

Summary: Nearly 50% (470 miles) (Figure 1) of the stream miles of the Christina Basin are listed as “impaired” by PA and DE. Yet these waters are the cleanest they have been in over 100 years. Building on improvements gained by regulatory programs instituted since the 1950’s, the Christina Basin Partnership (Table 1) has demonstrated a commitment and ability to accomplish water quality improvements through coordinated implementation of regulatory, physical, institutional, and educational initiatives. Table 2 highlights a number of activities accomplished through the Partnership since 1995, with an overall investment of \$15 million (private, county, state, and federal funding). The Partnership is currently developing a series of high-flow nonpoint source TMDLs, and interim implementation is underway with additional BMP installations and public stewardship projects scheduled over the next 12 months. With significant impairments from agricultural, urban/suburban and industrial runoff, it is estimated that at least \$80 million will be needed over the next 13 years to achieve total water quality restoration from nonpoint pollutant sources. The Christina Basin Partnership continues to pursue sources of long-term funding. However, to continue our immediate progress, the Partnership is proposing **Phase VI of the Christina Basin Clean Water Strategy**, for funding by the EPA Watershed Initiative Grant, in order to accelerate near-term restoration efforts; expand public participation; install pilot projects of innovative stormwater runoff management techniques; implement monitoring programs to document the improved water quality changes; and continue inter-jurisdictional policy coordination to facilitate effective restoration strategies, all leading toward the long-term goal - *to restore ALL waters of the streams and tributaries of the Christina Basin to achieve their designated protected uses by 2015.*

I. Characterization of The Christina Basin and Planning Effort

A. Physical Attributes: Tributary to the Delaware Estuary, the Christina Basin lies within the Mid-Atlantic metropolitan corridor between Philadelphia, PA and Baltimore, MD. Including 565 square miles (sq. mi.), 968 stream miles, and over 540,000 people, the Basin lies within PA (71%), DE (28%), and MD (1%). Portions of three states, 5 counties, and 57 municipalities lie within the Basin. The Basin includes four major watersheds; Brandywine, Red Clay, and White Clay Creeks and Christina River (see Figure 2).

Approximately 470 stream miles (nearly 50% of total stream miles) are listed as impaired by PA and DE for

nutrients, bacteria, dissolved oxygen, zinc, PCBs, sediment, hydromodification and flow variability, among other impairments. However, the watershed supplies nearly 100 million gallons per day of public water supplies for nearly 500,000 people in PA and DE. Approximately 25% of the streams are designated as Exceptional Value or High Quality (PA) or Exceptional Recreational or Ecological Significance (DE). The White Clay Creek watershed was the first Federal Wild and Scenic River to receive federal designation for the mainstem and its tributaries. Much of the Brandywine Creek has been designated as a Pennsylvania Scenic River. As of 1995, land uses were divided among agriculture (33%), urban/suburban (34%), and forest/open space (33%). However, Chester County (69% of the Basin) is one of the fastest growing counties in the northeastern U.S. The Basin population is projected to increase by about 22% by 2020.

Biological Diversity. The Piedmont watersheds of the Basin serve as habitat for numerous Federal and State listed endangered and threatened species: Bog Turtle, Cerulean Warbler, Longtailed Salamander, and Bald Eagle. Over 60 sites of threatened or endangered species habitats have been documented in the Pennsylvania Natural Diversity Index in the PA portions of the Basin. Biological diversity in the Basin, has shown long-term, significant improvements and good to very good current conditions, with some locations showing slight to moderate impacts from human activities. Genuinely unique natural habitat areas within the Basin include the Great Marsh, Wawaset Marsh; the Unionville, Marshallton, and Fern Hill Serpentine Barrens; and old growth forests. Beaver Creek is a PA-designated naturally reproducing trout fishery. Stocking of tens of thousands of trout occurs in the Basin annually.

Social, Cultural, and Economic Resources. Recreational opportunities within the Basin include significant uses of canoeing, boating, trout fishing, warm-water fishing, canoeing, kayak, hiking trails, bicycling, birding, equestrian sports, and ecotourism, all of which rely upon or interact with the surface waters of the Basin. The Red and White Clay Creek watersheds have the largest concentration of mushroom farms in the nation. Winterthur and Longwood Gardens are some of the most exceptional public gardens in the world. Wilmington houses the international headquarters of corporations such as Dupont and MBNA. Manufacturing in the basin includes cable, steel, paperboard, and pharmaceuticals.

B. Problems and Threats: 470 (49%) stream miles are listed as “impaired” on PA and DE 303(d) lists. Point/non-point pollution problems include excessive nutrients (160 miles impaired by nitrogen and phosphorus, leading to low dissolved oxygen), toxics (100 stream miles are impaired due to high levels of zinc), bacteria (395 stream miles frequently exceed primary contact recreation standards), fish consumption advisories (82 miles impaired due to PCB contamination in sediments and fish tissues), sediment (300-1000 pounds per acre sediment loadings) and habitat issues (the DNREC indicates 39% of Piedmont non-tidal streams in DE have poor habitat due to stormwater runoff). In addition to existing water quality problems, there is a high vulnerability to pollution in the watershed. Based on a 1998 watershed inventory, in DE, potential sources are combined sewer overflows (38 CSO’s), NPDES wastewater discharges (10 outfalls), roadways (2% of the watershed area), Solid/Hazardous Waste/Superfund Sites (135 identified), underground storage tanks (95 identified), and Urban/Suburban Runoff (53% of the watershed). In PA, Agriculture (40% of the watershed), NPDES wastewater discharges (82 outfalls), roadways (2% of the watershed), and Urban/Suburban Runoff (27% of the watershed) are all potential pollutant sources.

C. The Christina Basin Clean Water Strategy: In 1993, EPA recommended that the Delaware River Basin Commission (DRBC) work with the state agencies of DE and PA to address persistent water quality problems in the Basin. The Policy Committee was designated to serve as the overall decision-making body, representing the Secretaries of the environmental management agencies of each state (PADEP, DE-DNREC), DRBC Executive Director, and EPA Region III. Three local co-coordinators (Chester County Water Resources Authority (CCWRA), University of DE/Water Resources Agency (UDE WRA), and Chester County Conservation District (CCCD) were designated to coordinate local planning, implementation, and stakeholder participation. The Partnership (previously known as the Christina Basin Water Quality Management Committee) now includes 18 agencies and entities.

An initial five-year Christina Basin Water Quality Management Strategy (now known as the Christina Basin Clean Water Strategy) was developed and implemented. The four objectives of the Strategy were to; 1) develop water quality goals for the watershed (i.e., TMDLs), 2) provide effective demonstration of Best Management Practices, 3) provide for active stakeholder involvement, and 4) develop and implement

individual watershed action plans. These four objectives still provide the framework for the Partnership, and continue to serve as the short-term goals.

Phases I (initial assessment and characterization), II (monitoring, initial pilot BMP demonstrations, identification of priority subbasins), and III (additional pilot and demonstration BMPs, and development of low-flow TMDLs), have been completed and Phase IV (installation of NPS runoff reduction BMPs in high priority subbasins, and development of runoff loading models for high flow TMDLs) is very near completion. Funding for Phase V (completion of high flow TMDLs, installation of agricultural and residential BMPs) has been requested separately through other grant programs. Additional planning conducted for other programs has been taken into consideration, emphasizing inter-jurisdictional and inter-agency coordination in identifying priority areas and projects. These include the Chester County *Watersheds* Plan, the DE-DNREC Piedmont Whole Basin Assessment, the Red and White Clay PL 566 riparian land treatment plan, and the White Clay Creek Federal Wild and Scenic River Management Plan. Additionally, DE and PA, in conjunction with DRBC and USEPA, have issued a point source, low flow TMDL for the Basin. High-flow storm water TMDLs (to be promulgated in 2003/2004) will address DE and PA 303(d) stream impairments. The proposed Phase VI projects support the short and long-term goals of the Strategy, the priority subbasins identified in earlier phases, and the implementation of future high flow TMDLs under development for the Christina Basin.

C.1 Goals: (see Table 3) *Phase VI Grant* - Over the next 3 years, a sustained, measurable reduction in non-point source runoff from the land areas and facilities, to which the proposed BMPs will be applied, is sought. Reductions in nutrients (nitrogen, phosphorus, potassium), and sediment are prioritized pollutants to be addressed by the Partnership's Phase VI activities. *Long-term* - By 2015, achieve "fishable, swimmable and drinkable" waters throughout the streams and tributaries of the Basin, achieving or surpassing the water quality standards for the designated and protected uses.

C.2 Identification and Prioritization of Projects: Priority areas, already identified for the Christina Basin Clean Water Strategy, are shown in Figure 3. The headwaters of the **Brandywine Creek** and the **Trout Run** subbasin in the White Clay Creek Watershed were identified as a high priority for addressing agricultural

runoff problems. Phases IV and V have focused installation of agricultural BMPs into these areas, but many more BMPs are needed to fully address these problems. **West Valley Creek** and other subbasins in the more developed portions of DE were prioritized for urban/suburban stormwater BMPs. Stakeholder participation and public involvement in watershed stewardship are high priorities all throughout the Basin.

C.3 Projects Not Eligible for Funding: As per Federal Register Notice FRL-7262-8, all projects anticipated under the Christina Basin Clean Water Strategy would likely be eligible for funding under this program. Proposed projects were selected to address the most pressing water quality needs and priority areas identified by the Partnership.

C.4 Entity Responsible for Implementing the Strategy: Table 1 presents the members and organization of the Partnership. The Policy Committee (PADEP, DE-DNREC, DRBC, and EPA), by consensus, is responsible for setting policies, directing and overseeing the planning and implementation of the Strategy. Coordination of the planning and implementation of the Strategy and funded projects is conducted by the local co-coordinators (CCWRA, UDE/WRA, and CCCD).

II. Description of Proposed Projects

A. Relationship to Goals of the Christina Basin Strategy: The proposed projects directly address the Strategy's long-term goal, and also short-term goals 2 and 3; Provide effective demonstration of BMPs; and Provide for active stakeholder involvement, respectively. Section B (below) describes how specific BMPs will be utilized in support of the articulated Goals. In addition, **Monitoring** activities will document the actual water quality benefits received from these efforts. **Public participation and stakeholder involvement** activities address short-term goal No. 3.

B. Description of Phase VI Proposed Projects

B.1 *Agricultural BMPs as follows:*

- **10 Nutrient Management Plans** - Site-specific instruction on collection and use of manure, including spreading/application rates and timing, based on soil characteristics.
- **7 Nutrient Management Storage Systems** – Storage, protection and control of manure for proper use in conjunction with a nutrient management plan.

- **500 Acres Soil Conservation Practices** - Farm land treated to prevent excessive erosion that can leads to nutrient and sediment pollution in streams
- **2,000 Feet of Diversions** - Keep water from erodible areas and/or stored animal wastes
- **4 Water Control Structures** – Collect and re-direct rainwater, from barnyards and roofs, away from erodible areas and animal waste
- **1,000 Feet Stream Fencing** - Exclude livestock from streams and stream banks to prevent grazing/trampling, resulting in reductions of sediment/nutrient/bacteria inputs to water ways

These BMP projects will include agricultural waste management, cropland treatment, and riparian area treatments. Riparian corridor protection and restoration practices will also be considered on non-agricultural lands. These BMPs will be targeted to Sub-Basin B1 (**West Branch Brandywine Creek, Honey Brook**), Sub-Basin B8 (**Upper East Branch Brandywine**), and Sub-Basin B5 (**Buck Run**). CCCD will administer these projects and has a well-established track record of engaging landowners in BMP implementation. Exact locations will be dependent upon identifying willing landowners to participate in these BMP programs. **The goals:** to yield 25 to 50% (on average) reduction in non-point source loads from each land parcel treated. (See Appendix A for project examples, from the Brandywine Creek).

Urban and Suburban Stream Bank Restoration/Reforestation as follows:

- **5,000 Linear Feet Restoration/Reforestation** in the White Clay Creek Wild and Scenic Watershed
- **10,000 Linear Feet Agricultural Stream Restoration** in the PA portion of the Christina Basin

These projects involve two components: 1) in DE, stream bank restoration based on stream geomorphology methods, bringing stream structure and function close to a natural condition to halt excessive erosion/sedimentation and habitat impairment; and 2) in PA, fencing and native plants and trees planted as part of reforestation of the riparian corridor. **The goals:** reduced sediment loads and improved biotic integrity in the White Clay Creek Wild and Scenic watershed, and other restoration sites. Success of the projects will be monitored through assessment of stream geomorphology pre, during, and post implementation.

Urban and Suburban Storm Water BMPs as follows:

- **3 Urban/Suburban Storm Water Retrofits** - **1** retrofit for water quality of an existing storm water discharge in Kennett Square Borough, and **2** retrofits of storm water management basins to increase infiltration and/or utilize treatment wetlands.
- **6 Storm Water Facility Retrofits** – In DE, the outlet structures of 6 storm water dry basins in New Castle County will be converted to create storm water wetlands with native plantings.

The 6 storm water basin retrofit projects will be selected for basins that were constructed prior to 1991, the effective date of storm water quality requirements by the DE DNREC. Retrofits will consist of prefabricated outlet fittings that pool the water and create storm water wetlands. A portion of the funding will be applied to cultivation of native wetland plants for increased nutrient uptake. **The goal:** to treat nonpoint source runoff by removal of nutrients and sediment.

- **1000 SMARTYARD Landscaping Projects** – An innovative residential storm water BMP program to increase infiltration, and reduce non-point loadings of fertilizers and chemicals, based on a successful Phase IV Christina Basin Strategy demonstration project.

SMARTYARDS projects, targeted to the **Red Clay and Brandywine Creek watersheds** will provide 250 homeowners with: 1) The opportunity in cost sharing to purchase rain barrels and fittings to disconnect down spouts to convey roof runoff onto pervious vegetated areas. 2) Landscape design plans and financial incentives to purchase and use water-friendly and low-fertilizer/chemical-requiring native plants. **The goals** of the SMARTYARDS projects are 30% less runoff per property to storm sewers and up to 25% reduction (each property) in fertilizer and pesticide use through the native landscape projects.

B.2 Schedule for Implementation of Projects: All projects are listed in Table 4 and are expected to be completed three years from the date of grant authorization.

B.3 Proposed Phase VI Budget and Schedule. The total proposed budget for Phase VI (\$1,339,000) is presented in Table 4 and includes \$1,000,000 requested from EPA through this grant program, and \$339,000 local match, comprised of \$100,000 match provided by each state through PADEP and DE-DNREC. Local entities and property owners will provide an additional \$139,000 match. Property owners can only be

identified after the grant has been awarded and outreach can be undertaken. The requisite 25% funding match is provided under this proposal and no federal funding is proposed as match.

B.4 Environmental Milestones. Results of proposed monitoring will be used to quantify the water quality improvements from Phase VI projects relative to the short-term goals listed in Table 3. Other key environmental indicators will be the number of agricultural nutrient management plans developed, number of agricultural BMP systems installed, and/or number of acres treated by installed BMPs, etc.

C. Monitoring and Evaluation Component - Water Quality Improvement Monitoring

Some specifics of a final monitoring plan will be developed when BMP installation sites have been determined. It will include monitoring of 6 BMP locations, with 3 sample sites (one upstream and one downstream of the BMP or BMP series and, where possible, a sampling of direct runoff from the BMP site) at each of the 6 individual BMP locations. Three agricultural BMP and three urban/suburban storm water BMP locations will be monitored. Monitoring ideally will occur prior to installation and at least twice following installation, attempting to capture baseflow and high flow conditions. Water samples will be analyzed for nitrogen (total N and/or NO₃/NO₂), total phosphorus, potassium, total suspended solids, and fecal coliform. Stream flow, temperature, pH and conductivity will also be measured. EPA-accepted sampling procedures will be followed and analysis will occur at a state-certified laboratory. Certified commercial laboratories are also located within the Basin. All of the agency Partners are experienced in technically sound water quality monitoring programs for NPS pollutants. The final monitoring plan will be submitted to EPA for approval if necessary. In total, 6 BMP locations, 3 samples sites per location, 3 rounds of sampling, will yield 54 samples collected and analyzed.

D. Consistency With EPA, Federal, and State Programs and Mandates: EPA: Project goals are consistent with low-flow (10/2002) and high-flow TMDLs currently being developed by the USEPA Region III for nutrients, bacteria and low dissolved oxygen. Federal: Consistent with Delaware Estuary Program goals such as reducing toxics (Addressed here with storm water retrofits and infiltration/wetland treatment). The White Clay Creek Wild & Scenic Rivers Study Watershed Management Plan objectives are complemented regarding enhanced water quality for fisheries and recreation, the protection of natural,

cultural and recreational resources, and the coordination among levels of government, businesses, organizations and individuals without creating a new regulatory agency. *State*: Consistent with the PADEP's Environmental Futures Planning Program, PADEP's efforts to develop and implement TMDLs, efforts to promulgate new NPDES Phase II regulations. PA has supported the Christina effort with 3 Growing Greener Grants for Watershed Implementation Projects in High Priority identified areas. Other projects funded are Mushroom Farm Planning Assistance, Riparian Corridor Management Improvement (Trout Run), and Storm Water BMPs for Developing Areas. The proposed effort is consistent with DNREC's Piedmont Whole Basin Program, Biodiversity Initiative, and Nonpoint Source Program Management Plan.

E. Project Coordination: CCWRA, CCCD, and UDE/WRA are the local project coordinators, on behalf of the Partnership. Actual implementation is lead by the following: PA agricultural and stormwater BMP implementation – CCCD; watershed planning – CCWRA and UDE/WRA; stakeholder participation and public involvement – Brandywine Valley Association; DE stormwater and residential BMP implementation – UDE/WRA. Each entity has been performing these roles since the inception of the Partnership and has the necessary staff and resources to accomplish these responsibilities.

III. Project Management and Stakeholder Involvement

A. Plan and Project Administration: The local co-coordinators and DRBC share all coordination and administration duties. Due to the large number of partners, activities and jurisdictions involved, substantial effort is required in overall coordination, quarterly meetings, conference calls, technical subcommittee meetings, grant administration, and reporting. Thus, the proposed Phase VI budget includes \$17,500 for Plan coordination/administration activities.

Policy Committee – Strategy Coordination and Administration: The Policy Committee has been responsible for overseeing and directing progress of the Partnership since 1995. Represented are EPA, PADEP and DE-DNREC senior or executive staff. DRBC is represented by its Executive Director or designee and is administrative facilitator for the Strategy, receiving /administering grant funding to appropriate Partners, coordinating and facilitating meetings, and other administrative and technical roles.

Local Co-Coordinators – Strategy and Project Coordination and Implementation: The local co-coordinators for PA and DE (see Table 1), each having national recognition in water resources management, will perform the roles of project leaders, as since 1995. They are: Dan Greig, Manager, CCCD, 24 years watershed management experience, successfully overseeing over \$5M of agricultural/riparian BMPs implementation in the Christina Basin; Jan Bowers, Executive Director, CCWRA, 23 years experience in watershed management, overseeing over \$5M of water resources projects annually, and recently overseeing the preparation of PA’s first county-wide integrated water resources management plan – “WATERSHEDS”; Gerald Kauffman, DE State Water Coordinator, UDE WRA, 21 years experience in watershed management. The Brandywine Valley Association (BVA) will continue to lead stakeholder participation/public involvement activities (see Table 5). Mr. Robert Struble, Jr., over 20 years service as Executive Director of BVA and responsible for conducting the Christina Basin activities, overseeing over \$1M in water resources projects implementation annually. Table 1 shows other community-based participating organizations.

IV. Description of Outreach Activities

A. Knowledge Transfer: Knowledge gained from the Christina Basin Strategy efforts has been and continues to be transferred to other watersheds in DE, PA and across the U.S. through: 1) the Christina Basin Strategy web site at www.wr.udel.edu; 2) GIS data and maps by UDE/WRA; 3) articles published by Partners in professional publications; and 4) presentations by Partners at professional and local conferences/symposia. An Annual BMP Bus Tour attracts a diversity of attendees. Mushroom-growing BMP technology has been transferred to watersheds in Berks County. BasinScapes (public educational brochures on watershed stewardship techniques) have been utilized in other counties as well.

B. Public Participation and Stakeholder Involvement: BVA continues to lead all efforts regarding public participation and will provide the following activities (See Table 4 for further description of these activities): Community Participation Events, Annual Bus Tour, Publications to Enhance Public Awareness, Education and Involvement (including brochures and BasinScapes homeowners’ guides), General Outreach and Education (including meetings, forums, workshops, etc.), press releases, maintenance of an informative website, and continuation of a storm-drain stenciling program.

Table 1: Members and Organization of the Christina Basin Partnership

Category	Entities Represented
Policy Committee	Pennsylvania Department of Environmental Protection Delaware Department of Natural Resources and Environmental Control Delaware River Basin Commission* U.S. Environmental Protection Agency, Region III
Local Co- Coordinators	Chester County Water Resources Authority, Pennsylvania University of Delaware, Institute for Public Administration, Water Resources Agency Chester County Conservation District, Pennsylvania
Members	U.S. Department of Agriculture, Natural Resources Conservation Service U.S. Department of Interior, National Park Service U.S. Department of Interior, U.S. Geological Survey Chester County Board of Commissioners, Pennsylvania New Castle County Executive and Dept. of Planning, Delaware New Castle Conservation District, Delaware Brandywine Valley and Red Clay Valley Associations White Clay Watershed Association Delaware Nature Society Christina Conservancy

*DRBC also serves as administrative facilitator for the Partnership

Table 2: Accomplishments of the Christina Basin Partnership Since 1995

1	Developed, promulgated and implemented a series of low-flow TMDLs
2	Conducted monitoring and modeling for development of high-flow nonpoint source (NPS) TMDLs
3	Installed over 50 agricultural Best Management Practices (BMPs)
4	Restored over 10,000 linear feet of stream banks
5	Established a Storm Water BMP Tour for municipal officials and designers
6	Engaged over 300 residential property owners in lawn management and rain barrel stewardship programs
7	Established the Christina Basin Task Force as a mechanism for stakeholder participation
8	Updated municipal comprehensive plans and zoning ordinances in dozens of municipalities to incorporate sustainable land use management strategies
9	Preserved hundreds of acres of riparian and other lands
10	Overcame issues of inconsistent policies and institutional barriers that spanned multiple jurisdictions

Table 3: Goals of the Christina Basin Clean Water Strategy

Long Term Goal	Short Term Goals
By 2015, restore the water quality of ALL streams and tributaries of the Christina Basin to achieve their designated protected uses protected uses	Develop water quality goals (TMDLs) for the watershed
	Provide effective demonstration of Best Management Practices
	Provide for active stakeholder involvement
	Develop and implement individual watershed action plans

Table 4: Proposed Phase VI Budget and Completion Schedule*

Task	Staff Expenses	Materials &/or Installation	Total	Request	Match
Phase VI Coordination	\$27,000	\$3000	\$30,000	\$22,500	\$7,500
PA-10 nutrient management control plans developed	0	\$10,000	\$10,000	\$7,500	\$2,500
PA-7 nutrient management control systems installed	0	\$355,000	\$355,000	\$250,000	\$105,000
PA-500 acres treated	0	\$4,000	\$4,000	\$3000	\$1000
PA-2000 feet diversion	0	\$4,000	\$4,000	\$3000	\$1000
PA-4 water control structures	0	\$12,000	\$12,000	\$9,000	\$3000
PA-1000 ft. stream fencing	0	\$8,000	\$8,000	\$6000	\$2000
PA-10,000 ft. stream restored	0	\$100,000	\$100,000	\$73,000	\$27,000
PA-1 storm water outfall retrofit	0	\$50,000	\$50,000	\$37,000	\$13,000
PA-2 storm water basin retrofits	0	\$50,000	\$50,000	\$37,000	\$13,000
PA-project implementation administration total	\$50,000	\$0	\$50,000	\$37,000	\$13,000
DE- SMARTYARD Landscaping - 1000 homes	\$20,000	\$180,000	\$200,000	\$183,500	\$16,500
DE- Stream bank Restoration/Reforestation – 5000 linear feet	\$34,400	\$309,600	\$344,000	\$227,500	\$116,500
DE - Stormwater Wetland Retrofit - 6 basins	\$6,000	\$54,000	\$60,000	\$45,000	\$15,000
Education/Outreach	\$20,000	\$7,000	\$27,000	\$27,000	\$0
Monitoring	\$17,500	\$17,500	\$35,000	\$32,000	\$3000
Total	\$174,900	\$1,164,100	\$1,339,000	\$1,000,000	\$339,000

* All projects expected to be completed three years from the date of grant authorization.

Table 5: Education and Outreach Projects - Phase VI Christina Basin Clean Water Strategy

Project	Description	Lead Entity	Audience	Deliverable/Unit of Measure
Community Participation Events	Quarterly Christina Basin Task Force meetings to more closely involve watershed stakeholders.	Christina Basin Task Force	Public, municipalities, watershed organizations, NPDES dischargers, land developers, agricultural operators, water and wastewater purveyors, and other entities active in the watersheds in the decision-making and implementation processes of the Christina WQMS.	12 meetings over three years
Annual Bus Tour	Visit BMP implementation sites to foster understanding of the purpose, benefits and challenges of implementing effective BMPs.	Brandywine Valley Association	Local and regional decision-makers, elected officials and the general public are targeted invitees for the bus tours	3 bus tours over three years
Publications	Updated, published and distributed to enhance public awareness, education and involvement. Includes <i>Christina Basin brochures</i> at public meetings, watershed festivals, water bill stuffers, stores, restaurants and at public events such as college football and minor league baseball games and <i>BasinScapes Homeowner's Guides</i> at public meetings and watershed festivals.	Brandywine Valley Association, CCCD, CCWRA, UDE WRA	General public, homeowners and property owners, commercial interests	Number of publications distributed
General Outreach and Education	Evening meetings, educational forums, workshops or conferences	Brandywine Valley Association, CCWRA, UDE WRA	General public, decision-makers, local officials, homeowners and property owners, commercial interests	Number of forums held, number of attendees
Newsletters and Press Releases	Describing the objectives and accomplishments of the Christina Basin Partnership and other stakeholders media outlets such as local and regional newspapers, and local television/radio stations.	Brandywine Valley Association, CCWRA, UDE WRA	General public, decision-makers, local officials, homeowners and property owners, commercial interests	Number of press releases, estimated audience reached
Website	Establish and maintain an Internet WEB page for the Christina Basin Strategy. No grant funds are requested for this initiative	UDE WRA, assisted by Brandywine Valley Association and others	General public, decision-makers, local officials, homeowners and property owners, commercial interests	Number of website/linked webpage visits
Storm Drain Stenciling	Continue the ongoing PA storm drain stenciling program, working with the watershed associations. Groups to be contacted for involvement include school ecology clubs, girl/boy scout troops, Indian Guides and other civic organizations.	CCCD	Christina Basin residents, workers, and visitors	Listing of locations stenciled and groups involved