inland Bays and other environmental issues.

The **Development Coordinator** serves the Executive Director and is responsible for planning, coordinating and implementing the financial plan for the CIB, which includes building and maintaining relationships and securing financial support from current and prospective donors. This individual will also plan and coordinate special events activities. Principal duties and responsibilities include increasing “Friends of the Bays” memberships, organizing mailing lists, identifying donor base, developing prospect research tools, cultivating individual and corporate donors, managing the CIB’s endowment fund and annual campaigns, developing, organizing and marketing programs and annual events to the community and target audiences, and identifying and pursuing grant funding opportunities.

The **Schoolyard Habitat Coordinator** (part-time) works with the Education and Outreach Coordinator to manage the program to plan and build new schoolyard habitats (SYH) at schools in the watershed; continues to work with schools where CIB has already established schoolyard habitat programs; coordinates the activities of SYH Community Volunteers Leaders, the SYH Education Volunteer, Garden Club Partners, and school administration, staff and students.

The **Environmental Policy Coordinator** (part-time) is responsible for working collaboratively with the Board of Directors, staff and committees to develop, disseminate and promote public policies dealing with issues of concern to Delaware’s Inland Bays and the implementation of the Inland Bays Comprehensive Conservation & Management Plan (CCMP); serves as a liaison between the CIB and decision-making groups, including legislators as well as county, municipal and other local elected officials, state agencies and other non-profit groups; provides policy guidance and technical support for Board and staff; assists in developing and allocating financial resources in the form of grants and programmatic funding to ensure that Inland Bays policy implementation is effective and efficient.

# BOARD OF DIRECTORS

MR. RICHARD EAKLE, CHAIR; APPOINTEE OF THE PRESIDENT PRO TEMPORE OF THE DELAWARE SENATE  
DR. WILLIAM McGOWAN, VICE-CHAIR; SUSSEX CONSERVATION DISTRICT REPRESENTATIVE  
MR. BILL ZAK, SECRETARY; CITIZENS' ADVISORY COMMITTEE CHAIR  
MS. JOANNE CABRY, TREASURER; APPOINTEE OF THE SPEAKER OF THE DELAWARE HOUSE OF REPRESENTATIVES  
MR. DR. WILLIAM ULLMAN, SCIENTIFIC & TECHNICAL ADVISORY COMMITTEE CHAIR  
MAYOR GORDON WOOD; SUSSEX COUNTY ASSOCIATION OF TOWNS  
MR. DAVID BAKER; SUSSEX COUNTY ADMINISTRATOR  
SECRETARY EDWIN KEE; DELAWARE DEPARTMENT OF AGRICULTURE  
SECRETARY COLLIN O'MARA; DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL  
MR. ED AMBROGIO; U.S. EPA (EX-OFFICIO)

# STAFF DIRECTORY

MR. EDWARD LEWANDOWSKI, EXECUTIVE DIRECTOR .....*director@inlandbays.org*  
MR. CHRIS BASON, DEPUTY DIRECTOR .....*chrisbason@inlandbays.org*  
MS. LORETTA SMITH, ADMINISTRATIVE ASSISTANT .....*office@inlandbays.org*  
MR. ERIC BUEHL, HABITAT COORDINATOR .....*habitat@inlandbays.org*  
MS. SALLY BOSWELL, EDUCATION & OUTREACH COORDINATOR .....*outreach@inlandbays.org*  
MR. E.J. CHALABALA, RESTORATION COORDINATOR .....*restoration@inlandbays.org*  
MS. JENN JONES, DEVELOPMENT COORDINATOR.....*development@inlandbays.org*  
DR. DENNIS BARTOW, SCHOOLYARD HABITAT COORDINATOR..... *dennisbartow@inlandbays.org*  
MR. ROY MILLER, ENVIRONMENTAL POLICY COORDINATOR.....*policy@inlandbays.org*

The **CENTER FOR THE INLAND BAYS (CIB)** is a private, non-profit organization dedicated to promoting the wise use and enhancement of Delaware's Inland Bays and associated watersheds. The CIB was established by the Delaware General Assembly in 1994 under the auspices of the Inland Bays Watershed Enhancement Act and is administered by the U.S. EPA's National Estuary Program.

## CENTER FOR THE INLAND BAYS

39375 Inlet Road  
Rehoboth Beach, DE  
Phone: (302) 226-8105  
Fax: (302) 226-8109  
Web: [www.inlandbays.org](http://www.inlandbays.org)

