Implementation of the Inland Bays CCMP

Work Plan for the period October 1, 2013 - September 30, 2014

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 2014. These projects implement various CCMP Action Plans and Tactics and may include, but are not limited to the following:

Completed

CIB09-002	Acreage and Condition Trends for Marshes of Delaware's Inland Bays as an Environmental Indicator and Management Tool (USEPA RARE GRANT)
CIB10-004	1000 Raingardens for the Inland Bays
CIB10-005	Hard Clam Density and Distribution Survey
CIB11-007	Massey's Landing Dredge Spoil Project
CIB11-010	Mini Oyster Demonstration Reef
CIB11-015	Seaweed Monitoring, Method Calibration, and Long Term Trend Analysis (2011 and 2013).
CIB11-016	Effects of Suburban Development on Shallow Groundwater Quality
CIB12-003	Delaware Envirothon
CIB12-007	Colonial Nesting Bird Survey
CIB12-008	Inland Bays Island Restoration
CIB12-014	Children in Nature- Environmental Literacy Plan for Delaware
CIB12-018	Burton's Island Toxic Bioaccumulation Study
CIB12-022	Inland Bays Shellfish Aquaculture Initiative
CIB13-002	Rain Garden Training for Professional Landscapers
CIB13-009	Beneficial Reuse of Dredge Material for Wetland Restoration (Demonstration Project)

On-going

CIB09-004	Long-term continuous saltmarsh monitoring in the Inland Bays
CIB11-001	Inland Bays CCMP Project Management & Oversight
CIB11-003	Eelgrass Habitat Suitability Mapping Project
CIB11-011	Bethany Beach Nature Center
CIB11-012	Schoolyard Habitats in the Inland Bays Watershed
CIB11-013	Shorezone Fish Community Volunteer Monitoring Program
CIB12-001	Inland Bays Clean Up
CIB12-004	Oyster Gardening Program
CIB12-012	Volunteers for the Bays
CIB12-013	Annual Inland Bays Horseshoe Crab Survey
CIB12-015	CIB Speakers Bureau
CIB-12-016	Gardening for the Bays Native Plant Sale
CIB12-019	Inland Bays Nitrogen and Phosphorus Total Maximum Daily Load Modelling Assessment
CIB12-020	Eelgrass planting in Delaware Inland Bays
CIB12-023	Hazardous Debris Removal from Lewes/Rehoboth Canal
CIB13-001	Hopkins Dairy Farm Headwater Stream and Wetland Restoration-Phase 2
CIB13-003	James Farm Long Term Site Planning
CIB13-005	Demonstration and Training of Living Shoreline Techniques for Marine Contractors
CIB13-007	Inland Bays Migratory Fish Passage Restoration Feasibility and Planning Study
CIB13-008	Shoreline Monitoring and Assessment to aid in Restoration

Proposed

CIB14-001	Land Conservation Options and Considerations Workshop
CIB14-002	Shellfish Restoration Action Plan
CIB14-004	Angola Neck Reforestation Project
CIB14-005	Loop Canal Living Shoreline & Wetland Restoration Project
CIB14-007	Poplar Thicket Restoration Plan
CIB14-008	Poplar Thicket Upland Habitat Restoration Project
CIB14-011	Living Shoreline Restoration Permitting and Policy Development
CIB14-013	Upper Rehoboth Bay Land Conservation & Restoration Initiative
CIB14-014	Middle Island Restoration Project
CIB14-015	Your Creeks

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 2014 (October 1, 2013 through September 30, 2014). 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.

Fiscal Year 2013 Accomplishments Summary

Fiscal Year 2013 resulted in integrated successes for the CIB in implementing the Comprehensive Conservation and Management Plan (CCMP). The Center began this year by socializing the first ever Addendum to the CCMP to its stakeholders through presentation of its actions to CIB committees. After years of operating under an outdated management plan, the Center and its partners are now benefiting from a clear and actionable road map to estuary restoration.

RESEARCH & MONITORING

This fiscal year also continued the Center's core added-value of providing timely applied research to address important management questions about the estuary. The USEPA Regional Applied Research Grant (RARE) to determine **long-term trends in saltmarsh acreage and condition** demonstrated widespread changes in not only marsh acreage but condition. The significant GIS data gathering and processing exercise quantified recent and localized conversion of interior marshes to pooled open water habitats and quantified extensive barriers to marsh migration. Multi-directional condition changes were commonly detected. The research suggested that a legally protected signature ecosystem of the estuary is undergoing significant and variable-direction changes in condition over time, likely from multiple indirect stressors including sea level.

The **Inland Bays Hard Clam Density and Distribution Study** was completed demonstrating little change in the density of a critical resource since it was last studied in the 1970s and 80s. The data was immediately and successfully used to inform marine spatial planning for potential aquaculture leases.

The project entitled **Effects of Suburban Development on Shallow Groundwater Quality** was completed with the submission of a manuscript to the Journal of Environmental Quality. Findings show that shallow ground water nitrate concentrations were greatly lower in a suburban area (median 2.3 mg/l) versus nearby agricultural lands (median 16.9 mg/l). Localized sources of fertilizer input may continue to occur to shallow groundwater of suburban developments. These results will be used to continue to guide water quality actions towards the agricultural landscape where pollution loads are highest and may help to eventually update the IB watershed model.

A small scale study to determine if heavy metal concentrations in mussels and mummichogs were elevated adjacent to the **Burton Island Coal Ash Landfill** was completed. The draft results and reviewer comments, to be finalized in June, indicated that though concentrations for certain heavy metals were higher they were not over thresholds of concern for the organisms. The data will be submitted to help inform remedial and mitigation decisions for the Voluntary Cleanup Process and the Natural Resource Damage Assessment Process for the Landfill. This study was an excellent example of internal organizational cooperation between the staff and standing committees of the Board that was used to inform policy or regulatory action, a hallmark of the CIB.

A **shoreline condition survey** of the Rehoboth and Indian River Bays was initiated and a draft report prepared. This information will serve as the baseline for tracking condition and setting management goals for living shorelines. The first monitoring report for the Shorezone Fish Survey was produced. Monitoring reports for previous year's data collection on shorebirds, horseshoe crabs, and seaweed will be produced by the end of the fiscal year.

The **Seaweed Monitoring study** has produced produced another year of monitoring data for a key indicator of eutrophication and a final report will be completed by the end of the fiscal year. Initial results demonstrated that seaweed volumes remained low relative to the abundant conditions when monitoring began. This suggests that improvements in eutrophic conditions in portions of the Bays are being sustained over time.

The **Colonial Nesting Bird Survey**, a project to 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, concluded this year. In the last half of 2012, 4 successful Oystercatcher nests were observed and in the first half of 2013 4 pairs were exhibiting breeding behavior. Work related to this particular project is completed by CIB and will be continued by DNREC as part of the baseline monitoring for the Middle Island Restoration Project.

The feasibility study for the **Massey's Landing Dredge Spoil Project/Island Restoration Project** to restore upland and marsh portions of Middle Island in Indian River Bays through the beneficial reuse of dredged material was completed and used in to request project implementation funding from the Delaware legislature and the USACE.

PUBLIC POLICY

The Center also completed a major stakeholder based education and advisement process in its **Shellfish Aquaculture Initiative**. A community-based stakeholder team met over 20 times in a public forum to develop the educational, scientific, and policy groundwater necessary to allow for the habitat and water quality benefits of shellfish to be realized in the Inland Bays. The team and the board of directors unanimously approved the findings of the final report which was forwarded onto the Department of Natural Resources and the Department of Agriculture, the agencies that would be responsible for regulating a shellfish aquaculture industry in Delaware.

EDUCATION & OUTREACH

Education and Outreach programs continued this year at CIB with the completion of partnership initiatives such as the **Children in Nature Task Force**. Recommendations from the Children in Nature Task Force are being implemented to improve the environmental education curricula state-wide. Long standing programs **Rain Gardens for the Bays** and the **School Yard Habitat Program**, have largely completed their construction/implementation phases and now CIB will support these initiatives through educational assistance to schools and interested property owners. This year, CIB coordinated teachers and students from the G.W. Carver School to create a new Schoolyard Habitat Wetland at the Indian River School District's Ingram Pond Outdoor Education Center in Millsboro. A raingarden design and installation training for professional landscapers educated 10 participants this year.

RESTORATION & ENHANCEMENT

The major restoration and enhancement initiative completed this was the **beneficial reuse of dredged material** from Pepper Creek to increase the elevation of 25 acres of degrading saltmarshes. This successful partnership project between CIB and DNREC will be continued in the fall of this year. Successful demonstration now demands planning to integrate this practice into the regular sediment management actions in the Bays.

The **Delaware Envirothon** was included as a completed project this year although the CIB will continue its involvement in the future. The project CIB's plays a supportive role in this school aged environmental education competition that is does not warrant inclusion as an individual workplan item.

One hundred square feet of adult oysters were added as a **mini oyster reef demonstration project** in the salt pond, and monitoring results demonstrating fair survival of placed oysters indicated the potential for future ecosystem enhancement projects to the watershed's major coastal salt pond ecosystem. Future efforts may be included in the Inland Bays Shellfish Restoration Plan.

ADMINISTRATIVE

Administrative improvements this past year include the redevelopment and implementation of a staff performance evaluation process, initiation and planned completion of an update to the CCMP project implementation and tracking database, solicitation and selection of coastal restoration consultants for term service agreements, and the anticipated completion of a refinement of CIB's budget development process budget materials and their presentation.

Fiscal Year 2014 Workplan Summary

This year's workplan contains a planning component aimed at developing project concepts that can easily be submitted as grant proposals for funding. This strategy is intended to increase the number of implementation projects accomplished in the intermediate term through increased application for individual project grants and the potential availability of new implementation funds from the State's SRF based Water Quality Project Sponsorship Program. Planning for terrestrial protection and restoration projects as well as large-scale baygrass and shellfish restoration efforts will increase the likelihood of receiving larger implementation grants and increase partner participation in restoration projects.

Additional focus areas include living shorelines and the beneficial reuse of dredged material to enhance saltmarshes. Funding for Continued shoreline condition assessment will be pursued and living shoreline demonstration projects will be implemented under the Living Shoreline Initiative which began in March of this year. Living shoreline demonstration projects will improve shoreline habitat while educating shoreline contractors and permitting agencies about the installation and maintenance of these practices. The longer term objective is to provide a policy analysis for how shorelines could be better managed in the Inland Bays. Planning to implement and monitor beneficial reuse of dredged material will also be a priority focus. Two upland reforestation projects of agricultural fields on public lands will be initiated with significant reductions in nutrient loads from the converted agricultural fields which are in close proximity to the Bays. An outreach effort communicating the condition of the major tidal creeks will also be initiated. EPA funding this year is generally in support of administration and project manager salary for project oversight and pursuit of project implementation grants.

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COMPLETED PROJECTS

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Acreage 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 Chris Bason, CIB, (302) 226-8105
Bart Wilson, CIB
Marty Chintala, EPA, (401) 782-3090
Richard Field, UDCMES

Project Status: Completed

Work Pan ID : CIB09-002

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A,HP-D,HP-F,LU-B	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1E,G2,G2E,G2F,G3, G3B,G7,G7A,G7B,G7E,G9	Integrate projected sea level rise into shoreline planning and activities

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.

Research to Support CCMP Addendum Actions:
Managing Living Resources & Their Habitat. Objective 2. Action B.
Planning for Climate Change. Objective 1. Action D.

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 assurance 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. Arragned 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 analaysis and database development (Initiated: August 2010, Completed: MAY 2012)
3. Historical analysis of aerial photography (Target: August 2011, Completed MAY 2012)
4. Begin Analysis of process factors (Completed Decemeber 2012)
5. Complete factor and time series analyses (Completed November 2012)
6. Complete interview process (Completed December 2012)
7. Final Report (Target: May 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.

Project Progress

Progress To Date:

1. GIS deliverables sent to CIB for review (MAY 2013)
2. Final report in final internal review (JUN 2013)
3. Results of project to be presented at JUNE 2013 STAC meeting.
4. Final report completed by end of fiscal year.
5. Results used to inform additional Inland Bays marsh research proposals to UD Seagrant.
6. Press release and IB Journal Article produced on results for public education by end of fiscal year.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination : RFP

Amendment: ☐

Amendment Source:

CIB FUNDS: $3,860.00
OTHER FUNDS: $60,000.00
MATCHING FUNDS:
AMENDMENT FUNDS:
TOTAL: $63,860.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☐

Habitat Type :

Restoration type :

Acreage :

Partners :

QAPP ☑

Date Completed : 4/1/2010
Date Approved : 4/1/2010
Location : CENTER FOR THE INLAND BAYS

Completion Date:

Cost :

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *1000 Raingardens for the Inland Bays*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

Sally Boswell -- Project Manager
Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
(302) 226-8105
outreach@inlandbays.org

Project Status: Completed

Work Pan ID : CIB10-004

Project Description

Strategic Alignment:

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

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. Implementation for this successful public outreach program continued through 2013. Education, partner alignment, and promotion will continue as occasional efforts by CIB ongoing.

CCMP Addendum Actions:
Stormwater Management. Objective 1. Action B.
Water Quality Management. Objective 5. Action B.
Outreach & Education. Objective 2. Action C.

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. Raiin 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. Udate/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. Intiate a Corporate Lands RG focus in coordination w/partners working w/corporations (DNS, etc.)
5. Develop incentives: Intiate 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:

-Demonstration Rain Garden- Town of Fenwick Island. Design completed Installation completed May 2013. Interpretive sign installed
-Millsboro Civic Center Rain Garden Workshop and Demonstration Rain Garden-Secured partners; Town of Millsboro, DNREC, Sussex Conservation District and contractor, Envronmental Concern to plan a demonstration rain garden project and workshop at the Millsboro Civic Center to capture stormwater off the parking lot.. Design completed for three rain gardens in the islands around the parking lot.
Free rain garden workshop presented to interested residents with a planting of the rain gardens on the same day. Provided an interpretive sign for the project. Rain Garden booklets are provided for distribution at the Town Hall/Civic Center. Funding provided by EPA Region 3 Rain Gardens for the Bays initiative.
-Demonstration rain gardens are now completed throughout the Inland Bays watershed in Rehoboth Beach, Dagsboro, Bethany Beach, Clarksville, Millville, Fenwick Island and Millsboro and in Ocean View at Lord Baltimore Elementary School.

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 :

Restoration ☐ **Habitat Type :** **Restoration type :** **Acreage :** **Partners :** **Completion Date:** **Cost :**	**QAPP** ☐ **Date Completed :** **Date Approved :** **Location :**	

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Hard Clam Density and Distribution Survey*

Lead Contractor: DNREC - WAS

Responsible Partners, Contact Info, and

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: Completed

Work Pan ID : CIB10-005

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2B,G2E,G3,G3D	Enhance monitoring and response strategies

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.

Research to Support CCMP Addendum Actions:
Managing Living Resources and their Habitat. Objective 5. Action C.

Coordinating Land and Water Use Decisions. Objective 3. Action D.

Intended Results

1. Biomass and distribution survey of hard clam resource in the Inland Bays.
2. Ancillary information on other shellfish speices 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, Completed: October 2011)
4. Complete data analysis and preparation for Rehoboth Bay (Target: April, 2011, Extended: October, 2011, Completed: June 2012)
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; Completed NOV 2012).
7. Complete final report (Completed MAR 2013).

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 resoure.

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

1. Support increases in economic and ecological benefits of native shellfish populations through aquaculture.

Project Progress

Progress To Date:

1. Final report completed and submitted to CIB
2. Findings of study presented at MARCH 2013 STAC
3. Findings presented at Shellfish Aquaculture Tiger Team Meetings.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 :

Restoration ☐	**QAPP** ☑	
Habitat Type :	**Date Completed :** 3/1/2010	
Restoration type :	**Date Approved :** 3/1/2010	
Acreage :	**Location :** CIB	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

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

Lead Contractor: Delaware Center for the Inland Bays

Responsible Partners, Contact Info, and

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: Completed **Work Pan ID :** CIB11-007

Project Description

Strategic Alignment:

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

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.

CCMP Addendum Actions:
Managing Living Resources and their Habitat. Objective 2. Action B & D.

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.

Project Progress

Progress To Date:

1. Ad hoc working group met to evaluate Feasibility Study and made suggestions on potential revisions to the Study if funding was available.
2. Committee recommended that federal grant funding be solicited to implement the project.
3. CIB grant application for federal funding submitted.
4. Future activity reports for this project will be consolidated into the Middle Island / Massey's Landing Project report.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination : RFP

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

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 2013

Date : 08/12/2013

Project Report

Project Name: *Mini Oyster Demonstration Reef*

Lead Contractor: DE Center for the Inland Bays

Responsible Partners, Contact Info, and

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

Project Status: Completed

Work Pan ID : CIB11-010

Project Description

Strategic Alignment:

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

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

Overview:

This project will use spat on shell to grow oysters in a suitable location of the Salt Pond, a tidally influenced coastal pond, to further demonstrate how well different estuarine locations can support oyster growth. The project intends for an increase in natural oyster recruitment. A safe location will be determined that has acceptable water flow and quality and shell will be placed on bottom and later monitored for oyster survival.

CCMP Addendum Actions:
Managing Living Resources and their Habitat. Objective 5. Action B.

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 square feet of off bottom oyster reef with approx 15 bushels of oysters
2. Approx 100 square feet of aquatic habitat enhancement
3. Large, healthy oysters with the potential for natural recruitment
4. Final report documenting oyster growth and survival

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
Aug-2012- Document growth survival and mortality
Aug-2013- Document growth survival and mortality

Short-Term Outcomes

1. Increase aquatic habitat (oyster reef)
2. Public outreach and awareness

Intermediate Outcomes:

1. Increased understanding and a learning tool for resource managers involved in planning protection and restoration strategies.

Long-Term Outcomes

-Demonstrate that oysters can grow on reefs in diverse environments of the Inland Bays.
-Provision of oyster reef ecosystem services.

Project Progress

Progress To Date:

-Additional monitoring to take place to document growth, survival and mortality.
-Final report documenting oyster growth and survival on a planted reef after two growing seasons.

Additional Project Information

Project Financing

Funding Determination : Sole Source

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

Year Reported 2013

Date : 08/12/2013

Report Title:

Author :

Abstract :

Restoration ☑		**QAPP** ☐	
Habitat Type :	shellfish bed	**Date Completed :**	
Restoration type :	Establishment	**Date Approved :**	
Acreage :	1	**Location :**	
Partners :			
Completion Date:	09/30/2013		
Cost :	$0.00		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Seaweed Monitoring, Method Calibration, and Long Term Trend Analysis (2011 and 2013).*

Lead Contractor: DNREC -- Division of Water

Responsible Partners, Contact Info, and

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: Completed **Work Pan ID :** CIB11-015

Project Description

Strategic Alignment:

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

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

This is a joint research project between DNREC and CIB that 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 macroalage, are often an important and sometimes the dominant primary producers in the Inland Bays, yet the 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 curretnly 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.

NOTE: The method calibration and long term trends analysis were dropped because of the contractor's inability to complete these project tasks. Effort was reallocated to to complete an additional year of data collection for all established sites and new sites in Little Assawoman Bay in 2012.

Research and Monitoring Used to Support CCMP Addendum.

Intended Results

1. Seaweed monitoring data for 2011 & 2012
2. Statistical calibration of the dredge sled seaweed monitoring method results to the hook method results (RESULT DROPPED DUE TO INABILITY OF CONTRACTOR TO PERFORM).
3. Long term trend analysis of macroalgae biomass and composition (RESULT DROPPED DUE TO INABILITY OF CONTRACTOR TO COLLECT NECESSARY DATA).
4. Final report and peer reviewed journal article publication.

Outputs/Deliverables:

1. Final report.
2. Presentation to STAC.

Milestones:

1. Hire seasonal research assistant. INITIATED: JAN 2011. TARGET: APR 2011. COMPLETED: MAR 2011.
2. Complete sampling and method calibration. TARGET: NOV 2011. DROPPED.
3. Analyze data and produce final report. TARGET: DEC 2012. Expected Sept 2013
4. Complete manuscript for journal submission and present data at STAC: JUN 2013 (presented to STAC). Journal submission expected Fall 2013.

Short-Term Outcomes

1. Understading 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

Project Progress

Progress To Date:

1. Due to partner staff health issues of contractor, final report still to be completed. This will be completed by the end of FY2013 along with data delivery.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 :

Restoration ☐	**QAPP** ☑	
Habitat Type :	**Date Completed :** 3/1/2009	
Restoration type :	**Date Approved :** 3/1/2009	
Acreage :	**Location :** CIB	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

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

Lead Contractor: USGS

Responsible Partners, Contact Info, and

Judy Denver -- USGS Principal Investigator
USGS
1289 McD Drive
Dover, Delaware 19901
(302) 734-2506 x229
jmdenver@usgs.gov

Joanna York -- UD CEOE Principal Investigator
University of Delaware College of Earth Ocean and Environment
005 Robinson Hall
Newark, DE
1-302-831-7040
jyork@Udel.Edu

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: Completed **Work Pan ID :** CIB11-016

Project Description

Strategic Alignment:

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

CWA Program Implementation: Controlling Nonpoint Source Pollution on a Watershed Basis, Developing Total

Maximum Daily Loads

Overview:

This joint USGS-DNREC-UDCEOE 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 helpt to improve loading models and pollutant reduction management stragies. 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 septics, 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.

Research and Monitoring to Support CCMP Addendum Actions:
Nutrient Management. Objective 1. Action E.
Water Qaulity Management. Objective 1. Action B.

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.

Outputs/Deliverables:

1. Final project report.
2. Published peer reivewed journal article.

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. COMPLETED: JULY 2011.
4. Complete Report. TARGET: JANUARY 2012. COMPLETED: MAR 2012.
5. Published Peer Reviewed Journal Article. TARGET: JAN 2013, EXTENDED: OCT 2013.

Short-Term Outcomes

1. Improved qunatification of the variation within suburban development's effect on shallow groundwater quailty 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.

Year Reported 2013

Date : 08/12/2013

Project Progress

Progress To Date:

1. Final report will be in the form of an accepted and published manuscript in a peer reviewed journal. Manuscript submitted to Journal of Environmental Quality in Spring of 2013 also submitted to CIB.
2. Findings show that shallow ground water nitrate concentrations were greatly lower in a suburban area (median 2.3 mg/l) versus nearby agricultural lands (median 16.9 mg/l). Localized sources of fertilizer input may continue to occur to shallow groundwater of suburban developments.

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☐

Amendment Source:

CIB FUNDS: $17,000.00

OTHER FUNDS:

MATCHING FUNDS: $110,000.00

AMENDMENT FUNDS:

TOTAL: $127,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : Rehoboth Bay, Rehoboth Bay WS

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☐

Habitat Type :

Restoration type :

Acreage :

Partners :

Completion Date:

Cost :

QAPP ☑

Date Completed : 4/25/2011

Date Approved : 4/25/2011

Location : CIB

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Delaware Envirothon*

Lead Contractor: DNREC

Responsible Partners, Contact Info, and

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: Completed **Work Pan ID :** CIB12-003

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2A,G9,G9D,G9F	Provlde educatlon programs statewlde

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

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.

THIS PROJECT WILL CONTINUE BUT THE AMOUNT OF STAFF TIME AND FUNDS SPENT ON THE PROJECT DO NOT WARRANT ITS REPORT IN THE ANNUAL WORKPLAN. THIS WILL BE THE LAST WORKLAN THAT REPORTS THE ENVIROTHON.

CCMP Addendum Actions:
Outreach & Education. Objective 2. Action A.

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 natural resources
-Organize a one day competion 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 winnig team to the National Competition to compete for first place

Short-Term Outcomes

-Get High School students and their teachers interested in learning about Delaware's ecosystems.
-Bring resource agencies together to disucuss 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.

Long-Term Outcomes

Increased public education about the environment.

Project Progress

Progress To Date:

-Competition was held on April 25 2013.
-This years topic was Pastureland Management.
-It was the 18th annual Envirothon with 20 teams registered from 10 schools.

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☐

Amendment Source:

CIB FUNDS: $500.00
OTHER FUNDS:
MATCHING FUNDS: $30,000.00
AMENDMENT FUNDS:
TOTAL: $30,500.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

Project Leveraging Role

Support

Report Information

Report Title:

Author :

Abstract :

Restoration ☐ **Habitat Type :** **Restoration type :** **Acreage :** **Partners :** **Completion Date:** **Cost :**	**QAPP** ☐ **Date Completed :** **Date Approved :** **Location :**	

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Colonial Nesting Bird Survey*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

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: Completed

Work Pan ID : CIB12-007

Project Description

Strategic Alignment:

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

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.

CIB staff work and funding related to this particular project is complete and will be continued as partner support for the baseline monitoring for the Middle Island/Massey's Ditch Project.

Research and Monitoring to Support CCMP Addendum Actions:
Managing Living Resources & their Habitat. Objective 2. Action D.

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:

QTR 3&4 OF 2012
Identified 6 American Oystercatcher nesting sites at 3 locations.
4 of the 6 nests survived predation or abandonment to produce chicks.
2 of the 5 total chicks banded.
Scouted a Tern colony south of the Indian River Inlet.
Plan to scout additional Tern and Gull nesting sites prior to the end of the season.
QTR 1&2 OF 2013
2013 Annual Survey initiated.
4 pairs of Oystercatchers identified as exhibiting nesting behavior.
1 active nest found to date.
Work related to this particular project is complete and will be continued as part of the baseline monitoring for the Middle Island/Massey's Ditch Project.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Inland Bays Island Restoration*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

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: Completed

Work Pan ID : CIB12-008

Project Description

Strategic Alignment:

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

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:

1. Feasibility Study completed and distributed to workgroup members for review.
2. Workgroup met to discuss Study and recommended revisions if funding was still available to accommodate the changes.
3. Workgroup agreed to pursue Federal grant funding to implement the project.
4. Grant request for project implementation funding submitted to the Estuary Habitat Restoration Council.

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 :

Restoration ☐ **Habitat Type :** **Restoration type :** **Acreage :** **Partners :** **Completion Date:** **Cost :**	**QAPP** ☐ **Date Completed :** **Date Approved :** **Location :**	

Year Reported 2013

Date : 08/12/2013

Project Report

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

Lead Contractor: DNREC

Responsible Partners, Contact Info, and Sally Boswell - CIB

Project Status: Completed **Work Pan ID :** CIB12-014

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G9,G9D,G9E	Provlde educatlon programs statewlde

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.

CCMP Addendum Actions:
Outreach & Education. Objective 2. Action A.

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 reward schools for their participation in a "Greener Schools for Delaware" program.

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 administators are informed about resources available to them for 'greener schools'

Intermediate Outcomes:

1. A Greener School program is sanctioned by the Governer 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:

Year Reported 2013

Date : 08/12/2013

-The Task Force Report was accepted by the Secretary of DNREC and Secretary of Education and was presented to the Governor with "Greener Schools for Delaware" a major goal within the report.
-Delaware participated in the first year of the U.S. Department of Education's Green Ribbon School program.
-The Task Force has completed its work and will now provide leadership to a statewide coalition to implement the recommendations in the report

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Burton's Island Toxic Bioaccumulation Study*

Lead Contractor: Smithsonian Environmental Research Center

Responsible Partners, Contact Info, and

Dr. Gerhardt Riedel/ SeniorScientist
Smithsonian Environmental
Research Center
PO Box 28
Edgewater, Maryland 21037
Phone: 443-482-2499
Fax: 443-482-2380
Email:riedelf@si.edu

Bart Wilson, CIB Project Manager

Project Status: Completed

Work Pan ID : CIB12-018

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2C,G8,G8A	G2C

CWA Program Implementation: Improving Water Quality Monitoring, Strengthening National Pollutant Discharge Elimination System Permits

Overview:

Burtons Island on Indian River was used as a coal ash disposal site for the Indian River Generating Station from the 1950 to the 1980s. The State of Delaware Department of Natural Resources and Environmental Control has entered into a Voluntary Cleanup Agreement with the owner of the landfill, NRG Inc. Existing studies have identified high levels of heavy metals in sediments and groundwaters in and around the landfill. Studies have not determined the levels of the metals in the fish and shellfish on and around the island. This project seeks to explore if fish and shellfish on and around the landfill have elevated levels of contaminants. The information will be submitted to the Department as to be used to determine appropriate remediation efforts under the Voluntary Cleanup Program and to determine natural resource damages and their mitigation under the Natural Resources Damage Assessment process for the facility. This project was identified as a high priority by the Center's Strategic Planning Committee.

The Center will sample five sites in the Indian River in the area that has been affected by erosion from Burton's Island, and up to five sites with similar marsh habitat in the Indian River Estuary remote from the Burton's Island site and likely to be unaffected by the ash. Sampling is planned to collect composite samples (5 to 10 individuals per sample) of two organisms, the Ribbed Mussel, Geukensia demissa and Mummichog, Fundulus heteroclitus at each site, as well as a sample of the sediment at each site. At each site, a sample of surface sediment (0-2 cm deep) will be collected as well.

CCMP Addendum Actions:
Water Quality Management. Objective 4. Action A.

Intended Results

1. Determination of contamination in fish and shellfish on and around Burton's Island.
2. Submittal of information to DNREC and Resource Trustees for use in the Island's Remedial Investigation and Natural Resources Damage Assessment Process.

Outputs/Deliverables:

1. Final Report
2. Presentation to Inland Bays Scientific & Technical Advisory Committee

Milestones:

1. Scope of Work completed. TARGET: MAY 2012. COMPLETED: MAY 2012.
2. QAPP completed. TARGET: JUNE 2012. EXTENDED: JULY 2012.
3. Sampling permission obtained. TARGET: JUNE 2012.
4. Sampling completed. TARGET: AUG 2012:COMPLETED Oct 2012
5. Laboratory analysis completed. TARGET: NOV 2012.COMPLETED Mar 2013
6. Final report issued and presentation to Scientific & Technical Advisory Committee. TARGET: FEB 2013

Short-Term Outcomes

1. Improved data set for toxics in aquatic organisms around and near an industrial site

Intermediate Outcomes:

1. Enhanced understanding of water quality conditions and organismal bioaccumulation around and near an industrial site.
2. Increased interest in research activities on a contaminated site affected by sea level rise.

Long-Term Outcomes

Information for resource managers to use in the determination of remedial alternatives and actions for hazardous substances and Natural Resources Damagae Assessment and Mitigation.

Project Progress

Progress To Date:

1. Sample analysis completed by Smithsonian
2. Analytical results QA/QC'ed by Smithsonian Lab
3. Draft report of findings completed
4. Draft report Sent to technical experts for peer review
5. Peer review and CIB CAC review ongoing.
6. Final report release, presentation, and submission to DNREC for inclusion deliberations for remedial and mitigatory actions for the Voluntary Cleanup Process and Natural Resources Damage Assessment for the Island to occur in

JUN 2013.

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Inland Bays Shellfish Aquaculture Initiative*

Lead Contractor: Delaware Center for the Inland Bays

Responsible Partners, Contact Info, and

E.J. Chalabala -- Restoration Coordinator
Center for the Inland Bays
39375 Inlet Road
302-226-8105
restoration@inlandbays.org

Project Status: Completed

Work Pan ID : CIB12-022

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G3,G3C,G3E,G9,G9B	

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

Overview:

Delaware is the only coastal state with no commercial shellfish aquaculture. The Center for the Inland Bays in conjunction with a broad range of stakeholder interests and government agencies convened a tiger team to provide the scientific, educational, and policy groundwork to advise on how shellfish aquaculture might best occur in the Inland Bays to realize its myriad habitat and water quality benefits to the estuary. The Team met 22 times with an additional 5 special meetings and produced a final report detailing its findings which included the results of a marine spatial planning exercise. A white paper on the status of shellfish growth and aqucultural opportunities was produced as well.

CCMP Addendum Actions:
Managing Living Resources & their Habitat. Objective 5. Action C.

Intended Results

1. Summary of the scientific, educational, and policy groundwork necessary to allow for a shellfish aquaculture to occur in the Inland Bays as produced by a community stakeholder group.

2. Public education about the benefits of shellfish aquaculture to the estuary.

Outputs/Deliverables:

1. Public stakeholder meetings.
2. Final report of findings.
3. Literature review of disease and genetic considerations.
4. Educational materials.
5. White paper summarizing shellfish growth opportunities and constraints.

Milestones:

Short-Term Outcomes

1. Stakeholder process.
2. Increase in understanding of the water uses and potential resource conflicts in the Inland Bays.
3. Increase in understanding of the benfits of shellfish aquaculture.

Intermediate Outcomes:

NA

Long-Term Outcomes

1. Potential water quality and habitat benefits from additional shellfish resources.

Project Progress

Progress To Date:

1. Tiger Team and subcommittees met over 20 times from March 2012 to March 2013
2. "Final Report of the Shellfish Aquaculture Tiger Team" was unanimously approved by both the Tiger Team and the CIB Board of Directors.
3. Information on the initiative was dissemenated and public input was received throughout this process.
4. Literature review on disease transfer and genetic drift concerns from aquaculture to wild shellfish populationis produced.

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

Report Information

Year Reported 2013

Date : 08/12/2013

Report Title:

Author :

Abstract :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Rain Garden Training for Professional Landscapers*

Lead Contractor: Sally Boswell, Project Lead

Responsible Partners, Contact Info, and
Sally Boswell, Project Manager
Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
Ed Lewandowski
DE Sea Grant
Lara Allison
DNREC

Project Status: Completed **Work Pan ID :** CIB13-002

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1C,G9,G9C,G9D	Develop and implement a comprehensive stormwater management program

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

Overview:

Through our 1000 Rain Gardens for the Inland Bays program we have raised awareness about using rain gardens for stormwater management and have created a need for expertise in our watershed for individuals and companies that are trained to design and install rain gardens. We propose to develop and market a workshop to train landscape professionals and interested HOA leaders and town officials in south coastal Delaware to design and install rain gardens.

CCMP Addendum Actions:
Education & Outreach. Objective 2. Action B.
Stormwater Managemetn. Objective 1. Action B.

Intended Results

1. To create awareness of rain gardens as an effective and attractive practice for stormwater management.
2. To increase the number of landscape professionals who possess the knowledge and expertise to design, install and maintain rain gardens.
3. To build capacity of achieving 1000 Rain Gardens for the Inland Bays by expanding the number of contractors available to provide these services to homeowners, HOA's, businesses and towns.

Outputs/Deliverables:

1. Increase the number of landscape professionals who are knowledgeable and qualifed to design, install and maintain rain gardens to meet the growing demand for these services.
2. Create of list of landscape professionals that can be provided to homeowners, HOA's, businesses and other stakeholders who would like to install a rain garden.
3. Raise the level of awareness and knowledge among landscape professionals regarding 'bay friendly' landscape practices.

Milestones:

1. Seek additional partner(s)
2. Identify partner that can provide training and certification
3. Plan logistics of workshop
4. Identify potential attendees
5. Market the workshop
6. Conduct the workshop-Completion-Feb 2013
7. Compile a list of professionals who successfully complete the workshop that can be provided to communities and homeowners-Completion-March 2013

Short-Term Outcomes

Participants completing the workshop will be able to add rain garden installation services to the slate of products and services they presently offer, expanding their potential market and adding a service that will contribute to improved water quality in the Inland Bays.

Intermediate Outcomes:

An increase the number of landscape professionals [who are key influencers in our towns and communities in landscape planning, design and maintenance of open space] about landscape practices that mitigate stormwater pollution.

Long-Term Outcomes

Towns and communities in the watershed and the landscape companies that service them will be familiar with rain gardens as a stormwater practice that can improve water quality in the Inland Bays.

Project Progress

Progress To Date:

-Partners were identifed and a planning committee formed; Delaware Sea Grant, the Delaware Department of Natural Resources and Environmental Control, Delaware Nursery and Landscape Association
-Identified a community in the watershed interested in using rain gardens as one method of managing stormwater in their community and partnered with them to hold the workshop at their site.
-Contracted with Rutgers University Water Resources Program, to present the workshop
-Content was developed which included Rain Garden Site Selection, Rain Garden Installation and Maintenance, native plant selection, Importance of Soil in Rain Gardens, a Rain Garden Design Exercise, and Hands-on Rain Garden Installation
-Worked with the Delaware Nursery and Landscape Association to publicize the workshop through their membership
-Developed and distributed a brochure and save-the-date flyer

Held the workshop at
-Ten participants registered and attended the full day workshop-Initiated a partnership with the Delaware Technical Community College, Sustainable Landscaping Program to begin work on the developoment of a Rain Garden certification program for the state of Delaware.

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Beneficial Reuse of Dredge Material for Wetland Restoration (Demonstration Project)*

Lead Contractor: Watershed Assessment (DNREC)

Responsible Partners, Contact Info, and Bartholomew Wilson- Science Coordinator
Center for the Inland Bays

Project Status: Completed

Work Pan ID : CIB13-009

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
HP-E	Expand public land acquisition, protection, and access
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G3,G3B,G5,G5C,G6,G 6G	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

In an effort to utilize dredge material to aid in the restoration of tidal wetlands, the Fringe Wetland Restoration workgroup for the Inland Bays is currently in the process of finalizing a demonstration/ feasibility project to utilize dredge material from Pepper Creek to restore 25 acres of wetland. This workgroup is a cooperative effort consisting of representatives from DNREC's Shoreline and Waterway, Watershed Assessment, Wetland and Subaqueous Sections, and the Division of Fish and Wildlife, and the Center for the Inland Bays.

The navigational channel of Pepper Creek will be dredged in the Fall and Winter of 2012 to allow better access for boating traffic, and normally this silty material would be placed in a upland confined disposal facility. Current research has shown that removal of dredge material could result in a long-term deficient in the amount of sediment that is available to allow marshes to build and keep pace with rising sea-levels.

The fringe wetland workgroup is working to utilize dredge material for navigational dredging to restore tidal wetlands, with the first project to restore 25 acres of tidal wetlands adjacent to the Vines Creek Marina. 1 to 4 inches of sediments will be sprayed, through a high pressure nozzle, over the 25 acres. The project is expected to start in late October. The permit for this project is currently still in review with DNREC and the Army Corp of Engineers.

The lessons learned and experiences from this project will be used to plan and implement beneficial reuse projects on future DNREC navigational dredging projects.

Updated CCMP References:

Managing Living Habitat Resources and their Habitat
Objective 2. Halt the continued loss of wetlands and reverse these loss trends by promoting projects to mitigate for previously lost wetlands.
B. Identify candidate sites for the creation and restoration of wetlands
D. Protect and enhance/restore additionalwetland acreage.

Intended Results

1. To demonstrate that fine grained dredge material can be utilized in wetland restoration.
2. Evaluate techniques that could be utilizing to reduce loss of sediment off of marsh platform during restoration.
3. Enhance/Restore 25 acres of degrading saltmarsh with material dredged from navigational channel needing maintenance.

Outputs/Deliverables:

1. 25 acres of enhanced/restored saltmarsh.
2. Press release and Inland Bays Journal Article on project outcome.
3. Presentation of findings at technical conference.

Milestones:

Short-Term Outcomes

1. Increased understanding by the public and technical community of the technique of beneficial reuse of dredged material for marsh restoration/enhancement.
2. Capacity of dredge crews and natural resource technicians to operate thin layer application equipment during dredging.

Intermediate Outcomes:

1. Increased utilization of dredged material for marsh restoration
2. Increased capacity of 25 acres of marsh to keep pace with rising sea level.

Long-Term Outcomes

1. Institutionalized incorporation of dredged material for marsh restoration in the navigational and sediment management of the estuary.
2. Maintenance of full suite of marsh services for an undetermined number of years to due application of dredged sediments.
3. Reduction in overall costs for sediment management should through preservation of marsh ecosystem service value, reduction of costs associated with land-based disposal should the practice be instutionalized.

Project Progress

Progress To Date:

1. Workgroup selected marsh restoration site.
2. Pre project monitoring conducted.
3. Permits obtained.
4. Equipment purchased and installed.
5. Application of material completed.

6. Project tours with DNREC leadership completed.
7. Presented preliminary findings at AERS confernace (Poster)
8. Collected first set of post-restoration RTK surveys and cryogenic marsh cores.
9. Conducted Port-restoration update meeting with Fringe Wetland Workgroup
   - Discussed project scope, outcomes, and next steps for fall restoration
10. Had meeting with Ariane Nichols to discuss permitting issues related to Fall/Winter 2013 benefical reuse
11. Published article in Inland Bays Journal.

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☐

Amendment Source:

CIB FUNDS: $0.00
OTHER FUNDS: $10,000.00
MATCHING FUNDS: $0.00
AMENDMENT FUNDS:
TOTAL: $10,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : Indian River Bay, Little Assawoman Bay, Rehoboth Bay

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 :		

ON-GOING PROJECTS

Year Reported 2013

Date : 08/12/2013

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 Bart Wilson -- CIB: Project Coordination, Data Collection, Data Analysis and Reporting, Monitoring Setup
Chris Bason, CIB, Project Oversight and Asssistance.
Andy Howard -- DNREC, WAS, WMAP: Project Coordination

Project Status: On-going **Work Pan ID :** CIB09-004

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2E,G3,G7,G7B,G7E, G9	Enhance monitoring and response strategies

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.

Research to Support CCMP Addendum Actions:
Planning for Climate Change. Objective 1. Action D.

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-metero 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.)
6. Second data report (Target: May 2014)

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. SET Elevation readings taking place for all three SET areas during May and June 2013
2. Located Cyrogenic coring device and had liquid nitrogen tank delivered.
3. Cryogenic corer used to collect fledspar accretion samples.
4. Continuous water level data collection ongoing.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 : Indian River Bay, Rehoboth Bay

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title: NA

Author : NA

Abstract : NA

Restoration ☐

Habitat Type :

Restoration type :

Acreage :

Partners :

Completion Date:

Cost :

QAPP ☑

Date Completed : 12/1/2008
Date Approved : 12/1/2008
Location : Center for the Inland Bays

Year Reported 2013

Date : 08/12/2013

Project Report

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

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
(302) 226-8105

Chris Bason
Executive Director
chrisbason@inlandbays.org

Project Status: On-going

Work Pan ID : CIB11-001

Project Description

Strategic Alignment:

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

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 funds and in-kind effort to match or otherwise support the Section 320 grant and CIB Work Plan

Task 2: Pepare 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 (two times per annum), 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 implementation of Inland Bays Pollution Control Strategy in cooperation with the Delaware Department of Natural Resources & Environmental Control.

Task 11: Continue management and operation of 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 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: Secure state funding and other funds and in-kind effort to match or otherwise support the Section 320 grant and CIB Work Plan ($209,200 in State of DE funds, $10,000 in County funds, $215,060 from multiple project grant awards in 2013).

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

Task 3: Hiire and/or retain appropriate support staff as needed (on-going). Produced and implemented staff performance evaluation system in 2013.

Task 4: Monitor budgetary and financial reconciling procedures; secure annual A-133 audit; report results to EPA 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 (two times per annum- sprin/summer and fall/winter), to public and private groups/individuals, state, county, and local governments. (Published special document on shellfish aquacutlure.)

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). (Redevelopment of CCMP project tracking database initiatied and planned for completion by end of 2103.)

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 implementation of Inland Bays Pollution Control Strategy in cooperation with the Delaware Department of Natural Resources & Environmental Control.

Task 11: Continue management and operation of the James Farm Ecological Preserve as well as other public and private sites. (Completed major maintenance effort at the Farm and secured additional funding for maintainance and planning in 2013. Replaced super storm Sandy damaged boardwalks.)

Task 12: Serve on state-wide and regional committees and task-forces to promote sound environmental policies based on best available science. (Completed service to the Delaware Sea Level Rise Advisory Committee in 2013.)

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. Reinitiated annual legislators breakfast to inform policy makers about key Inland Bays issues.

Task 16: Organize and host special events, such as, 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.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination : Sole Source

Amendment: ☐

Amendment Source:

CIB FUNDS: $500,833.00
OTHER FUNDS: $180,172.00
MATCHING FUNDS: $0.00
AMENDMENT FUNDS:
TOTAL: $681,005.00

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 :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Eelgrass Habitat Suitability Mapping Project*

Lead Contractor:

Responsible Partners, Contact Info, and Bart Wilson, CIB -- Project Coordinator

Project Status: On-going **Work Pan ID :** CIB11-003

Project Description

Strategic Alignment:

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

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 qaulity 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 likley 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 affects 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 a 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.

CCMP Addendum Actions:
Managing Living Resources and their Habitat. Objective 1. Action B & C.

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.

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,ONGOING).
5. Begin map construction (Target: April 2011,ONGOING).
6. Complete sediment type mapping (Target: October 2011 potentially Summer 2013).
7. Complete final maps and reports (Target: January 2013, Extended:NOV 2013)
8. Complete environmental indicator (Target: January 2013, Extended: JAN 2014)

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 sensitivty 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.

Year Reported 2013

Date : 08/12/2013

Project Progress

Progress To Date:

1. Meeting held with DNREC partners to identify and assess existing data and knowledge base of criteria used to identify restoration locations.
2. Meeting held with consultant to prioritize data acquisition needs.
3. Light and Temperature penetration sensors purchased.
4. Conference call conducted with eelgrass restoration experts in NJ to discuss methods of data acquisition and suitability model parameters.
5. Critical sediment data layer obtained in 2012.

Additional Project Information

Project Financing

Funding Determination : RFP

Amendment: ☐

Amendment Source:

CIB FUNDS: $0.00
OTHER FUNDS: $550.00
MATCHING FUNDS:
AMENDMENT FUNDS:
TOTAL: $550.00

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Project Report

Project Name: *Bethany Beach Nature Center*

Lead Contractor: CIB

Responsible Partners, Contact Info, and

Sally Boswell, Project Manager
Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971

Cliff Graviet & 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 :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2A,G9,G9C,G9F	Promote education of out-of-state users and visitors

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 assitance 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.

CCMP Addendum Actions:
Outreach & Education. Objective 2. Action A2.

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.

Project Progress

Progress To Date:

-Bethany Beach Nature Center continues to be a successful outreach location for reaching children and families in the the resort area of our watershed. Our outreach matierals are distributed to visitors and over 2,000 children and their family members visited or participated in programs at the BBNC in 2012.
-Attendance averages 25-30 for Sat morning children's program
-6-9 children regularly attend the Friday afternoon Bethany Beach Nature Club. They have Adopted-a-Wetland at the BBNC and conduct water testing monthly as well at trail maintenance.
-Continues to serve visitors to the demonstration rain garden that is onsite distributing our brochure on how to create your own rain garden.
-Participated in the 2nd Annual Earth Day Festival at BBNC with our Eco-House Interactive exhibit that allows visitors

to learn about all the ways they can improve water quality at their house and in their yard and garden.

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☑

Amendment Source: CE993990-

CIB FUNDS:

OTHER FUNDS: $3,400.00

MATCHING FUNDS: $0.00

AMENDMENT FUNDS: $3,600.00

TOTAL: $7,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays, All Watersheds

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

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

Lead Contractor: Sally Boswell, Project Coordinator

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

Project Status: On-going **Work Pan ID :** CIB11-012

Project Description

Strategic Alignment:

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

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. Beginning in 2014, CIB will construct one final school yard habitat and maintain educational program support at schools with habitats as funding allows.

Year Reported 2013

Date : 08/12/2013

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.

Project Progress

Progress To Date:

- The entire student body, volunteers and school officials attended the Dedication of the John C. Clayton Elementary Schoolyard Habitat to celebrate the work of over 1000 students and CIB volunteers who participated in planning, site preparation, planting, clean-up of the new Schoolyard Habitat.
-Worked with the teachers and students from the G.W. Carver School to create a new Schoolyard Habitat Wetland at the Indian River School District's Ingram Pond Outdoor Education Center in Millsboro
- Water Quality Testing conducted in the fall with students at Eagle's Nest Christian Academy and Indian River High School. We instructed students in water quality testing at Millsboro MS, Indian River HS, Sussex Central HS, and Southern DE School of the Arts at their schoolyard habitats this spring.
-After a 2 year dela due to town untility work on their campus, the Millsboro MS Schoolyard Habitat will be completed in schoolyear 2014.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination : Sole Source

Amendment: ☑

Amendment Source: CE993990-

CIB FUNDS: $20,000.00

OTHER FUNDS: $0.00

MATCHING FUNDS: $0.00

AMENDMENT FUNDS: $3,000.00

TOTAL: $23,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

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 :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Shorezone Fish Community Volunteer Monitoring Program*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

Bart Wilson -- CIB Project Lead
Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
302 226-8105
chrisbason@inlandbays.org

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:

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

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.

CCMP Addendum Actions:
Outreach & Education. Objective 4. Action B.
Outreach & Education. Objective 5. Action A.

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. COMPLETED DEC 2012

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.

Project Progress

Progress To Date:

1. Report on 2011 findings finalized.
2. Advisory committee meeting scheduled and held to discuss Final 2011 report, 2012 preliminary trends, potential changes in the reporting for 2012 findings, and work plan for 2013 field season.
3. Introductory Fish Survey meeting held at CIB office to introduce new volunteers to the process of seine surveying and the identification of fish species.
4. Supplies needed for 2013 surveying purchased.
5. Sampling underway for 2013.

Year Reported 2013

Date : 08/12/2013

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☐

Amendment Source:

CIB FUNDS: $12,000.00
OTHER FUNDS: $0.00
MATCHING FUNDS: $0.00
AMENDMENT FUNDS:
TOTAL: $12,000.00

Project Location

Municipality : Bethany Beach, South Bethany Beach

Watershed/Waterbody : All Bays

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☐	**QAPP** ☑	
Habitat Type :	**Date Completed :** 3/1/2011	
Restoration type :	**Date Approved :** 3/1/2011	
Acreage :	**Location :** CIB	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Inland Bays Clean Up*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and 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:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A,HP-C	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2C,G4,G4D,G6,G8,G 8C,G9,G9F	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

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

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.

CCMP Addendum Action:
Outreach & Education. Objective 1 and 4. General.

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 is such a positive event that yields significant results.

Project Progress

Progress To Date:

- Inland Bays Clean Up scheduled for June 8 2013 at Massey's Landing.
- Inland Bays Clean Up scheduled for June 22 2013 at Little Assawoman Wildlife Area.

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☑

Amendment Source: CE993990-

CIB FUNDS: $1,000.00
OTHER FUNDS: $1,000.00
MATCHING FUNDS: $0.00
AMENDMENT FUNDS: $1,000.00
TOTAL: $3,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

Project Leveraging Role

Primary

Year Reported 2013

Date : 08/12/2013

Report Information

Report Title:

Author :

Abstract :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Oyster Gardening Program*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

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:

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

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

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.

CCMP Addendum Action:
Managing Living Resources & their Habitat. Obejctive 5. Action B.

Intended Results

1. Demonstrate oyster growth in different locations around the 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 an average of 250 bags of spat every other year
-Have identified locations where natural spat set has occurred from oyster gardener oysters
-Numerous thesis projects have been published
-49 species of fish and invertebrates has been documented living in the gear
-Specific restoration sites identified and planted with program oysters
-Survival and growth documented from year to year from particular gardens and resoration sites

Milestones:

Short-Term Outcomes

- Increased public understanding about oyster resources of the Inland Bays and the need for their restoration.
-Create habitat for fish and invertebrates

Intermediate Outcomes:

Production of oysters for restoration purposes.
-Making new partnerships with numerous organizations

Year Reported 2013

Date : 08/12/2013

Long-Term Outcomes

Restoring native oysters to our Inland Bays
Increasing general partnerships between participating organizations and the CIB.
Improving the quality of our waters through the filtering effect of these oysters

Project Progress

Progress To Date:

-New online database created to track information and volunteer hours
-repleaced much gear due to Super Storm Sandy
-on schedule to produce oyster spat in June-July
-provide all gardeners with new baby oysters
-120 gardening locations
-oysters have been provided to look for harmful algae blooms
-Finish and review ongoing growth and survival thesis project involving Delaware State student
-Plant approximately 60 bushels of oysters at sites around the bays.

Additional Project Information

Project Financing

Funding Determination :

Amendment: ☐

Amendment Source:

CIB FUNDS:	$10,000.00
OTHER FUNDS:	
MATCHING FUNDS:	$20,000.00
AMENDMENT FUNDS:	
TOTAL:	$30,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☐ **Habitat Type :** **Restoration type :** **Acreage :** **Partners :** **Completion Date:** **Cost :**	**QAPP** ☐ **Date Completed :** **Date Approved :** **Location :**	

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Volunteers for the Bays*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and Sally Boswell
CIB
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outreach@inlandbays.org
Project Director

Project Status: On-going

Work Pan ID : CIB12-012

Project Description

Strategic Alignment:

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

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

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 it 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 citizens scientists and outreach ambassadors.

Project Progress

Progress To Date:

Year Reported 2013

Date : 08/12/2013

-Our Citizen Science Survey projects continue to provide CIB volunteers the opportunity to contribute to research and advance their learning and understandng of the Bay system. The Inland Bays Inshore Fish Survey, led and conducted by volunteers began its second year in Spring 2013. About 45 volunteers participate in the survey; seven as site leaders and one as project leader. The Inland Bays Horseshoe Crab Survey is in its 6th year with a volunteer project leader and 6 site leaders leading over 50 volunteers.
- 55 volunteers assisted with community outreach events, rain garden plantings, schoolyard habitats activities, train maintenance, Inland Bays Clean Ups, delivery of outreach materials, and setting up library exhibits.
-24 volunteers participated on our Citizen's Advisory Committee, providing stakeholder and community input to the Board of Directors, assisting with the Speakers Bureau and informing the public on watershed issues at presentations offered at their regular meetings.
-20 community volunteers paricipate in our Water Use Planning and Implementation Committee assisting on projects and providing input to the Board.

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Annual Inland Bays Horseshoe Crab Survey*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

Sally Boswell
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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 :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2E,G9,G9C	Enhance monitoring and response strategies

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 Horseshow 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.

CCMP Addendum Actions:
Education & Outreach. Objective 4. Action B.

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

Project Progress

Progress To Date:

-45 volunteers attended the 2013 Inland Bays Horseshoe Crab Survey Planning meeting in April.
-We provided opportunities for teachers and professors to bring students to our sites to observe and participate in the Survey.
-We expanded our participation in the U.S. Fish and Wildlife Horseshoe Crab Tagging Program to collect data on horseshoe crab populations and to monitor their movement and range through recovery of tagged Horseshoe Crabs. This year we are tagging 1,000 horseshoe crabs at six locations around the Bays: Tower Road on Rehoboth Bay, James Farm Ecological Preserve, Bay Colony, the Peninsula, and Holts Landing on Indian River Bay, and at Coastal Kayak on Little Assawoman Bay.
-This project continues to generate stories in the press raising awareness of knowledge about this important Bay species among citizens in the watershed

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *CIB Speakers Bureau*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and
Sally Boswell
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outreach@inlandbays.org
Project Director

Project Status: On-going

Work Pan ID : CIB12-015

Project Description

Strategic Alignment:

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

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.

CCMP Addendum Actions:
Outreach & Education. Objective 2. Action B.

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 desseminated 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 expland 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.

Project Progress

Progress To Date:

1. Worked with new CAC chair to review and improve the powerpoint presentation
2. Providee training and support to CAC members serving on our Speakers Bureau
3. Promoted the speakers bureau through the Inland Bays Journal and press releases

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

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

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

Sally Boswell
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outreach@inlandbays.org
Project Director

Project Status: On-going

Work Pan ID : CIB-12-016

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G9,G9C,G9F	Develop programs involving senlor cltlzens and other special Interest groups

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.

CCMP Addendum Actions:
Education & Outreach. Obective 1. General.
Education & Outreach. Objective 2. General.

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 natiive 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:

-500-700 people attended the 9th annual (2013) Gardening for the Bays Native Plant Sale, our highest attendance to date.
-We have demonstrated to participating nurseries that there is a growing interest in and demand for native plants. Five nurseries participated in the sale this year.
-Additional local nurseries have come on board, expanding their inventories of native plants and providing local homeowners and gardeners with a source of native plants every day of the year.
-We invited a 'beekeeper' for the second year, to raise awareness about the importance of bees as pollinators; critical to our native ecosystems.
-Over three years, we have sold 350 rain barrels; demand continues to grow each year.

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 :

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Inland Bays Nitrogen and Phosphorus Total Maximum Daily Load Modelling Assessment*

Lead Contractor: University of Maine

Responsible Partners, Contact Info, and Damian Brady
University of Maine

Bart Wilson, CIB

Project Status: On-going

Work Pan ID : CIB12-019

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2B,G2C,G2E,G4,G4A ,G4C,G8,G8A	Enhance monitoring and response strategies

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

Overview:

The estuarine hydrodynamic and water quality models used to develop the Total Maximum Daily Loads (TMDLs) of Nitrogen and Phosphorus to Rehoboth Bay and Indian River Bay were some of the first sophisticated estuarine models created for this purpose. Originally developed in 1993, the models were updated with more current data to develop TMDLs for Little Assawoman Bay and the Tributaries of the Inland Bays in 2004. Since 1993, a great deal of advancement has occurred in estuarine modelling approaches and in the understanding the relationship between nutrient sources, loads, and response variables such as dissolved oxygen concentrations. Pepper Creek on Indian River Bay has since become the best studied system in the world for diel-cycling hypoxia and its affects on juvenile fishes. Additionally, a significant amount of new spot sampled and continuously monitorined water quality data has become available throughout the Bays. This project will examine the performance the existing TMDL model used by DNREC to determine the response of the estuary to nutrient loads as well as that of a newly draft model that integrates new knowledge on estuarine characteristics and function. Should the new model produce significantly different results, the CIB will 1) request that DNREC update the TMDLs and the TMDL regulations for the Inland Bays and 2) pursue the development of a publicly accessible estuarine model available to ask questions about management and climate change scenarios in the Inland Bays.

CCMP Addendum Action:

Water Quality Management. Objective 1. Action A.

Intended Results

1. Final report comparing the performance of the orginal and new modelling approaches with recommendations on TMDL revision.

Outputs/Deliverables:

1. Final report comparing the performance of the orginal and new modelling approaches with recommendations on TMDL revision.
2. Presentation of the final report to STAC.
3. Workshop with DNREC Watershed Assessment Section to determine process for TMDL update if needed.

Milestones:

1. Select sub-recipient. TARGET: APR 2012. COMPLETED: APR 2012.
2. Compile updated data for models. TARGET: APR 2012. INITIATED: APR 2012.COMPLETED JAN 2013
3. Obtain DNREC's TMDL model. TARGET: JUN 2012.COMPLETED JAN 2013
4. Compare model outputs. TARGET: AUG 2012.
5. Report preparation. TARGET: SEP 2012.
6. STAC Presentation and DNREC Workshop. TARGET: DEC 2012.

Short-Term Outcomes

1. Increased understanding of the performance of existing TMDL models and new modelling approaches.

Intermediate Outcomes:

1. Information with which to determine if a TMDL estuarine and hydrodynamic model update is necessary.

Long-Term Outcomes

1. Reinvigorated research interest in modelling what was once one of the most sophisticatedly modelled esturaies in the country.

Project Progress

Progress To Date:

1. GEMSS model outputs finally located and send to Dr. Brady by DNREC and consultant.
2. Initial comparison of original model input data to existing continuous monitoring data completed.
3. Preliminary findings presented to Maryland Coastal Bays STAC members as point of discussion for Maryland Coastal Bays TMDL workgroup.

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Eelgrass planting in Delaware Inland Bays*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and E.J. Chalabala -- Project Manager
Center for the Inland Bays
39375 Inlet Road

Project Status: On-going

Work Pan ID : CIB12-020

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
HP-A	Create a Resource Protection Area management plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2A	Promote recurrence of submerged aquatic vegetation

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-m2 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.

CCMP Addendum Actions:
Living Resources & their Habitat. Objective 1. Action D.

Intended Results

-to increase the population of eelgrass within the Inland Bays
-provide for increased benthic habitat as 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.
-to produce an eelgrass restoration plan with partners such as DNREC that will outline historical data, present data, future needs, funding sources, suitability areas planning, project milestones and monitoring components.
-restore 1 acre of eelgrass to Delaware's Inland Bays

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 and 2013)
-Return to site in April 2013 and 2014 for monitoring…..Ten randomly selected 1-m2 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 and 2014.

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).
6. Seed stalks will be collected manually during late spring 2013 from healthy beds in Chincoteague Bay, MD.
7. Harvested reproductive stalks will be stored in mesh bags in flowing seawater (spring 2013)
8. 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 2013).
9. Seeds will then be planted in October-November of 2013 at pre determined suitable location.
10. Restoration project plan to begin and completed (July 2013-May 2014)

Short-Term Outcomes

-For partnerships with Maryland DNR and DNREC to identify resources.

-Collect baseline data and identify needs

Intermediate Outcomes:

-Collecting eelgrass seed and becoming familiar with the correct methods.
-Implementing a new method of encapsulating eelgrass seed.
-Restoring up to 1 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 in Delaware's Inland Bays
-Create and Implement an SAV restoration plan specifically for Delaware's Inland Bays.

Project Progress

Progress To Date:

- contract formed and signed with Ecosystem Solutions to help with efforts again this year
- surveyed prior year's plantings
- met with partners to discuss the future of SAV in the Inland Bays
- purchased HOBO units to document light and temperature at 7-8 suitable planting locations in the Inland Bays-Havest and plant another 80,000 - 100,000 eelgrass seeds
- Incorporate new planting techniques
- Process the data and find suitable locations to plant SAV, and produce a map/GIS file containing these locations
- 2013/2014 Create and begin implementing restoration project plan with partners such as DNREC that will outline historical data, present data, future needs, funding sources, suitability areas planning, project milestones and monitoring components.

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 :

Restoration ☑		**QAPP** ☐	
Habitat Type :	subtidal	**Date Completed :**	
Restoration type :	Re-establishment	**Date Approved :**	
Acreage :	1	**Location :**	
Partners :	Ecosystem Solutions		
Completion Date:			
Cost :	$0.00		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Hazardous Debris Removal from Lewes/Rehoboth Canal*

Lead Contractor: DE Center for the Inland Bays (WUPIC)

Responsible Partners, Contact Info, and E.J. Chalabala

Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
(302) 226-8105
restoration@inlandbays.org

Project Status: On-going

Work Pan ID : CIB12-023

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A,IMS-A	Implement the Comprehensive Public Participation and Education Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2F,G4,G4E,G5,G5D, G6,G6B,G8,G8C,G9,G9B, G9F	Develop and inplement a water use pian

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

Overview:

Hazardous debris in the form of old, abandoned docks litter the Lewes Rehoboth Canal. The CIB's Water Use Plan Implementation Committee (WUPIC) would like to hire a marine contractor to remove all of the debris that we can find funding for.

The WUPIC is working with partners to identify the most dangerous debris in the canal. Not only is it a navigational hazard and an eyesore, these old docks provide unwanted chemicals into the Bays. WUPIC is working with local towns, DNREC, the Army Corp of Engineers and the Lewes/Rehoboth Canal Improvement Association to complete this project.

It's envisioned that this project would make way for a larger effort that would involve local communities in spreading information and rasing funds to help improve the Lewes Rehoboth Canal further.

This project proposes to use unspent EPA carry over funds from FY2013.

2012 CCMP Update: FOCUS AREA-Objective(s): Action(s).
COORDINATING LAND AND WATER USE DECISIONS -Objective 3: Action B.
COORDINATING LAND AND WATER USE DECISIONS -Objective 3: Action C.
OUTREACH AND EDUCATION -Objective 3: Action E.
OUTREACH AND EDUCATION -Objective 4: Action B.
OUTREACH AND EDUCATION -Objective 5: Action B.

Intended Results

-Remove hazardous debris from the Lewes/Rehoboth Canal.
-Highlight the role of WUPIC.

Outputs/Deliverables:

-Remove hazardous debris from the Lewes/Rehoboth Canal.

Milestones:

-Identify hazardous debris and gain permission to remove it; March 2013
-Get a quote from three marine contractors; June 2013
-Remove debris; July-August-Sept 2013
-Media updates; Sept 2013

Short-Term Outcomes

-An ad-hoc subcommittee of the BOD's able to set goals and accomplish another project
-Working with DNREC, Army Corp of Engineers, marine contractors and community leaders in a postive way

Intermediate Outcomes:

-Removal of hazardous debris that impedes navigation
-An instant beautification project that citizens can associate the CIB with.
-Sets the stage for a possible water taxi docking location.
-Energize local communities and business owners which may get them to contribute towards other canal clean ups.
-Identifies who has actually abandoned this debris and sets the stage for penalization and/or better subaqueous leasing protocols.

Long-Term Outcomes

-Improved navigation saftey

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination : RFP

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 : Lewes, Rehoboth Beach

Watershed/Waterbody : Rehoboth Bay, Rehoboth 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 2013

Date : 08/12/2013

Project Report

Project Name: *Hopkins Dairy Farm Headwater Stream and Wetland Restoration-Phase 2*

Lead Contractor: CIB

Responsible Partners, Contact Info, and

Eric Buehl, Habitat Coordinator
Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
302-226-8105
habitat@inlandbays.org
Project Lead
USDA Natural Resources Conservation Service
21315 Berlin Road, Unit 3
Georgetown, DE 19947
302-856-3990
Technical Assistance
Sussex Conservation District
23818 Shortly Road
Georgetown, DE 19947
302-856-2105
Construction
Delaware Department of Transportation (DelDOT)
23697 DuPont Highway
Georgetown, DE 19947
302-853-1300
Technical Assistance/Construction

Project Status: On-going **Work Pan ID :** CIB13-001

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1A,G2	Establish and Implement a comprehensive nonpoint source pollution control program

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

Year Reported 2013

Date : 08/12/2013

Overview:

Enhance habitat, water quality, and safety due to road and feedlot flooding by installing buffers and restoring wetlands as well as demonstrating the compatibility of infrastructure maintenance and environmental restoration.

This project is intended to occur in an area where historic attempts to drain the road and fields appears to have done little to alleviate the problem, nor does it appear that it has provided for any enhancement of water quality for the runoff from the paved surfaces, crop fields, and animal feedlot. By increasing field buffers, filtering roadside runoff, enhancing an old animal waste filter strip, and improving the drainage system in the woods, water quality leaving the area should be enhanced.

Updated CCMP Reference:
Nutrient Management: Objective 1-Monitor effectiveness of the nutrient management law, program, and CAFO regulations, and suggest and implement any revisions as needed.
Action C-Conduct geographic and priority targeting.

Intended Results

1. Wetland Restoration/Enhancement.
2. Implement Buffers.
3. Improvement in Water Quality.

Outputs/Deliverables:

1. Completed Watershed Analyses.
2. Completed Project Design.
3. Permits Secured.
4. Construction Begins.
5. Construction Completed.

Milestones:

1. Initiate project survey, soils analysis, engineering design, and permitting; October 2012.
2. Coordinate with DelDOT about fence relocation, wetland restoration, and roadside drainage/configuration; November 2012.
3. Review project design/coordinate construction schedule; February 2013.
4. Secure all necessary permits; March 2013.
5. Begin fence relocation; April 2013.
6. Begin wetland restoration/construction; May 2013.
7. DelDOT begins roadside drainage construction; June 2013.
8. Plant grassed buffers; September 2013.
9. Project complete; October 2013.

Short-Term Outcomes

1. Demonstrate that required drainage infrastructure maintenance and habitat and water quality enhancement are mutually compatible.

Intermediate Outcomes:

1. Implement more projects that requiring the maintenance of drainage infrastructure to also enhance habitat and water quality.

Long-Term Outcomes

1. Implement 0.92 acres of buffers.
2. Implement 1.04 acres of restored or enhanced wetlands.
3. Decrease Nitrogen export by ABC pounds.

4. Decrease Phosphorous export by ABC pounds.

Project Progress

Progress To Date:

1. Met with potential contractor to discuss feasibility of wetland construction in wooded areas.
2. Met with landowner to discuss project concept and options.
3. Have held 2 meetings with the landowner to discuss restoration/ehancement of wetlands onsite as part of water quality and site drainage scheme.
4. Met with potential contractor to discuss options for construction in wooded areas.

Additional Project Information

Project Financing

Funding Determination :

Amendment: ☐

Amendment Source:

CIB FUNDS: $2,500.00
OTHER FUNDS: $13,000.00
MATCHING FUNDS: $0.00
AMENDMENT FUNDS:
TOTAL: $15,500.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : Rehoboth Bay, Rehoboth 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 2013

Date : 08/12/2013

Project Report

Project Name: *James Farm Long Term Site Planning*

Lead Contractor: CIB

Responsible Partners, Contact Info, and Chris Bason, CIB
Sally Boswell, CIB, Education and Outreach Coordinator

Project Status: On-going **Work Pan ID :** CIB13-003

Project Description

Strategic Alignment:

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

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

The James Farm Ecological Preserve is a 150 acre tract of land located in Sussex County Delaware on the Indian River Bay north of Ocean View. The Preserve consists of upland fields, freshwater wetlands, a mixed hardwood forest, tidal salt marsh, a sandy bay beach and a saltwater cove. The property was donated to the Sussex County Council for preservation as natural, undeveloped open space for public use. In 1998, Sussex County Council began leasing the Farm to the Delaware Center for the Inland Bays under a management agreement to promote environmental education, recreation, and habitat restoration.

The Preserve is open to the public seven days a week, from dawn to dusk. An estimated 10,001 visits were made to the Farm in 2012. The comparable Holts Landing State Park, also located on Indian River Bay, received an estimated 6,448 visits in 2011. Each year nearly 1,000 students receive environmental education at the Farm and a kayak tour concession is operated on the beach. Overall visitation has grown dramatically due to population increase and a regionally increased demand for outdoor recreation. Sussex County's population increased by 35% from 148,897 in 1998 to 200,330 in 2011 ; and is projected to increase another 35% to 271,326 people in 2030 The Preserve contributes millions of dollars to the local economy through direct provision of ecosystem services that also indirectly raise the values of nearby properties and increase economic activity through ecotourism.

A simple master plan for the farm focused on managing its natural habitats exists. However, the plan did not

anticipate increased visitation nor address replacement of facilities. Many facilities now need replacement in a manner that can accommodate the increased visitation while protecting the preserves ecosystems and enhancing visitor experiences. Opportunities remain to increase the environmental educational value of the Preserve through signage. Furthermore, an analysis of current and future impacts from increased human use and sea level rise are needed to develop costs for adaptive management of the Preserve.

The CIB intends to partner with Sussex County and the UD/Sustainable Coastal Communities Initiative to hire a professional site planning firm for the development of a long term management plan that enhances the Preserves designated uses of preservation and education and develops maintenance costs and system replacement costs. The CIB has budgeted $20,000 for FY2013 to complete this project, UD and Sussex County will both contribute $7,500.

CCMP Addendum Actions:
Outreach & Education. Objective 2. Action A1.

Intended Results

1. Protection of the ecosystems at the James Farm Ecological through timely and thorough site planning to accommodate the growing numbers of visitors
2. Enhancement of education and outreach to visitors through development of additional programming, interpretive signage and printed materials.

Outputs/Deliverables:

1. Develop an RFP to invite proposals from professional site planning firms
2. Select a firm and begin planning process
3. Evaluate existing interpretive signage and plan for additional signage
4. Evaluate informal program opportunities at James Farm and implement

Milestones:

TBD

Short-Term Outcomes

Current regular visitors to the Farm will learn more about it and about the Inland Bays and their watershed

Intermediate Outcomes:

New visitors will be attracted to the Farm by informal program opportunities to learn more about the Inland Bays and their watershed

Long-Term Outcomes

Ecological protection of the James Farm property

Project Progress

Progress To Date:

1. Due to staff time constraints and inadequate budget no implementation was completed on this project.
2. A partnership was formed in Spring of 2013 between Sussex County, UD Seagrant Marine Advisory Service, and the CIB to generate the necessary funding for an adequate plan.
3. Depending on budget approvals for the County, the project will go forward through a competetive bidding process with a site planning contractor.

Additional Project Information

Project Financing

Funding Determination : RFP

Amendment: ☐

Amendment Source:

CIB FUNDS: $2,712.00
OTHER FUNDS: $13,288.00
MATCHING FUNDS: $19,000.00
AMENDMENT FUNDS:
TOTAL: $35,000.00

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Demonstration and Training of Living Shoreline Techniques for Marine Contractors*

Lead Contractor:

Responsible Partners, Contact Info, and

Bartholomew Wilson--Science Coordinator
Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, De 19971

Project Status: On-going

Work Pan ID : CIB13-005

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C,HP-F	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2F,G3,G3B,G7,G7E, G7F	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

Rehoboth, Indian River, and Little Assawoman Bays all have experienced extensive shoreline erosion as the result of boat wakes, sea-level rise, and storm wave action. Within the watershed, the common techniques used by marine contractors to halt this erosion or attempt to restore these impacted shorelines is to use shoreline hardening techniques.

Living or green shoreline techniques, can not only halt current and future shoreline erosion but also increase vegetated intertidal habitat. Living shorelines also can be more pleasing to the eye, than hardened shorelines, and can enhance landowners landscape with plantings of perennial and annual vegetation. The long-term effectiveness of living shoreline techniques used in Inland Bays will be monitored to evaluate the best practices for the Inland Bays.

Updated CCMP References:
Planning for Climate Change
Objective 1- Action E. Sub-Action E1. Conduct a demonstration project in the Inland Bays that employs living shorelines rather than hard structures for shoreline stabilization.
Outreach and Education Goals
Objective 1 - Action D. Seek opportunities to partner with Environmental and non-profit organizations,…….
Objective 3 - Action A. Administer and maintain and engaging, active website as a primary vehicle for disseminating

CIB information.

Intended Results

1.Demonstate different techniques available, when using living shoreline techniques for shoreline restoration.
2. Train and inform contractors about the benefits in using living shoreline techniques for ecological an permitting benefits.
3. Construct demonstration area to be used to educate the public and contractors about the importance of using living shorelines.

Outputs/Deliverables:

1. GIS data on assessment of shoreline conditions for Rehoboth, Little Assawoman Bay, and Indian River Bays. Web-based portal for data retrevial.
2. Complete demonstration area for living shoreline techniques
3. Secure permits for shoreline restoration and modification.
4. Develop and complete outreach material of techniques and benefits.
5. Develop list of contractors that have been trained and have demonstrated their ability to install approved living shoreline techniques.
5. Develop list of potential sites for further demonstration site installation.

Milestones:

1. Coordinate with Wetlands and Subaqueous Lands Section (DNREC), Watershed Assessment Section (DNREC), and Partnership for the Delaware Estuary on techniques to outline or highlight in training.COMPLETED May 2013
2. Locate areas for potential restoration.EXPECTED AUG 2013
3. Secure funding for two demonstation areas. ONGOING
4. Review project design, site priorities, and list of contractors that could benefit for training. ONGOING
5. Secure necessary permits. EXPECTED SEPT 2013
6. Conduct pre-training meetings and outreach sessions with local contractors
7. Secure all necessary materials.
8. Conduct training and construction of living shorelines at demonstration site.

Short-Term Outcomes

1. Demonstrate ecological and economic benefits of living shorelines to contractors.

Intermediate Outcomes:

1. Develop demonstration area through the Inland Bays that have been created by local contractors.
2. Create opportunities for public landowners to tour and evaluate potential alternatives for shoreline restoration at demonstration sites.
3. Cultivate the relationship between trained contractors and interested landowners.

Long-Term Outcomes

1. Restore eroding shorelines, to help provide intertidal habitat and provide a heightened level of protection to habitats landward of the shoreline restoration.
2. Increase utilization of living shorelines techniques within the Inland Bays watersheds.
3. Monitor long-term effectiveness of living shoreline techniques used in Inland Bays, to evaluate the best practices for the Inland Bays.

Project Progress

Progress To Date:

Year Reported 2013

Date : 08/12/2013

QTR 1
1. VIMS shoreline assessment data collect and analysis completed.
2. Determination that Tower Road not viable site for Demonstation area due to Park and Rec internal communication issues.

QTR 2
1. Draft of VIMS shoreline assessment data provided to DNREC and CIB for evaulation.
2. Meet with David Baird to discuss roll of SCD in shorelien initative
3. Meet with Wetlands and Subaquous Lands section of DNREC to discuss permitting and policy issues related to shoreline initative
4. Site visit conducted to evaulate the shoreline condition of Fish and Wildlife Okie Property
5. Meeting with Tony Pratt, Frank Piorko, Mark Biddle, and Bob Palmer to evaualte condition of shoreline at Lewes Facility, and discussion of implementing Shoreline restoration area at Poplar Thicket.

Additional Project Information

Project Financing

Funding Determination :

Amendment: ☐

Amendment Source:

CIB FUNDS: $0.00
OTHER FUNDS: $24,459.00
MATCHING FUNDS:
AMENDMENT FUNDS:
TOTAL: $24,459.00

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 :

Restoration ☐

Habitat Type :

Restoration type :

Acreage :

Partners :

Completion Date:

Cost :

QAPP ☐

Date Completed :

Date Approved :

Location :

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Inland Bays Migratory Fish Passage Restoration Feasibility and Planning Study*

Lead Contractor: TBD

Responsible Partners, Contact Info, and Roy Miller
Center for the Inalnd Bays

Project Status: On-going

Work Pan ID : CIB13-007

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C,HP-F	
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

Seven millpond dams are present in the Inland Bays watershed and are to varying degrees restricting passage of migratory anadromous and catadromous fish species such as striped bass, blueback herring, american shad, alewife, white perch, and americal eel. Many of these fish species have suffered significant local population decreases thought to be due in part to reduction in lower salinity habitats associated with the increasing tidal prism of the Indian River Inlet beginning in earnest around 1970. The dams are affecting a significant portion of stream miles in the watershed. Regional population decreases of many of these species have also occurred, to the extent that some border on listing as threatened species under the Federal Endangered Species Act. Restoration of fish passage to streams for the purposes of spawning has become an important regional restroation action to improve fisheries. The Inland Bays are an important estuarine habitat for many anadromous and catadromous fishes.

This project will hire a consultant to assess the feasibility of fish passage restoration and develop restoration concepts where feasibile. Data on target species from the Inland Bays will be summarized and additional data needs identified and pursued as necessary. Restoration project concepts will be to 30% design where appropriate and include project alternatives and cost estimates as well as implementation plans. An Inland Bays fish passage restoration workgroup will be formed and managed to support this effort.

CCMP Addendum Actions:
Managing Living Resources and their Habitat. Objective 3. Action A.

Intended Results

1. Development of a fish passage restoration feasibility study including restoration concepts.
2. Formation of an Inland Bays fish passage restoration workgroup.

Outputs/Deliverables:

1. Fish passage restoration feasibility study including restoration concepts.
2. Recommendations for project implementation funding sources.
3. Education and Outreach material on migratory fish species of the Inland Bays and fish passage restoration.

Milestones:

1. Formation of an Inland Bays fish passage restoration workgroup. TARGET: JAN 2013. COMPLETED.
2. RFP for consultant services. TARGET: JAN 2013.COMPLETED: MAY 2013
3. Consultant selection. TARGET: FEB 2013.COMPLETED 2013
4. Advisory Committee project scoping meeting with Consultant. TARGET: MARCH 2013.
5. Necessary surveys to establish migration. TARGET: MAR-APR 2013. EXTENDED.
6. Draft study submittal. TARGET: AUG 2013. EXTENDED.
7. Final study approved and released. TARGET: SEP 2013.

Short-Term Outcomes

1. Increased understanding of the use of the estuary by migratory fish species by resrource agencies and the general public.
2. Increased communication between the public and resource agencies and among fisheries managers about fish passage restoration in the Inalnd Bays watershed.

Intermediate Outcomes:

1. Increases in the miles of streams accessbile for fish migration and general and spawning habitat.

Long-Term Outcomes

1. Increases in the populations of migratory fish species in the Inland Bays and their tributaries.

Project Progress

Progress To Date:

QTR 1
1. Initiated several meeting and email conversations with DNREC Fish and Wildlife staff to assess potential permitting and implementation issues related to fish passages and the introduction of nuisance species.
2. Draft scope of work developed for feasibility study, with outline of potential desired deliverables.
3. RFP for Watershed and Engineering services released to select consultant.
QTR 2
1. Consultant selected to conduct fish passage feasibility study

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination : RFP

Amendment: ☐

Amendment Source:

CIB FUNDS: $10,000.00

OTHER FUNDS:

MATCHING FUNDS: $20,000.00

AMENDMENT FUNDS:

TOTAL: $30,000.00

Project Location

Municipality : Millsboro

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

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☑

Habitat Type : subtidal

Restoration type : Re-establishment

Acreage :

Partners :

Completion Date:

Cost : $0.00

QAPP ☐

Date Completed :

Date Approved :

Location :

Year Reported 2013

Date : 08/12/2013

DELAWARE CENTER FOR THE INLAND BAYS
Rehoboth Indian River Little Assawoman

Project Report

Project Name: *Shoreline Monitoring and Assessment to aid in Restoration*

Lead Contractor: VIMS

Responsible Partners, Contact Info, and Bartholomew Wilson--Science Coordinator
Center for the Inland Bays
39375 Inlet Road

Project Status: On-going

Work Pan ID : CIB13-008

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C,HP-F	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2F,G3,G3B,G7,G7E, G7F	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

The Inland Bays have ~356 miles of shoreline that fall under the jurisdiction of 13 municipalities, Sussex County, and the State of Delaware. A detailed field and GIS based shoreline assessment of the Inland Bays will aid in long-term assessment and restoration planning for the county and its watershed partners.

By assessing the status of shoreline and riparian areas in the three Inland Bays we will be able to identify critical or vulnerable shoreline areas and develop science based management recommendations for the area's most in need. The results of the assessment will be used to advocate the use of permitting for shoreline stabilization practices other than hardened shorelines and be a tool for reducing the amount of shoreline hardened in the Inland Bays moving forward.

Project actions and strategies include:

- Conduct geographic and priority best management practice targeting. This includes the development of a GIS database to target BMPs to the most effective locations on a whole watershed or on a sub-watershed basis.
- Halt the continued loss of non-tidal wetlands and reverse these loss trends by promoting projects to mitigate for previously lost wetlands.
- Using GIS and other identification and mapping technologies, identify candidate sites for re-creation of freshwater and tidal wetlands.

• Protect and enhance/restore/create additional freshwater and/or tidal wetlands each year based on the GIS and field analysis.
• Promote the use of living shorelines rather than hard structures for shoreline stabilization because the former better accommodates sea level rise than the latter. DNREC and other permitting agencies should increase their emphasis on living shorelines in their permitting process.

CCMP Addendum Actions:

Managing Living Resources and their Habitat
Objective 2: Halt the continued loss of wetlands and reverse these loss trends by promoting projects to mitigate for previously lost wetlands.

H1. Assess and report on the condition of shorelines in the Inland Bays.
H2. Conduct an education and outreach program on shoreline function and management alternatives for shoreline property owners.

Planning for Climate Change
Objective 1- Action E. Sub-Action E1. Conduct a demonstration project in the Inland Bays that employs living shorelines rather than hard structures for shoreline stabilization.

Outreach and Education Goals
Objective 1 - Action D. Seek opportunities to partner with Environmental and non-profit organizations,…….
Objective 3 - Action A. Administer and maintain and engaging, active website as a primary vehicle for disseminating CIB information.

Intended Results

1.Assess the status of shoreline and riparian areas in the Inland Bays, including riparian land use, bank condition and shoreline features.
2.Collect the needed background information to facilitate the evaluate the use of living shorelines as a method for erosion control and shoreline stabilization
3.Share monitoring and assessment results, disseminate new scientific information and collaborate with science partners to educate and improve programs and protection.
4.Use data collected to develop and implement living shoreline demonstration projects with the project partners within the watershed.

Outputs/Deliverables:

1. GIS data on assessment of shoreline conditions for Rehoboth, Little Assawoman Bay, and Indian River Bays.
2. Web-based portal for data retrieval by public.

Milestones:

1. Secure Funding to conduct assessment. (Completed June 2012)
2. Select contractor to conduct shoreline assessmnt of Rehoboth Bay and Indian River Bay (Completed June 2012)
3. Complete contract with firm (Completed June 2012).
4. Collect field data (Completed July and August 2012)
5. Data analysis of field and GIS data (Completed December 2012).
6. Receive final report on shoreline assessment (Target: end of 2013)
7. Have web based portal launched (Target: end of 2013)

Short-Term Outcomes

1. Aid in bring recognition that shoreline assessmnets can be used to better educate the public.
2. Aid decisions makers make better informed planning choices.

Intermediate Outcomes:

1. Create GIS data and web based portal that can be used by the CIB, State partners, contratcors, and the public to assess the conditions of the shorelines in the inland bays.

Long-Term Outcomes

1. Create baseline shoreline assessment data that can be used to analysis longterm trends in shoreline condition.

Project Progress

Progress To Date:

- Funding was secured from CIB and DNREC to fund a shoreline Assessment of Rehoboth By and Indian River Bays.
- Contract was negotiated and awarded to VIMS to fund the shoreline assessment of Rehoboth and Indian River Bays. GIS data and Web-based portal for data viewing was included as deliverable of project.
- VIMS shoreline assessment data collect and analysis completed.
- Draft of VIMS shoreline assessment data provided to DNREC and CIB for evaluation.

Additional Project Information

Project Financing

Funding Determination : Sole Source

Amendment: ☐

Amendment Source:

CIB FUNDS: $0.00
OTHER FUNDS: $73,359.00
MATCHING FUNDS:
AMENDMENT FUNDS:
TOTAL: $73,359.00

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 :

Year Reported 2013

Date : 08/12/2013

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

PROPOSED PROJECTS

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Land Conservation Options and Considerations Workshop*

Lead Contractor: Delaware Wild Lands

Responsible Partners, Contact Info, and

Primary:
Kate Hackett, Executive Director
Delaware Wild Lands
315 Main Street
P.O. Box 505
Odessa, Delaware 19730
Phone: (302) 378-2736
Fax: (302) 378-3629
Cell phone: (302) 824-6235
khackett@dewildlands.org
Center for the Inland Bays
Eric Buehl, Habitat Coordinator

Project Status: Proposed

Work Pan ID : CIB14-001

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
HP-E	Expand public land acquisition, protection, and access
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G3,G3B,G6,G6G	Implement an agress1ve program to acquire public access lands

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

Overview:

The primary goal of this project is to host a workshop in Millsboro in late September for specific landowners to make them aware of the various options available to them to preserve their land for conservation purposes. Invitation will be based on criteria such as the size of a parcel of land or its adjacency to already protected or preserved land.
The work proposed in this project is hold a workshop to educate landowners about land conservation.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s).
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action B.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action G.
COORDINATING LAND AND WATER USE DECISIONS-Objective 2: Action C.
COORDINATING LAND AND WATER USE DECISIONS-Objective 2: Action D.

Intended Results

1. Identify and prioritize conservation lands in the Rehoboth Bay watershed (DE CIB) and in Sussex County (DE Wild Lands and DE Nature Society).
2. Convene a land conservation options workshop for specific owners of priority lands.
3. Develop a list of interested individuals for land protection and/or habitat restoration

Outputs/Deliverables:

1.List of land parcels prioritized for conservation purposes.
2.Hold a land conservation workshop.
3.List of interested individuals who are interested in habitat restoration.

Milestones:

1.May 2013-identify parcels based on size and proximity to protected lands.
2.June 2013-initial mailing to landowners.
3.July 2013-begin using various print and online media to promote event.
4.August 2013-direct mailing to targeted landowners.
5.September 2013-hold workshop in Millsboro, DE.

Short-Term Outcomes

1.Provide information to landowners about the benefits to land conservation.
2.Increase awareness of attendees about options and alternatives for land conservation.

Intermediate Outcomes:

1.Landowners will begin to consider their individual situation and land conservation options as it relates to potential income, taxes, and other perceived financial advantages.
2.Landowners will begin to consider their “legacy” of what they leave behind for their heirs or what they help to conserve for others to enjoy.

Long-Term Outcomes

1.Less wildlife habitat will be lost to land conversion.
2.Land that is more suited as wildlife habitat will not be converted to less-appropriate land uses.

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Shellfish Restoration Action Plan*

Lead Contractor: DE Center for the Inland Bays

Responsible Partners, Contact Info, and E.J. Chalabala

Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, DE 19971
(302) 226-8105
restoration@inlandbays.org

Project Status: Proposed

Work Pan ID : CIB14-002

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
ED-A,IMS-A	Meet the nutrient reduction goals of the Pollution Control Strategy
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2B,G2C,G2E,G2F,G3, G3B,G4,G4E,G5,G5D	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

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

Overview:

Bivalve shellfish restoration projects are becoming increasingly common in the United States, spurred by increased public awareness of their important ecological role in coastal waters and increases in funding (primarily federal) available for such efforts. Community groups, school classes and others interested in promoting healthier coastal ecosystems are joining forces with government agencies at the local, state and federal level to help restore these important components of coastal ecosystems. This increased interest in restoration is due, in part, to the dramatic declines in shellfish fisheries that were once the mainstay of many coastal communities. This is also likely due to greater public awareness of the imperiled state of coastal environments in general, and a desire to restore the ecosystems such as oyster reefs.

With this said, a clear plan and vision is needed for our Inland Bays in order to funnel these increased resources into desired and successful restoration projects. Shellfish, and in regards to this particular plan (eastern oysters=Crassostrea virginica, and hard clam=Mercenaria mercenaria) have been a part of the Delaware's Inland Bays ecosystem well before the engineered inlet was formed in the 1930's, and most certainly after. This plan will

identify past restoration project successes and failures to help further identify potential successful shellfish restoration projects. The CIB's oyster gardening and restoration efforts have documented successful oyster survivability throughout the Inland Bays and this plan will identify and expand on efforts such as these in order to identify potential future restoration projects. Due to their filtration capabilities, shellfish are one of the most important natural resources we have in our Bays. We have a responsibility to enhance and restore shellfish populations through correct planning and appropriate methodologies.

This Action Plan will outline what it takes to move forward with shellfish restoration project based strategies based on BMP's, suitable locations, historical restoration activities, ecosystem changes, permitting needs, public use, advancing technologies and other identified variables as we progress.

Overall this action plan will serve as a resource that identifies and documents what past and current shellfish restoration/enhancement projects and activities have occurred and are occurring in Delaware's Inland Bays; and more importantly this plan aims to serve as a project compendium where, when funding sources are identified, they can easily be steered to a number of already identified shellfish restoration projects in our Inland Bays. Each specific identified potential project, and potential project locations, will have quantifiable variables that would be analyzed. These are to include but not limited to the number of planted/restored organisms, filtering capacity, hourly daily and yearly nutrient uptake, and total number of restored acres and/or linear feet. The formation of this plan will involve seeking out grant funding for restoration consultant support.

2012 CCMP Update: FOCUS AREA-Objective(s): Action(s).
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action B.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action D.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 5: Action A.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 5: Action B.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 5: Action C.

Intended Results

1. Shellfish restoration plan developed, identifying past and current Inland Bays shellfish restoration efforts in order to develop prioritized potential restoration projects based on project locations; costs; quantitative ecosystem services, filtering capabilities, nutrient reductions, and restored acres/linear feet; and partnerships.
2. Identify new science and technologies that can be used in future shellfish restoration projects.
3. A project compendium identifying potential shellfish restoration projects for the Inland Bays.

Outputs/Deliverables:

1. Shellfish restoration plan developed to the project concept level including potential project locations, costs, materials, strategies and methods.
2. Document current and historical shellfish restoration projects in order to develop and document potentially successful restoration/enhancement projects and concepts.
3. To have all past, present and future potential shellfish restoration/enhancement projects and concepts in one document where, if funding becomes available, it will make for a faster/more streamlined process to identify projects and project concepts for the available funding.
4. A quantitative list of potential projects where potential project areas/acres to be restored; permits required; available technologies and methods; ecosystem services including but not limited to increased habitat; filtering capabilities and nutrient reduction will be identified.
5. GIS layer(s) and maps produced identifying and prioritizing locations where potential projects may occur, be most cost effective, and provide the most environmental value.

Milestones:

-Pursue grant funding September 2013
-Identify needs and research related plans; September-October 2013
-Identify partners and possible workgroup; September-October 2013

-Research historical projects and conclusions, monitoring data; October-November 2013
-Discuss within workgroup and write plan; Nov-May 2013

Short-Term Outcomes

--CIB expanding efforts to restore and enhance shellfish in the Inland Bays
-Local agencies, partners, and supporters of the CIB made aware of the value of shellfish restoration and enhancement based on communicating the need for this plan.

Intermediate Outcomes:

-Past IB shellfish restoration projects and studies identified and compiled into one source/document.
-Potential restoration sites/locations identified.
-Funding sources and partners identified which will lead to future plan implementation.
-An outline that puts all pre-written variables into one document which will make it far easier to plan for restoration projects as well as filter surprise funding.

Long-Term Outcomes

-A quantifiable increase in shellfish restoration projects implemented.
-Increase in available funding sources.
-Increase in nutrient reduction and restored acres of aquatic habitat that will be quantifiable by each specific project implementation. This plan aims to identify and quantify these variables based on each potential identified project, but what actually is implemented on the ground, will result in the final calculations.
-An action plan acting as a resource for other groups which will shed awareness on the NEP program.

Project Progress

Progress To Date:

None

Additional Project Information

Project Financing

Funding Determination : RFP

Amendment: ☐

Amendment Source:

CIB FUNDS: $7,436.00
OTHER FUNDS: $0.00
MATCHING FUNDS: $2,564.00
AMENDMENT FUNDS:
TOTAL: $10,000.00

Project Location

Municipality : All Coastal Communities

Watershed/Waterbody : All Bays, All Watersheds

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Year Reported 2013

Date : 08/12/2013

Abstract :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Angola Neck Reforestation Project*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and
Center for the Inland Bays
Eric Buehl, Land Conservation & Restoration Coordinator
302-226-8105
DNREC Division of Parks & Recreation
Robert Line
302-739-9229
Ducks Unlimited
Jake McPherson
410-224-6620

Project Status: Proposed

Work Pan ID : CIB14-004

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1E,G2	Establish and Implement a comprehensive nonpoint source pollution control program

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

Overview:

The project site is on state-owned and managed land located in the eastern/northeastern portion of Angola Neck, just northwest of the mouth of Love Creek. The parcels, which are owned by DNREC State Parks and managed as open space lands, are approximately 190 acres in size, of which approximately 40 acres is currently tilled by a local farmer in a small grain-corn-soybean rotation. The lands to be reforested to a mixed hardwood pine forest community are in very close proximity to tidal wetlands, open water areas, streams, and sensitive wetland areas, and would create a forested corridor from Love Creek into and out of other wetland areas located further inland. The reforestation will benefit neotropical migratory songbirds.
The work proposed in this project is to reforest 40 acres of farmed land.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s).
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action D.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action E.

Intended Results

1. The goal of this project is to reforest the tilled portions of the property (40+/- acres) in native trees.
A. The first objective is to enhance water quality by planting native trees, thereby increasing nutrient uptake.
B. The second objective is to restore a mixed hardwood pine upland forest and associated wildlife habitat including neotropical migratory song birds on the property by planting native trees.

Outputs/Deliverables:

1. Enhanced water quality.
2. Increased wildlife habitat for birds, mammals, reptiles, and insects.

Milestones:

1.July 2013 – Hold project planning meeting with partners (CIB, DNREC, DU) to:
A.Develop plant species list and density.
B.Determine plant material suppliers.
C.Identify amount of acreage to be planted each season over a 2 to 3 year planting cycle.
D.Prioritize areas to be planted first.
2.August 2013 – Solicit additional project funding.
3.November 2013 – Initiate the first phase of the planting plan.
4.March 2014 – Monitor plant growth/mortality.
5.April 2014 – Estimate plant mortality and if possible, determine the cause(s) such as weather, herbivory, etc.
6.May 2014 – Develop strategy to overcome those causes that can be controlled.
7.July 2014 – Prepare for second phase of tree plantings.

Short-Term Outcomes

1. A change in land use from agriculture to fallow/recently planted land.

Intermediate Outcomes:

1. Increase in wildlife habitat as land transitions from fallow to scrub/shrub.
2. Less impact to water quality as soil is no longer exposed to precipitation.

Long-Term Outcomes

1. Based on the Inland Bays Pollution Control Strategy estimated land-use Loading Rates (appendix E), the conversion from tilled land to forested area should result in a 76 percent decrease in total Nitrogen and a 50 percent decrease in total Phosphorus entering receiving waters from the re-forested farmland.
2. Increased quality of wildlife habitat as trees mature and produce seed/fruit.

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

Project Financing

Funding Determination :

Amendment: ☐

Amendment Source:

CIB FUNDS: $0.00
OTHER FUNDS: $10,000.00
MATCHING FUNDS: $0.00
AMENDMENT FUNDS:
TOTAL: $10,000.00

Project Location

Municipality : Lewes, Rehoboth Beach

Watershed/Waterbody : Rehoboth Bay, Rehoboth Bay WS

Latitude:

Longitude:

Project Leveraging Role

Primary

Report Information

Report Title:

Author :

Abstract :

Restoration ☑	**QAPP** ☐	
Habitat Type : upland	**Date Completed :**	
Restoration type : Establishment	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost : $0.00		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Loop Canal Living Shoreline & Wetland Restoration Project*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and Center for the Inland Bays
Eric Buehl, Land Conservation & Restoration Coordinator
Tingle's Addition HOA
Steve Piron

Project Status: Proposed

Work Pan ID : CIB14-005

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
HP-F	Promote natural alternatives to bulkheading
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1E,G2,G2F,G7	Establish and Implement a comprehensive nonpoint source pollution control program

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

Overview:

The project site is located on the Bethany Beach Loop Canal, just west of Route 1 and southwest of the National Guard Training Center at the south end of the Salt Pond. It is in the Lower Indian River Bay watershed and flows directly into the Assawoman Canal. A portion of the land is State-regulated tidal marsh and smaller upland portions are the remnants of old spoil berms from the construction of the Loop Canal approximately 100 years ago. The bank along the upland areas and northern edge of the tidal marsh are eroding on the northern (Salt Pond) side due to wave activity. Ownership is with the State of Delaware and the Town of Bethany Beach.
The work proposed in this project is to stabilize eroding shoreline and restore wetlands via beneficial re-use.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s). Sub-Action.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action B.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action D.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action H. Sub-Action H4.

Intended Results

1. The goal of the project is to work in three phases to control shoreline erosion and restore lost or degraded tidal marsh:

A. Phase 1 – stabilize 500 feet of the most severely eroded shoreline area on the western end of the project site.
B. Phase 2 – stabilize 500 additional feet of eroded shoreline located further to the east of the project site. In conjunction with this phase, investigate the potential to place coir logs in the tidal marsh to act as an "accretion sill" and the placement of anchored logs/woody material along the marsh edge.
C. Phase 3 – utilize beneficial re-use of dredged material to enhance and restore 1 acre of tidal marsh on the Salt Pond along the northern edge of the project site.
2. Enhance water quality by reducing sedimentation through the implementation of erosion control practices.
3. Enhance water quality by restoring and enhancing tidal marsh.
4. Increase wildlife habitat by restoring tidal marsh.
5. Reduce or eliminate the loss of shoreline by implementing erosion control practices.
6. Demonstrate the use of "Living Shoreline" practices and materials.
7. Demonstrate the value of the beneficial re-use of dredged material.

Outputs/Deliverables:

1. 1,000 feet of stabilized shoreline along the Salt Pond.
2. Enhanced water quality through reductions in erosion and restoration of 1 acre of tidal marsh.
3. Decreases in sedimentation by reducing shoreline erosion.
4. Increased wildlife habitat through restoration of tidal marsh.

Milestones:

1.June 2013 – Land Strip Committee to develop draft of 3-phase plan and budget to stabilize shoreline and restore wetlands.
2.July 2013 – Finalize plan with a focus on Phase 1:
A. Raise funds to implement Phase 1.
B. Submit permit to DNREC
C. Order materials and begin implementation.
3.August 2013 –Finalize plan for Phase 2:
A. Continue to raise funds for Phase 2 and 3
B. Submit permit to DNREC for the Phase 2 shoreline stabilization and accretion sills.
4.October 2013 – Implement Phase 2.
5.November 2013 – Finalize plan for Phase 3:
A. Identify potential sources of dredged material.
B. Work with DNREC on specific permit requirements.
6.Winter/Spring 2014 – Monitor site conditions and repair/replace as necessary.
7.Phase 3 implementation will depend upon funding availability and finding a suitable source of dredged material.

Short-Term Outcomes

1. Increased exposure to Living Shoreline techniques and materials.

Intermediate Outcomes:

1. Demonstration of Living Shoreline practices.

Long-Term Outcomes

1. Enhanced water quality from less erosion and sedimentation.
2. Increased acreage of tidal marsh (increase in habitat and improved water quality).

Project Progress

Progress To Date:

None

Year Reported 2013

Date : 08/12/2013

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 : Bethany Beach

Watershed/Waterbody : Indian River Bay, Little Assawoman Bay

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 :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Poplar Thicket Restoration Plan*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and
Center for the Inland Bays
Eric Buehl, Land Conservation & Restoration Coordinator
302-226-8105
DNREC Division of Fish & Wildlife
Rob Gano
302-539-3160

Project Status: Proposed

Work Pan ID : CIB14-007

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C,HP-F	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1E,G2,G2A,G7	Establish and Implement a comprehensive nonpoint source pollution control program

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

Overview:

Located on the south side of the Long Neck peninsula east of the marina at Whitehouse Beach, the property is situate on the lower Indian River Bay watershed. The overall site is 229 acres and the focus is to identify potential areas for habitat restoration and to implement practices that improve water quality including uplands, wetlands, shallow-water, sandy beach/dune, and wooded or scrub/shrub areas. The property has a variety of land uses/land covers and will ultimately be managed as a bird sanctuary by the landowner and land manager, DNREC Division of Fish & Wildlife.
The work proposed in this project is to develop a comprehensive restoration plan for the property.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s). Sub-Action.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action C.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action D.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action H. Sub-Action H4.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 6. Action A.

Intended Results

1. The goal of this plan is to identify potential areas for habitat restoration and to identify practices that will improve water quality and to develop a timeline for implementation.
2. Improve water quality.
3. Increase the diversity, quality, and quantity of wildlife habitat present on the property.
4. Demonstrate the use of native trees and warm-season native grasses on a large scale.
5. Demonstrate the use of innovative “Living Shoreline” stabilization practices on Indian River Bay.

Outputs/Deliverables:

1. A plan that identifies resource needs and potential projects/actions to address them.
2. A plan that can be used by any member of the Planning Committee to solicit funding for project implementation.

Milestones:

1.June 2013 – Convene the partners (Poplar Thicket Planning Committee) to discuss the project and any stipulations affecting initial goals and objectives.
2.July 2013 – Break Committee members into smaller workgroups based on interests and/or areas of expertise.
A. Initial focus areas will be:
a) Aquatic (SAV, Oyster, Clam, etc.)
b) Upland (Habitat and Water Quality Improvements)
c) Wetland (Enhancement and Restoration)
d) Shoreline (Living Shoreline demonstration)
B. Develop a timeline for project identification and possible implementation.
C. Determine data needs and availability.
3.August 2013 – Establish working group to identify and solicit funds to implement various elements of the plan.
4.November 2013 – Complete draft of restoration plan and provide to Planning Committee members for review and comment.
5.January 2014 – Convene the workgroup to prioritize projects and actions identified within the plan.
6.March 2014 – Complete plan and post on CIB website and distribute to various agencies/groups.

Short-Term Outcomes

1. Increased awareness by stakeholders (those developing components to the restoration plan) about the resource needs for the property.
2. Increased involvement by CIB with various bird conservation organizations.

Intermediate Outcomes:

1. Consolidated effort to secure funding to implement the practices identified in the restoration plan.
2. Increased opportunities to partner with or receive funding from bird conservation organizations.

Long-Term Outcomes

1. Increases in the amount and diversity of wildlife habitat onsite.
2. Enhanced water quality.

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 : Bethany Beach

Watershed/Waterbody : Indian River Bay

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 :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Poplar Thicket Upland Habitat Restoration Project*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and
Center for the Inland Bays
Eric Buehl, Habitat Coordinator
302-226-8105
DNREC Division of Fish & Wildlife
Rob Gano
302-539-3160
Sussex Conservation District
David Baird
302-856-2105

Project Status: Proposed

Work Pan ID : CIB14-008

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G1,G1E,G2	Establish and Implement a comprehensive nonpoint source pollution control program

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

Overview:

Located on the south side of the Long Neck peninsula east of the marina at Whitehouse Beach, the property is situate on the lower Indian River Bay watershed. The overall site is 229 acres and the focus of this project is the 70 acre tilled farm field in the center of the property. The area has been fallow since fall/winter of 2012 and was under cultivation since at least 1938 (oldest aerial photograph available). The property is owned by the State of Delaware (DNREC Division of Fish & Wildlife) and is to be managed as a bird sanctuary as required by deed stipulations.
The work proposed in this project is to restore upland wildlife habitat on 70 acres of farmed land.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s).
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action C.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action D.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action E.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 6. Action A.

Intended Results

1. The goal of this project is to replant the 70 acre farm field with warm-season native grasses and native tree species based on soil type, surface drainage, and soil moisture holding capacity.
A. Replant part of the farm field with native grasses based on site-specific conditions.
B. Replant part of the farm field with native trees based on site-specific conditions.
2. Evaluate the potential to restore/enhance farmed (prior-converted) wetlands onsite.

Outputs/Deliverables:

1. Increase 70 acres of upland habitat for birds and other important species.
2. Improved water quality through decreased nutrient loss to receiving waterbodies.
3. Increased diversity of both vegetation and habitat types.

Milestones:

1.July 2013 – Investigate site conditions and create localized GIS layer to aid in the development of the overall planting scheme.
2.August 2013 – Develop a warm-season native grass and native tree planting plan.
3.August 2013 – Identify potential funding sources and plant material providers.
4.November 2013 – Plant native trees.
5.March 2014 – Plant warm-season native grasses.
6.April 2014 – Investigate seasonal high water table in farmed wetlands and evaluate restoration potential.
7.June 2014 – If applicable, develop a plan to restore/enhance farmed wetlands onsite.

Short-Term Outcomes

1. Development of a comprehensive upland habitat restoration project plan.

Intermediate Outcomes:

1. Support by all project partners to secure funding and implement practices needed to complete the project.

Long-Term Outcomes

1. Increases in the amount of wildlife habitat.
2. Based on the Inland Bays Pollution Control Strategy estimated land-use Loading Rates (appendix E), the conversion from tilled land to forested area should result in a 76 percent decrease in total Nitrogen and a 50 percent decrease in total Phosphorus entering receiving waters from the re-forested farmland.

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 : Bethany Beach

Watershed/Waterbody : Indian River Bay

Latitude:

Longitude:

Project Leveraging Role

Report Information

Report Title:

Author :

Abstract :

Restoration ☑

Habitat Type : upland

Restoration type : Re-establishment

Acreage :

Partners :

Completion Date:

Cost : $0.00

QAPP ☐

Date Completed :

Date Approved :

Location :

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Living Shoreline Restoration Permitting and Policy Development*

Lead Contractor:

Responsible Partners, Contact Info, and Bartholomew Wilson--Science Coordinator
Center for the Inland Bays
39375 Inlet Road

Project Status: Proposed **Work Pan ID :** CIB14-011

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
AG-C,HP-F	Manage and plant forested/vegetative buffers
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2F,G3,G3B,G7,G7E, G7F	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

CWA Program Implementation: Improving Water Quality Monitoring

Overview:

The Center for the Inland Bays multiyear project to maximize the amount of green or living shorelines that are installed in the Inland Bays (to reduce the hardening of the bays natural shorelines) has been initiated and the main objective for this initiative will be to better integrate sustainable and softer shoreline management techniques to optimize the natural resources and habitat along the shoreline, while creating a shoreline that will better evolve with rising sea levels.

To achieve this goal , a main focus will be to assess what regulatory and permitting challenges and changes can be done by DNREC and the ACOE to forward the utilization of living or greener shoreline restoration techniques. The CIB will take the role of chairing the sub-committee and coordinating all committee activities. CIB will assist the Partnership for the Delaware Estuary and DNREC Watershed Assessment Section to develop a centralized website repository that contains guidebooks for site assessment, guidebook of shoreline installation methods, information on regional projects, and information on permitting and regulations related to shorelines in Delaware. DNREC will be responsible for presenting an overview of the State of Delaware regulations, as they pertain to shorelines. They will also be responsible for assessing the regulations related to shoreline construction in neighboring states and they differ from Delaware's regulations. The CIB will also take the responsibility of initiating and providing oversight of the regulation assessment for the State of Delaware, and lead the development of recommendation that will be presented to the Secretary of DNREC to address issues that are outlined in the shoreline assessment.

Much of this work will be done through the Inland Bays Shoreline Initiative Sub-committee.

Updated CCMP References:
Managing Living Resources and their Habitat
Objective 2: Halt the continued loss of wetlands and reverse these loss trends by promoting projects to mitigate for previously lost wetlands.

H. Develop a living shoreline initiative to maximize the amount of natural Bay shorelines.
H5. Support legislative and/or regulatory changes needed to require that living shoreline techniques be employed wherever feasible for shoreline stabilization.

Planning for Climate Change
Objective 1- Action E. Sub-Action E1. Conduct a demonstration project in the Inland Bays that employs living shorelines rather than hard structures for shoreline stabilization.
Outreach and Education Goals
Objective 1 - Action D. Seek opportunities to partner with Environmental and non-profit organizations,…….
Objective 3 - Action A. Administer and maintain and engaging, active website as a primary vehicle for disseminating CIB information.

Intended Results

1. Create a regulatory setting where living shoreline techniques are encouraged or required over exising hardered techniques (DNREC responsibility).
2. Ease the permitting process for ACOE permits that are using living shoreline techniques (ACOE responsibility).
3. Strengthen the criteria that is used by contractors to assess that only shoreline hardening will solve erosion issues.

Outputs/Deliverables:

Preliminary Outcomes (further development of outcomes will be developed as the Living Shoreline Initiative Committee conveys in Oct 2013).

1. Website that contains guidebooks for site assessment, information on regional projects, and information on permitting and regulations related to shorelines in Delaware.
2. Document containing policy assessment of Delaware's regulations and what could be adopted from neighboring states regulations to improve regulatory efficiently and reduce shoreline hardening. (expected Feb 2014).

Milestones:

Preliminary Milestones (further development of Milestones will be developed as the Living Shoreline Initiative Committee conveys in Oct 2013).

1. Presentation by DNREC on the current regulations of Delaware, related to shorelines. (expected Oct 2013).
2. Presentation and assessment of the regulations of the surrounding states. This will include highs on regulation components that could be incorporated into Delaware.(expected Oct to Dec 2013).
3. Policy assessment of Delaware's regulations will be completed by Committee. (expected Feb 2014).

Short-Term Outcomes

1. Incentivising of living shoreline restortation techniques through the implementation of a streamlined permitting process.

Intermediate Outcomes:

1. A detailed review and assessment of changes that could be implemented with the regulations of the State of

Delaware to require the use of greener shoreline restoration techniques.

Long-Term Outcomes

1. An expansion of softer shoreline restortaion techniques within the watershed.
2. A precipitase decline in the length of new hardened shoreline within the Inland Bays.

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 :

Restoration ☐	**QAPP** ☐	
Habitat Type :	**Date Completed :**	
Restoration type :	**Date Approved :**	
Acreage :	**Location :**	
Partners :		
Completion Date:		
Cost :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Upper Rehoboth Bay Land Conservation & Restoration Initiative*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and

Center for the Inland Bays
Eric Buehl, Land Conservation & Restoration Coordinator
302-226-8105
Kate Hackett
Delaware Wild Lands
302-378-2736
Ginger North
Delaware Nature Society
302-239-2334

Project Status: Proposed

Work Pan ID : CIB14-013

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
HP-E	Expand public land acquisition, protection, and access
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G3,G3B,G5,G5C,G6,G 6G	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

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

Overview:

General area of focus is the Upper Rehoboth Bay Watershed; Love Creek subwatershed, Angola Neck area, Rehoboth Marsh, and adjacent to the Lewes Rehoboth Canal. Until the final GIS analysis is complete, the focus will be on larger parcels (>50 acres) that are forested, contain sizeable areas of wetlands, or have agricultural land adjacent to waterbodies or wetlands that have the potential for BMP implementation. It may also include smaller parcels with similar land uses that are adjacent to one another and can be combined to form a larger parcel.
The work proposed in this project is to identify parcels of land for restoration or conservation activities.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s).
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action B.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action G.
COORDINATING LAND AND WATER USE DECISIONS-Objective 2: Action C.
COORDINATING LAND AND WATER USE DECISIONS-Objective 2: Action D.

Intended Results

1. The goal of this project is to identify parcels of land for conservation and/or restoration purposes in preparation for the release of potential funding in the Upper Rehoboth Bay watershed.
2. To identify potential parcels of land in which the owner is interested in conservation or habitat restoration in targeted areas.
3. To contact potential landowners identified in the GIS analysis to gauge their interest in participation.
4. To prepare a ready project list of interested landowners.
5. To be poised to take advantage of funding opportunities as they become available.

Outputs/Deliverables:

1. Development of new GIS layers and data.
2. List of potential landowners interested in land conservation or habitat restoration.
3. Development of a methodology and data that will aid in other land conservation initiatives.
A. The methodology will include utilizing new GIS data and chronicling the steps involved in identifying parcels, landowners, land use/land cover, and restoration potential.
4. Development of a project compendium that identifies a potential parcel's goal(s), partners, and work to be done.

Milestones:

1.May 2013 – Work with partners to identify potential parcels.
2.June 2013 – Work with partners to develop ranking criteria.
3.June 2013 – Complete GIS analysis and ranking.
4.June 2013 – Compile draft list of potential landowners.
5. July 2013 – Initial contact with landowners to be by mail.
6. July 2013 – Develop ranked list of potential landowners.
7.August-October 2013 – Develop individual parcel plans for inclusion in project compendium.
8. October 2013 - Follow-up phone contact with potential landowners to gauge interest.
9. November 2013-January 2014 – Set up meetings with interested landowners and various resource agencies (as needed).

Short-Term Outcomes

1. Identification of key properties for habitat restoration or conservation.
2. Increased awareness by landowners of the significance of their property in relation to habitat and water quality.

Intermediate Outcomes:

1. Adoption of water quality and wildlife habitat restoration techniques and practices by landowners.
2. Increased willingness by landowners to protect or restore open space lands.

Long-Term Outcomes

1. Increases in protected open space.
2. Enhanced water quality.
3. Increases in the amount of quality wildlife habitat protected or restored.

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 : Lewes, Rehoboth Beach

Watershed/Waterbody : Rehoboth Bay, Rehoboth Bay WS

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 :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Middle Island Restoration Project*

Lead Contractor: Center for the Inland Bays

Responsible Partners, Contact Info, and Eric Buehl, Land Conservation and Restoration Coordinator
Center for the Inland Bays
Chuck Williams, Program Manager
DNREC Division of Watershed Stewardship
302-739-9921

Project Status: Proposed **Work Pan ID :** CIB14-014

Project Description

Strategic Alignment:

CCMP Action Plan ID :	Primary Action Plan ID Title :
HP-G	Review, update, and codify the Inland Bays Dredge Plan
CCMP Goal Objective ID :	**Primary Goal Objective ID Title :**
G2,G2A,G2B,G7,G7E	Protect, restore, and enhance living resources by improving water quality and protecting and enhancing habitat

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

Overview:

Located between Rehoboth and Indian River Bays, Middle Island is a privately owned island that serves as an important nesting area for various species of birds. It is approximately 5 acres in size although it appears to have eroded from an original size of about 11 acres due to wave action and currents. The island is mostly tidal Spartina Spp marsh with a salt panne in the middle and a sand flat caused by regular overwash. The island was the site of a previous bird nesting project (Middle Island Heron Rookery) and is the focus of State American Oystercatcher nesting monitoring efforts.
The work proposed in this project is to restore tidal wetlands at Middle Island via the beneficial re-use of dredge material.
2012 CCMP Update: FOCUS AREA-Objective(s): Action(s). Sub-Action.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action D.
MANAGING LIVING RESOURCES AND THEIR HABITAT-Objective 2: Action H. Sub-Action H4.

Intended Results

1. The primary goal of this project is to restore and enhance habitat areas on and adjacent to Middle Island via the beneficial re-use of dredged material from nearby Massey's Ditch.
2. Additional project goals include:
A. Stop the loss of and restore additional critical habitat for birds and other species.
B. Utilize dredge material for habitat restoration.
C. Evaluate the effectiveness of beneficial re-use of dredged material for habitat restoration.
D. Utilize the dredged material to maintain the island and wetland habitats in the face of rising sea levels.
E. Utilize the lessons learned from this project on future island restoration endeavors.

Outputs/Deliverables:

1. Completed design plans.
2. Restoration of approximately 11 acres tidal marsh and upland nesting habitat.
3. Enhancement of bird nesting habitat on Middle Island.

Milestones:

1. June 2013 – receive notification regarding approval/disapproval of federal grant application for project funding.
2. July 2013 – receive notification regarding approval of State funding for project implementation.
3. August 2013 – solicit additional funding for project completion.
4. September 2013 – if sufficient funding exists, select contractor to complete design plans, attain state and federal project permits, and oversee dredge/construction activities.
Final implementation timeline will depend on permits, contractor selection, project agreements and contracts, and plans completion.

Short-Term Outcomes

1. Increased awareness about the loss of bird nesting habitat and wetlands in the Inland Bays.
2. Greater understanding that innovative habitat restoration can enhance and restore these areas.

Intermediate Outcomes:

1. Adoption of beneficial re-use of dredge material as a standard practice in certain types of habitat restoration projects.

Long-Term Outcomes

1. Increases in bird nesting populations.
2. Increase in tidal marsh habitat.
3. Enhanced water quality.

Project Progress

Progress To Date:

None

Additional Project Information

Year Reported 2013

Date : 08/12/2013

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 : Lewes, Rehoboth Beach

Watershed/Waterbody : Indian River Bay, Rehoboth Bay

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 :		

Year Reported 2013

Date : 08/12/2013

Project Report

Project Name: *Your Creeks*

Lead Contractor: CIB

Responsible Partners, Contact Info, and Bart Wilson, Science & Technical Coordinator, CIB
Sally Boswell, Education & Outreach Coordinator, CIB

Project Status: Proposed

Work Pan ID : CIB14-015

Project Description

Strategic Alignment:

CCMP Action Plan ID : HP-G

Primary Action Plan ID Title :

CCMP Goal Objective ID : G2,G2A,G2B,G7,G7E

Primary Goal Objective ID Title :

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

Overview:

Development of environmental indicators using existing data and supporting education and outreach material for the 14 major tributaries and their watersheds of the Inland Bays; which will include: the status and trends of the nutrient concentrations, sources of nutrient input, LU/LC, status of habitat, and any potential threats or concerns specific to each watershed. The “Your Creek” campaign will have targeted outreach material specific to each watershed, where nutrient sampling data has been collected by DNREC, and will not only illustrate the issues that the tributary faces, but also suggestions as to what every resident can accomplish on their property and in their community to aid in reducing nutrient pollution.

CCMP Addendum Actions:
Nutrient Management
Action E. Improve nutrient management of developed lands through research and education to better quantify and reduce nutrient loads.
Action F. Develop a program to educate the general public and landscapers on the benefits of reducing fertilization and improving fertilization practices.*

Water Quality
Objective 5: Reduce nutrient input to residential canals and lagoons.

Action A. Treat or remove graywater discharges into tributaries, canals, and lagoons.
Action C. Provide and disseminate educational material for homeowners on reducing fertilizer inputs to tributaries, canals, and lagoons.

Education and Outreach
Objective 3: Communicate with stakeholders through a variety of media; to promote public involvement and influence behaviors, attitudes and actions to foster stewardship.
Action A. Continue to develop and administer a website as a primary vehicle for disseminating information.
Action B. Incorporate social marketing and enhanced use of media into CIB's communication strategy.
Action D. Create and disseminate printed marketing materials such as brochures, postcards, flyer exhibits and signage to address specific education/outreach needs to target audiences.

Intended Results

1. Increased recognition of the Center of the Inland Bays and its mission.
2. Increase in the number of community partners working with the CIB
3. Raise the level of understand of the sources of nutrient pollution within communities and tributaries, and introduce means of helping to reduce those loads.

Outputs/Deliverables:

1. Design and produce "Your Creek" brochures for each tributary watershed selected.
2. Develop general "Your Creek" exhibit for use at community events throughout Inland Bays watershed.
3. Host or otherwise facilitate outreach events for communities around major tributaries.

Milestones:

1.Complete GIS and statistical analysis of LU/LC and main non-point source of nutrients in each tributary watershed.
2.Develop draft layout design and straw content for campaign
3.Create print materials for the campaign for each watershed.
4. Create general exhibit for use at community events in any of the tributary watersheds.
5. Host one outreach event of the "Your Creek" campaign per watershed or tributary of study.
6. Implement an education campaign using our website, Facebook account, YouTube and constant contact communications

Short-Term Outcomes

1. Build awareness and name recognition among local residents, homeowners and visitors about the Inland Bays and the role that everyone can play in reducing nutrient pollution.

Intermediate Outcomes:

1. Increase awareness and support of the Inland Bays among communities and townships 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 neighboring creeks , that results in increased public participation in public policy issues affecting the Inland Bays.
2. Increased membership and support for CIB.
3. Increased adoption of pollution control practices by residents.

Summary of Major Project Changes from the 2013 Workplan

The following is a summary of major project changes from the 2013 CIB Workplan to the EPA. It is common occurrence that a small percentage of the total Comprehensive Conservation & Management Plan Projects intended for implementation during a given Fiscal Year are either altered significantly in their scope or abandoned due to a number of potentially unforeseen circumstances. The purpose of this summary is to track and briefly describe these instances by project and how funds were re-allocated to adjust.

Projects Removed from the Workplan due to Low Significance or Inactivity.

The following projects were removed from the workplan: 1) Inland Bays Habitat Restoration Strategy Comparison to Draft CIB Habitat Plan and 2) Land Acquisition, 3) Land Owner Habitat Technical Assistance and 4) Stormwater Maintenance & Open Space Management Seminars. These projects were not specifically allocated EPA dollars or matching funds, but were supported by salary. The former two projects had inactivity and the latter two will be ongoing but require a level of effort that is not significant enough to warrant their own workplan item.

Inland Bays Shellfish Aquaculture Initiative

The project description was altered to reflect the tasks actually carried out. When devised and included in the 2012 workplan, its objectives were in a very preliminary form. They included new legislation and a pilot scale demonstration farm, and economic increases. These objectives were not pursued using EPA funding and the revised workplan description accurately reflects the final goals and deliverables of the initiative.

Demonstration and Training of Living Shoreline Techniques for Marine Contractors

This project was originally budgeted $24,459 of non-EPA non-matching funds which were reallocated towards the newly added Shoreline Monitoring and Assessment to aid in Restoring Wetland and Riparian Shoreline project. This reallocation occurred because the latter project needed additional funding for its initiation and was priority over the former. The Shoreline Monitoring and Assessment Project was begun after the submittal of the previous workplan and is now added.

Beneficial Reuse of Dredge Material for Wetland Restoration (Demonstration Project)

This project was initiated after the submittal of the 2013 workplan and was completed.

Enhancement of Education and Outreach Opportunities at the James Farm Ecological Preserve

This project had no implementation during FY2013, aside from development of funding and partnership building. Through this work, the name of the project was changed to James Farm Long Term Site Plan which more accurately describes the major project outcome. The project originally had $2,712 of EPA funds budgeted and $13,288 of State of Delaware funds budgeted. An addition $15,000 was contributed by partners which should allow implementation to occur beginning at the end of the current fiscal year.

DE CENTER FOR THE INLAND BAYS
Expenditure Journal - EPA Travel 2012
From 10/1/2011 Through 9/30/2012

CE993990-10-1
CE993990-11-0

Funding Source Code	Effective Date	Name	Transaction Description	Expenditures
1085	10/31/2011	Christopher Bason	C Bason, local mileage, Oct 2011 734 miles @ .51 ,tolls $4	$ 308.10
1085	10/31/2011	Chris Bason	C Bason local mlieag 149 miles@ .51 Sept 2011	$ 75.99
1085	10/31/2011	Chris Bason	C Bason ANEP mtg, L.A.,CA,10-15-20,mileage 66,cab,meals,	$ 79.53
1085	11/4/2011	E.J. Chalabala	E. Chalabala local mileage Oct 2011, 146 miles @ .51	$ 74.46
1085	11/14/2011	Sally Boswell	S Boswell local mileage Sept-Oct, 641.2 miles @ .51	$ 327.02
1085	11/14/2011	Chase Inc	C Bason ANEP Mtg,L.A,CA, Oct 15-20 Hotel, parking, meals, airfare	$ 760.70
1085	12/9/2011	Chris Bason	C Bason local mileage Nov 2011, 230 miles @ .51/toll .50	$ 117.80
1085	12/9/2011	Sally Boswell	S Boswell local mileage Nov 2011, 290.1 miles @ .51	$ 151.95
1085	12/9/2011	E.J. Chalabala	E Chalabala local mileage Nov 2011, 90 miles @.51	$ 45.90
1085	12/9/2011	Partnership for the De Estuary	E Chalabala, Living Shorlines workshop,Dover, DE, Dec 13, Registration	$ 15.00
1085	3/7/2012	Sally Boswell	S Boswell local mileage Feb 2012, 121.4 miles @ .555	$ 67.38
1085	3/7/2012	E.J. Chalabala	E.Chalabala local mileage Feb 2012, 116miles @ .555	$ 64.38
1085	3/8/2012	Chase Inc	S Boswell,DBartow,PDrizd,Feb-25,De Environmental Educ Conference, Lewes DE, Registrations	$ 105.00
1085	3/8/2012	Chase Inc	C Bason,JJones,ANEP/EPA Meetingg,Wash DC, Feb-28, meal	$ 48.55
1085	4/4/2012	Sally Boswell	S Boswell local mileage Mar 2012, 86.9 miles @ .555	$ 48.23
1085	4/17/2012	Chase Inc	EJ Chalabala,Registration, Shellfish Forum,Denton MD, 3-15-12	$ 15.00
1085	4/17/2012	Chase Inc	C Bason,ANEP/EPA Meeting,Wash DC,2-27-3-1, Hotel & parking	$ 717.12
1085	5/3/2012	E.J. Chalabala	EJ Chalabala local mileage Apr 2012, 111 miles@ .555	$ 61.61
1085	5/3/2012	Sally Boswell	S Boswell local mileage Apr 2012, 443.9 miles@ .555/$4 toll	$ 250.36
1085	6/11/2012	Sally Boswell	S Boswell local mileage May 2012, 235.5 miles @ .555	$ 130.70
1085	7/17/2012	Sally Boswell	S Boswell local mileage,June 2012,233.4 miles @ .555	$ 129.54
1085	7/17/2012	Chase Inc	EJChalabala, Manage Priorities Workshop,Dover DE, 7-18, Registration	$ 99.00
1085	8/3/2012	Eric H. Buehl	E Buehl local mileage,July 2012, 327.1miles @ .555	$ 185.54
1085	8/13/2012	Chase Inc	E.J Chalabala, Restor Amer Estuary Conf,Tampa,FL, Oct-20-25, Hotel, Airfare, Registration	$ 1,272.20
1085	8/13/2012	Chase Inc	B Wilson, Restore Amer Estuary Conf,Tampa, Fl, 10-20-25, Airfare Registration	$ 631.40
1085	8/13/2012	Chase Inc	E Buehl, USFWL,NCTC training, Hotel,Jul-8-13, Shepardsville,WV-split	$ 387.20

Funding Source Code	Effective Date	Name	Transaction Description	Expenditures
1085	8/15/2012	E.J. Chalabala	EJ Chalabala local mileage 140 miles @ .555, July 2012	$ 77.70
1085	8/15/2012	Sally Boswell	S Boswell local mileage July 2012, 130 miles @ .555	$ 72.15
1085	8/22/2012	NC State University	E Buehl-Stream Morphology Assessment Workwhop, Sept 17 & 21, Raleigh,NC, Registration	$ 495.00
1085	8/22/2012	Four Points by Sheraton Ashevi	E Buehl, Hotel, ,Raleigh,NC, Stream Morphology Assessment Workwhop Sept 17 & 21	$ 389.28
1085	8/22/2012	Damian Brady	D Brady, Rental car, June -14,Wash DC to Dover DE, Project -TMDL Model Inlandbays	$ 421.68
1085	8/30/2012	Dennis Bartow	D Bartow local mileage 136miles @.555 May	$ 75.48
1085	9/6/2012	Sally Boswell	S Boswell local mileage August 2012, 173.4 miles @ .555	$ 96.24
1085	9/6/2012	Eric H. Buehl	E Buehl local mileage August, 128.8 miles @ .555/toll .25	$ 71.73
1085	9/18/2012	Association of Natl Estuary Pr	S Boswell, Registration,ANEP Mtg,Tampla FL,10-21-24-2012	$ 150.00
1085	9/18/2012	Restore America's Estuaries	S Boswell,Registration, REA Mtg,Tampa Fl,Oct 21-23, 2012	$ 300.00
			SUB-TOTAL 1085	$ 8,318.92
1087	10/31/2011	Christopher Bason	C Bason,local mileage,Oct 2011 734 @ .51,tolls $4	$ 72.24
1087	11/4/2011	Eric H. Buehl	E Buehl local mileage, Oct 2011,289.3miles @ .51	$ 147.54
1087	2/2/2012	Roy Miller	R Miller local mileage 84miles @.555, Jan 2012	$ 46.62
1087	3/7/2012	Roy Miller	R Miller local mileage Feb 2012 80miles @ .555	$ 44.40
1087	3/7/2012	Eric H. Buehl	E Buehl local mileage Feb 2012 79.8 miles @.555	$ 44.29
1087	4/4/2012	Roy Miller	R Miller local mileage, Mar 2012, 72 miles @ .555	$ 39.96
1087	4/19/2012	Eric H. Buehl	E Buehl local mileage March 2012 35.2 miles @.51	$ 19.54
1087	5/3/2012	Eric H. Buehl	E Buehl local mileage Apr 2012 84.2 miles @ .555	$ 46.73
1087	6/6/2012	Eric H. Buehl	E Buehl local mileage May 2012, 194.2 miles @.555	$ 107.78
1087	6/11/2012	ARAMARK	E Buehl-US Fish Wildlfe workshop/Hotel-Jul-8 to 13,Shepardsvill,WV	$ 645.00
1087	6/28/2012	Eric H. Buehl	E Buehl local mileage June 2012, 244.5 @ .555	$ 135.70
1087	8/13/2012	Chase Inc	E Buehl,US Fish Wildlife, NCTC trng, Hotel, Jul-8-13,shepardsvill,WV-split	$ 562.80
			SUB-TOTAL 1087	$ 1,912.60
			1085,1087 TOTAL EXPENSES GRANT CE993990-10-1	**$ 10,231.52**

Funding Source Code	Effective Date	Name	Transaction Description	Expenditures
1089	12/2/2011	Eric H. Buehl	E Buehl local mileage nov 2011 56.7 miles @ .51	$ 28.92
1089	1/6/2012	Eric H. Buehl	E Buehl local mileage Dec 2011 50.4 miles @.555	$ 27.97
1089	1/6/2012	E.J. Chalabala	E Chalabala local mileage Dec 2011 56 miles @ .555	$ 31.08
1089	1/6/2012	Loretta Smith	L Smith local mileage Dec 2011 63.1 miles @ .555	$ 35.02
1089	1/6/2012	Chris Bason	C Bason local mileage Dec 2011 562 miles@ .555/$4 toll	$ 315.91
1089	1/24/2012	Sally Boswell	S Boswell local mileage Dec 2011, 321.7 miles @.555	$ 178.54
1089	2/2/2012	Sally Boswell	S Boswell local mileage Jan2012 257.1 @ .555/toll $4	$ 146.69
1089	2/2/2012	E.J. Chalabala	E Chalabala local mileage Jan 2012, 144 @.555	$ 79.92
1089	2/2/2012	Eric H. Buehl	E Buehl local mileage 133 miles @ .555,Jan 2012	$ 73.82
1089	2/2/2012	Loretta Smith	L Smith local mileage Jan 2012 80.1 miles @ .555	$ 44.46
1089	2/6/2012	Chris Bason	C Bason local mileage Jan 2012 505 miles @.555	$ 280.28
1089	2/22/2012	Association of Natl Estuary Pr	C Bason-ANEP Mtg Feb-28-3-1-12,EPA Wash DC, Registration	$ 150.00
1089	3/7/2012	Chris Bason	C Bason,ANEP Mtg,Wash DC, Feb/27-3/1, 243 miles @.555/meals, tolls	$ 225.34
1089	3/7/2012	Chris Bason	C Bason local mileage, Feb 2012,463 miles @ .555	$ 256.97
1089	3/7/2012	Loretta Smith	L Smith local mileage Feb 2012 52.8 miles @ .555	$ 29.30
1089	4/4/2012	Loretta Smith	L Smith local mileage March 2012, 48.8 miles @ .555	$ 27.08
1089	5/3/2012	Chris Bason	C Bason local mileage Mar & Apr 2012, 1330 miles @ .555, $1 toll	$ 739.16
1089	6/6/2012	Chris Bason	C Bason local mileage May 2012,377 miles @.555	$ 224.24
1089	7/9/2012	Caitlin Seppi	C Seppi local mileage June 2012 102 miles @ .555	$ 56.61
1089	7/9/2012	Nick Spalt	N Spalt local mileage June 2012,109 miles @ .555	$ 60.50
1089	7/9/2012	Chris Bason	C Bason,Local mileage, June 2012, 406miles @.555, $4 toll	$ 229.33
1089	7/9/2012	Loretta Smith	L Smith local mileage June 2012 47.9 miles @ .555	$ 26.58
1089	7/17/2012	Chase Inc	C Bason, Registration,ANEP Mtg, Oct 20-25,Tampa Fl	$ 300.00
1089	8/3/2012	Loretta Smith	L Smith local mileage July 26.8 miles @ .555	$ 14.87
1089	8/30/2012	Dennis Bartow	D Bartow HSC-local mileage 50 miles @.555 June 2012	$ 27.75
1089	8/31/2012	Chris Bason	C Bason local mileage August 2012, 833 miles@ .555, tolls-parking $26 meal $9.41	$ 497.73
1089	9/14/2012	Chase Inc	C Bason,EPA Mtg 8-13 Phila PA, Parking/ NOAA Conf, Silver Spring MD 8-22 Parking/ REA Conf,Tampa Fl, Oct 21-23-Airfare	$ 286.69
			1089 TOTAL EXPENSES-CE993990-11-0	**$ 4,394.76**
			REPORT TOTAL	**$ 14,626.28**

CENTER FOR THE INLAND BAYS, INC.

Travel Budget

Estimated Travel Expenses for Fiscal Year 2014

Position	Event/Reason	Date(s)	Location	Mode	Cost
Executive Director	Fall National Estuary Program Meeting	NOV 12-15	Mobile, AL	Air fare/ Transportation Hotel/Food	$1,263
Executive Director	Spring National Estuary Program Meeting	Februrary?/March? 2014	Washington, D.C.	Transportation Hotel/Food	$900
Executive Director & Administrative Assistant	CCMP Project Implementation	N/A	N/A	*Local Mileage	$637
Land Protection & Restoration Coordinator	CCMP Project Implementation	N/A	N/A	*Local Mileage	$1,200
Restoration Coordinator	CCMP Project Implementation	N/A	N/A	*Local Mileage	$1,200

TOTAL $5,200

Costs Expressed

Only the estimated travel expenses expected to be applied to the FY2043 federal grant are shown.

Allowance for Meals

Meals at authorized functions will be reimbursed at the federal per diem rate for the destination city.

* Mileage is calculated to exclude daily commute and is reimbursed at the established federal rate of $0.565/mile

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 **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 **Science & Technical Coordinator** serves the Executive Director and is responsible for formulating, coordinating and implementing the research and demonstration project agenda of the Center for the Inland Bays, which includes building and maintaining relationships with scientists, resource professionals, and other associates responsible for analyzing and reporting on the condition of Delaware's Inland Bays. This individual will also assist in the planning and coordination of the activities of the Inland Bays Scientific & Technical Advisory Committee. The Science & Technical Coordinator provides vision, leadership, and experience to plan and execute those activities and tactics that satisfy implementation of the Inland Bays Comprehensive Conservation and Management Plan (CCMP) that pertain to the following: 1) Monitor existing research projects and provide guidance on future and potential research projects, 2) Analyze existing data and provide guidance and consultation on Inland Bays issues related to science and management, 3) Responsible for the CIB Quality Management Plan and creation, review, and approval Quality Assurance Project Plans for research projects, 4) Prepare regular State of the Inland Bays Reports and other ecosystem condition assessments, 5) Prepare other scientific reports and documents as needed, 6) Effectively communicate complex scientific data and understanding to multiple audiences including: the general public, decision makers, and special interest groups, 7) Implement demonstration projects that meet CCMP objectives, 8) Serve as the staff liaison to the CIB STAC by providing committee support and assisting in the planning and implementation of STAC activities, 9) Assist staff and other CIB committees with science guidance, 10) Lead and serve on local, statewide, regional, and national committees and workgroups related to estuarine science and restoration, 11) Produce and maintain CIB's GIS including a standardized map catalog, 12) Procure grants relative to science and demonstration project priorities, 13) Perform other duties as assigned by Executive Director.

The **Education and Outreach Coordinator** serves the Executive Director and is responsible for developing and coordinating the implementation of the public participation and education action plan of the Center's Comprehensive Conservation and Management Plan (CCMP) for the Inland Bays, as well as the development of programmatic infrastructure to secure funding and oversee project implementation to meet the goals stated in the plan. This individual is responsible for developing and distributing educational information across all media types in regards to the Inland Bays and their restoration and tracking the effectiveness of targeted education campaigns. The Education & Outreach Coordinator will enable the general public to make sound decisions that contribute to the restoration of the Inland Bays and their watershed; to instill in stake holders, teachers, students, and municipal officials an environmental awareness with regard to the Inland Bays and their watershed; to promote watershed education in the school system and to stake holders through in-service programs, school visitations, all forms of educational media and publications, coordinated programs, and various educational seminars in cooperation with, among others, state agencies and local colleges/universities and others. The Education & Outreach Coordinator will 1) Work with CIB staff and partners to

develop and conduct targeted education and outreach campaigns to achieve and document increased understanding of the Inland Bays and their resources and the behavior changes necessary to support their restoration, 2) Partner with governmental agencies and other groups on projects that promote citizen education and involvement in CCMP focus areas, 3) Represents the CIB at meetings convened by federal, state, county, and local governmental agencies and other non-governmental agencies and groups for the purposes of identifying opportunities for public participation and involvement in addressing CCMP focus areas, 4) Solicits, identifies, and develops grant proposals to pursue financial assistance to fund education and outreach projects sponsored by the CIB; manages grant funded projects as awarded, 5) Develop detailed annual plans of action for education and outreach activities, 6) Direct and supervise the James Farm Education Program, 7) Provide education activities/programs to schools and other organizations as requested, 8) Direct and supervise our education/outreach partnership with the Bethany Beach Nature Center, 9) Responsible for the coordination, writing, editing, design, production and distribution of the bi-annual Inland Bays Journal and Annual Report as well as other publications, reports, exhibits and interpretative signage as needed, 10) Develop content for the CIB website, 11) Supervise the part-time Volunteer Coordinator to provide direction and continuity to the CIB volunteer program, 12) Serve as primary press liaison, 13) Develop and Coordinate community educational events and exhibits throughout the watershed, 14) Develop and implement targeted education/outreach campaigns for priority projects, 15) Serve as the coordinator for the CIB speakers bureau; develop presentations and train speakers, 16) Serve as the liaison to the Citizens Advisory Committee, 17) Responsible for tracking and reporting on education and outreach actions and program success, 18) Perform other duties as assigned by Executive Director.

The **Land Protection and Restoration Coordinator** serves the Executive Director and is responsible for formulating, coordinating and implementing the land protection and restoration project agenda of the Center for the Inland Bays, which includes building and maintaining relationships with scientists, landowners, elected officials, resource professionals, and other associates responsible for protecting and restoring natural habitats per the goals of the Center's Habitat Plan, Comprehensive Conservation and Management Plan, Pollution Control Strategy and other relevant conservation initiatives. This individual will also assist with various in monitoring and educational activities related to the natural environments and resources of the Inland Bays watershed. The Land Protection and Restoration Coordinator will provide vision, leadership, and experience to plan and execute those actions that satisfy implementation of the Inland Bays Habitat Plan, CCMP, and other conservation initiatives that pertain to the following: 1) Primary responsibility is the development and implementation of a watershed-wide habitat protection and restoration plan. This includes continual refinement and prioritization of plans 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, 2) Coordinate program and planning efforts of federal, state, county, and local governmental agencies and other non-governmental agencies and groups related to natural lands protection and restoration within the watershed. Emphasis is on keeping Inland Bays' habitat and environmental issues at the forefront of other agency/group planning and consideration, 3) Implement natural lands protection and restoration projects that balance multiple objectives including achievement of priority conservation objectives, reduction of pollution loads to waterways, and provision of recreational and educational value, 4) Solicits, identifies, and develops grant proposals to pursue financial assistance to fund natural lands protection and restoration projects sponsored by the CIB;

manages grant funded projects as awarded, 5) Works directly with landowners to advise on restoration and conservation options for private lands and carries out land conservation, acquisition, and restoration activities, 6) Lead and serve on local, statewide, regional, and national committees and workgroups related to natural lands protection and restoration, 7) Effectively communicate complex land restoration and protection data and concepts to multiple audiences including: the general public, decision makers, and special interest groups, 8) Serves as a reference for habitat related information and inquiries to staff and general public, 9) Produces and assists in the production of reports, educational, and outreach materials on habitat and its restoration to multiple audiences, 10) Responsible for tracking and reporting on program success, 11) Perform other duties as assigned by Executive Director.

The **Aquatic Restoration Coordinator** serves the Executive Director and is responsible for formulating, coordinating, implementing and reporting on the aquatic resources restoration and management agenda of the Center for the Inland Bays, which includes building and maintaining relationships with scientists, resource professionals, and other associates responsible for implementing aquatic restoration actions of the Inland Bays Comprehensive Conservation and Management Plan. This individual will also assist in the planning, coordination, and implementation of the activities of the Inland Bays Water Use Plan Implementation Committee. The Aquatic Restoration Coordinator will provide vision, leadership, and experience to plan and execute those activities and tactics that satisfy implementation of the Inland Bays Comprehensive Conservation and Management Plan (CCMP) that pertain to the following: 1) Develop, fund, and implement long-term, stakeholder-based plans for estuarine living resource restoration and enhancement including but not limited to finfish, shellfish, and baygrasses, 2) Develop demonstration projects for cost effective and efficient estuary restoration techniques and systems, 3) Monitor and report on the success of estuarine living resource restoration and enhancement projects, 4) Assist in the analysis and interpretation of restoration project monitoring data, 5) Serve as the manager of the CIB Oyster Gardening Program, 6) Solicit and manage volunteers and seasonal employees to assist in responsibilities, 7) Serve as the staff liaison to the CIB Water Use Plan Implementation Committee by providing committee support and assisting in the planning and implementation of WUPIC activities, 8) Build the capacity and will among partner organizations to participate in and fund restoration and water use plan implementation projects, 9) Procure grants relative to restoration and water use plan implementation project priorities and assist with private donor cultivation to fund restoration, 10) Build the physical/facilities capacity for large scale restoration and enhancement activities, 11) Conduct education and outreach activities on aquatic living resources and assist the Education & Coordinator with related materials preparation, 12) Effectively communicate complex estuary restoration concepts to multiple audiences including: the general public, decision makers, and special interest groups, 13) Lead and serve on local, statewide, regional, and national committees and workgroups related to estuarine restoration, 14) Perform other duties as assigned by Executive Director.

The **Development Coordinator** serves the Executive Director and The development coordinator works under the supervision of the Executive Director and is responsible for planning, coordinating and implementing the fundraising efforts of 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. The Development Coordinator will provide vision, leadership, and experience to plan and execute fundraising, marketing, and

public relations efforts, including: 1) Increase mailing lists and donor base, 2) Develop prospect research tools and donor profiles, 3) Cultivate individual and corporate donors, 4) Annual fundraising events, 5) Major gifts campaigns, 6) Direct mail, CIB Endowment and Annual Fund campaigns, 7) Web site—Online giving, 8) Marketing programs and annual events to the community and target audiences, 9) The Development Coordinator will create a comprehensive strategic development/finance plan, and will take the lead in implementing all aspects of this plan.

The **Environmental Policy Coordinator** reports to the Executive Director and 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). The individual 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. Responsibilities include establishing and maintaining contact with decision-makers (Congressional Members, legislators, local elected and appointed officials, agency leaders, resource managers, etc.) to increase awareness of issues and initiatives identified for Delaware's Inland Bays; working with various Inland Bays stakeholder groups to assess current policy issues and needs and assists in designing public policy that leads to successful implementation of the Inland Bays CCMP; performing policy analyses and report preparation; providing policy guidance and technical support for Board and staff; assisting 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.

The **Property Manager** serves the Executive Director and the Restoration Coordinator and is responsible for the management, care, and maintenance of CIB properties. The Property Manager is also responsible for assisting in the development of management plans and projects for CIB properties. The Property Manager works independently and as part of a team of paid CIB employees and unpaid CIB volunteers to manage, care for, and maintain existing and newly acquired properties owned and/or managed by the CIB. The Property Manager will manage CIB properties for the purposes of natural resource conservation, water quality improvement, and outstanding recreational and educational visitor experiences by: 1) Serving as a positive and enthusiastic representative of the CIB and its mission to property visitors, 2) Encouraging the safe and respectful use of CIB properties by residents, visitors, and special interest groups, 3) Utilizing volunteer labor to maximize the successful management of properties, 4) Improving and maintaining the cleanliness of CIB properties, equipment, and facilities, 5) Maintaining and improving relationships between the CIB and property visitors, concessionaires, neighbors, and local communities, 5) Managing the natural resources of CIB properties to maximize conservation and the recreational and education experiences of visitors, 6) Assisting with special events, education programs, research, and conservation projects on the properties, 7) Assisting with the development of property management plans

The **Schoolyard Habitat Coordinator** works with the Education and Outreach Coordinator to manage the Schoolyard Habitat Program; activities including planning and constructing new schoolyard habitats at schools in the watershed and working with the schools where schoolyard habitats have already been established; responsibilities also include identifying and cultivating community volunteer Leaders, garden club partners, and coordinating school administration, staff and students.

Board of directors

MR. RICHARD EAKLE, CHAIR; APPOINTEE OF THE PRESIDENT PRO TEMPORE OF THE DELAWARE SENATE
MS. JOANNE CABRY, VICE-CHAIR; APPOINTEE OF THE SPEAKER OF THE DELAWARE HOUSE OF REPRESENTATIVES
DR. WILLIAM MCGOWAN, TREASURER; SUSSEX CONSERVATION DISTRICT REPRESENTATIVE
MS. NACNY CABRERAS-SANTOS, SECRETARY; CITIZENS' ADVISORY COMMITTEE CHAIR
DR. SCOTT ANDRES, SCIENTIFIC & TECHNICAL ADVISORY COMMITTEE CHAIR
MAYOR GORDON WOOD; SUSSEX COUNTY ASSOCIATION OF TOWNS
MR. TODD LAWSON; 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

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MR. ERIC BUEHL, LAND PROTECTION AND RESTORATION COORDINATOR .....*habitat@inlandbays.org*
MS. SALLY BOSWELL, EDUCATION & OUTREACH COORDINATOR .....*outreach@inlandbays.org*
MR. E.J. CHALABALA, AQUATIC RESTORATION COORDINATOR .....*restoration@inlandbays.org*
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MR. ROY MILLER, ENVIRONMENTAL POLICY COORDINATOR.....*policy@inlandbays.org*
MR. BART WILSON, SCIENCE AND TECHNICAL COORDINATOR.....*science@inlandbays.org*
MR. BOBBY COLLINS, PROPERTY MANAGER.....*jamesfarm@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
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CENTER FOR THE INLAND BAY
Rehoboth Indian River Little Assawoman