ANACOSTIA RIVER AND TRIBUTARIES
MARYLAND AND THE DISTRICT OF COLUMBIA
COMPREHENSIVE WATERSHED PLAN

SECTION 905(b) (WRDA 86) ANALYSIS

U.S. Army Corps of Engineers
Baltimore District
July 2005

ANACOSTIA RIVER AND TRIBUTARIES
MARYLAND AND THE DISTRICT OF COLUMBIA
COMPREHENSIVE WATERSHED PLAN

SECTION 905(b) (WRDA 86) ANALYSIS

USACE Baltimore District Team

Bill Abadie	Environmental Review
Tim Anderson	Office of Counsel Review
Carol Anderson-Austra	Planning
Jodi Beauchamp	Planning
Dan Bierly	Planning Management
Mark Chalecki	Plan Formulation Review
Harold Clingerman	Planning
Wesley Coleman	Planning Management
Sean Dawson	Civil Engineer Review
Sandy Gore	Programs
Craig Homesley	Real estate
Effie Hondrelis	Planning
Harvey Johnson	Civil Engineer Review
Jean Kapusnick	Planning
Kevin Luebke	Environmental Planning
Sarah Miller	Planning
Fontella Moore	Plan Formulation Review
Richard Olin	Civil Engineer Review
Robert Pace	Planning Management
Amy Pereira	Office of Counsel
Steven Pugh	Study Manager
Chris Spaur	Environmental Planning

ACKNOWLEDGEMENTS

The U.S. Army Corps of Engineers, Baltimore District, would like to acknowledge the many partners who assisted in the preparation of this document. The members of the Anacostia Watershed Restoration Committee, Anacostia Restoration Potential Workgroup, Anacostia Watershed Toxics Alliance, Anacostia Watershed Citizens Advisory Committee, Anacostia Watershed Society, Chesapeake Bay Foundation, and Summit Fund of Washington were instrumental in the development of this report.

The Baltimore District would like to especially acknowledge Mr. John Galli and Mr. Phong Trieu of the Metropolitan Washington Council of Governments for their exceptional support in providing guidance, technical support and data vital to the production of this report.

Cover Photo: Claire D. O'Neill, 2000

ANACOSTIA RIVER AND TRIBUTARIES MD & DC, COMPREHENSIVE PLAN

SECTION 905(b) (WRDA 86) ANALYSIS

1.0 STUDY AUTHORITY

This analysis was prepared as a response to the September 8, 1988, resolution of the Committee on Public Works and Transportation, U.S. House of Representatives, which reads as follows:

"Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors is hereby requested to review the report of the Chief of Engineers on the Anacostia River and Tributaries, District of Columbia and Maryland, published as House Document No. 202, 81st Congress, 1st Session, with a view to determining if further improvements for flood control, navigation, erosion, sedimentation, water quality and other related water resources needs are advisable at this time."

Funds in the amount of $260,000 were appropriated in Fiscal Years 2004 thru 2005 to conduct the reconnaissance phase of the study.

2.0 STUDY PURPOSE

Consistent with the study authority, the purposes of this reconnaissance study are to: 1) determine if there is a Federal interest in developing a comprehensive plan to restore and protect the natural resources of the Anacostia River ecosystem; 2) determine if further improvements related to flood control, navigation, erosion, sedimentation, water quality and other related water resources are needed and warrant Federal participation; 3) document the findings in a reconnaissance report; 4) develop a Project Management Plan(s) to conduct potential feasibility level study(s); 5) identify a non-Federal sponsor(s) to cost-share at the feasibility level; and 6) negotiate and execute a feasibility cost sharing agreement(s). This reconnaissance study was initiated in March of 2004.

3.0 LOCATION OF STUDY AND CONGRESSIONAL DISTRICTS

The study area is defined as the Anacostia River Watershed encompassing approximately 180 square miles in Montgomery and Prince George's Counties, Maryland and the District of Columbia. (Appendix A). The study area is highly urbanized and densely populated.

The study area lies within the jurisdiction of the following Congressional Districts:

1) Maryland Congressional District 4: Honorable Albert R. Wynn

2) Maryland Congressional District 5: Honorable Steny H. Hoyer

3) Maryland Congressional District 8: Honorable Christopher Van Hollen, Jr.

4) District of Columbia: Honorable Eleanor Holmes Norton

4.0 PRIOR REPORTS AND EXISTING PROJECTS

The Army Corps of Engineers has been involved in the Anacostia River basin since 1876. Initial studies were related to evaluating the feasibility of using the river as part of a canal system from Washington to Baltimore. Through the years, many studies have been conducted related to navigation, flood control, public health, recreation and ecosystem restoration. Table 4-1 lists the previous reports prepared by the Corps of Engineers for the Anacostia River basin. (Reports prepared since the U. S. Army Corps of Engineers Washington District was disbanded in 1961 have been prepared by the Baltimore District.)

While conducting this study, many documents were reviewed that have been prepared by other organizations. A complete list of these documents can be found in Appendix B.

Table 4.1 Previous USACE Reports on the Anacostia River Watershed (continued p.3)

Date	Document or Annual Report	Subject	Recommendations or Action
1876	House Exec. 94-44/1	Survey of Eastern Branch (Anacostia River)	Describes waterway & estimates cost of channel between Navy Yard and Bladensburg
1888	1889 Annual Report page 993	Preliminary Examination of the Eastern Branch of Potomac River (Anacostia River)	Opinion of Lt. Col Hains on improvement of Eastern Branch to Bladensburg. Unfavorable- not worthy of improvement
1890	House Exec 347-51/1	Channel improvement – mouth to Navy Yard	Requests from the Navy Department to deepen channel to Navy Yard
1891	House Exec. 30 52/1	Preliminary Examination and Survey, Bladensburg	Recommends channel from mouth and Navy Yard 20 ft. deep, 200 ft. wide; reclamation of adjacent marshes
1898	House Doc. 87-55/3	Plans for reclamation of marshes	Submits plans and costs for reclamation of flats between mouth and District Line
1903	House Doc. 194 59/1	Title to lands embracing Anacostia River Flats, mouth to District Line	Describes U.S. properties bordering on Anacostia River. Opinions as to title of lands
1910	Senate Doc. 462-61/2	Ownership of land and riparian rights along Anacostia River	Opinions of Special Counsel to District of Columbia on ownership of lands and riparian rights
1911	Senate Doc. 19-63/1	Public and private rights	Supplement to Report of 1910
1916	House Doc. 1357-64/1	Report of Board of Engineers proposing a modification of the projects for the reclamation & development of the Anacostia River & Flats, D.C.	Features of the report include dam across river at Massachusetts Ave. forming a lake extending upstream to District line; construction of river walls from dam downstream to Anacostia Bridge
1923	Senate Doc. 37-68/1	Report and recommendations on the Reclamation and Development of the Anacostia River & Flats	Determined the desirability of continuing park project with same features as outlined in H. Doc. 1357-64/1

Table 4.1 Previous USACE Reports on the Anacostia River Watershed Continued

Date	Document or Annual Report	Subject	Recommendations or Action
1934	House Doc. 101-73/1	Flood control measures protection of Bladensburg Bolling Field and Naval Air Station	Concurred in general with improvement desired
1935	House Doc. 22-74/1	Washington Harbor project including Anacostia River channel to 2,100 feet above Anacostia Bridge	Concurred and recommended combining Anacostia and Potomac River Project at Washington, D.C. into Washington Harbor project
1949	House Doc. 202-81/1	Review of Report on Preliminary Examination & Surveys of Anacostia River & Tributaries, D.C. & MD, for flood control and navigation	Recommended adoption of project for improvement of Anacostia River Basin to provide for channel, levees & boat basin
1968	Detailed Project Report	Anacostia River & Tributaries, Prince George's County, MD Local Flood Protection Project	Recommended construction of channel modification
1990	Reconnaissance Report	Review of water resources related problems and opportunities	Recommended cost shared feasibility study for fish and wildlife habitat restoration
1992	Section 1135 Report	Anadromous Fisheries Restoration	Requested Authorization to Modify Existing Corps Project
1993	Section 1135 Report	Habitat Restoration	Requested Authorization to Modify Existing Corps Project
1994 2000	Integrated Feasibility Report & Final EIS Section 206 Report	Anacostia River & Tributaries D.C. & MD, for habitat restoration Habitat Restoration in the Northwest Branch of the Anacostia River	Recommended wetland, stream & riparian habitat restoration in the Anacostia basin Recommended Stream, wetland & riparian habitat restoration.
2001	Section 206 Preliminary Restoration Plan	Habitat Restoration at Lower Anacostia Park	Recommended cost shared feasibility study for fish and wildlife habitat restoration
2001	Section 1135 Preliminary Restoration Plan	Marsh Restoration at Heritage Island	Recommended cost shared feasibility study for fish and wildlife habitat restoration
2001	Section 206 Preliminary Restoration Plan	Habitat Restoration at Fort Chaplin and Fort DuPont	Recommended cost shared feasibility study for fish and wildlife habitat restoration
2002	Section 1135 Preliminary Restoration Plan	Habitat Restoration on Lower Kingman Island	Recommended cost shared feasibility study for fish and wildlife habitat restoration
2002	Section 206 Preliminary Restoration Plan	Paint Branch Anadromous Fish Passage and Stream Restoration	Recommended cost shared feasibility study fish habitat
2002	Anacostia Federal Facilities Impact Assessment	Assessed Adverse Impacts of Federal Facilities	Recommended pollution prevention, habitat restoration and best management practices
2002	Section 1135 Report	Restoration of Heritage Island Marsh	Received funding to construct Heritage Island Marsh

5.0 PLAN FORMULATION

Six planning steps are set forth in the Water Resource Council's Principles and Guidelines to focus the planning effort and eventually to select and recommend a plan for authorization. The six planning steps are: 1) specify problems and opportunities, 2) inventory and forecast conditions, 3) formulate alternative plans, 4) evaluate effects of alternative plans, 5) compare alternative plans, and 6) select recommended plan. The iterations of the planning steps typically differ in the emphasis that is placed on each of the steps. In the early iterations, those conducted during the reconnaissance phase, the step of specifying problems and opportunities is emphasized. That is not to say, however, that the other steps are ignored since the initial screening of preliminary plans that result from the other steps is very important to the scoping of the follow-on feasibility phase studies. The sub-paragraphs that follow present the results of the initial iterations of the planning steps that were conducted during the reconnaissance phase. This information will be refined in future iterations of the planning process that will be accomplished during the feasibility phase.

5.1 National Objectives

This reconnaissance report focuses on National Ecosystem Restoration (NER) objectives that may be achieved through the implementation of a comprehensive watershed restoration plan as well as other objectives that are more appropriate for state and local governments to address. NER objectives contribute to the restoration of the nation's ecosystems and are measured by changes in the amounts, level of functions and values of habitat.

No new issues related to National Economic Development (NED) objectives have been identified by watershed stakeholders at this time. NED objectives contribute to increases in the net value of the national output of goods and services expressed in monetary units. If identified in the future, studies related to NED may be considered.

5.2 Coordination and Identification of General Concerns

Because of the large number of interested stakeholders, it proved to be a formidable task to coordinate with all interested parties. To meet this challenge, an extensive 15 month outreach effort was undertaken. To identify public concerns, numerous meetings with non-governmental organizations (NGO's) and citizens groups were held. Additional input was received through formal and informal coordination with the Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDDNR), Metropolitan Washington Council of Governments (MWCOG), Interstate Commission on the Potomac River Basin (ICPRB), Prince George's County Department of Environmental Resources (PGDER), Montgomery County Department of Environmental Protection (MCDEP), District of Columbia Department of Health (DCDOH), District of Columbia Water and Sewer Authority (WASA), all other members of the Anacostia Watershed Restoration Committee (AWRC), members of the Anacostia Watershed Toxics Alliance (AWTA) and some initial coordination with other Federal agencies.

A number of concerns were identified during the course of public and agency coordination efforts that relate to the establishment of planning objectives and constraints. These concerns are:

1) There needs to be a unified watershed restoration plan in order to obtain focused restoration efforts by multiple interested parties.

2) The Anacostia River and Tributaries Comprehensive Watershed Plan (ARCWP) should incorporate a comprehensive list of the problems and opportunities to implement a holistic restoration of the Anacostia River watershed and not be limited to those issues that fall within the authorities of the U.S. Army Corps of Engineers.

3) Ensure that the ARCWP does not impede the progress of projects currently in construction or scheduled to go to construction by other organizations.

4) The ARCWP must incorporate a strategy to protect vital existing natural resources such as rare wetland plant communities, riparian corridors, etc., through land purchases and other appropriate implementation measures.

5) The ARCWP must consider the history and needs of the communities and residents of the Anacostia watershed. Public concerns reflect a range of needs. This section describes those needs in the context of problems and opportunities that can be addressed through water and related land resource management. For each problem listed below, the existing condition, ongoing efforts, potential opportunities and expected future conditions are described.

5.3 Problems and Opportunities

Through the coordination efforts described above, as well as reviews of existing reports, 16 major problem areas were identified. This section describes those problems, ongoing efforts to deal with them, and identifies remaining needs and opportunities that should be undertaken to correct the problems. A detailed matrix of known problems by sub-watershed that agencies could potentially correct is located in Appendix C.

Problem 1: **Comprehensive Watershed Restoration Plan**

There is no long-term comprehensive plan to serve as a blueprint for restoring the Anacostia River watershed.

Ongoing Efforts: The AWRC has developed a Six-Point Action Plan (Appendix G) to address many restoration needs in the watershed. Along with this plan, the AWRC has published a set of restoration goals and targets to be achieved by 2010 ("Anacostia Watershed Restoration Indicators and Targets for Period 2001 – 2010", MWCOG 2001) (Appendix G) which appropriate agencies and others are striving to meet. Progress towards the goals are measured and reported by the AWRC. The AWRC and AWTA have jointly produced a toxic chemical management strategy to address many of the contaminants issues in the watershed.

Opportunity: The many watershed partners are interested in developing a single comprehensive plan to coordinate the restoration of the Anacostia River. This plan would provide a framework to help the partners function in the most efficient way and accelerate the pace at which restoration goals could be achieved.

Expected Future Condition: Currently, there is no initiative to develop a comprehensive restoration plan for the Anacostia River watershed. If no comprehensive watershed restoration plan is developed, then local, state and Federal agencies and their partners will not have a comprehensive strategy to implement an efficient and well coordinated restoration effort.

Problem 2: **Combined Sewer Overflow's (CSO)**

There are eleven CSO outfalls that drain to the tidal waters of the Anacostia River. During heavy rainstorms, untreated sewage is diverted to these CSO's because the flow volumes are too high for sewage treatment plants to handle. These CSO's have substantially reduced the water quality and degraded the habitat for aquatic organisms in the tidal estuary. Without addressing the CSO problem it would not be realistic to consider a comprehensive restoration of the river.

Ongoing Efforts: The DC Water and Sewer Authority has worked with the U.S. Environmental Protection Agency to develop a long term control plan which will reduce the CSO discharges into the river by 40 percent within five years and by 98 percent within 20 years. WASA published a draft implementation report for the long term control plan in February of 2005. This reduction in CSO discharges is expected to result in a substantial improvement to water quality and aquatic habitat in the tidal Anacostia.

Opportunities: The Federal government will continue to coordinate with WASA on CSO issues and provide support as authorities and funding permit. This plan will be given consideration in the future ARCWP.

Expected Future Condition: If current plans to reduce CSO pollution by 98 percent over the next twenty years are implemented, substantial improvement to water quality in the estuary would be expected. These improvements would be an important step towards restoring the ecological health of the tidal portion of the Anacostia. It is not known if local government will be able to fully implement the long term CSO control plan without additional Federal financial support.

Problem 3: **Sewer System Leakage**

Sewer system leaks have been attributed to the degradation of water quality and aquatic habitat in many tributaries to the Anacostia River. Addressing the problems caused by leaking sewer lines is essential to achieving a holistic restoration to the watershed.

Ongoing Efforts: The Washington Suburban Sanitary Commission (WSSC) has recently established an intensive and accelerated effort to address sewer line leaks into the tributaries of the Anacostia River. This effort will include walking the sewer lines each year and expediting the maintenance schedule when appropriate.

Opportunities: The Federal government will continue to coordinate with WSSC regarding sewer system leakage and provide support as authorities and funding permit. The potential for private sector contributions to sewer system leakage will need to be evaluated in the future. The WSSC plan and the need for other initiatives will be addressed in the ARCWP.

Expected Future Condition: It is not known if the current plans to reduce sewer system leakage into the stream systems will have a substantial impact on water quality in the Anacostia watershed. It is expected, that localized improvements to water quality should occur where sewer leaks are repaired.

Problem 4: **Fish Blockages**

Approximately 140 permanent or seasonal fish blockages were identified in a study by the Metropolitan Washington Council of Governments in 2000. Approximately 50 of the identified blockages were located in the mainstem reaches of larger tributaries and many are impediments to the upstream movement of migratory fish. These fish blockages drastically reduce the available habitat for migratory fish and degrade the quality of the tributary system for the use of resident fish species.

Ongoing Efforts: In recent years, many projects have been implemented to remove fish blockages through mitigation requirements and capitol projects constructed by local and Federal government agencies.

Opportunities: Many blockages have not been removed and some new ones have recently occurred as a result of impacts from urban storm flows.

Expected Future Condition: There are currently no future plans to remove the fish blockages throughout the Anacostia River watershed. If the problem is not fixed, a majority of the tributaries will continue to exhibit permanent or seasonal blockage to fish movement. Fish blockages will be included in the future ARCWP for agency action.

Problem 5: **Point Source Pollution**

Approximately 40 National Pollution Discharge Elimination System (NPDES) permitted point source sites are located in the Anacostia River watershed.

Ongoing Efforts: The current permit system provides the opportunity for state and local governments to monitor point source discharges and take appropriate measures to limit their impacts to the aquatic ecosystem.

Opportunity: The impacts of these point source areas will be addressed in the ARCWP for future agency coordination.

Expected Future Condition: It is likely that the future condition will be very similar to existing conditions. It is expected that the number of NPDES permits would increase but that all point source discharges will continue to be monitored by state and local governments and that measures will be taken to limit their impacts to the aquatic ecosystem.

Problem 6: **Non-Point Source Pollution**

Non-point source pollution problems are located throughout the watershed. Uncontrolled stormwater runoff comprises 75 to 90 percent of total pollutant loads in the watershed according to a 1997 MWCOG report entitled, "*An Existing Source Assessment of Pollutants to the Anacostia Watershed*".

Ongoing Efforts: The local governments of Montgomery County, Prince George's County and Washington D.C. along with others continue to implement projects to reduce the impacts of non-point source pollution in the watershed. Some of the efforts being made to reduce non-point source pollution include updated stormwater management regulations, construction of new or retrofitted stormwater management facilities, the use of Low Impact Development (LID) techniques, street sweeping programs and the general permitting process for new development.

Opportunity: Since non-point source problems do not have a defined single source, opportunities exist throughout the watershed to alleviate poor water quality. This problem will be given consideration in the future ARCWP for agency action.

Expected Future Condition: Some projects to address non-point source pollution problems are currently being planned. No watershed wide plan has been developed. If non-point source problems are not corrected on a watershed scale, the Anacostia River and many of its tributaries will continue to exhibit poor water quality and degraded habitat for aquatic life.

Problem 7: **Stream Degradation - Physical Problems** [Specifically, a) low or no base flow, b) excessive erosion or sedimentation, c) poor or no in-stream habitat, and d) channel alteration]

According to an analysis conducted by the MWCOG there are a minimum of 55 stream miles in the watershed that both exhibit physical and hydrologic degradation and are realistically capable of being restored. These problems degrade the quality of aquatic habitat for fish and wildlife and result in a substantial decrease in biodiversity and species richness throughout the watershed.

Ongoing Efforts: Currently, the Federal, state and local governments and their partners are continuing to plan and implement projects to restore streams throughout the watershed. These projects have begun to make a substantial improvement to the ecological health of certain streams.

Opportunities: In many locations throughout the watershed, physical problems in the streams continue to get worse. The MWCOG study indicates that at least 55 stream miles could potentially be restored. These problems will be given consideration in the future ARCWP for agency action.

Expected Future Condition: Where stream restoration projects are being planned, improvements to aquatic habitat and water quality are expected. However, there currently is no plan developed to restore the majority of the degraded streams in the watershed. These streams are expected to continue to exhibit poor physical habitat and continue to contribute to poor water quality.

Problem 8: **Stream Degradation – Hydrologic Problems** [These include severely disrupted hydrologic regime, tributaries disconnected from their floodplains, and outfalls located directly on streams]

Severely disrupted hydrologic regimes exist in most of the subwatersheds. Tributaries are disconnected from their floodplains throughout the entire watershed. Outfalls are located directly on tributaries throughout the watershed. These problems greatly degrade the quality of aquatic habitat, decrease biodiversity and contribute to poor water quality. As discussed under problem 7 above, a minimum of 55 stream miles in Anacostia drainage exhibit physical and hydrologic problems that could be alleviated.

Ongoing Efforts: Currently, the Federal, state and local governments and their partners are continuing to plan and implement projects to restore streams throughout the watershed. These projects have begun to make a substantial improvement to the ecological health of certain streams.

Opportunities: MWCOG has identified at least 55 miles of stream that have the potential of being restored. In many locations, problems continue to get worse and new problem sites are developing. These issues will be addressed in the ARCWP for agency action.

Expected Future Condition: Where stream restoration projects are being planned, improvements to aquatic habitat and water quality are expected. However, there currently is no plan developed to restore the majority of the degraded streams in the watershed. These streams are expected to continue to exhibit poor physical habitat and continue to contribute to poor stream water quality. It is also expected that more problem areas will occur in the future.

Problem 9: Toxic Chemicals

The following information regarding toxic chemicals in the Anacostia River was derived exclusively from a document produced by AWTA and AWRC in 2004 entitled, "*Charting a Course Toward Restoration: A Toxic Chemical Management Strategy for the Anacostia River*" unless otherwise stated. Historic and ongoing contamination continues to degrade the Anacostia River ecosystem. There are known elevated concentrations of polychlorinated

biphenyls (PCB's), polynuclear aromatic hydrocarbons (PAH's), pesticides, lead, and other trace elements in the river sediments. These contaminants pose a risk to humans and aquatic organisms.

Studies conducted by the U.S. Fish and Wildlife Service – Chesapeake Bay Field Office have indicated that 50-68 percent of the brown bullhead catfish studied from the Anacostia River have liver tumors and 13-23 percent have skin tumors (Pinkney et al. 2004). The prevalence of liver tumors is the highest recorded in North America.

Ongoing Efforts: An intensive amount of effort is being made to address problems related to toxic chemicals in the watershed. These efforts are being implemented by Federal, state and local governments as well as members of academia and the private sector. Some examples of what has already been accomplished include the removal of 7,000 gallons of coal tar, 20,000 gallons of petroleum and 25 pounds of mercury. In addition, members of AWTA have cleaned up 27,000 tons of contaminated soil and 1 million gallons of surface and groundwater. Over 30 acres of former disposal sites have been capped to reduce migration of contaminants. Many other projects have been or continue to be implemented that are not given consideration in this report.

Opportunities: AWTA and the AWRC have developed a management strategy for toxic chemicals in the Anacostia River. This strategy will be included in the ARCWP for future agency coordination and action.

Expected Future Conditions: Although a strategy to address problems related to toxic chemicals has been developed, no watershed wide implementation plan has currently been funded. It is likely that little change in the problems related to toxic chemicals will occur without action and funding from appropriate Federal agencies.

Problem 10: **Wetland Loss or Degradation**

Tidal Wetlands: It is estimated that approximately 1,000 to 1,500 acres of freshwater tidal marsh have been lost in the estuary over the past 100 years [based on historic maps and the best professional judgment of the Anacostia Restoration Potential Workgroup (ARPWG)]. Some wetlands that remain exhibit degraded functional value (either for habitat, water quality, etc.) as a result of many factors including invasive plant species, hydrologic changes, reduction in scale and other problems.

Non-tidal Wetlands: In a *Blueprint for the Restoration of the Anacostia Watershed* produced by the MWCOG in 1994, it was estimated that the watershed has experienced a 75 percent loss of non-tidal wetlands.

The loss of both tidal and non-tidal wetlands has resulted in a substantial decrease in the biodiversity of fish, wildlife and plants and has contributed to water quality problems throughout the watershed.

Ongoing Efforts: Federal and local governments have restored approximately 80 acres of freshwater tidal wetlands in the Anacostia River over the past 15 years. Additional projects are expected to be implemented this year and in the near future. In addition, some non-tidal wetland restoration has occurred mostly associated with stream restoration projects.

Opportunities: Potential additional areas for freshwater marsh habitat restoration have been identified in the tidal estuary. Also, the potential for restoring and/or protecting habitat types such as forested wetlands, vernal pools and rare fall-line Magnolia seepage bogs exist throughout the tributary system.

Expected Future Condition: Although several projects to restore wetlands are being planned, no comprehensive plan to restore wetlands in the watershed exists. If a plan to address wetlands loss and protection is not implemented, the watershed will continue to lack essential habitat for fish and wildlife, exhibit a severe loss of biodiversity, and rare plant communities such as the Magnolia bogs will have an increased risk of being destroyed. These problems will be given consideration in the future ARCWP for agency action.

Problem 11: **Loss of Submerged Aquatic Vegetation (SAV)**

It has been projected that several hundred acres of SAV have been lost from the tidal Anacostia alone (based on historic maps and the best professional judgment of the ARPWG). Although some SAV occurs in a few of the streams it is mostly absent throughout the tributaries. The loss of SAV has resulted in a decrease in the biodiversity of fish and wildlife and the quality of aquatic habitat particularly in the estuary.

Ongoing Efforts: Many of the efforts mentioned in problems 2 – 9 above are expected to result in water quality benefits that should eventually lead to an increase in the amount of SAV habitat. However, no substantial increase in SAV has occurred to date.

Opportunity: The restoration of SAV habitat would most likely be tied with improvements in water quality and water clarity which are issues related to problems 2, 3, 5, 6, 7, 8 and 9 above.

Expected Future Conditions: No watershed wide plan to address problems 2,3,5,6,7,8 and 9 currently exists. If the impacts related to these problems are not substantially reduced then decrease in quality habitat and biodiversity as a result of SAV loss will continue to occur. SAV loss will be addressed in the future ARCWP for agency action.

Problem 12: **Loss of Riparian and Upland Forest**

The forested area of the Anacostia watershed has decreased from 95 percent cover, at the time of European settlement (*Urban Ecosystem Analysis for the Washington D.C. Metropolitan Area,* American Forests, 2002), to a current level of only 27.5 percent (*Anacostia Watershed Forest Management and Protection Strategy*, MWCOG, 2005). Most of the deforestation took place from the mid 1800's to the early 1900's and according to the MWCOG 2005 report, there was a 7.9 percent decline in forest cover and 6.2 percent loss in

tree canopy cover between 1936 and 2000. The loss of forest cover and changes in tree canopy age and composition has had wide ranging deleterious impacts to the watershed including a decrease in both terrestrial and aquatic biodiversity.

Ongoing Efforts: Many efforts continue to be undertaken by the AWRC and their partners to protect and restore tree canopy cover and forest habitat in the watershed. Some of the efforts include urban street tree plantings, riparian reforestation projects, zoning and special area designations, development of park systems, land purchases and public education. According to the MWCOG 2005 report, more than 70 reforestation projects have been completed throughout the watershed since 1993.

Opportunities: There are many opportunities for restoration and/or protection of riparian, upland, mature and urban forests as well as increases in urban street tree canopies throughout the watershed. These opportunities will be given consideration in the future ARCWP for agency action.

Expected Future Condition: Although many reforestation projects have been completed and several more are planned, no funded plan to restore the majority of the deforested areas currently exists. If forest and tree canopy cover is not restored, the landscape will continue to remain fragmented, stream hydrology and water quality will continue to be degraded and both terrestrial and aquatic biodiversity will continue to decrease.

Problem 13: **Invasive and Non-native Plant Species**

Problems related to invasive and non-native plant species are systemic throughout the watershed. These plant species have caused the degradation of both forest and wetland habitats which has resulted in a decrease of plant and wildlife biodiversity. Non-native plant species continue to pose a threat to existing healthy forest and wetland habitats.

Ongoing Efforts: Many efforts to control invasive non-native species are being implemented by Federal, state and local governments as well as NGO's and volunteer citizens groups. The MWCOG, under contract with the MDDNR, has developed an assessment strategy that will be useful in beginning to develop a strategy to manage this problem.

Opportunities: There are numerous areas throughout the watershed that continue to need invasive non-native species control. The MWCOG has projected the locations where management measures could be implemented in forested areas throughout the watershed (MWCOG 2005). These areas will be given consideration in the future ARCWP for agency action.

Expected Future Condition: No watershed wide plan to reduce invasive and non-native plant species is currently being implemented. If this problem is not addressed, the wetlands and forests of the watershed will continue to face degradation and continue to exhibit a loss of biodiversity.

Problem 14: **Nuisance Animals**

Most of the problems related to nuisance animals occur as a result of an un-natural population density of particular species. White tailed deer and resident Canada geese are two of the most troublesome nuisance animals in the Anacostia watershed. The lack of natural predators has resulted in extremely high deer densities and changes in landscape habitat features has resulted in resident Canada geese that no longer migrate to Canada during the breeding season. Un-naturally high densities of deer result in the devastation of the forest ground cover and shrub layers and inhibit the establishment of new tree seedlings. Since resident geese remain in the watershed during the breeding season, they have a devastating impact on natural wetland plant communities. Impacts from both deer and resident Canada geese have resulted in a substantial decrease in the biodiversity of plant and animal communities throughout the watershed.

Ongoing efforts: Many efforts have been taken by Federal, state and local government agencies to manage deer populations on public lands throughout the watershed. These efforts have resulted in some improvements in forest communities and some recovery of understory plants has occurred.

Some of the AWRC partners have been working to develop a resident goose management plan. Currently, nests are being inventoried in the tidal estuary and eggs are being oiled to prevent population growth. The results of these efforts are currently being assessed.

Opportunities: The need to manage nuisance animal populations continues to exist throughout the watershed. Problems related to this issue will be addressed in the ARCWP for agency action and coordination.

Expected Future Conditions: No watershed wide plan to reduce the populations of nuisance animals is currently approved or funded. If problems related to nuisance animals are not addressed, then both the forests and the wetlands of the watershed will continue to be devastated and to exhibit a substantial decrease in biodiversity of both plants and animals.

Problem 15: Rare, Threatened and Endangered Species

Although American bald eagles (*haliaeetus leucocephalus*) were known to nest in the Anacostia River watershed historically, eagle nests were not identified throughout much of the 1980's and 1990's. However, according to a letter from the USFWS dated May 4, 2005, there are currently two known active nesting sites for the threatened American bald eagle in the study area.

Ongoing efforts: Existing efforts that benefit the American bald eagle include tidal wetland restoration, stream restoration, fish passage projects and toxic chemical remediation.

Opportunities: The USFWS has indicated that there are measures that could be implemented to improve habitat for nesting American bald eagles in the watershed. These measures will me addressed in the ARCWP for agency coordination and action.

Expected Future Condition: There is currently no comprehensive plan to restore the Anacostia River watershed. Without substantial ecological improvement to the Anacostia, few nesting opportunities for bald eagles would be expected.

Problem 16: **Trash**

Trash is a pervasive problem throughout the Anacostia watershed. Trash is harmful to animals and degrades and destroys both terrestrial and aquatic habitats. Trash is a threat to human health and reflects negatively on the value of the Anacostia River and its tributaries.

Ongoing Efforts: Many efforts by Federal, state and local governments as well as NGO's and private citizens to address the trash problem have been undertaken. The Corps removes debris from the river under the "Removal of Drift and Debris from the Potomac and Anacostia Rivers Program." Debris removal is conducted 5 days per week, year-round to ensure that navigation is not impeded. Under this program, about 1,200 cubic yards of debris are removed annually. In 2005, the Anacostia Watershed Society and its' partners collected an estimated 50 tons of trash in a single day during the annual earth day clean up. WASA has estimated that they remove 500 – 700 tons of trash annually from out of the tidal estuary. The MWCOG and MDE have worked together to develop a trash reduction strategy. The local governments implement many programs and projects such as street sweeping and the maintenance of stormwater management facilities to reduce trash problems. These are a few of the ongoing efforts to address trash problems throughout the watershed.

Opportunities: Many more opportunities to reduce the amount of trash that gets to the river, such as street sweeping and public education, and to clean trash out of the river exists. This problem will be given consideration in the ARCWP for continued coordination and future agency action.

Expected Future Condition: Although many efforts to remove trash from the river are expected to continue, no comprehensive prevention and clean up plan for the watershed exists. Without implementing a comprehensive plan, trash would be expected to continue to be a pervasive problem throughout the watershed.

5.4 Planning Objectives

The water and related land resource problems and opportunities identified in this study are stated as specific planning objectives to provide focus for the formulation of alternatives. These planning objectives reflect the problems and opportunities and represent desired positive changes in the without project conditions. The planning objectives are specified as follows:

1) To develop a comprehensive watershed restoration plan in order to direct future restoration efforts and to assist in the development of future cost-shared feasibility projects as well as projects implemented by others that comprehensively address the watershed's problems.

2) To help the AWRC achieve or exceed its 2010 indicators and targets goals (Appendix G) through projects designed to alleviate the problems described in this report.

a) Reduce pollutant loads delivered to the tidal river and its tributaries to meet water quality standards and goals based on the 10 indicators established by the AWRC. These pollutants include total suspended solids, CSOs, nutrients, bacteria, trash, and toxins.

b) Protect and restore ecological integrity of the watershed to enhance biodiversity, increase recreational use, and provide for a quality urban fishery based on the 11 indicators established by the AWRC.

c) Improve fish passage by restoring, to the extent possible, the natural range of resident and anadromous fish to historical limits based on the 3 indicators established by the AWRC.

d) Increase the natural filtering capacity and habitat diversity of the watershed by increasing the quantity and quality of tidal and non-tidal wetlands based on the 3 indicators established by the AWRC.

e) Protect and expand forest cover throughout the watershed and create a continuous riparian forest buffer, to the extent practicable, adjacent to its streams, wetlands and river based on 5 indicators established by the AWRC.

f) Increase public and private awareness of their vital role in both the cleanup and economic revitalization of the watershed, and increase volunteer and public-private partnership participation in watershed restoration activities.

5.5 Planning Constraints

Unlike planning objectives that represent desired positive changes, planning constraints represent restrictions that should not be violated. The planning constraints identified in this study are as follows:

1) The primary planning constraint is to ensure that the development of the ARCWP does not interfere, rather complements, the movement forward of previously identified potential restoration projects. Since the ARCWP is a cross-jurisdictional document, all levels of government will be involved and will ensure that all appropriate codes, regulations, plans and laws are followed.

2) All applicable Executive Orders, statutes and regulations will be followed. Coordination with other agencies is a critical component in developing and implementing a holistic watershed restoration plan. Some of these critical items are presented in Tables 5.1 and 5.2.

Table 5.1 Applicable Statutes and Regulations

Archeological and Historic Preservation Act
Clean Water Act
Coastal Zone Management Act
Comprehensive Environmental Response, Compensation and Liabilities Act
Endangered Species Act
Estuary Protection Act
Farmland Protection Policy Act
Federal Facilities Compliance Act
Food Security Act
Federal Water Project Recreation Act
Fish and Wildlife Coordination Act
Land and Water Conservation Fund Act
Magnuson Fishery Conservation and Management Act
Migratory Bird Conservation Act
National Historic Preservation Act
National Environmental Policy Act
Resource Conservation and Recovery Act
North American Wetlands Conservation Act
Rivers and Harbors Act
Water Resources Planning Act
Watershed Protection and Flood Prevention Act.

Table 5.2 Applicable Executive Orders

Environmental Justice in Minority and Low-Income Populations	E.O. 12898
Migratory Bird	E.O. 13186
Protection of Children from Health Risks and Safety Risks	E.O. 13045
Protection and Enhancement of Environmental Quality	E.O.11514
Protection and Enhancement of Cultural Environment	E.O. 11593
Floodplain Management	E.O. 11988
Protection of Wetlands	E.O. 11990
Invasive Species	E.O. 13112

5.6 Measures to Address Identified Planning Objectives

A management measure is a feature or activity at a site, which address one or more of the planning objectives. A wide variety of measures were considered, some of which were found to be infeasible due to technical, economic, or environmental constraints. Each measure was assessed and a determination made regarding whether it should be retained in the formulation of alternative plans. The descriptions and results of the evaluations of the measures considered in this study are presented below:

1) No Action. The Corps is required to consider the option of "No Action" as one of the alternatives in order to comply with the requirements of the National Environmental Policy Act (NEPA). No Action assumes that no project would be implemented by the Federal Government to achieve the planning objectives. No Action, which is sometimes synonymous with the Without Project Condition, forms the basis from which all other alternative plans are measured.

2) Identify and prioritize stream, wetland and forest restoration, enhancement and/or protection measures (Planning Objective 1 and 2) as a watershed management measure. This management measure includes both USACE led initiatives and initiatives that would be more appropriate to be addressed by others. The restoration options are numerous and include all the typical restoration techniques currently available. Ecological restoration in an urban setting requires the use of atypical restoration techniques in order to adequately deal with watershed stressors. All options remain for consideration at this time.

3) Restore in-stream habitat and stream corridors according to the AWRC goals (Planning Objective 2). Specific measures include but are not limited to: a) channel bank and bed alterations, b) sediment flow analysis, c) reconnection of the floodplain to the stream, d) large scale channel reconfiguration, e) low base flow augmentation, f) installation of in-stream habitat features, g) normalize disrupted hydrological regime, and h) provide permanent riparian buffers with adequate width. The restoration techniques include all the numerous restoration techniques currently available. Ecological restoration in an urban setting frequently requires the use of atypical restoration techniques in order to adequately deal with watershed stressors. All options remain for consideration at this time.

4) Restore or protect wetland cover types according to the AWRC goals (Planning Objective 2). Specific measures include but are not limited to the beneficial use of dredged material to restore tidal wetlands, grading riparian areas to re-establish floodplains, and development of isolated wetlands where appropriate. All options are on the table at this time

5) Restore forest cover types according to the AWRC goals (Planning Objective 2). Restoration options include reforestation by planting both uneven-age and even-age classes of tree and shrub species. Ecological restoration in an urban setting requires the use of atypical restoration techniques in order to adequately deal with watershed stressors. All options are being considered at this time

6) Enhance and/or protect stream, wetland and forest land cover types according to the AWRC goals (Planning Objective 2). The enhancement and protection options include all real estate options available to local, state and federal agencies. Projects designed to address severely disrupted hydrological regimes (e.g. reconnect the stream with the floodplain, stormwater retrofits, providing hub and corridor habitat) will be investigated. Protection of highly significant habitat types (e.g. Magnolia seepage bogs) is considered as a management measure.

5.7 Preliminary Plans

Preliminary plans are comprised of one or more management measures that were selected during the initial screening. The descriptions and results of the evaluations of the preliminary plans that were considered in this study are presented below:

1) Preliminary Plans Eliminated from Further Consideration: USACE does not expect to be the lead implementing agency for projects that are too small in scale, not found to be cost-effective or not within USACE existing authorities; however these projects will be identified in the ARCWP for action by the appropriate agencies. It may also be appropriate for other entities to take the lead on projects where funding limitations constrain USACE from implementing the full set of solutions within desired time frames. Large scale wetland and forest land cover losses have been identified in this report. This project will not be able to restore forests and wetlands to historic levels as a result of the current land-use within the watershed.

2) Preliminary Plans for Further Consideration: All restoration opportunities discussed in this document and stated in the problems matrix (Appendix C) remain for consideration except the CSO problems and the sewage system leakage problems. For these two problem types, the USACE currently does not have implementation authorization in the Anacostia River watershed. However, other Federal agencies are authorized to address these problems and they will be fully considered in the ARCWP for appropriate agency coordination and action.

3) Alternative Implementation Authorities: Smaller stream and wetland restoration projects that other agencies are unable to implement may be implemented through the Continuing Authorities Program under Section 206 (WRDA 1996) (Small Aquatic Ecosystem Restoration) or Section 1135 (WRDA 1985) (Modifications for the Improvement of the Environment).

5.8 Conclusions from the Preliminary Screening.

The preliminary screening indicates that the proposed alternatives which are consistent with the AWRC goals (Planning Objective 2) would be selected for the comprehensive restoration plan (the ARCWP). These proposed alternatives would be prioritized and appropriate agencies would be identified for implementation. The potential magnitude and types of benefits from the proposed actions could result in the restoration of approximately 100 acres of wetlands, 12 miles of forested riparian buffer, 20 miles of migratory fish passage, 20 miles of stream and an undetermined amount of SAV habitat. In addition, stormwater controls could be implemented in up to 30 percent of the watershed.

Substantial long-term ecosystem benefits would be expected as a result of implementing the proposed preliminary restoration measures. No significant long-term negative effects to the environment would be anticipated as a result of such implementation.

Costs of the alternatives would range from hundreds of thousands to tens of millions of dollars.

5.9 Establishment of a Plan Formulation Rationale

The conclusions from the preliminary screening form the basis for the next iteration of the planning steps that will be conducted in the feasibility phase. The likely array of alternatives that will be considered for USACE implementation in the development of a comprehensive watershed management plan includes stream and riparian restoration (including fish blockage removal), wetland restoration, riparian forest restoration, and habitat protection or enhancement. All alternatives considered will strive to be a self-regulating and sustainable feature on the landscape. Restoration alternatives are based on the problems described in this report, are outlined in the AWRC goals, and depend on the scale of the problem at the site(s).

The existing site constraints will dictate, to a large extent, the technique(s) used in the restoration. For wetland restoration projects, most site(s) will probably be isolated wetlands (e.g. vernal pools, bogs or fens), floodplain wetlands or freshwater tidal marsh. Beneficial use of dredged material, if applicable, is a tidal wetland restoration option. Wetland restoration will be formulated based on wetland function as it relates to resolving the problem(s) identified in this report. Stream restoration options are largely dictated by how altered the hydrologic regime is, whether the stream channel was physically moved (altered) and how developed the stream valley is. Excess erosion, aggradation and sediment transport appear to be large problems. In order to address these types of problems, hardened structures may have to be utilized, although they are not favored. To the extent practicable, habitat features will be incorporated into alternatives unless they are stormwater retrofit alternatives.

Future screening and reformulation will be based on the following factors: site specific data collected in the feasibility study, and future coordination and collaboration with other entities (including the non-federal sponsor) to ensure *effectiveness, efficiency, completeness and acceptability.* The ARCWP will incorporate, to the extent practicable, a comprehensive listing of all types and sizes of projects, both public and private. Monitoring and adaptive management will be a critical component in the actual implementation of the ARCWP. As stated previously, by virtue of its comprehensive nature, the ARCWP will identify projects that can be cost-effectively implemented by USACE, as well as projects not cost-effective for the USACE to implement. These latter projects could instead be implemented by other entities. By striving to meet the AWRC goals, the implementation of the ARCWP will make a significant contribution to addressing the specified restoration problems or opportunities. In other words, plan implementation will result in the restoration of important ecosystem structure or function to some meaningful degree.

5.10 Real Estate

The Anacostia River Watershed is comprised of a wide variety of land uses from natural wetlands to industrial areas. The Federal government owns 17 percent of the land in the watershed. A Federal Facilities report recommending the implementation of best management practices and restoration measures on Federal lands was published in 2002.

Those recommendations continue to be implemented by the appropriate agencies as funding allows. The ARPWG has estimated that approximately 85 percent of the stream valley corridors are owned by state and local governments. Lands owned by state and local governments are viewed as areas where potential restoration efforts are most feasible. However, because of the highly urbanized nature of the watershed, there is extensive belowground infrastructure with associated rights-of-way corridors that may pose real estate challenges even on public lands. Real estate issues are anticipated to be most challenging for any restoration work proposed on private lands.

Future feasibility studies focused on projects for the Corps to implement that evolve from the ARPWG will determine the minimum lands, easements, rights-of-way, relocations, and disposal areas (LERRDs) necessary, and estimated acquisition and LERRD costs, specific to each recommended site for the initial implementation as well as future non-Federal sponsor(s) operation and maintenance. Potential examples are conservation easements to protect a wetland or streambank areas, road easements for implementation access and future maintenance, temporary work area easements for staging areas, relocation of utilities, or in some instances fee simple as determined necessary due to the project use. The non-Federal sponsor(s) will be responsible for acquiring all of the necessary LERRDs for the approved project(s) prior to implementation.

6.0 Federal and USACE Interest

Based on the findings of this reconnaissance study, there is a Federal interest in participating in a feasibility study(s) to develop a comprehensive restoration plan and focused restoration projects in an effort to restore the ecological health of the Anacostia River watershed. There are sufficient indications that solutions to many of the watershed problems can be formulated that accrue cost-effective environmental benefits. The potential solutions are consistent with Army and budgetary policies and the project will meet criteria for Corps participation in project implementation. In addition, many solutions to problems in the watershed can be addressed by other Federal agencies and non-Federal interests.

Aquatic ecosystem restoration is a primary mission of the USACE and is the driving factor necessitating the development of a comprehensive plan for the Anacostia River watershed. In addition, other Federal agencies such as the USEPA, NOAA, USGS, USFWS and NPS have expressed enthusiastic support for the joint development of the ARCWP as one portion of the proposed feasibility phase of this study. In 2003, the USACE signed an MOA with the USEPA to collaborate more closely under the Urban Rivers Restoration Initiative (URRI). The Anacostia River Watershed was selected as one of the first URRI sites. The USACE recently signed a memorandum with NRCS initiating a collaborative partnership effort to foster innovative approaches to finding effective answers to the many water resources challenges facing the Nation. NRCS has requested to be a Federal partner in development of an ARCWP.

The USACE has been implementing ecosystem restoration projects in the Anacostia River for over a decade and is a key collaborator with the public and other agencies leading ecosystem restoration efforts in the watershed. The 1993 Anacostia River and Tributaries

feasibility report indicated that much of the wetland loss and ecosystem degradation was a result of past USACE and other Federal actions. The report also stated that it was an interim response to Congress and recommended the development of a comprehensive watershed plan in the future.

The Anacostia River has been identified as one of the three priority areas for restoration by the Chesapeake Bay Program (CBP). As the largest estuary in the United States and one of the most productive in the world, the Chesapeake Bay was the nation's first estuary targeted for restoration and protection. In the late 1970s, scientific and estuarine research on the Bay pinpointed three areas requiring immediate attention: eutrophication, dwindling underwater Bay grasses, and toxic pollution. Once the initial research was completed, the CBP evolved as the means to restore this exceptionally valuable resource. The CBP is the unique regional partnership that directs and conducts restoration of the Chesapeake Bay since the signing of the historic Chesapeake Bay Agreement in 1983. The following year, the USACE joined the partnering effort and officially committed USACE resources to the goal of restoring the Bay. The USACE then signed two federal agency agreements, one in 1994, and more recently, the Federal Agencies' Chesapeake Ecosystem Unified Plan (FACEUP), in 1998. Again in June 2000, the partners demonstrated a recommitment to the restoration of the Bay by signing the Chesapeake 2000 Agreement. The CBP partners include the states of Maryland, Pennsylvania and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; and the United States Environmental Protection Agency, representing the federal government. The USACE participates in the CBP through: 1) coordination, 2) technical support and 3) planning, design and construction of ecosystem restoration projects.

The preliminary proposed restoration measures in this report are consistent with Federal law, regulation and policy and no significant negative impacts to the human environment would be expected as a result of implementation. The preliminary analysis indicates that the proposed restoration measures could be constructed with proven technology and would produce real measurable improvement to the Anacostia River watershed that would exceed the costs of implementation.

The proposed approach is consistent with the "USACE Civil Works Fiscal Year 2004 - Fiscal Year 2009 Strategic Plan." The Strategic Plan recognizes that it is beyond the scope and capability of any single agency to solve the water resources challenges confronting watersheds. Instead, a holistic focus on water problems and opportunities using the watershed as a logical geographic area for managing water resources in collaboration with other agencies and entities is the recommended approach.

7.0 PRELIMINARY FINANCIAL ANALYSIS

MDE, Montgomery County, and Prince George's County have indicated by letters of intent dated July 8, 2005; July 10, 2005; and July 29, 2005 respectively, their understanding of feasibility and construction cost-sharing responsibilities, and willingness to enter into negotiations for the feasibility phase (Appendix D).

8.0 STRATEGY AND ASSUMPTIONS FOR FEASIBILITY STUDIES

While negotiations are not complete, there is the potential for one or multiple feasibility studies to investigate and evaluate inter-related issues addressed by this reconnaissance report. Interest has been expressed in both system-wide investigations, as well as investigations focused on a particular subwatershed or suite of habitat types. It has not yet been determined if there will be one unified feasibility study to address both the comprehensive plan and focused investigations related to ecosystem restoration or if multiple studies will be conducted. The final approach towards these studies will be negotiated in detail and documented in the Project Management Plan(s) associated with the Feasibility Cost Sharing Agreement(s) (FCSA).

The anticipated approach towards a comprehensive watershed plan is generally characterized and described below based on discussions with stakeholders to date.

(1) Anacostia River and Tributaries Comprehensive Watershed Plan (ARCWP)

Potential non-federal sponsors for the cost-shared ARCWP feasibility study have been identified. A completed project management plan (PMP) and signed feasibility cost-share agreement identifying the scope of the study and responsibilities of the study partners will be submitted to higher authority with USACE. Potential sponsors submitting letters of intent are MDE, Montgomery County, and Prince George's County. In addition, MWCOG and DCDOH have expressed interest in sponsoring a study (ies), although they have not yet submitted letters of interest.

Details concerning the development of the ARCWP will be provided in the project management plan. The strategy of the plan development is founded in a coordinated and collaborative multi-organization commitment to restoring the Anacostia River watershed. The 1991 Six Point Action Plan is the baseline for all restoration activities in the watershed. From this baseline, the 2010 Anacostia Watershed Restoration Indicators and Targets developed by the AWRC will be used as a platform to establish the goals the ARCWP will plan to achieve.

Several working committees will be established to ensure a fully collaborative multi-organization effort. The plan will include implementation details based on organizational capability. All level of projects, both simple and complex, will be included. Citizen groups and non-profit organizations will play a key role in identifying a truly holistic restoration plan.

The outcome of the watershed study will generally be a watershed management plan, which identifies the combination of recommended actions to be undertaken by various partners and stakeholders in order to achieve the needs and opportunities identified.

(2) Focused Investigations

Interest has been expressed by numerous stakeholders to investigate one or more of the problems and opportunities identified during this reconnaissance study through Federal/local partnerships. Those identified problems include but are not limited to: 1) fish blockages, 2) point source pollution, 3) non-point source pollution, 4) physical problems with the stream, 5)severely disrupted hydrologic regime, 6) disconnected floodplains, 7) outfalls on streams, 8) wetland loss, 9) submerged aquatic vegetation loss, 10) riparian forest loss, 11) upland forest loss, 12) trash, and 13) invasive, non-native species.

As previously stated, identified projects will be stated in the ARCWP but are not contingent on the completion or approval of the ARCWP. Project specific negotiations are not complete.

A general and preliminary PMP for the feasibility phase, regardless of whether one or multiple feasibility studies will be conducted, can be found in Appendix F. The PMP is not specific to any of the potential studies identified above. Such negotiations are ongoing to determine the best approach towards addressing the problems identified in this report.

Any Corps' projects proposed for implementation in the ARCWP would require additional subsequent documentation to ensure compliance with NEPA. It is anticipated that a Finding of No Significant Impact (FONSI) and Environmental Assessment (EA) would be adequate documentation for any projects that are developed.

9.0 FEASIBILITY PHASE MILESTONES

Table 9.1 Feasibility Phase Milestones

MILESTONE	DATE	DESCRIPTION	QUALITY CONTROL (QC) ACTION
Initiate Feasibility #1	Jan 06		None
P-6*	Jan 06	Study initiation meeting	Participate
Technical Review Team (TRT) review of Read Ahead Material (RAM)	Feb 07	QC review	Review
RAM due to Division	Feb 07	Send	None
P-7	Mar 07	***Formulation briefing***	Participate
P-8	Jul 08	Draft report to Division	Review
Feasibility Resolution Conference	Sep 08	Review feasibility report and resolve issues.	Participate
P-9	Nov 08	Final report & QC	Review
P-10	Dec 08	Division Engineer's notice	None

*Corps feasibility study milestones per NADR 1110-1-18 (18 September 1998)

The dates in Table 9.1 are provisional and subject to change based on budgeting constraints and agreement with the sponsor(s), and the Corps' District, Division, and Headquarters. Assumes signed FCSA in place by December 2005. This is contingent upon funding. It is likely that the schedule will be modified at the P-6 meeting.

10.0 FEASIBILITY PHASE COST ESTIMATE

Based on preliminary agency coordination and recent negotiated FCSA's for similar studies in the Washington, D.C. metropolitan area, the preliminary feasibility phase cost estimate ranges from $3.0 million to $5.0 million. Of the total feasibility phase cost for studies identified by this reconnaissance report, $1.5 million to $2.5 million is Federal funding and $1.5 million to 2.5 million will be provided by the non-Federal sponsor(s) as 100 percent in-kind services, or a combination of cash and in-kind services. The specific cost-sharing arrangements will be determined during PMP scoping sessions and prior to the Corps and non-Federal sponsor(s) signing the Feasibility Cost Sharing Agreement(s).

The exact feasibility study tasks and costs will be determined in negotiations with the non-Federal sponsor(s). The first feasibility study is targeted for completion within 36 months of receipt of non-Federal and Corps funds. The general PMP strategy for the feasibility phase is located in Appendix F.

11.0 VIEWS OF OTHER RESOURCE AGENCIES

An initial coordination letter has been sent to the USFWS. In addition, a public notice has been sent to all other appropriate Federal, state, and local resource agencies. The public notice was also sent to many stakeholder groups throughout the watershed.

To date, two agencies, the USFWS and the Natural Resources Conservation Service (NRCS), have provided written responses. Both agencies expressed support of the development of the ARCWP and of implementing restoration measures in the future.

The initial USFWS coordination letter, public notice, mailing list, and response letters are included in Appendix E.

Several Federal Agencies are members of the Anacostia Watershed Restoration Committee and/or the Anacostia Watershed Toxics Alliance. This reconnaissance study has been on the agenda of every meeting of each of these groups for approximately 12 months. The Federal Resource Agencies that belong to these groups and have expressed support of the development of the ARCWP and future restoration projects include:

1. U.S. Environmental Protection Agency
2. U.S. Geological Survey
3. National Oceanic and Atmospheric Administration
4. National Park Service
5. U.S. Fish and Wildlife Service

State and intrastate resource agencies that belong to the AWRC and/or AWTA that have expressed support of the development of the ARCWP and future restoration projects include:

1. Maryland Department of the Environment
2. Maryland Department of Natural Resources
3. District of Columbia Department of Health
4. Interstate Commission on the Potomac River Basin
5. Metropolitan Washington Council of Governments

12.0 POTENTIAL ISSUES AFFECTING INITIATION OF FEASIBILITY PHASE

Continuation of this study into the cost-shared feasibility phase is contingent upon an executed FCSA. Failure to achieve an executed FCSA within 18 months of the approval date of the Section 905(b) Analysis will result in termination of the study. Issues that could impact the initiation of the feasibility phase include effectively coordinating with multiple non-Federal sponsors.

The projected schedule for signing the Feasibility Cost Sharing Agreement (FCSA) is December, 2005. This schedule is contingent on the availability of funds and negotiations with potential non-Federal sponsors.

13.0 STUDY AREA MAP

A map of the study area is provided in Appendix A.

This Page Intentionally Left Blank

14.0 RECOMMENDATIONS

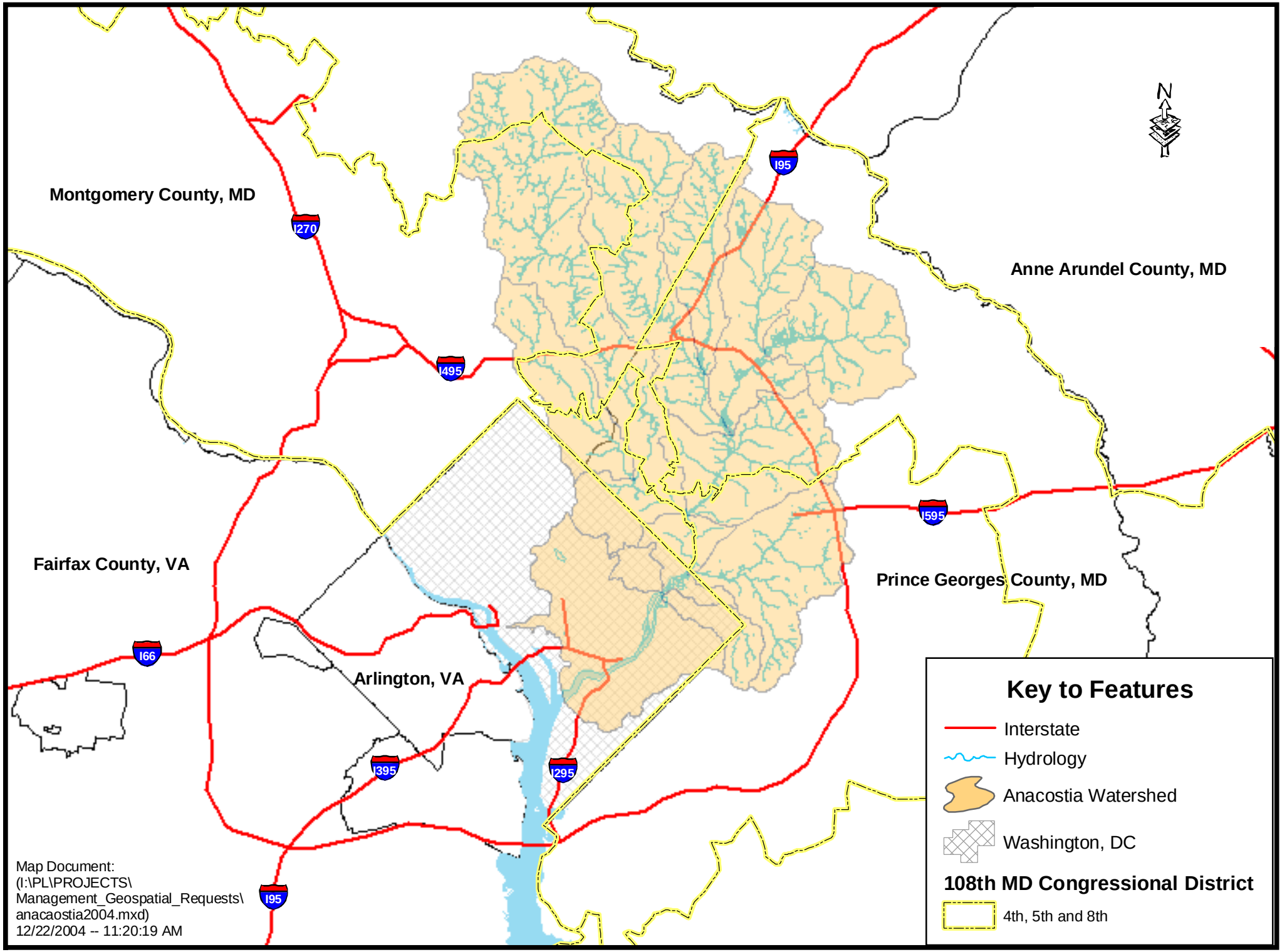
I recommend that the Anacostia River and Tributaries, MD and D.C. Comprehensive Plan feasibility study be approved. There are sufficient indications that solutions to the watershed problems can be formulated that accrue cost-effective environmental benefits. The approach outlined in the Section 905(b) reconnaissance report is consistent with the USACE Civil Works Strategic Plan. The potential solutions are consistent with Army and budgetary policies and the project will meet criteria for Corps participation in project implementation.

Date_____

_____
Robert J. Davis
Colonel, Corps of Engineers
Commanding

APPENDIX A

Anacostia Watershed Environmental Restoration Projects



APPENDIX B

REFERENCES CONSULTED

American Forests. 2002. Urban Ecosystem Analysis for the Washington D.C. Metropolitan Area: An assessment of existing conditions and a resource for local action. Sponsored by the USDA Forest Service and the Casey Trees Endowment Fund. February 2002.

Anacostia Watershed Restoration Committee. 2002. Working together to restore the Anacostia watershed. Annual Report. 19 pages.

Anacostia Watershed Toxics Alliance (AWTA) and Anacostia Watershed Restoration Committee (AWRC). 2004. Charting a Course Toward Restoration: A Toxic Chemical Management Strategy for the Anacostia River. 73 pages.

D.C. Dept. of Consumer & Regulatory Affairs. 1997. An existing source assessment of pollutants to the Anacostia watershed. Environmental Report. Prepared by A. Warner, D. Shepp, K. Corish, and J Galli of Dept. of Environmental Programs, Metropolitan Washington Council of Governments for the District of Columbia Dept. of Consumer & Regulatory Affairs. Grant No. 93a-94-WRMD01. June 1997. Four chapters paginated by chapter, plus appendices.

Md. Dept. of Natural Resources. No Date. Anacostia Watershed Riparian Forest Buffer Study, Summer 1997. Prepared by A. Mintz, D. Plummer, and B. Brumbley. Completed by Md. Dept. of Natural Resources Forest Service for the U.S. Forest Service. 18 pages plus appendices.

Md. Dept. of Natural Resources. 2003. Draft Anacostia Tributary Exotic Invasive Plant Surveying Methodology and Indexing System. Prepared by J. Galli, C. Vatovec, and B. Lecouteur of the Dept. of Environmental Programs, Metropolitan Washington Council of Governments for Md. Dept. of Natural Resources. September 2003. Unpaginated.

Md. Dept. of Natural Resources. 2004. Anacostia riparian buffer plant survivability. Sites planted between 1995-2004. Technical Memorandum. Prepared by Dept. of Environmental Programs, Metropolitan Washington Council of Governments for Md. Dept. of Natural Resources Forest Service. August 2004. 14 pages plus appendices.

Metropolitan Washington Council of Governments, Dept. of Environmental Programs. 2004. Blueprint for the Restoration of the Anacostia Watershed, 2nd Edition. Prepared by Dept. of Environmental Programs, Metropolitan Washington Council of Governments for the D.C. Dept. of Consumer and Regulatory Affairs and the Anacostia Watershed Restoration Committee. November 1994. 129 pages plus appendices.

Metropolitan Washington Council of Governments, Dept. of Environmental Programs. 2005. Anacostia Watershed Forest Management and Protection Strategy Final Draft. Prepared by K. Levendosky, J. Galli, P. Trieu, and C. Vatovec for the Anacostia

Watershed Restoration Committee. 72 pages (including appendices paginated as part of main report).

Montgomery Co. Dept. of Environmental Protection. 2003. Countywide Stream Protection Strategy 2003 Update. Rockville, Md. 23 pages.

Montgomery Co. Dept. of Environmental Protection. 2003. Montgomery County's Commitment to Anacostia Watershed Restoration. May 2003. Unpaginated.

Pinkney, A.E., J.C. Harshbarger, E.B. May and W.L. Reichert. 2002. Tumor prevalence and biomarkers of exposure and response in brown bullheads (*Ameiurus nebulosus*) from the Anacostia River, Washington, D.C. and Tuckahoe River, Maryland. U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD. CBFO-C02-07.

Summit Fund of Washington. 2000. Sligo Creek Trash Reduction Plan. Prepared by J. Galli and P. Guillozet of Dept. of Environmental Programs, Metropolitan Washington Council of Governments for The Summit Fund of Washington. January 2000. 57 pages.

Summit Fund of Washington. 2001. Anacostia Watershed Restoration Indicators and Targets for Period 2001-2010. Draft Final Report. Prepared by J. Galli, E. Graham, T. Murphy, P. Trieu, P. Guillozet, and D. Shepp of Dept. of Environmental Programs, Metropolitan Washington Council of Governments for The Summit Fund of Washington. June 2001. 49 pages plus appendices.

U.S. Army Corps of Engineers. 2004. Civil Works Strategic Plan Fiscal Year 2004 - Fiscal Year 2009. March 2004. Accessed July 2005 at: http://www.usace.army.mil/civilworks/hot_topics/cw_strat.pdf.

APPENDIX C

		*Problem Categorized by Subwatershed												*Agency that could fix the problem																	
	Problem	Sligo Creek	Northwest Branch	Paint Branch	Little Paint Branch	Indian Creek	Upper Beaverdam Creek	Northeast Branch	Lower Beaverdam Creek	Watts Branch	Hickey Run	Tidal DC Waters	Other DC Tributaries	USACE	USFWS	MWCOG	District of Columbia	USEPA	NOAA	Federal Facilities (e.g.NPS)	PG County	MONT County	State (MD)	DC - WASA	WSSC	Grass Roots Organizations	MNCPPC	Other Landowners (e.g. U of MD)
1	Combined Sewer Overflow	0	0	0	0	0	0	0	0	0	0	X	X				X							X	X			
2	Sewer System Leakage (gray water in streams OR infiltration)	X	X	X	X	X	X	X	X	X	X	X	X				X							X	X			X
3	Fish Blockage - Complete	27	12	10	8	4	2	3	3	7	5	0	11	X	X						X	X		X	X		X	X
4	Fish Blockage - Partial	3	5	4	1	2	1	2	3	1	1	0	4	X	X						X	X		X	X		X	X
6	Low or no Base Flow (not caused by utilities)	0	0	X	0	X	X	X	X	X	X	0	X	X	X				X		X	X	X				X	X
7	Point source pollution	0	0	X	0					X	X						X			X	X	X	X	X	X		X	X
8	Non-point source pollution (NOT FROM SEDIMENT)	0	X	0	0	0	X	0	0	100%	100%	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X
9	Excessive erosion/accretion	0	X	0	X	X	X	X	X	29%	51%		X	X	X		X		X	X	X	X	X			X	X	X
10	Poor or no in-stream aquatic habitat (not caused by #9)	0	X	X	X	X	X	X	X	95%	53%	X	X	X	X		X		X	X	X	X	X			X	X	X
11	Poor quality or non-functional wetlands					X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X	X	X
12	Loss of wetland habitat	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X	X	X
13	Loss of riparian habitat	X	X	X	X	X	X	X	X	89%	75%	X	X	X	X		X	X	X	X	X	X	X			X	X	X
14	Loss of forest habitat	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X			X	X	X
15	Severely disrupted hydrologic regime	X	X	X	0	X		X	X	X	X	X	X	X	X	X					X	X	X					
16	Trash	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	Loss of SAV habitat					X	X	X	X	X	X	X		X	X		X		X							X	X	X
18	Invasive Non-native Species	X	X	X	X	X	X	X	X	X	X	30%	X	X	X	X	X			X	X	X	X			X	X	X
19	Channel moved/straightened	X	X	X	X	X	X	X	X	100%	100%	25%		X	X		X				X	X	X					
20	Disconnected Floodplain	X	X	X	X	0	0	X	0	100%	100%	100%	X	X	X		X				X	X	X					
21	Outfalls on Stream	X	X	X	X	X	X	X	X	54	15	X	X	X			X				X	X	X	X	X		X	X

* The subwatershed problems listed in this table reflect the best estimate at this time.

The lack of an identified subwatershed problem at the Reconnaissance level does not preclude feasibility phase restoration for that problem in that subwatershed.

* If no quantified number provided then ' X ' means that the problem occurs, ' 0 ' means the problem does not occur, ' blank cell ' means unknown.

* The problem can either be found through the entire watershed or in just a portion of the watershed.

SOURCES REVIEWED TO DATE:

DRAFT "The Anacostia River Watershed Initiative" (AWS, January 2005)
FINAL DRAFT "Anacostia Watershed Forest Management and Protection Strategy" (MWCOG for the Anacostia Watershed Restoration Committee, May 2005)
DRAFT "Anacostia Watershed Fish Blockage Inventory 1998-2005" (MWCOG 2005)
"Charting a Course Toward Restoration: A Toxic Chemical Management Strategy for the Anacostia River" (AWTA 2002)
"Working Together to Restore the Anacostia Watershed", Anacostia Watershed Restoration Committee Annual Report (AWRC 2002)
draft FINAL REPORT "Anacostia Watershed Restoration Indicators and Targets for Period 2001-2010 (MWCOG for The Summit Fund of Washington, June 2001)
FINAL REPORT "1999 Biennial Federal Workplan for the Anacostia River Watershed" (USACE 1999)
"Anacostia Watershed Riparian Forest Buffer Study" (Maryland Department of Natural Resources & United States Forest Service, Summer 1997)

APPENDIX D

PLACE YOUR LETTERHEAD HERE

[DATE]

Colonel Robert J. Davis
U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Dear Colonel Davis:

The [name *of your organization]* is interested in providing non-Federal support to the U.S. Army Corps of Engineers (USACE) for the initiation of a feasibility study under its Anacostia River and Tributaries Maryland & District of Columbia Comprehensive Watershed Restoration Project.

The {*name of your organization]* understands the USACE is seeking non-Federal sponsors to partner with and provide cost-share for this effort. The [your *organization*] is interested in being a non-Federal sponsor, depending on the cost and scope of the project. It also recognizes that there may be other non-Federal entities interested in participating as well, which should enhance successful implementation and completion of the project.

The cost-sharing for non-Federal sponsors is 50 percent of the total study cost subject to the execution of the Feasibility Cost Sharing Agreement. The [your *organization]* understands that in-kind services of all non-Federal sponsors is allowable as match.

The [*your organization*] understands the future phases such as Pre Construction, Engineering and Design (PED) and Construction are also cost shared. The cost-sharing for non-Federal sponsors is 25% of the total cost of the PED phase and 35% of the total cost of construction.

We look forward to initiation of this important study. If you require further information, please contact me at (*insert your phone number*).

Sincerely,

Name
Title

APPENDIX E

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

May 4, 2005

Mr. Wesley E. Coleman, Chief
Civil Project Development Branch
Department of the Army
Baltimore District, U.S. Army Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203-1715

RE: Comprehensive Plan for the Anacostia River and Tributaries in Maryland and the District of Columbia

Dear Mr. Coleman:

This responds to your letter, received March 15, 2004, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the above referenced project area. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). Please be aware that additional endangered species list requests will be needed in the future for specific projects and activities because these findings are not valid for greater than 90 days.

The federally threatened bald eagle *(Haliaeetus leucocephalus)* nests within the project area or within the vicinity of the project. The federally threatened bald eagle is known to nest in two locations within the Anacostia River watershed. One nest, identified as PG-01-01, is located along Beaverdam Creek just east of Research Road (Beltsville Quad). A second nest, identified as the St. Elizabeth's nest, is located east of the Anacostia Freeway and north of Congress Heights near St. Elizabeth's Hospital (Alexandria Quad). For further information regarding activity at these nests, Glenn Therres of the Maryland Wildlife and Heritage Division should be contacted at (410) 260-8572. Any construction or forest clearing activities within one-quarter mile of an active nest may impact bald eagles. If such impacts may occur, further Section 7 consultation with the U.S. Fish and Wildlife Service may be required.

Except for occasional transient individuals, no other federally proposed or listed endangered or threatened species are known to exist within the area. Should additional information on the distribution of listed or proposed species become available, this determination may be reconsidered.

This response relates only to federally-protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the basin's remaining wetlands, and with the long term goal of increasing the quality and quantity of the basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Craig Koppie at (410) 573-4534.

Sincerely,

Mary Ratnaswamy

Mary Ratnaswamy
Program Supervisor, Threatened and Endangered Species

cc: Glenn Therres, Maryland Wildlife and Heritage Division, Annapolis, MD

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
339 Busch's Frontage Road, Suite 301
Annapolis, MD 21401

Phone: 410-757-0861
FAX: 410-757-0687
www.md.nrcs.usda.gov

April 28, 2005

Wesley E. Coleman, Jr.
Chief, Civil Project Development Branch
US Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Dear Mr. Coleman:

I have received a Public Notice dated March 16, 2005 concerning the Anacostia River Watershed Comprehensive Plan and the intent of the USACE to conduct a study of the Anacostia River watershed to develop a blueprint for protection and restoration of the river and project development and implementation.

The USDA Natural Resources Conservation Service (NRCS) is a federal partner in this effort to improve conditions of the River and the watershed. Our mission area focuses on providing technical and financial assistance towards conservation of natural resources to private landowners engaged primarily in agricultural production. NRCS utilizes a local partnership with the county Soil Conservation Districts to accomplish this conservation mission. Maintaining farmland, forested land, open space and conservation of the natural resources is vital to a healthy watershed facing pressures within an urban environment.

As you develop various phases of this comprehensive plan I would ask that you include the NRCS state and field offices as a federal partner and participant in this effort. I have included a contact list of the NRCS field offices in Maryland. Mark Rose, Assistant State Conservationist for Programs has statewide responsibilities for Basin and Area Planning which includes inter-agency coordination. He can be reached at 443-482-2910.

If I can be of further assistance please do not hesitate to contact me.

Sincerely,

VIRGINIA (GINGER) L. MURPHY
Acting State Conservationist

cc:
Steven B. Pugh, USACE, Baltimore District, Baltimore, MD

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

May 4, 2005

Mr. Wesley E. Coleman, Chief
Civil Project Development Branch
Department of the Army
Baltimore District, U.S. Army Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203-1715

RE: Anacostia River Watershed Comprehensive Plan

Dear Mr. Coleman:

The U.S. Fish and Wildlife Service (Service), Chesapeake Bay Field Office (CBFO), has received your study initiation letter for the Anacostia River Watershed Comprehensive Plan to identify and prioritize restoration activities in the watershed. The Service appreciates this early invitation to be a part of a comprehensive effort to protect and restore the Anacostia River. The Service has been working in the Anacostia for many years and welcomes the opportunity to share both our previous efforts and current priorities in the watershed and to become an active participant in the planning phase of the project.

Based on the information provided in the project narrative, the Service has determined that any proposed restoration efforts in the Anacostia may impact Fish and Wildlife Service trust resources. Our Endangered Species Program reviewed the proposed geographical scope of the Anacostia River watershed and the federally threatened bald eagle *(Haliaeetus leucocephalus)* is known to nest in two locations within the Anacostia River watershed. A letter detailing those locations and the subsequent coordination necessary to ensure these nests are not adversely affected is enclosed (Attachment A(a)). The presence of bald eagles in the watershed may also provide a unique restoration opportunity for the benefit of bald eagles and the Service welcomes the opportunity to highlight these opportunities.

In addition to regulatory concerns, the Service has numerous historical and current assessment and restoration efforts occurring in the Anacostia watershed that we are anxious to share with the Corps as part of this Comprehensive Plan. The CBFO Stream Habitat Assessment and Restoration Program (SHARP) supports and implements a comprehensive watershed-based approach towards restoration of the Anacostia watershed. SHARP has several on-going projects in the tributaries of the Anacostia. Attachment A(b) provides a summary of the SHARP

activities in the watershed as well as recommendations for pursuing a watershed approach. In addition to the efforts of SHARP, the CBFO Permits and Licenses Program is working with the Maryland State Highway Administration to direct mitigation funds from the Wilson Bridge project towards restoration activities, some of which are in the Anacostia watershed and include stream restoration, fish passage, and wetland creation. Appendix A(c) provides the latest report from the Woodrow Wilson Bridge Project Maryland Interagency Group, which details restoration efforts. For additional information on these efforts, it is recommended that the Corps contact Maryland State Highway Administration. Part of a watershed approach is assessing the presence and impact of environmental contaminants. Over the past 10 years, CBFO Environmental Contaminants Program (CBFO-EC) has conducted numerous projects aimed at identifying contaminant sources and effects in the Anacostia watershed. Appendix A(b) provides a description of the studies CBFO-EC is currently interested in pursuing in the Anacostia that would be instrumental in directing restoration efforts. CBFO-EC has provided a list of reports and publications and, where possible, provided those publications (Appendix B).

Incorporating these ideas and issues at the reconnaissance phase will help to expedite future coordination under the Fish and Wildlife Coordination Act and Endangered Species Act. To ensure that the reconnaissance study is inclusive of the Service's concerns with regards to our trust resources, the Service would like the opportunity to review the draft reconnaissance study and anticipates the need for a Fish and Wildlife Coordination Act (FWCA) report on the feasibility study that details our concerns and recommendations. Details regarding the FWCA report scope of work should be discussed with Mr. Robert Zepp at 410-573-4536.

CBFO would also like to take this opportunity to offer our technical assistance above and beyond the FWCA, ESA, and the specific areas highlighted above. Appendix A(d) provides a list of CBFO expertise for potential partnering efforts with the Baltimore Corps for the Anacostia watershed assessment and restoration effort. Please contact Michelle Eversen at 410-573-4538 to further discuss the specific project components.

Sincerely,

John P. Wolflin
Supervisor

Enclosures:

1) Attachment A. Documents Referenced in Response Letter
    a. Endangered Species List Request Letter
    b. Summary of FWS current priorities and recommendations for the Anacostia Watershed Comprehensive Plan
    c. Woodrow Wilson Bridge Project Maryland Interagency Group Report
    d. List of Technical Expertise within the Chesapeake Bay Field Office
2) Attachment B. FWS Reports and Publications from the Anacostia watershed
    a. List of Reports Completed by CBFO specific to the Anacostia watershed
    b. Copies of Reports where available

APPENDIX F

FEASIBILITY STUDY PROCESS

This section provides an overview of the feasibility study related to the reconnaissance report, Anacostia River Watershed [restoration] Plan (ARWP) and will be the framework to guide the study team throughout the feasibility phase(s). The information presented in this section includes an overview of the (1) study goal and objectives and (2) products. The feasibility phase will be completed in 36 months.

1. Study Goal and Objectives

As part of the reconnaissance report and preparation of the preliminary project management plan, the following broad feasibility study goals and objectives were established between the Corps and stakeholders.

1. Reduce pollutant loads delivered to the tidal river and its tributaries.
2. Protect and restore ecological integrity of the watershed to enhance aquatic diversity, increase recreational use, and provide for a quality urban fishery.
3. Improve fish passage by restoring, to the extent possible, the natural range of resident and anadromous fish to historical limits.
4. Increase the quantity and quality of tidal and non-tidal wetlands.
5. Protect and expand forest cover throughout the watershed and create a continuous riparian forest buffer, to the extent practicable, adjacent to its streams, wetlands and river.

Specific restoration objectives may include, but are not limited to,

- Restoration of up to 100 acres of wetlands
- Restoration and/or protection of up to 12 miles of forested riparian buffer
- Restoration of up to 20 miles of stream for anadromous fish passage and 100% of historic range for resident fish passage
- Restoration of up to 15 acres of SAV
- Restoration of up to 20 stream miles
- Implementation of stormwater controls for up to 30% of the watershed

Primary solutions that could be implemented by USACE to achieve the goals and objectives will focus on wetland restoration, stream restoration, riparian forest restoration and/or protection, and alternatives to address the severely disrupted hydrological regime. Additional objectives for the study include improving passive recreation opportunities, and promoting public education and land stewardship awareness. Other objectives may be defined in future PMP negotiations.

2. Products

The primary products expected to be produced from the feasibility phase include the development of the Anacostia River Watershed Plan, a feasibility report(s), appropriate NEPA documentation, a PMP(s) and PCA(s) for final implementation phases ((plans and specifications, and construction). The feasibility report(s), NEPA documentation, and feasibility level designs will be the culmination of environmental, cultural, economic, engineering, and real estate

assessments and analyses. Combinations of project benefits, costs, and impacts will be evaluated and compared in order to select the recommended restoration plan.

3. Cost Estimate Justification

Work Task	**Anacostia River Watershed [restoration] Plan (ARWP)**		**Focused Investigations**	
	Federal	Non-Federal	Federal	Non-Federal
Public Involvement	$25K	$25K	$50K	$50K
Institutional Studies, Surveys & Mapping	$5K	$5K	$400K	$400K
Social Studies	$10K	$10K	$10K	$10K
Cultural Studies	$20K	$20K	$20K	$20K
Environmental Studies	$100K	$100K	$250K	$250K
USFWS Studies	$15K	$15K	$25K	$25K
Economic Studies	$25K	$25K	$40K	$40K
Real Estate Studies	$20K	$20K	$75K	$75K
Hydraulic Engineering/ Hydrology	$25K	$25K	$650K	$650K
Geotechnical Studies	$10K	$10K	$100	$100K
HTRW Studies	$20K	$20K	$75K	$75K
Civil Engineering	$25K	$25K	$300K	$300K
Cost Estimating	$15K	$15K	$50K	$50K
Study Management	$75K	$75K	$100K	$100K
Design Management	$25K	$25K	$75K	$75K
Plan Formulation	$50K	$50K	$100K	$100K
Report Preparation	$50K	$50K	$50K	$50K
Project Management	$20K	$20K	$150K	$150K
Technical Review	$20K	$20K	$20K	$20K
TOTAL	$.5M	$.5M	$2.5M	$2.5M
		$1M		**$5M**

*Costs include 6% escalation and 10% contingency

** Cost extrapolated from a PMP and FCSA negotiated in 2004 for a similar study in the Washington, D.C. metropolitan area and preliminary discussions with potential non-Federal sponsors

APPENDIX G

Aiming High

Setting Targets for a Restored Anacostia Watershed

December 3, 2001

Sharing a Common Vision

The Anacostia is a resilient watershed. With continued care and commitment, it once again can provide a unique contribution to the quality of life and economic vitality of the surrounding community. It can also resume its place as a healthy and integral part of the larger Potomac River and Chesapeake Bay ecosystems.

The Anacostia watershed covers 176 square miles of once beautiful land in Maryland and the District of Columbia. For over three hundred years it was extensively farmed and urbanized, resulting in loss of habitat, erosion, flooding, loss of wetlands, toxic pollution and decline of river-based recreation. Beginning in 1984, however, visionaries began to recognize that the quality of the watershed is inextricably linked with the health and well being of the community. Since then, many partners have worked long and hard toward a vision of a restored Anacostia River watershed.

In 1984 Maryland and the District of Columbia officially recognized the value of a restored Anacostia watershed. In 1987, the "Anacostia Watershed Restoration Agreement" brought Montgomery and Prince George's Counties in as equal partners and resulted in the formation of the Anacostia Watershed Restoration Committee. In 1991, this partnership adopted, through its "Six-Point Action Plan," six overarching goals designed to restore the Anacostia River and its tributaries.

Since then, restoration has progressed toward all six goals. The four signatory jurisdictions, the District of Columbia, Montgomery County, Prince George's County and the State of Maryland, together with the DC Water and Sewer Authority, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the National Park Service and the Maryland-National Capital Park and Planning Commission have all made major contributions. The dedication of community-based groups, who have galvanized support and effectively mobilized the watershed's citizenry, as well as numerous local businesses have also been instrumental in the restoration effort.

The restoration partnership was greatly strengthened by the May 10, 1999 Anacostia Summit. The restoration partners reaffirmed their commitment to the six fundamental goals, directed the development of specific restoration indicators to measure progress and the setting of specific targets to be achieved by 2010. They also agreed to meet biennially to assess progress and examine the needs for furthering the goals of the restoration effort.

In June 2000, the Chesapeake Bay Program officially recognized the importance of the restoration of the Anacostia watershed. Chesapeake 2000, the new Bay agreement, called for the Anacostia watershed partners to "eliminate public health concerns and achieve the living resource, water quality and habitat goals of this and past Agreements" by 2010.

Building on Underlying Principles

The Anacostia River watershed is inextricably linked with the health and well being of the community. The quality of its waters has a direct bearing on quality of life and economic vitality and is coupled with the ecological health of the Potomac River and the Chesapeake Bay. Success in restoring and protecting the Anacostia watershed will both complete the vision and commitment first established in the landmark 1987 Anacostia Restoration Agreement and accomplish the goal of restoring the Anacostia River in the Chesapeake Bay Program's Chesapeake 2000 agreement. Several underlying principles help frame and shape the common vision for a restored Anacostia watershed. These principles can help guide and sustain the programs and projects necessary for the restoration and protection of the Anacostia watershed.

- ✓ The Anacostia River and all of its tributaries are community assets to be restored, protected and preserved for the common good.
- ✓ The Anacostia ecosystem is an integral part of the larger Potomac River and Chesapeake Bay ecosystems and should be managed in concert with the ecosystem goals outlined in the Bay agreement.
- ✓ All citizens are entitled to ready access to waters whose condition supports high quality recreation.
- ✓ All waters of the watershed shall be managed to provide for the designated maximum safe recreational use and shall be protected against unsafe and repellent levels of pathogens, toxics, sediment, trash, debris and odors.
- ✓ The Anacostia watershed shall be managed in a scientific and environmentally sensitive manner to protect the public from potential flood hazards.
- ✓ All waters of the watershed shall be safe and attractive for fishing. They shall be protected against unsafe levels of toxics. Water quality and habitat will be maintained to support a diverse population of native fishes and their supporting food webs.
- ✓ All waters of the watershed shall be attractive for riparian recreation – walking, cycling, viewing wildlife and quiet contemplation. They, along with their riparian areas, shall be maintained so that they are an appealing destination for recreation and home for a diverse community of native plants and animals.
- ✓ All waters of the watershed shall be suitable to encourage education and environmental stewardship.

Defining Shared Goals

In the 1991 Anacostia Watershed Restoration Agreement, six distinct restoration goals were established. These were reaffirmed in the 1999 Agreement and are equally valid today.

These goals are:

Goal #1: Dramatically reduce pollutant loads, such as sediment, toxics, CSOs, other nonpoint inputs and trash, delivered to the tidal river and its tributaries to meet water quality standards and goals.

Goal #2: Protect and restore the ecological integrity of the Anacostia River and its streams to enhance aquatic diversity, increase recreational use and provide for a quality urban fishery.

Goal #3: Restore the natural range of resident and anadromous fish to historical limits.

Goal #4: Increase the natural filtering capacity and habitat diversity of the watershed by sharply increasing the acreage and quality of tidal and non-tidal wetlands.

Goal #5: Protect and expand forest cover throughout the watershed and create a continuous riparian forest buffer adjacent to its streams, wetlands and river.

Goal #6: Increase citizen and private business awareness of their vital role in both the cleanup and economic revitalization of the watershed, and increase volunteer and public-private partnership participation in watershed restoration activities.

State and federal requirements play a large role in charting progress toward some of these goals. In setting these goals, however, the signatories recognized that the complexities of watershed restoration extend well beyond these requirements and reflect unique environmental and cultural conditions, problems and opportunities. Accordingly, defining indicators of progress and setting restoration targets is a complex process that reflects, in part, regulatory requirements and also the signatories' respective programs and priorities.

Measuring Progress and Setting Targets

Substantial restoration progress has been made since 1987. More than $100 million dollars have been spent resulting in: major reductions in storm flows and associated pollutants from nearly 15 square miles of developed area; improved management of the District's combined sewer system that have contributed to improved dissolved oxygen and trash levels in the tidal Anacostia; the restoration of degraded habitat in over ten miles of stream; the restoration of 75 acres of tidal wetland; the creation of approximately 100 acres of non-tidal wetland; acquisition of approximately 400 acres of stream valley parkland for the protection of sensitive aquatic resources; riparian buffer reforestation of nearly 12 linear stream miles; and the support for and participation in the restoration effort on the part of businesses and thousands of the watershed's citizens.

The 1999 Agreement recognized that planning for restoration and communicating progress could be greatly enhanced with distinct measures of progress and specific restoration targets. Thus the signatories agreed to develop "a suite of specific long-term restoration indicators and targets" and pledged to "continue a basin-wide strategy to equitably achieve the six fundamental goals and associated targets by the year 2010." They also agreed to reconvene biennially to "assess progress, provide general direction and examine the needs and means to further the goals of the restoration effort."

This combination of restoration indicators and targets is intended to:

- ✓ Encourage watershed-based planning;
- ✓ Foster regional cooperation;
- ✓ Develop public involvement and support; and
- ✓ Help set program and budget priorities.

Fifty indicators[1] have been prepared to measure progress toward the six restoration goals. Specific targets have also been set for each of these, to be achieved by the year 2010. These indicators and targets address many areas not covered by regulations and generally go well beyond what is currently required. This reflects the signatories' willingness to voluntarily and proactively move forward, thereby contributing substantially to the restoration of the Anacostia watershed. They are presented in the attachment to this agreement. In some cases, ongoing regulatory actions such as Total Maximum Daily Loads (TMDLs) will mandate certain targets that will supersede several provisional targets included in the attachment.

It will be the responsibility of the Anacostia Watershed Restoration Committee to regularly review and assess progress on these and other actions and to make adjustments, where warranted, to the indicators and targets. This effort will involve public participation and will include an annual report.

---

[1] Note: Indicator 2i., *Percent Impervious Surface in the Watershed,* is a floating indicator, which, if included, would bring the total number of indicators to 51. Its applicability is pending and is subject to the availability of data.

Making the Commitment

By this agreement, the 2001 Anacostia Watershed Restoration Agreement, we reaffirm our commitment to the six goals of the 1999 Agreement; adopt the restoration principles; approve the restoration indicators for measuring and communicating progress; and set the restoration targets to be attained by 2010.

We also pledge to use our best efforts to fully support the programs, initiatives and projects necessary for both achieving these targets and for tracking and reporting on restoration progress.

We further resolve to reconvene in fall 2003 and biennially thereafter to celebrate and assess progress, continue to provide general direction and examine the needs and means to further the goals of the restoration effort.

Attest, this third day of December in the year 2001:

By: _____
Hon. Anthony A. Williams
Mayor
District of Columbia

By: _____
Hon. Parris N. Glendening
Governor
State of Maryland

By: _____
Hon. Douglas M. Duncan
County Executive
Montgomery County, Maryland

By: _____
Hon. Wayne K. Curry
County Executive
Prince George's County, Maryland

Witnesses

We, the undersigned, support the goal of restoring the Anacostia watershed and bear witness to the signing of the 2001 Anacostia Watershed Restoration Agreement:

Name:	Affiliation:
Mark and Hali Cavin	Cape Leonard Group
Theresa Pierno	Chesapeake Bay Foundation
Stacey Alan Bland	DC DOH
Susan Clause	DC DOH
Douglas Siglin	Chesapeake Bay Foundation
Caroline Melvadon	D.C. Bureau of Env. Quality
Mary Vogel	P.G. Co. Dept of Environ. Resources
Shirl Meyer	Georgetown Univ.
Neil Ridgely	Citizens Advisory Comm.
Claudia Donegan	Middle Potomac Tr. 5 Team Coordin.
Gilbert M. Allen	Dept. of Health, Watershed Protection
Stuart A. Freudberg	Metro. Washington COG
James R. Cundiff	Anacostia Watershed Society
Steven Buda	MDE
Tom P. Schueler	Center for Watershed Protection
Lloyd D. Pain	EPA - Chesapeake Bay
Patricia E. Firth	State of MD
Jane Nishida	MDE

ATTACHMENT TO THE

2001 ANACOSTIA WATERSHED RESTORATION AGREEMENT

Restoration Indicators and 2010 Targets

Note: 2001 baseline used in development of targets

Goal #1 – Dramatically reduce pollutant loads	
Note: For Goal 1 Indicators (except 1g, 1h and 1i), final 2010 targets will be determined by a combination of the Chesapeake Bay Program, TMDLs and revised criteria. These requirements are expected to replace the current voluntary targets listed below.	
Indicator	**2010 target**
1a - Total Suspended Solids	Current interim voluntary 2010 target is to reduce annual average concentration to less than 80 mg/l, with a goal of supporting underwater grasses.
1b - Combined Sewer Overflows	Long-term Control Plan will determine ultimate target. Current target is to initiate long-term CSO system improvements before 2010 with an ultimate capture of 95% of the overflows.
1c - Total Phosphorus and Total Nitrogen	Current voluntary target is to achieve the 40% Chesapeake Bay reduction goal.
1d – Fecal Coliform Concentration and Bacterial Contamination	Current voluntary 2010 target is to achieve 85% reduction for tidal river and tributary compliance with water quality standards 75% of the time.
1e – Dissolved Oxygen	Current interim voluntary 2010 target is to maintain DO levels above 2 mg/l at all times. No fish kills.
1f – Biochemical Oxygen Demand	Current voluntary 2010 target is to achieve a 75% reduction.
1g – Secchi Depth	Greater than 1.0 meter average.
1h – Trash Index and Quantity of Trash Removed	Watershed trash levels in the "light" range. Decreasing trend levels in annual tonnages removed.
1i – Toxics and Metals	Elimination of all fish consumption advisories.
1j – Chlorophyll 'a'	Current voluntary 2010 target is to attain Mesotrophic levels.

Goal #2 – Protect and restore ecological integrity	
Indicator	**2010 target**
2a – Temperature	Meet water quality standards 100% of the time.
2b – Turbidity	Less than 50 NTU average.
2c – Fish Deformities, Erosions, Lesions and Tumors (DELTs)	DELTs found on less than 3% of the fish community.
2d – pH	Meet water quality standards 100% of the time.
2e – Macroinvertebrate Community Health	Better than "fair" for all subwatersheds. Decrease in percent dominant taxon for tidal river.
2f – Resident Fish Community Health	Increasing numerical IBI scores throughout watershed.
2g – Stream Miles Restored	Twenty additional miles.
2h – Submerged Aquatic Vegetation	Twenty acres total.
2i – Percent Impervious Surface in the Watershed (Note: Floating Indicator-applicability pending)	*Increase in watershed acreage featuring Low Impact Development (LID) techniques.*
2j – Percent of Developed Land with Stormwater Management Controls	Approximately double the amount of older watershed areas controlled.
2k – Recreational Usage	Increase in multiple categories.

Goal #3 – Increase natural range of fish	
Indicator	**2010 target**
3a – Percent Anadromous Fish Range Open	Twenty additional stream miles.
3b – Percent Anadromous Fish Habitat Utilization	100% utilization of available habitat.
3c – Percent Tributary Mainstems and Major Feeder Streams Open to Resident Fishes	100% of all mainstem areas. 100% of all 'priority' tributaries.

Goal #4 – Increase wetland acreage	
Indicator	**2010 target**
4a – Created/Restored Tidal Wetland Acreage	Sixty additional acres of emergent wetland.
4b – Created/Restored Non-Tidal Wetlands	Twenty new projects. Approximately fifteen additional acres.
4c – Wildlife Utilization of Wetlands	Develop Anacostia-specific IBI by end of 2002.

Goal #5 – Protect and expand forest cover	
Indicator	**2010 target**
5a – Miles of Created Riparian Forest Buffer	Twelve additional miles. Approximately forty-five additional acres.
5b – Percent Adequate Riparian Forest Buffer	Develop watershed-wide buffer criteria by 2002.
5c – Acres of Mature Hardwood Forest	Develop watershed forest management protection strategy by 2002.
5d – Acres of Created Upland Forest	Prepare inventory by 2002. Develop watershed forest management protection strategy by 2002.
5e –Upland, Riparian and Total Forest Acreage as Percent of Watershed Area	Address under targets for 5a through 5d.

Goal #6 Increase Public Usage, Stewardship and Advocacy	
Indicator	**2010 target**
6-1 – Usage Indicators	**Usage Targets**
6-1a – Number of Anglers	Watershed wide increase.
6-1b – Number of Fishing Piers and Usage	Construct three new piers.
6-1c – DC Anacostia Hiker-Biker Trail and Usage	Complete linkage with Maryland system.
6-1d – Colmar Manor to Bladensburg Footbridge	Construct footbridge.
6-1e – Number of Public Boat Ramps	Four additional small boat ramps.
6-1f – Number of Boathouses	Four additional boathouses.
6-1g – Number of Annual Regattas	Three additional per year.
6-1h – Annual Park Visitation	Increase throughout.
6-2 – Stewardship Indicators	**Stewardship Targets**
6-2a – School Activities	Increase in all watersheds emphasizing meaningful local stream, river or Bay experiences.
6-2b – Anacostia River Business Coalition Membership	Expand into Montgomery and Prince George's Counties.
6-2c – AWRC-University Partnerships	Expand opportunities in all jurisdictions.
6-2d – Anacostia School Web Linkages	Link all public schools. Create 'partner' school program.
6-2e – Stewardship Events	Increase throughout watershed.
6-2f – Revitalization Expenditures	Increase throughout watershed.

6-3 - Advocacy Indicators	Advocacy Targets
6-3a – Active "Friends of" Groups	Establish active advocacy group in every major subwatershed.
6-3b – Media Coverage	Increase overall coverage and promote greater public awareness and a more positive image.
6-3c – Herring Festival	Establish as an annual event.
6-3d – Government by Example	Expand current efforts.
6-3e – Restoration Expenditures	Increase in all three jurisdictions.