

<b>Appendix C: Objectives and actions for Water Supplies</b>					
Goals: To ensure adequate water supplies and flow in the Barnegat Bay Watershed for ecological and human communities now and in the future.					
<ul style="list-style-type: none"> <li>Timeframe – The timeframe from adoption of the CCMP in which the action should be completed. Short (S) indicates a completion within 1-2 years, Medium (M) actions are completed within 3-5 years, and Long (L) actions take 5 or more years. On-going actions are considered Long.</li> <li>Costs – The anticipated costs of action components: \$ &lt; \$100,000, \$\$ \$100,000 - \$500,000, \$\$\$ \$500,000 - \$1,000,000, \$\$\$\$ &gt; \$1,000,000.</li> </ul>					
WS Objective	WS Action ID	CCMP Action	Partners, Leads, and Identified Appropriate Funding Sources	Time-frame	Cost?
1. Protect, maintain and enhance existing water supply and surface and ground water flow					
	WS 1-1	<p><b><u>Assess and implement existing shallow groundwater protection programs, including wellhead protection, rainwater and treated wastewater recharge, and new septic designs that may better address the release of nutrients and anthropogenic compounds to groundwater.</u></b></p> <p><b>METRIC:</b> The number of shallow groundwater protection programs, including local ordinances and project sites</p> <p><b>MILESTONES:</b> 1-1a: Assess programs already in place</p>	<p>Partners: Municipalities, Utilities, NJDEP</p> <p>Lead (s): NJDEP</p> <p>Funding Sources: DEP State Revolving Funds, EIT; Other funding TBD</p>	L	\$\$- \$\$\$\$

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

		<p>1-1b: Identify areas where programs could be located</p> <p>1-1c: Implement programs</p> <p>1-1d: Evaluate results</p>			
	<b>WS 1-2</b>	<p><b><u>Determine minimum ecological flow requirements for priority streams, rivers and wetlands within the watershed.</u></b></p> <p><b>METRIC:</b> Number of waterways with minimum ecological flows determined.</p> <p><b>MILESTONES:</b>          1-2a: Compile available data and determine where sufficient data exists and where there are data gaps          1-2b: Identify priority data gaps and cost estimates, which may be substantial          1-2c: Perform ecological flow assessments          1-2d: Peer review and publishing of assessments</p>	<p>Partners: USGS, Pinelands Commission, NJDEP</p> <p>Lead(s): NJDEP and NJPC; USGS</p> <p>Funding Sources: DEP State Revolving Funds, EIT; Others TBD</p>	S	\$\$\$- \$\$\$\$
	<b>WS 1-3</b>	<p><b><u>Assess HUC 11s for water supply capability related to streamflow, surface and shallow groundwater withdrawal capacity.</u></b></p> <p><b>METRIC:</b> Number of assessments completed by HUC11 watershed</p> <p><b>MILESTONES:</b>          1-3a: Compile available data and prioritize data gaps by HUC 11.          1-3b: Rank areas in terms of capacity and potential ecological issues, and address data gaps in those HUC 11s.          1-3c: Publish information to inform regulatory decision-making and guide mitigation.</p>	<p>Partners: NJDEP, NJPC</p> <p>Lead(s): TBD</p> <p>Funding Sources: DEP State Revolving Funds, EIT; Other funding TBD.</p>	M	\$\$\$- \$\$\$\$

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

	<p><b>WS 1-4</b></p>	<p><b><u>Support comprehensive planning that will guide sustainable water supply management, and to the maximum extent possible, maintain natural hydrology.</u></b></p> <p><b>METRICS:</b> Percentage of a Barnegat Bay-specific water supply plan completed; Percentage of a Barnegat Bay-specific water supply plan implemented</p> <p><b>MILESTONES:</b>          1-4a: Identify plan elements and additional detail needed beyond the existing NJDEP Statewide Water Supply Plan          1-4b: Develop plan with stakeholder involvement          1-4c: Implement plan with stakeholders and through the regulatory process          1-4d: Review progress, revise and update plan</p>	<p>Partners: NJDEP, Water/WW Utilities, Pinelands Commission</p> <p>Lead(s): NJDEP, NJPC</p> <p>Funding Sources: DEP State Revolving Funds, EIT; Other funding TBD</p>	<p>L</p>	<p>\$\$\$-          \$\$\$\$</p>
	<p><b>WS 1-5</b></p>	<p><b><u>Promote and support land use activities that enhance water supply protection and minimize water withdrawals and usage, especially in the most stressed water supply planning areas as identified in the State Water Supply Master Plan</u></b></p> <p><b>METRICS:</b> Stabilized water demand figures; acres of land uses with low water demand</p> <p><b>MILESTONES:</b>          1-5a: Examine NJ Ambient Ground Water Quality Monitoring data by land use (developed/undeveloped) to classify per capita and regional water demands          1-5b: Design ground water monitoring plan for priority areas          1-5c: Identify and implement land use changes necessary to stabilize water demands          1-5d: Evaluate and revise approaches, as necessary</p>	<p>Partners: NJDEP, Municipalities, Land Conservancies</p> <p>Lead(s): NJDEP, PC, Ocean and Monmouth County, municipalities</p> <p>Funding Sources: DEP State Revolving Funds, EIT; Other funding TBD</p>	<p>L</p>	<p>\$\$</p>

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

<p><b>2. Prevent degradation of water supplies</b></p>					
	<p><b>WS 2-1</b></p>	<p><b><u>Inventory and promote municipal land use regulations that emphasize water supply protection as a primary goal.</u></b></p> <p><b>METRIC:</b> Number of municipalities inventoried; number of new municipal regulations/ordinances</p> <p><b>MILESTONES:</b>          2-1a: Identify local regs/ordinances that are effective in protecting water supplies          2-1b: Identify municipalities where these regs are in place          2-1c: Identify water supply sources by municipality          2-1d: Target promotion of land use regulatory improvements where improvements can be made and with respect to the local water supply source(s)          2-1e: Update inventory and re-promote where needed</p>	<p>Partners: NJDEP, BBB</p> <p>Lead(s): BBB, JCNERR, NJ Future, Sustainable Jersey, others TDB</p> <p>DEP State Revolving Funds, EIT; Other State and Local Funding Sources: TBD</p>	<p>S</p>	<p>\$</p>
	<p><b>WS 2-2</b></p>	<p><b><u>Identify, implement and support voluntary and mandated conservation and infiltration practices and regulation to maintain and restore base stream flows and natural hydrology.</u></b></p> <p><b>METRIC:</b> Number of ongoing conservation programs and regulations identified, implemented, and supported</p> <p><b>MILESTONES:</b>          2-2a: Identify effective water conservation and infiltration practices and programs, both voluntary and mandatory          2-2b: Build upon existing programs to incorporate new practices, increase effectiveness and expand coverage across the Barnegat Bay watershed</p>	<p>Partners: NJDEP, Municipalities, Utilities, Pinelands, USEPA WaterSense</p> <p>Lead(s): NJDEP</p> <p>Funding Sources: DEP State Revolving Funds, EIT; Other State and Local Funding Sources: TBD</p>	<p>L</p>	<p>\$</p>
	<p><b>WS 2-3</b></p>	<p><b><u>Inventory and evaluate municipal ordinances, rate structures and other available information for opportunities to better ensure judicious water usage</u></b></p>	<p>Partners: NJDEP, Municipalities, Utilities</p>	<p>M</p>	<p>\$\$</p>

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

		<p><b><u>and incentivize water conservation at the household and community levels; including metering all water usage.</u></b></p> <p>METRIC: Water use in developed and developing areas</p> <p>MILESTONES:          2-3a: Develop list of strategies to decrease water usage at the household and community level</p> <p>2-3b: Pursue opportunities/partners to implement these strategies</p> <p>2-3c: Evaluate success</p>	<p>Lead(s): BBP, others TBD</p> <p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding Sources: TBD</p>		
<b>3. Monitor and assess status and trends of water supply throughout the watershed.</b>					
	<b>WS 3-1</b>	<p><b><u>Conduct shallow aquifer protection monitoring.</u></b></p> <p>METRIC: Collection of monitoring data</p> <p>MILESTONES:          3-1a: Use NJ Ambient Groundwater Quality Monitoring Network to identify representative sites and install additional monitoring wells in priority areas of concern</p> <p>3-1b: Collected groundwater quality and water level data at appropriate intervals</p> <p>3-1c: Evaluate data and adjust monitoring as necessary; identify areas of concern, in a summary report to further implementation of WS 1-1 (<i>e.g.</i>, identify potential groundwater protections and mitigation options, where needed).</p>	<p>Partners: NJDEP, USGS</p> <p>Lead(s): NJDEP, TBD</p> <p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding Sources: TBD</p>	L	\$\$- \$\$\$
	<b>WS 3-2</b>	<p><b><u>Continue to monitor water use trends.</u></b></p> <p><b>METRIC:</b> Availability of current database of water use trends for the Barnegat Bay watershed</p>	<p>Partners: NJDEP</p> <p>Lead(s): NJDEP</p>	L	\$\$\$

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

		<p><b>MILESTONES:</b>          3-2a: Maintain or, if necessary, expand upon collection of water use data</p> <p>3-2b: Periodically evaluate trends</p> <p>3-2c: Publish results to inform water supply planning and conservation programs</p>	<p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding Sources:          TBD</p>		
	<b>WS 3-3</b>	<p><b><u>Continue, and if possible expand, stream flow monitoring throughout the watershed to assess the effects of changing precipitation patterns, water use and development.</u></b></p> <p><b>METRIC:</b> Number of stream gauging stations in the Barnegat Bay watershed</p> <p><b>MILESTONES:</b>          3-3a: Maintain existing gauging stations</p> <p>3-3b: Identify areas where new stations, either temporary or permanent, would provide beneficial data and secure funding for installation and maintenance</p> <p>3-3c: Publish gauging station data on USGS website consistent with current practice, including a monthly summary of freshwater flows to the bay</p>	<p>Partners: USGS, NJDEP</p> <p>Lead(s): NJDEP</p> <p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding Sources:          TBD</p>	L	\$\$\$- \$\$\$\$
	<b>WS 3-4</b>	<p><b><u>Assess water-supply trends and effects of current and projected surface and groundwater withdrawals</u></b></p> <p><b>METRIC:</b> Number of completed assessment reports on the effects of existing and projected water withdrawals</p> <p><b>MILESTONES:</b>          3-4a: Develop current and projected water withdrawal estimates</p> <p>3-4b: Identify and address data gaps</p>	<p>Partners: NJDEP, USGS</p> <p>Lead(s): NJDEP</p> <p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding Sources:          TBD</p>	M	\$\$- \$\$\$

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

		3-4c: Evaluate trends and effects (ecological, social, <i>etc.</i> ) at appropriate spatial scales, from local to watershed-wide			
<b>4. Review existing literature and successful pilots, and conduct studies to improve scientific understanding of new and emerging issues pertaining to water conservation, advanced potable treatment options, and reuse</b>					
	<b>WS 4-1</b>	<p><b><u>Identify and explore infrastructure, research and piloting options for the use of advanced treatment at wastewater treatment plants and water reuse, including wastewater and gray water, within the watershed.</u></b></p> <p><b>METRIC:</b> Completed report on advanced wastewater treatment and reuse options</p> <p><b>MILESTONES:</b>          4-1a: Identify possible applications of advanced wastewater treatment and water reuse in the watershed, drawing from available literature          4-1b: Identify and address, where possible, data/information gaps and barriers to implementation          4-1c: Identify specific sites for pilot/research projects and corresponding infrastructure improvement needs and budgetary cost estimates</p>	<p>Partners: USEPA, USGS, NJDEP, OCUA</p> <p>Lead(s): TBD</p> <p>Funding Sources: Water Pollution Control Grants; DEP State Revolving Funds, EIT; Other State and Local Funding Sources: TBD</p>	S	\$\$
	<b>WS 4-2</b>	<p><b><u>Conduct research on the effects of sea level rise, salt water intrusion, and deicer/chloride on regional water supply and ecology.</u></b></p>	<p>Partners: EPA, USGS, NJDEP, BTMUA, OCUA, BBP</p>	M	\$\$

Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

		<p><b>METRIC:</b> Completed report(s) documenting threats and mitigation options</p> <p><b>MILESTONES:</b>          4-2a: Identify areas of vulnerability and existing or potential water quality impairment          4-2b: Identify research questions          4-2c: Secure funding, conduct research and report findings</p>	<p>Lead(s): NJDEP, water purveyors, EPA</p> <p>Funding Sources:          Federal (DWA); DEP State Revolving Funds, EIT; Pollution Control Grants, Other State and Local Funding Sources:          TBD</p>		
<b>5. Educate consumers regarding water supply issues and indoor/outdoor water conservation and reuse</b>					
	<b>WS 5-1</b>	<p><b><u>Promote water reuse demonstration projects for stormwater, graywater and wastewater.</u></b></p> <p><b>METRIC:</b> Number of demonstration projects completed.</p> <p><b>MILESTONES:</b>          5-1a: Identify feasible demonstration projects          5-1b: Leverage existing programs, or create new ones, to complete demonstrations with appropriate public education and outreach          5-1c: Periodically update list of what is feasible to incorporate advances in understanding/technology</p>	<p>Partners: USEPA, NJDEP, Counties, Municipalities, MUAs, PPA, BBP</p> <p>Lead(s): BBP</p> <p>Funding Sources:          Water Pollution Control Grants; DEP State Revolving Funds, EIT; Other State and Local Funding Sources:          TBD</p>	L	\$\$\$- \$\$\$\$
	<b>WS 5-2</b>	<p><b><u>Disseminate educational materials related to best practices for water conservation activities.</u></b></p> <p><b>METRIC:</b> Number of materials distributed, people reached, and/or conservation improvements made</p>	<p>Partners: USEPA WaterSense, NJDEP, BBP, Utilities</p> <p>Lead(s): BBP</p>	S	\$



Barnegat Bay Partnership  
 Comprehensive Conservation Management Plan for the Barnegat Bay  
 Draft for Public Comment July 1, 2019

		<p><b>MILESTONES:</b>          5-2a: Inventory available education materials and develop new materials, as necessary</p> <p>5-2b: Distribute materials to the public and incorporate into existing programs</p> <p>5-2c: Evaluate effectiveness and revise program, as necessary</p>	<p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding Sources: TBD; Clean Water Act Section 320</p>		
	<b>WS 5-3</b>	<p><b><u>Develop program to educate stakeholders on the source and value of their water.</u></b></p> <p><b>METRIC:</b> Completion and implementation of program</p> <p><b>MILESTONES:</b>          5-3a: Inventory available education materials and develop new materials, as necessary</p> <p>5-3b: Develop education strategy</p> <p>5-3c: Implement program, evaluate effectiveness and revise, as necessary</p>	<p>Partners: NJDEP, BBP, Utilities, PPA (Save the Source Campaign), USEPA WaterSense</p> <p>Lead(s): BBP</p> <p>Funding Sources:          DEP State Revolving Funds, EIT; Other State and Local Funding TBD. Clean Water Act Section 320</p>	S	\$
	<b>WS 5-4</b>	<p><b><u>Implement components of the BBP Communications Plan related to water supply protection.</u></b></p> <p><b>METRIC:</b> Water supply protection components being implemented</p> <p><b>MILESTONES:</b>          5-4a: Identify components and whether revisions/updates are necessary</p> <p>5-4b: Leverage partners to carry out implementation</p>	<p>Partners: BBP, Save Barnegat Bay, NJDEP JC NERR</p> <p>Lead(s): BBP</p> <p>Funding Sources:          Clean Water Act Section 320; DEP State Revolving Funds, EIT; Other</p>	S	\$

Barnegat Bay Partnership  
Comprehensive Conservation Management Plan for the Barnegat Bay  
Draft for Public Comment July 1, 2019

			State and Local Funding TBD		
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