

**Stormwater Management
Planned Program Report**

Prepared By AMEC Earth and Environmental, Inc.

March 15, 2004

Planned Program

1.1 Purpose

Upon completion of the prioritization of program initiatives through consultation with the Policy Review Committee and Town staff, the Consultant Team's challenge is to create a comprehensive program of stormwater management services, utilizing the current program of services as the baseline and evaluating gaps in service or deficiencies in resources, which will create outcomes addressing the program priorities. A five-year planning horizon is utilized. This planning period provides sufficient time to define program content and evaluate resources that are predictable and understandable, limiting the need to quantify conditions and unknowns. As the program matures in meeting current priorities and objectives, the planning horizon can expand, as we have seen demonstrated in the water and sewer industry, which now uses planning horizons of 25 to 50 years.

In this section, the program of services will be defined using the program categories of Engineering and Master Planning, Operations and Maintenance, Regulation and Enforcement, Stormwater Quality, Special Programs, Administration and Finance, and Capital Improvements. In the development of the program, a building-block approach was followed, which identified linkages between program elements and coordinated the increase or decrease in resources in one program area with potential impacts for another program area. For example, the schedule for increasing monitoring resources under Stormwater Quality programs is clearly linked to the implementation of the watershed basin modeling under Engineering and Master Planning for, as this first element provides data for the basin models on stream flows and water quality conditions. The Consultant Team understands the importance of coordination of those program elements, so that the program recommended is consistent in outcomes and does not fluctuate wildly in the need for resources or for staff, so it is not difficult to manage within the overall program of services.

1.2 Stormwater Program Organizational Options

During the evaluation of the program of services, consideration is given to the organizational options available to the Town in carrying out the initiatives. It is recommended that overall programmatic leadership remain with the Engineering Department, with the Stormwater Program assigned to a Manager who will be accountable to the City Engineer and who will coordinate the work effort for all units that carry out elements within the overall program of services. It is not recommended that a major reorganization occur but that clear and direct accountability be established for the management of resources and program elements on behalf of the Town Council and the community. Utilization of technology to enhance program implementation is an effective technique used in many stormwater programs. Providing additional technology in Public Works and Engineering is included in the program recommendations.

The stormwater enterprise fund will serve to provide resources to organizational elements accounted for in their "home account" such as the General Fund. It is proposed to utilize internal accounting procedures to provide revenue contributions to those units. It is recommended that two individual positions be moved from their current "home account" to the stormwater enterprise fund. New positions recommended to address expanded or new services would be added, upon approval of the Town Council, to the appropriate organizational unit, but funded through stormwater fees.

1.3 Stormwater Program

The initial development of an enhanced program of services was driven by the input and recommendations from the Policy Review Committee. The five-year program is described below. Upon completion of this work, refinement of the program was completed with input from the Town Council, the Town Manager, and Town staff. A cost model was developed and is described in Section 4 for the initial program, as recommended by the Policy Review Committee, and for the final recommended program. Key differences are identified in the discussion. The final program addresses internal policies for financial accounting and the ability of the Town staff to absorb the increased workload of managing the new utility while initiating additional projects. The first year of the recommended program is focused on planning, compliance with Federal and State water quality regulations, and maintaining current programs and projects.

1.3.1 Five-Year Program Based on Policy Review Committee Recommendations

Engineering, Modeling and Planning

1. Initiate Master Plan that support all program priorities.	1. Continue Master Plan process to address major watersheds	1. Complete Master Plans on major watersheds.	1. Initiate sub-basin planning based on priorities identified through major basin plans.	1. Complete sub-basin planning effort.
2. Maintain current services. - floodplain mgmt. - FICRS (Flood Insurance Community Rating system) - Technical assistance to public (is this the same as the Drainage Asst program?) - Mapping/GIS - Development review services	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development review services - Hazard Mitigation	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development review services - Hazard Mitigation Plan	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development review services - Hazard Mitigation	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development review services - Hazard Mitigation
3. Address increasing workload for review of plans, site inspections, and technical assistance through staff addition.	3. Initiate Capital Improvement Program process, establishing criteria for prioritization of projects.	3. Complete creation Capital Improvement Program based on master plans of major watersheds.	3. Expand support for Public Works maintenance and remedial repair, shifting efforts to a more proactive program based on studies.	3. Continue design and construction of capital improvement program.
4. Create technology tools to coordinate database mgmt. with Public Works maintenance and remedial repair		4. Initiate design of capital improvement projects and contract for construction of major improvements	4. Update technology tools, as needed, including basin models for decision making and capital improvement program support.	4. Maintain and calibrate basin models to provide decision tools for development and capital improvement program support.

program.				
5. Install rain and stream gauges as necessary to support Master Planning process for basin studies.			5. Continue design and construction of capital improvement program.	
6. Review existing standards for system performance and update as appropriate to meet NPDES permit.				

Operations and Maintenance

Year One	Year Two	Year Three	Year Four	Year Five
1. Maintain current maintenance capabilities in Public Works Street Division.	1. Maintain expanded maintenance capability.	1. Sustain maintenance capability established in Year 1 and Year 2.	1. Sustain maintenance capability established in Year 1 and Year 2.	1. Sustain maintenance capability established in Years 1, 2 and 4.
2. Add technology tools for work-order management and coordinate with GIS system and Engineering database tools.	2. Evaluate enhancements in service to determine effectiveness. Adjust resource allocations if appropriate.	2. Evaluate maintenance needs based on input from Master Plans and basin models.	2. Increase, if required, maintenance resources based on outcomes of Master Plans and basin models.	
3. Integrate customer service request tracking into technology enhancements (Item 2).				
4. Expand maintenance manpower capability for catch basin cleaning and remedial repair.				
5. Increase use of technology by addition of equipment for inspection of closed pipe system.				
6. Increase capability for cleaning system through addition of equipment in field.				

Regulation and Enforcement

1. Maintain on-going services in Inspections and Code Enforcement.	1. Maintain on-going services in Inspections and Code Enforcement.	1. Maintain on-going services in Inspection and Code Enforcement	1. Maintain on-going services in Inspection and Code Enforcement	1. Maintain on-going services in Inspection and Code Enforcement
2. Maintain on-going support for floodplain management.	2. Increase capability to coordinate erosion and sediment regulation, inspections and enforcement.	2. Oversee compliance with NPDES Permit standards and take appropriate enforcement actions.	2. Oversee compliance with NPDES Permit standards and take appropriate enforcement actions.	2. Oversee compliance with NPDES Permit standards and take appropriate enforcement actions.
3. Update current ordinances and standards as needed to address NPDES Permit requirements.	3. Increase capability for follow up and enforcement, as needed, for illicit discharge detection program.	3. Increase inspections of structural controls and water quality system controls.	3. Maintain inspections of structural controls and water quality system controls.	3. Maintain inspections of structural controls and water quality system controls.
				4. Renew NPDES Permit and update regulatory standards and ordinances as appropriate.

Capital Improvements

1. Initiate one stream restoration project, based on current knowledge of the system	1. Complete one stream restoration project based on initial input from watershed Master Plans.	1. Complete one stream restoration project based on input from watershed Master Plans.	1. Increase staff resources to address growth in capital improvements program, providing field services and data analysis.	1. Complete one stream restoration project based on input from watershed Master Plans.
2. Take corrective action to address 2 to 4 "high" priority remedial repairs to the drainage system based on current backlog of needs	2. Take corrective action to address 2 to 4 priority remedial repairs to the drainage system based on current backlog of needs.	2. Take corrective action to address 4 priority remedial repairs to the drainage system based on current backlog of needs.	2. Complete one stream restoration project based on input from Master Plan process.	2. Take corrective action to address CIP program established based on Master Plans.
3. Acquire or set aside resources to acquire land for conservation, open space, or stream buffer protection.	3. Acquire or set aside resources to acquire land for conservation, open space, or stream buffer.	3. Acquire or set aside resources to acquire land for conservation, open space, easements, or stream buffers.	3. Take corrective action to address CIP program established based on Master Plans.	3. Acquire or set aside resources to acquire land for conservation, open space, or stream buffer protection.

Stormwater Quality

1. Maintain on-going services to address water quality regulations, field services, inspections.	1. Maintain on-going services to address water quality regulations, field services, inspections.	1. Maintain on-going services to address water quality regulations, field services, inspections.	1. Maintain on-going services to address water quality regulations, field services, inspections.	1. Maintain on-going services to address water quality regulations, field services, and inspections.
2. Enhance monitoring capabilities through placement of automated data sampler and stream gauges.	2. Increase staff resource to address NPDES permit compliance, including illicit discharge program, water quality monitoring, good housekeeping, industrial permit compliance.	2. Maintain compliance with NPDES permit.	2. Maintain compliance with NPDES permit conditions.	2. Maintain compliance with NPDES permit conditions.
3. Increase staff capability to address NPDES permit requirements for Public Education and Outreach.	3. Inspect Best Management Practices for water quality.	3. Update standards on BMPs for water quality protection.		3. Renew NPDES permit.
4. Expand current WebPages as a key resources for public outreach.	4. Test pilot BMPs and monitor.	4. Expand Stream restoration projects as Master Plans are completed.		
5. Continue regional participation in TMDL discussion on Jordan Lake.	5. Maintain and update database on habitat and stream assessment.			
6. Initiate stream restoration project, with grant assistance, if identified.	6. Expand stream restoration projects as Master Plans are completed.			

Administration and Finance

1. Oversee implementation of utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.
2. Establish credit program.	2. Maintain credit program.	2. Maintain credit program.	2. Maintain credit program.	2. Maintain credit program.
3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.

4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.
5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.
		6. Complete rate evaluation and program update based on completion of Master Plans for watershed improvements.		6. Complete rate evaluation and program update based on completion of sub-basin plans and NDPES permit negotiations.

Upon identification of the components of the five year program that address the priorities as validated by the Policy Review Committee, a cost model was developed that details the staffing, support resources, materials, equipment and capital investment, both of the current services provided by the Town and of the new initiatives identified above. The Cost of Service, Section 3 of this Report, discusses the details of the costs. The overall program resources necessary to achieve the program objectives identified above are provided in the following table. The Cost of Service Section of this report details the assumptions and the process followed in establishing the cost of service.

2004-2005	\$1,999,219
2005-2006	\$2,177,033
2006-2007	\$2,366,183
2007-2008	\$2,385,103
2008-2009	\$2,424,354

1.3.1 Recommended Program of Services

On January 26, 2004 and on February 16, 2004, the Town Council met with the staff, the Consultant Team and the Policy Review Committee, during scheduled public meetings to discuss the issues, provide input, and give policy direction for the refinement of the stormwater program and rate policy. Direction was given to use Year One of the enhanced program to initiate the Master Planning process, comply with NPDES requirements, and create reserves for establishing a capital improvement program, while limiting enhancements in other program areas to those necessary for existing staff to meet new work initiatives while maintaining services to the community.

In addition, direction was provided by staff and the Town Manager on key internal policies regarding fund balance requirements, indirect cost allocations and other critical financial and personnel policies that must be met within the resources of the enterprise fund management structure. These include:

- ◆ Payback of the investment made by the Town to establish the stormwater utility user-fee and enterprise fund.
- ◆ Maintenance of a 10 percent fund balance as an on-going operating reserve.
- ◆ Establishment of an emergency reserve for catastrophic infrastructure failure at a rate of \$50,000 a year.
- ◆ Limit on additional new staff to two positions in the Stormwater section, a staff engineer for support of development services and an education specialist for compliance with the NPDES permit.

Incorporation of these objectives along with the program focus for year one, resulted in the following recommended program of services.

Engineering, Modeling and Planning Recommended Program

1. Initiate Master Plan that supports all program priorities.	1. Continue Master Plan process to address major watersheds	1. Complete Master Plans on major watersheds.	1. Initiate sub-basin planning based on priorities identified through major basin plans.	1. Complete sub-basin planning effort.
2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development review services	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development services	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development services	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development services	2. Maintain current services. - floodplain mgmt. - FICRS - Technical assistance to public - Mapping/GIS - Development services
3. Address increasing workload for review of plans, site inspections, and technical assistance through staff addition.	3. Initiate Capital Improvement Program process, establishing criteria for prioritization of projects.	3. Complete creation Capital Improvement Program based on master plans of major watersheds.	3. Expand support for Public Works maintenance and remedial repair, shifting efforts to a more proactive program based on studies.	3. Continue design and construction of capital improvement program.

4. Create technology tools to coordinate database mgmt. with Public Works maintenance and remedial repair program.	4. Review existing standards for system performance and update as appropriate to meet NPDES permit.	4. Initiate design of capital improvement projects and contract for construction of major improvements	4. Update technology tools, as needed, including basin models for decision making and capital improvement program support.	4. Maintain and calibrate basin models to provide decision tools for development and capital improvement program support.
5. Install rain and stream gauges as necessary to support Master Planning process for basin studies.			5. Continue design and construction of capital improvement program.	

**Operations and Maintenance
Recommended Program**

1. Maintain current maintenance capabilities in Public Works Street Division.	1. Expand maintenance manpower capability for catch basin cleaning and remedial repair.	1. Sustain maintenance capability established in Year 1 and Year 2.	1. Sustain maintenance capability established in Year 1 and Year 2.	1. Sustain maintenance capability established in Years 1, 2 and 4.
2. Add technology tools for work-order management and coordinate with GIS system and Engineering database tools.	2. Increase use of technology by addition of equipment for inspection of closed pipe system.	2. Evaluate maintenance needs based on input from Master Plans and basin models.	2. Increase, if required, maintenance resources based on outcomes of Master Plans and basin models.	
3. Integrate customer service request tracking into technology enhancements (Item 2).	3. Increase capability for cleaning system through addition of equipment in field.			
	4. Maintain current maintenance capabilities in Public Works Streets Division for on-going services.			

**Regulation and Enforcement
Recommended Program**

Year One	Year Two	Year Three	Year Four	Year Five
1. Maintain on-going services in Inspections and Code Enforcement.	1. Maintain on-going services in Inspections and Code Enforcement.	1. Maintain on-going services in Inspection and Code Enforcement	1. Maintain on-going services in Inspection and Code Enforcement	1. Maintain on-going services in Inspection and Code Enforcement
2. Maintain on-going support for floodplain management.	2. Increase capability for follow up and enforcement, as needed, for illicit discharge detection program.	2. Oversee compliance with NPDES Permit standards and take appropriate enforcement actions.	2. Oversee compliance with NPDES Permit standards and take appropriate enforcement actions.	2. Oversee compliance with NPDES Permit standards and take appropriate enforcement actions.
	3. Increase capability to coordinate erosion and sediment regulation, inspections and enforcement.	3. Increase inspections of structural controls and water quality system controls.	3. Maintain inspections of structural controls and water quality system controls.	3. Maintain inspections of structural controls and water quality system controls.
	4. Update current ordinances and standards as needed to address NPDES Permit requirements.			4. Renew NPDES Permit and update regulatory standards and ordinances as appropriate.

**Capital Improvements
Recommended Program**

Year One	Year Two	Year Three	Year Four	Year Five
1. Create reserve for capital improvements.	1. Complete one stream restoration project based on initial input from watershed Master Plans.	1. Complete one stream restoration project based on input from watershed Master Plans.	1. Increase staff resources to address growth in capital improvements program, field services, data analysis.	1. Complete one stream restoration project based on input from watershed Master Plans.
2. Prioritize and initiate one stream restoration project through concurrent watershed grant, if applicable.	2. Take corrective action to address 2 to 4 priority remedial repairs to the drainage system based on current backlog of needs.	2. Take corrective action to address 4 priority remedial repairs to the drainage system based on current backlog of needs.	2. Complete one stream restoration project based on input from Master Plan process.	2. Take corrective action to address CIP program established based on Master Plans.
	3. Acquire or set aside resources to acquire land for conservation, open space, or stream buffer.	3. Acquire or set aside resources to acquire land for conservation, open space, easements, or stream buffers.	3. Take corrective action to address CIP program established based on Master Plans.	3. Acquire or set aside resources to acquire land for conservation, open space, or stream buffer protection.

**Stormwater Quality
Recommended Program**

1. Maintain on-going services to address water quality regulations, field services, and inspections.	1. Maintain on-going services to address water quality regulations, field services, and inspections.	1. Maintain on-going services to address water quality regulations, field services, and inspections.	1. Maintain on-going services to address water quality regulations, field services, and inspections.	1. Maintain on-going services to address water quality regulations, field services, and inspections.
2. Enhance monitoring capabilities through placement of automated data sampler and stream gauges.	2. Increase staff resource to address NPDES permit compliance, including illicit discharge program, water quality monitoring, good housekeeping, and industrial permit compliance.	2. Maintain compliance with NPDES permit.	2. Maintain compliance with NPDES permit conditions.	2. Maintain compliance with NPDES permit conditions.
3. Increase staff capability to address NPDES permit requirements for Public Education and Outreach.	3. Inspect Best Management Practices for water quality.	3. Update standards on BMPs for water quality protection.	3. Expand Stream restoration projects as Master Plans are completed.	3. Renew NPDES permit.
4. Expand current WebPages as a key resources for public outreach.	4. Test pilot BMPs and monitor.	4. Expand Stream restoration projects as Master Plans are completed.		4. Expand Stream restoration projects as Master Plans are completed.
5. Continue regional participation in TMDL discussion on Jordan Lake.	5. Maintain and update database on habitat and stream assessment.			
	6. Initiate stream restoration project as Master Plans are completed.			

**Administration and Finance
Recommended Program**

1. Oversee implementation of utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.	1. Oversee utility operation including staffing, space allocations, billing procedures, and equipment purchases.
2. Establish credit program.	2. Maintain credit program.	2. Maintain credit program.	2. Maintain credit program.	2. Maintain credit program.
3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.	3. Coordinate with external agencies and organization and with internal organizations to ensure effective service delivery to community.

4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.	4. Maintain on-going general communications and education program with community.
5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.	5. Provide staff support for the Citizen Advisory Board.
6. Repay General Fund for resources utilized to create stormwater program and funding mechanism.		6. Complete rate evaluation and program update based on completion of Master Plans for watershed improvements.		6. Complete rate evaluation and program update based on completion of sub-basin plans and NDPEs permit negotiations.

This program of services is the recommended strategy to begin the steps to achieve the goals and objectives embodied in the priorities identified in Section 1. The resources necessary to achieve these program initiatives are outlined in detail in Section 3. A summary of those resources is provided in the following Table. In Year 1, the payment to the General Fund for the investment of resources to create the stormwater program and utility is \$403,000.

	Estimated Cost
2004-2005	\$2,000,888
2005-2006	\$2,290,993
2006-2007	\$2,485,218
2007-2008	\$2,550,760
2008-2009	\$2,564,139

A detailed analysis of the cost of service for the five year planning period is presented below. All costs are shown in constant 2004 dollars. In the rate model, discussed in Section 5 of the *Cost of Service and Rate Study Report*, inflation is accounted for in addition to other institutional costs for enterprise fund management. The cash flow analysis and rate projection is shown on the last page of the report.

COST OF SERVICE ANALYSIS (NOT AN OPERATING BUDGET)

Major Cost Category	Year 1	Year 2	Year 3	Year 4	Year 5
Cost Subcategory					
Administration					
General Stormwater Program Administration	\$ 80,185.20	\$ 67,309.55	\$ 61,801.87	\$ 79,979.17	\$ 72,653.70
Billing, Finance and Customer Services	\$ 64,165.60	\$ 63,973.55	\$ 55,293.99	\$ 52,317.87	\$ 55,268.62
Legal Support Services	\$ 10,000.00	\$ 10,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Personnel Services	\$ 1,000.00	\$ 1,000.00	\$ -	\$ 500.00	\$ -
Administrative Support Services	\$ -	\$ 13,032.38	\$ 30,185.81	\$ 29,347.71	\$ 35,105.71
Program Planning and Development	\$ 7,513.60	\$ 4,416.28	\$ 2,786.38	\$ 12,952.50	\$ 10,800.14
Inter-agency Coordination	\$ 3,635.20	\$ 13,497.43	\$ 13,337.76	\$ 24,801.64	\$ 23,397.39
Public Education Programs - General	\$ 9,075.20	\$ 21,056.67	\$ 5,941.55	\$ 4,444.49	\$ 5,356.35
Stormwater Advisory Committee Support	\$ 1,740.80	\$ 899.12	\$ 956.11	\$ 6,490.36	\$ 12,257.65
Indirect Cost Allocations	\$ 27,047.97	\$ 46,846.78	\$ 54,245.75	\$ 61,054.43	\$ 66,535.21
Unspecified Overhead	\$ 4,000.00	\$ 7,000.00	\$ 7,000.00	\$ 8,000.00	\$ 8,000.00
Cost and Rate Analysis	\$ -	\$ -	\$ -	\$ -	\$ 14,723.76
Emergency/disaster Management	\$ 3,212.80	\$ 1,798.25	\$ 2,021.49	\$ 2,548.17	\$ -
Subtotal:	\$ 211,576.37	\$ 250,830.01	\$ 238,570.72	\$ 287,436.34	\$ 309,098.53
Engineering and Master Planning					
Stormwater Quantity Master Planning	\$ 192,667.20	\$ 204,929.13	\$ 148,518.34	\$ 141,091.82	\$ 147,189.71
System/project Design Engineering	\$ 10,465.60	\$ 8,448.60	\$ 11,496.19	\$ 15,150.88	\$ 16,999.75
Maintenance and Field Engineering Support	\$ 8,991.20	\$ 6,194.73	\$ 8,646.61	\$ 13,009.79	\$ 13,134.13
GIS, Database, and Mapping	\$ 18,110.40	\$ 22,274.96	\$ 12,390.28	\$ 22,407.48	\$ 27,753.20
Technical Services/Public Assistance	\$ 3,507.20	\$ 6,349.40	\$ 3,974.69	\$ 12,597.99	\$ 14,618.82
Best Management Practice Analysis/Design	\$ 10,368.00	\$ -	\$ 4,903.49	\$ 5,615.57	\$ 5,101.28
Design Criteria and Design Manual	\$ 2,611.20	\$ -	\$ 3,045.90	\$ 8,395.14	\$ 4,314.23
Field Data Collection	\$ 4,480.00	\$ 7,797.28	\$ 10,670.84	\$ 10,907.48	\$ 11,151.92
Hazard Mitigation Planning	\$ 50,870.40	\$ 51,798.25	\$ 51,857.59	\$ 50,000.00	\$ 52,550.64
Code Development and Zoning Support Services	\$ 24,704.00	\$ 29,411.26	\$ 22,260.44	\$ 29,650.96	\$ 18,500.49
Multiuse Planning and Design	\$ -	\$ -	\$ 1,857.59	\$ 5,347.49	\$ 5,800.89
Flood Insurance and Community Rating System	\$ 26,740.80	\$ 25,000.00	\$ 25,000.00	\$ 12,469.16	\$ 15,523.96
Infrastructure Management Planning	\$ 3,635.20	\$ 7,297.37	\$ 10,432.28	\$ 4,600.00	\$ 18,635.81
Subtotal:	\$ 357,151.20	\$ 369,500.96	\$ 315,054.24	\$ 331,243.75	\$ 351,274.83
Operations					
Operations and Maintenance Management	\$ 44,140.80	\$ 45,967.40	\$ 47,303.49	\$ 50,965.30	\$ 46,132.46
Storm Sewer and Culvert Maintenance	\$ 70,000.00	\$ 107,500.00	\$ 107,500.00	\$ 107,500.00	\$ 107,500.00
Remedial Repair and Replacement	\$ 100,500.00	\$ 135,100.00	\$ 135,100.00	\$ 135,100.00	\$ 135,100.00
Inlet, Catch Basin, and Manhole Cleaning	\$ 70,000.00	\$ 155,100.00	\$ 155,100.00	\$ 155,100.00	\$ 155,100.00
Erosion and Sediment Control	\$ -	\$ -	\$ -	\$ -	\$ -
Detention/retention System Maintenance	\$ -	\$ -	\$ -	\$ -	\$ -
Ditch and Channel Maintenance	\$ 70,000.00	\$ 118,100.00	\$ 118,100.00	\$ 118,100.00	\$ 118,100.00
Curb and Gutter Maintenance	\$ 65,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00
Infrastructure Management Program	\$ -	\$ -	\$ -	\$ -	\$ -
Public Assistance Program	\$ 63,481.60	\$ 63,596.49	\$ 62,786.38	\$ 64,797.22	\$ 62,550.64
Emergency Response	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal:	\$ 483,122.40	\$ 735,363.80	\$ 735,889.87	\$ 741,562.52	\$ 734,483.10
Regulation/Enforcement					
Code Development and Enforcement	\$ 52,164.80	\$ 16,007.42	\$ 61,556.28	\$ 60,221.97	\$ 54,224.35
Stormwater Permit Administration	\$ 5,376.00	\$ 17,489.39	\$ 20,845.79	\$ 13,469.74	\$ 11,279.84
Drainage System Inspection and Regulation	\$ 2,240.00	\$ 1,798.25	\$ 4,510.12	\$ 4,215.91	\$ 2,332.01
Zoning and Land Use Regulation Support	\$ 5,875.20	\$ 5,804.63	\$ 4,971.78	\$ 10,265.81	\$ 9,750.74
Special Inspection Programs	\$ 2,240.00	\$ 1,983.36	\$ 3,004.92	\$ 6,151.73	\$ 3,862.40
Dumping Regulation Program	\$ -	\$ -	\$ -	\$ 2,116.42	\$ 1,311.76
Floodplain Management	\$ 3,635.20	\$ 2,697.37	\$ 3,879.08	\$ 7,534.46	\$ 8,992.83
Erosion/sediment Control Regulation	\$ 1,740.80	\$ 29,573.61	\$ 42,417.21	\$ 44,776.43	\$ 41,320.38
Subtotal:	\$ 73,272.00	\$ 75,354.03	\$ 141,185.19	\$ 148,772.47	\$ 133,074.31
Capital Improvements					
Capital Improvement Project Management	\$ 22,446.40	\$ 12,582.82	\$ 18,439.48	\$ 22,294.02	\$ 19,444.78
Major Capital Projects	\$ -	\$ 104,746.84	\$ 310,700.26	\$ 310,751.42	\$ 310,537.79
Small Capital Projects	\$ -	\$ 129,746.84	\$ 132,782.75	\$ 135,751.42	\$ 136,703.80
Land, Easement, and Rights Acquisition	\$ 51,740.80	\$ 51,798.25	\$ 53,455.66	\$ 53,047.65	\$ 54,314.23
Subtotal:	\$ 74,187.20	\$ 298,874.75	\$ 515,378.15	\$ 521,844.51	\$ 521,000.59
Stormwater Quality					
Stormwater Quality Master Planning	\$ 154,352.00	\$ 164,822.31	\$ 168,958.33	\$ 132,463.91	\$ 141,192.93
NPDES Administration and Reporting	\$ 5,747.20	\$ 18,473.40	\$ 17,571.97	\$ 8,026.52	\$ 20,645.62
Watershed Assessment	\$ 31,571.20	\$ 26,304.63	\$ 26,291.31	\$ 29,473.63	\$ 30,192.44
Water Quality Monitoring	\$ 85,500.80	\$ 51,320.31	\$ 50,367.88	\$ 79,109.48	\$ 52,287.55
Best Management Practices Development	\$ 2,611.20	\$ 1,798.25	\$ 6,460.58	\$ 5,982.42	\$ 4,736.90
Water Quality Retrofitting Program	\$ 11,740.80	\$ 52,948.60	\$ 58,345.49	\$ 54,994.76	\$ 52,186.26
Installation of BMPs	\$ 2,611.20	\$ -	\$ 8,297.68	\$ 4,035.31	\$ 2,186.26
Illicit Connections and Illegal Dumping Program	\$ -	\$ 5,421.18	\$ 4,780.56	\$ 4,571.47	\$ 10,639.82
General Commercial/Residential Program	\$ -	\$ 4,991.46	\$ 3,004.92	\$ 3,724.90	\$ 2,186.26
Pesticide, Herbicide, and Fertilizer Program	\$ -	\$ -	\$ 2,253.69	\$ 846.57	\$ 437.25
Toxic and Hazardous Materials Control Program	\$ -	\$ -	\$ -	\$ 846.57	\$ 437.25
Spill Response and Cleanup Program	\$ -	\$ 2,049.47	\$ 1,229.29	\$ 1,269.85	\$ 874.51
Industrial Runoff Control Program	\$ 20,000.00	\$ 18,371.71	\$ 15,819.52	\$ 16,269.85	\$ 15,874.51
Public Education Program	\$ 38,555.20	\$ 49,871.33	\$ 61,537.13	\$ 58,559.39	\$ 61,044.20
Groundwater and Drinking Water Program	\$ -	\$ -	\$ -	\$ -	\$ -
Septic, Inflow, and Infiltration Program	\$ -	\$ -	\$ -	\$ -	\$ -
Emergency Response	\$ 1,894.40	\$ 1,692.47	\$ 928.79	\$ 1,382.73	\$ 991.11
Habitat Assessment	\$ 3,980.80	\$ 3,490.71	\$ 2,158.08	\$ 8,973.63	\$ 5,975.79
Subtotal:	\$ 358,564.80	\$ 401,555.83	\$ 428,005.23	\$ 410,530.99	\$ 401,888.64
TOTAL:	\$ 1,557,873.97	\$ 2,131,479.49	\$ 2,374,083.40	\$ 2,441,390.59	\$ 2,450,820.01

Once the cost of service has been calculated, the demand for resources is transferred into a rate model that must take into account financial policies, additional revenue sources, burdens to the enterprise fund such as the payback to the General Fund of \$403,000 in year one of the utility (these are funds "borrowed" from the General Fund to support the development and implementation of the user-fee and establishment of the enterprise fund). The rate model takes into account Bad Debt, potential use of credits, emergency reserves, mandatory fund unappropriated fund balances requirements and other fund management strategies. The cash flow and rate summary for the Recommended Program is shown below.

Chapel Hill, North Carolina					
Stormwater Cost of Service Analysis/Rate Model					
Revenue/Expenditure (Cash Flow) Analysis					
	Year 1	Year 2	Year 3	Year 4	Year 5
Expenses					
Annual Operating Expense	\$ 1,452,188	\$ 1,880,922	\$ 1,883,463	\$ 1,901,543	\$ 1,947,859
Annual Capital Expense and Bonded Capital Expense	\$ 145,700	\$ 348,000	\$ 538,000	\$ 587,000	\$ 552,000
<i>Subtotal with Inflation</i>	\$ 1,597,888	\$ 2,290,993	\$ 2,483,617	\$ 2,551,293	\$ 2,564,139
Bond Sale Costs and Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -
Bond Debt Service Coverage	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Fund Balance - Unappropriated	\$ 188,092	\$ 254	\$ 1,808	\$ 4,632	\$ 6,428
Emergency Reserve	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
Total: Expenses	\$ 1,835,981	\$ 2,341,247	\$ 2,535,425	\$ 2,605,925	\$ 2,620,567
Other Revenues					
Funds Carried Forward	\$ -	\$ 115,143	\$ 198,466	\$ 143,576	\$ 66,266
Bond Sales Receipts and Associated Funds	\$ -	\$ -	\$ -	\$ -	\$ -
Other Fees and Charges	\$ 30,000	\$ 33,000	\$ 36,600	\$ 41,600	\$ 46,200
Interest Income	\$ 14,522	\$ 37,618	\$ 37,669	\$ 38,031	\$ 38,957
Recovered Delinquencies	\$ 39,200	\$ 49,050	\$ 49,664	\$ 50,284	\$ 50,913
Other Resources	\$ 100,000	\$ 120,000	\$ 140,000	\$ 150,000	\$ 160,000
Total: Other Revenues	\$ 183,722	\$ 354,812	\$ 462,399	\$ 423,492	\$ 382,336
Service Fee Revenue Requirement	\$ 1,652,259	\$ 1,986,435	\$ 2,073,026	\$ 2,182,434	\$ 2,258,230
Revenue Stream Reduction Allowances					
Delinquencies and Bad Debt	\$ 40,000	\$ 51,632.04	\$ 52,277	\$ 52,931	\$ 53,593
Offsets	\$ 754,200	\$ 351,200	\$ 351,200	\$ 351,200	\$ 351,200
Credits	\$ 20,000	\$ 26,139	\$ 26,465	\$ 26,796	\$ 27,131
Total: Revenue Reduction Allowances	\$ 814,200	\$ 428,971	\$ 429,943	\$ 430,927	\$ 431,924
Adjusted Service Fee Revenue Requirement	\$ 2,466,459	\$ 2,415,406	\$ 2,502,969	\$ 2,613,361	\$ 2,690,154
Estimate of Service Fee Needed/Year					
Annualized ERU Revenue Requirement	\$ 2,466,459	\$ 2,415,406	\$ 2,502,969	\$ 2,613,361	\$ 2,690,154
Number of ERU	53,383	54,050	54,726	55,410	56,103
Estimated Monthly Charge per ERU	\$ 3.85	\$ 3.72	\$ 3.81	\$ 3.93	\$ 4.00
Service Fee Recommendation					
Recommended Monthly Charge per ERU	\$ 4.03	\$ 4.03	\$ 4.03	\$ 4.03	\$ 4.03
Estimated Annual ERU Revenue	\$ 2,581,602	\$ 2,613,872	\$ 2,646,545	\$ 2,679,627	\$ 2,713,122
Estimated Year-end Revenue Surplus (Deficit)	\$ 115,143	\$ 198,466	\$ 143,576	\$ 66,266	\$ 22,968
Available Funds for Appropriation in Following Year	6.1%	10.5%	7.6%	3.4%	1.1%
Assumed Inflation Rate for Supplies and Services	0.033				
	<i>Monthly Fee</i>	<i>Annual Fee</i>	<i>\$/sq. ft. imp./year</i>		
Recommended Monthly Charge/ERU	\$ 4.03	\$ 48.36	\$ 0.02418		
Monthly Charge per Acre of Impervious Area	\$ 87.77	\$ 1,053.28	\$ 0.02418		