

**RECOMMENDATIONS FOR DEVELOPMENT OF A  
STORMWATER UTILITY TO SERVE THE  
TOWN OF CHAPEL HILL, NC**

**REPORT OF THE STORMWATER UTILITY POLICY ADVISORY COMMITTEE,  
THE CONSULTANT AND THE TOWN ENGINEERING DEPARTMENT  
FOR THE  
January 26, 2004  
Town Council Work Session**

**(Rescheduled to January 28, 2004)**

*Revised*

**INTRODUCTION**

This report discusses key process and performance recommendations for development and implementation of a stormwater utility intended to provide a stable and sufficient source of revenue to support a comprehensive stormwater program to serve the Town of Chapel Hill. The policy and program recommendations included in this report were developed jointly by a core working group including the Town's consultant, AMEC Earth and Environmental, Inc, Town Engineering and Public Works department staff, and the Council-appointed Stormwater Utility Policy Review Committee.

Key policy issues were identified and program recommendations were developed in a "building-block" fashion including review of past stormwater management committee recommendations, consideration of the goals included in the Town's Comprehensive Plan regarding water quality improvements and the establishment of a utility, and identification of program elements that would be necessary to meet Federal and State water quality mandates and policy direction from the Town Council.

This report is organized as outlined below to provide information and proposed recommendations generally in the sequence that they were discussed and developed by the Committee, Consultant, and Town staff.

- I. Recommended Stormwater Management Program Mission Statement
- II. Recommended Stormwater Management Program Priorities
- III. Recommended Stormwater Management Program elements, service levels, costs
- IV. Analysis of existing Stormwater Management Program costs
- V. Aerial Photography and Mapping
- VI. Cost Model and Rate Study
- VII. Billing and Collections
- VIII. Other options/issues
- IX. Schedule
- X. Conclusions

## DISCUSSION

### I. Recommended Stormwater Management Program Mission Statement

*“It is the mission of this comprehensive stormwater management program to:*

- 1. protect the health and safety of both the public and the ecosystem;*
- 2. address both stormwater quality and stormwater quantity concerns; and*
- 3. meet or exceed Federal and State mandates regarding stormwater.”*

In association with the development of a Mission Statement, the Committee identified its understanding of the roles of the Town and community stakeholders in services that would be provided by a comprehensive Stormwater Management Program. Attachment # 1 outlines those roles.

### II. Recommended Stormwater Management Program Priorities

1. Develop and implement a comprehensive Stormwater Management Program Master Plan that supports all of the Program priorities.

A Stormwater Management Program Master Plan will be developed based on the Mission and Program Priorities for the stormwater management program. It will set out the activities to be undertaken in line with the priorities and a time schedule and resources needed to accomplish the various elements of the stormwater management program. The Stormwater Management Program Master Plan will help guide the implementation of the stormwater management program over the long-term.

2. Address stormwater quantity (flooding) as an integral component within the Program.

The stormwater management program will be enhanced to include comprehensive long-range management efforts to minimize flood risks and the many effects of flooding. These efforts include prioritizing and addressing stormwater infrastructure needs such as maintenance, repair, replacement, upgrades and capital improvements.

3. Address stormwater quality as an integral function within the Program.

The stormwater management program will continue to address stormwater quality. This applies to water quality regulatory demands, as well as to erosion and sediment controls and to stream and aquatic system health. The stormwater management program will recognize and move toward the goals of the Town’s Year 2000 Comprehensive Plan.

4. Protect and restore natural stream corridors.

The health of the aquatic ecosystem is dependent on both quality and quantity management. The Town’s stormwater management program will address both infrastructure concerns and aquatic habitat health.

5. Develop a formal public education and involvement program.

Stormwater education efforts will identify key stakeholders, including institutions, development and business communities, and the general public. Education efforts will focus on both causes and solutions for stormwater problems, including possible regulatory remedies. The goal will be to establish a clear understanding that stormwater and surface water systems are a public resource to be protected and managed in the public interest.

6. Define the level of service and performance standards for the Town's Stormwater Management Program.

The stormwater management program will plan, prioritize, design and construct system improvements at a pre-determined level-of-service that is considered to be appropriate for public and private drainage systems. Defining the level and extent of service and performance for the Town's drainage system provides valuable guidance about how and where stormwater management is to be delivered and enforced.

7. Ensure compliance with Federal and State regulatory mandates.

The stormwater management program will implement reasonable regulatory programs that comply with stormwater quality mandates from Federal and State agencies, and will address floodplain management requirements.

8. Establish clear Stormwater Management Program leadership that the public recognizes.

The stormwater management program will clearly identify point(s) of contact responsible for system planning, regulatory compliance and enforcement, system design, construction and maintenance, and addressing stormwater concerns from the public.

9. Integrate programs to utilize resources efficiently.

The stormwater management program will minimize duplication and inefficiencies in the management and implementation of the various stormwater management elements in order to improve the overall cost-effectiveness of the program and to optimize the use of already scarce resources. It will promote integrated programs and inter-jurisdictional cooperation aimed at ensuring a positive public reception to the program.

10. Establish an understanding of the stormwater system as a "utility".

The stormwater management program will be funded, at least in part, by the creation of a utility, providing a stable, dedicated funding source like those already in place for other services (i.e. water, sewer, gas, electricity)

### III. Recommended Stormwater Management Program Elements, Service Levels, and Costs

#### 1. Planning, Modeling and Engineering

A. Master Planning was identified by the Committee as one of the most important program elements of a comprehensive Stormwater Management Program. The desired result would be a comprehensive plan to manage the study, design, regulatory compliance and inspection of the community stormwater management system components including streams, engineered structures, riparian areas and other drainage infrastructure. The Committee noted that this effort would be critical to the long term success of a utility-based stormwater management program.

#### SERVICE LEVELS CONSIDERED

Minimal: By year 2011 Town staff would complete or up-date hydrologic, hydraulic and water quality computer models and GIS coverage's of the four (4) largest drainage basins within the Town's Planning Jurisdiction, limiting analysis to the major tributaries. This would not provide the analysis of smaller watershed and basins but would provide a broad look at the issues within major watersheds such as Bolin, Booker, Morgan, and Little Creeks. Based on the analysis, basin plans describing conditions and activities in the major basins would be completed by this date.

Moderate: Same as Minimal except complete master planning of largest drainage basins by year 2008. The use of consultants would be necessary to gather information, calibrate models and develop basin plans. Smaller basins would be modeled on a priority basis. Begin to install a limited number of telemetered rain and stream gauges and sampling technologies in major basins.

Aggressive: Same as Moderate except complete master plans by year 2006 and establish schedule to complete modeling and basin plans of sub basins by year 2008. Install rain and stream gauges as necessary to collect data for analysis of smaller basins.

#### ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$40,000	\$200,000	\$325,000

#### COMMITTEE RECOMMENDATION: **Aggressive Service Level**

B. Development Review for stormwater management and Resource Conservation District regulations has increased significantly with the adoption of the Chapel Hill Land Use Management Ordinance in January 2003. Application of the regulations requires significant staff time and resources to meet with developers, other Town staff and contractors; and to perform comprehensive development plan reviews to ensure compliance with the Ordinance.

#### SERVICE LEVELS CONSIDERED

Minimal: Utilize existing Town staff to meet with developers and to review development plans for compliance with the Land use Management Ordinance requirements.

Moderate: Same as Minimal with the addition of one staff engineer in the Engineering Department responsible for reviewing development plans, performing limited site inspections and providing technical assistance to staff and developers regarding compliance with the stormwater management related regulations in the Town’s Land Use Management Ordinance.

Aggressive: Same as Moderate with the addition of one technician in the Engineering Department. The staff engineer and technician would share responsibilities for plan review and field inspections to verify compliance. Technician would perform selected follow-up inspections to verify ongoing performance and condition of stormwater management facilities installed during initial construction.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$0	\$60,000	\$90,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

**2. Water Quality**

To ensure that Town facilities/operations and private development projects are and remain in compliance with the NPDES-II regulations and the Town’s Land Use Management Ordinance, and to protect streams and aquatic habitat, a more robust water quality monitoring and mitigation program is needed in Chapel Hill. The following key areas must be implemented and/or enhanced.

A. Illicit Connection Detection and Elimination. The Town is required by the National Pollutant Discharge Elimination System – Phase Two (NPDES-II) regulations to develop a plan to identify and eliminate illegal or illicit connections to the drainage system. This includes mapping of outfalls and enforcing appropriate ordinances to eliminate such connections once identified. The NPDES-II regulations allow the Town five years to fully implement a plan that, once approved, must continue in perpetuity.

**SERVICE LEVELS CONSIDERED**

Minimal: By year 2005, the Town would have the ordinance amended to meet the NPDES-II minimum measures, the storm sewer inventory completed and staff trained and in the field to identify existing or potential illicit discharge problems. Follow up enforcement and mitigation activities would occur as time and resources allowed.

Moderate: Same as Minimal and including an enforcement mechanism for illicit discharge identification, sampling and enforcement actions that would be implemented by year 2006. An additional technician would be added in the Engineering Department to perform onsite problem analyses, identify pollution source(s), propose appropriate mitigation measure(s), and initiate enforcement action as necessary. Also, a public education program would be created to provide specific information about illicit connections and their potential impacts.

Aggressive: Same as Moderate with additional water quality testing to better identify the types and level of pollutants that are present in streams, and the existing or potential origin(s) of pollutants..

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$30,000	\$70,000	\$90,000

**COMMITTEE RECOMMENDATION: Minimal Service Level**

B. Industrial Permit Compliance/Good Housekeeping Program. The NPDES-II rules require municipal facilities such as maintenance yards, garages, and treatment plants to apply for Industrial Permits. These permits require inspections of facilities, development of appropriate operating procedures, implementation of "good housekeeping" practices, training of staff, and annual reporting.

**SERVICE LEVELS CONSIDERED**

Minimal: Incorporate Industrial Permit related training into existing training activities with some minimal funding for printing or purchasing materials. Inspect Town buildings as part of routine maintenance procedures, and identify problems. Based on review of standards of practice in other North Carolina communities, develop and implement standards for Town maintenance and operations activities.

Moderate: Same as Minimal except develop more formal and detailed training program with specific materials provided to inform employees about water quality issues and standards for maintenance and operations activities. Hire a consultant to inspect key Town facilities every two years to identify existing and/or potential problems.

Aggressive: Same as Moderate except hire consultant to audit all Town facilities each year to identify existing and/or potential problems. Consultant would also be hired to provide comprehensive training for Town employees.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$2,000	\$10,000	\$15,000

**COMMITTEE RECOMMENDATION: Minimal Service Level**

C. Erosion and Sediment Control. Currently the Town’s soil erosion and sedimentation control (SES) regulations are enforced by Orange County. Because County erosion and sedimentation control personnel are spread out countywide, consistent compliance with the regulations cannot be assured at all times in Chapel Hill.

**SERVICE LEVELS CONSIDERED**

Minimal: Utilize existing Engineering Inspectors and Building Inspectors to identify major SES violations as part of routine site inspections, and report violations to County SES staff for follow-up action(s).

Moderate: Same as Minimal with the addition of one SES inspector in the Engineering Department who would focus on identifying violations of SES regulations and would report the violations to County SES staff. This inspector would follow-up with County staff and with the violator to facilitate implementation of appropriate mitigation measures in a timely manner.

Aggressive: Same as Moderate with one additional SES inspector in the Engineering Department. The Town would assume full responsibility for enforcement of SES regulations within its Planning Jurisdiction, including identification of violations and implementation of mitigation measures. The Town Code would need to be revised to reflect assumption of new responsibilities by the Town.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$0	\$ 60,000	\$ 120,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

**3. Operations**

Operations inherently involve issues of the extent of service, the level of service and the investment in the drainage system through maintenance and repair activities. The extent of service is used to identify and differentiate between public, private and shared-responsibility parts of the community drainage system. Currently, the Town typically operates and maintains only those parts of the drainage system that are within Town-owned properties and rights-of-way, and/or are within public easements on private property where the drainage system is conveying stormwater runoff originating on public property. The level of service defines the responsiveness, in terms of time and methods, of the Town’s drainage system maintenance and repair activities.

**SERVICE LEVELS CONSIDERED**

Minimal: Existing Town staff and equipment resources would continue the current extent and level of service and investment in drainage system maintenance and repairs. The current street sweeping program would be evaluated and adjusted as necessary to optimize water quality benefits.

Moderate: Same as Minimal with the addition of a three-person construction crew (supervisor and two laborers) and equipment in the Public Works Department to expand the general maintenance and repair of the community drainage system and to increase inspection and cleaning of the pipes, culverts, catch basins, inlets, ditches and streams, including facilities on selected State roads. A primary objective of the additional construction crew would be to address the backlog of identified drainage system repairs.

Aggressive: Same as Moderate with additional funding for private contract work as needed to supplement Town resources in performing identified drainage system construction, repair and maintenance activities and to provide supplemental street sweeping.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$10,000	\$150,000	\$210,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

**4. Special Programs**

Special programs include such activities as public education, drainage assistance, hazard mitigation, stream inventory/assessment, and technology enhancement. Some of these activities, such as public education/outreach and stream inventory/assessment are regulatory requirements under the NPDES-II permit program and are also identified community priorities. Improved technology utilization will increase both the efficiency and the effectiveness of Program service delivery, allowing the Town to transition from reactive to proactive responsiveness.

A. Public Education and Outreach. Develop a formal public education and involvement program.

**SERVICE LEVELS CONSIDERED**

Minimal: \$0.25 per year per capita would provide for production and direct mailing of a limited number of printed Program materials. This level would meet the minimum standards established for NPDES model programs.

Moderate: \$0.50 per year per capita would make it possible to utilize multiple media sources to distribute a variety of Stormwater Management Program messages and information of importance to the community.

Aggressive: Same as Moderate with the addition of one administrative staff position in the Engineering Department to develop and coordinate public education and outreach activities, volunteer efforts, and training programs associated with stormwater management issues and concerns. It has been shown in other programs that engaging citizens, schools, and businesses is a cost effective approach to improving Program performance and effectiveness.

ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$ 12,500	\$ 25,000	\$ 64,000

**COMMITTEE RECOMMENDATION: Aggressive Service Level**

B. Drainage Assistance Program is an effective means of responding to citizens’ requests-for-assistance by providing technical advice to residents at no cost, and sharing in the costs of repair or replacement of qualified storm drainage facilities serving primarily private properties. The Town has an adopted policy outlining a local Drainage Assistance Program; however, the program is not currently funded. This program may include retrofits, new construction or maintenance of existing facilities for water quantity or quality improvements.

SERVICE LEVELS CONSIDERED

Minimal: Provide for a few minor projects, which would benefit more than one property.

Moderate: Perform up to two minor projects and one major project per year.

Aggressive: Perform up to three minor projects and two major projects per year.

ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$ 15,000	\$ 60,000	\$ 100,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

C. Hazard Mitigation and Floodplain Management. As part of the Federal Emergency Management Agency (FEMA) requirements for emergency response, communities must have a Hazard Mitigation Plan in place. The plan identifies means and measures the community will use to mitigate impacts from flooding and other natural disasters and to administer the National Flood Insurance Program (NFIP). The activities associated with the plan require coordination between the local stormwater management program and Town/County/State emergency management agencies.

SERVICE LEVELS CONSIDERED

Minimal: Prepare a Town Hazard Mitigation Plan and update it as necessary for changing conditions and regulations. Utilize State and Federal flood maps and models only. Administer the NFIP program at a minimal level, including use of the existing Cooperating Technical Community (CTP) agreement between Chapel Hill, Carrboro and FEMA.

Moderate: Same as Minimal plus gather additional, detailed drainage system information including data necessary for watershed modeling and master planning, in

addition to the State flood maps. Expand inter-jurisdictional cooperative efforts to promote efficient, integrated hazard mitigation and stormwater management programs. Apply for cost-share grants with the NC Division of Emergency Management for limited mitigation measures. Administer the local NFIP program at a higher level of participation including the Community Rating System (CRS) and the Increased Cost of Compliance (ICC) strategies.

Aggressive: Same as Moderate with increased level of data collection necessary for watershed modeling, master planning, and implementation of increased mitigation measures. Provide leadership role in establishing functional, cooperative, inter-jurisdictional endeavors that will benefit all jurisdictions. Utilize digital aerial photography and geographic information system software to expand and automate analyses of local and regional stormwater management issues.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$40,000	\$100,000	\$160,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

D. Stream Restoration Program. The Town does not currently have a designated stream restoration program. Town activities associated with stream restoration are limited and are applied on an “as needed” basis, typically in response to citizen complaints.

**SERVICE LEVELS CONSIDERED**

Minimal: Identify and prioritize stream reaches and riparian areas in need of restoration for water quality or quantity purposes. Develop a plan of action for future restoration projects.

Moderate: Same as minimal with additional funding for easement acquisition, restoration design and one restoration project per year.

Aggressive: Same as moderate with additional funding for two or three restoration projects per year.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$10,000	\$50,000	\$75,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

E. Technology Utilization. The use of geographic information systems (GIS) as a tool for stormwater management and related database management continues to evolve in the Town. As technologies improve and more complex data sets are established, additional staff, equipment and software will be required.

## SERVICE LEVELS CONSIDERED

Minimal: Purchase and utilize advanced computer software for GIS database management, staff training, service request tracking, website applications, and construction/maintenance project planning and tracking.

Moderate: Same as Minimal with the addition of contracted assistance from an information system consultant to customize the software application(s) for specific Town needs and conditions. Funding would be programmed for technology updates and support and for employee training.

Aggressive: Same as Moderate with the addition of contracting for consultant services to develop sophisticated computer modeling tools for master planning and watershed analysis. Funding would be programmed to update modeling software, to secure additional software application services, and for training of employees as necessary.

## ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$20,000	\$50,000	\$70,000

## COMMITTEE RECOMMENDATION: **Minimal Service Level**

### **5. Capital Improvements**

Capital improvements associated with the Town's Stormwater Management Program involve major drainage system construction and/or renovation projects that are necessary to address deficiencies in system condition and/or performance or to mitigate identified problems caused by the existing system. Extraordinary maintenance (i.e. other than routine maintenance) activities may also be identified as capital improvement projects.

In 1996 the Town issued Street Improvement Bonds allocated for drainage projects of \$500,000, of this about \$460,000 of the bonds had been spent through May, leaving a balance of about \$40,000. The Town, however, has identified more than \$675,000 in unmet stormwater improvement capital projects. Also, there are no funds earmarked to handle major emergency repairs. A dedicated funding source is needed to provide emergency funds and money for new and existing major capital improvement projects (CIP).

The Town currently requires dedication of easements on new drainage systems as part of the development approval process. However, the Town does not currently have legal access to many older sections of the publicly maintained drainage system. The growth of the Town continues to place a burden on the older sections of the drainage system and funding is needed for system reconstruction and rehabilitation improvements to maintain reasonable levels of performance and flood protection.

## SERVICE LEVELS CONSIDERED

Minimal: Provide \$200,000 per year dedicated to capital improvement projects. These funds could be utilized as direct payment for improvements or for payment of interest on loan or bond debt necessary to fund larger and more costly improvement projects that may be necessary.

Moderate: Same as Minimal except increase annual expenditure for capital improvement projects to \$400,000 a year.

Aggressive: Same as Moderate except increase annual expenditure for capital improvement projects to \$600,000 a year.

ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$200,000	\$400,000	\$600,000

**COMMITTEE RECOMMENDATION: Minimal Service Level**

**6. Administration**

Leadership is a key Program element necessary to provide the community with a clearly identified point of contact and to assume oversight responsibility for effective stormwater system planning, regulatory compliance, system design/construction/maintenance, and enforcement of standards. In addition, Program leadership is critical for effective coordination with other municipalities, Orange and Durham counties, State and Federal agencies, and organizations involved with protection of water supply watersheds such as the Cape Fear River Basin and Jordan Lake.

It is not proposed that the Town centralize, by reorganization, the services currently provided by the Public Works Department and the Engineering Department; but rather establish a leadership position within the existing organization that would be responsible for organizing and coordinating delivery of comprehensive stormwater management services to the community using available Town resources supplemented by contract services.

In addition to a Program leadership position, additional technical and administrative support staff will be necessary to manage the Program at the different levels of involvement described below:

**SERVICE LEVELS CONSIDERED**

Minimal: Add a Program Manager position in the Engineering Department with oversight responsibility for the entire Stormwater Management Program. Add one technician position in the Engineering Department to assist with regulatory compliance, field inspections, water quality sampling, and responding to citizen requests-for-assistance.

Moderate: Same as Minimal with two additional staff positions in the Engineering Department: An additional technician would be necessary to increase water quality testing, to inspect and evaluate identified water quality and quantity problems, and to provide additional field inspection capability with regard to regulatory compliance. An administrative staff position would be necessary to manage increased reporting requirements, to track responses to reported problems, to assist with development plan review, to coordinate an expanded public education program, and to oversee a stormwater management “hotline” to be added in the Engineering Department.

Aggressive: Same as Moderate with one additional technician position in the Engineering Department to coordinate Program-related construction activities including both design work and field inspections.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$130,000	\$220,000	\$270,000

**COMMITTEE RECOMMENDATION: Minimal Service Level**

**7. Regulation and Enforcement**

Regulation and enforcement involve State and Federal mandates (NPDES-II regulations, Water Supply Watershed regulations, etc.), erosion and sedimentation control regulations, and a variety of regulations included in the Town’s Land Use Management Ordinance and Code that relate directly or indirectly to stormwater management.

A. NPDES-II and Land Use Management Ordinance Compliance. The Town has prepared and submitted a NPDES-II permit application in which it commits to addressing the following six minimum measures: (1) public education, (2) public involvement/participation, (3) illicit discharge detection and elimination, (4) construction site stormwater runoff control, (5) post-construction stormwater management, and (6) pollution prevention/good housekeeping. In addition to implementing a plan to address the above measures, the Town must provide the resources necessary to manage and report on permit compliance and to update the plan as needed.

We believe that the Minimal measures proposed in previous portions of this summary report would meet the minimum requirements of the Town’s NPDES Phase II permit application with the exception of the reapplication required in year 5. We also believe that other program areas cover the costs associated with Land Use Management Ordinance compliance. Implementation of Moderate or Aggressive measures, such as increased enforcement or training resources, would exceed the NPDES-II permit requirements in most cases.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$ 10,000 (in year 5)	\$ 20,000	\$40,000

**COMMITTEE RECOMMENDATION: Minimal Service Level**

**8. Finance and Billing**

Costs for financial administration and billing services will depend on the final method chosen for managing the billing system. Options include placing the stormwater fee on a local utility bill, on the county tax bill, or establishing an independent billing system solely for the stormwater utility bill. Based on experience with other stormwater programs in North Carolina, billing costs vary from about \$40,000 to \$80,000 per year, not including costs for additional staff that

may be necessary. Ongoing costs will be incurred for updating aerial photography and identification of impervious surface areas upon which the utility rate is established.

**SERVICE LEVELS CONSIDERED**

Minimal: Establish and implement a basic billing and collections system. Impervious surface area data would be updated continuously and aerial photography would be updated every five (5) years.

Moderate: Same as Minimal with the addition of an annual independent audit of the Stormwater Management Program financial data; and update of aerial photography every three years.

Aggressive: Same as Moderate with the addition of contract services for collection of delinquent fees; and update of aerial photography every two years.

**ESTIMATED ANNUAL COSTS ASSOCIATED WITH SERVICE LEVELS**

<b>Minimal</b>	<b>Moderate</b>	<b>Aggressive</b>
\$ 60,000	\$ 70,000	\$110,000

**COMMITTEE RECOMMENDATION: Moderate Service Level**

Based on the stormwater management program elements and recommended service levels described above, estimated annual program costs for operations, capital improvements, and personnel are summarized in the following table, assuming a program start date of July 1, 2004.

SUMMARY OF ANNUAL PROGRAM COSTS						
	<b>Existing</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Operations	\$621,700	\$1,219,450	\$1,202,450	\$1,142,450	\$1,092,450	\$1,092,450
Capital Impr.	\$97,000	\$506,700	\$511,000	\$717,000	\$746,000	\$724,000
Personnel	\$165,115	\$273,069 (add 1 staff)	\$407,210 (add 2 staff)	\$450,930 (add 1 staff)	\$491,190 (add 2 staff)	\$550,370
<b>Total</b>	<b>\$889,215</b>	<b>\$1,999,219</b>	<b>\$2,120,660</b>	<b>\$2,310,380</b>	<b>\$2,329,640</b>	<b>\$2,366,820</b>

Details about the changes in estimated Program costs each year for operations, capital improvements, and personnel are described above within the discussion of each recommended program element and the associated recommended service level. In general, they are a result of added staff resources, capital improvements and maintenance related increases.

**IV. Existing Program Analysis**

Stormwater management related activities currently performed by the Town were determined through interviews with representatives from all departments. These activities included construction, maintenance and repair, capital improvements, development review and permitting,

administration and accounting, inspections, report writing, and special services such as drainage assistance and hazard mitigation. Based on information gathered from these interviews, costs were estimated for each activity and service provided. The total of direct and indirect costs to the Town for existing stormwater management related activities and administration was determined to be approximately \$1.2 million per year.

The Engineering Department, Public Works Department, and Inspections Department carry out most of the activities related to stormwater management, accounting for direct annual costs of \$284,038 for Engineering, \$501,738 for Public Works, and \$103,439 for Inspections. These direct costs for stormwater management total approximately \$889,215 per year, currently borne by the Town's General Fund.

If a stormwater utility were implemented as a revenue source for the Town's Stormwater Management Program, it would be reasonable to consider transferring \$889,215 from the General Fund to the Utility. This could equate to approximately 2.0 cents on the current tax rate.

## **V. Aerial Photography and Impervious Surface Mapping**

A Town-wide impervious surface analysis was performed as the basis for developing a recommended a utility fee rate structure. The amount of stormwater runoff from a given property parcel is directly related to the amount of impervious surface area on that property. Increased impervious surface area increases demand on the receiving drainage system.

The Town provided AMEC with current aerial photography showing all impervious surfaces areas including building footprints, driveways, outbuildings, sidewalks, patios, etc. Using this information, AMEC analyzed the impervious surface area found on a representative sample of single-family residential properties located throughout the community.

The analysis determined that the mean impervious surface area on single-family residential properties in Chapel Hill is 3015 square feet. An impervious surface area of 3015 square feet is the equivalent runoff unit (ERU) for Chapel Hill, and was used by the Consultant in its rate study to develop a proposed "flat rate" utility fee.

At the Committee's request, the Consultant performed additional analysis involving the range of total impervious surface area measured on different single-family residential properties in Chapel Hill. This allowed development of a "variable (tiered) rate" utility fee that would vary depending on the amount of impervious surface area associated with a given property.

Alternative #1 below discusses the flat rate approach and Alternative #2 below discusses the variable (tiered) rate approach to establishing a utility fee.

It proposed that all properties other than single-family residential would be billed at a multiple of the equivalent runoff unit (ERU) applied to single-family properties. This method of establishing a flat or variable stormwater utility fee rate, based on a measured or statistically valid ERU area, is typical for existing stormwater utilities in North Carolina and in other states. It provides a fair and equitable way to apply the rate to residential and non-residential properties,

based on the impervious surface area and directly associated stormwater runoff demand placed on the receiving drainage system.

## **VI. Cost of Service Analysis and Rate Model**

A Cost of Service Analysis was performed to determine the estimated annual costs associated with the recommended program elements and service levels over the next five years. It includes the existing stormwater program costs and new costs associated with the recommended program.

Once the program costs were determined, a Rate Model was developed to establish the utility fee rate(s) necessary to support the recommended program as the desired service levels. Two alternatives for the rate structure were analyzed, as follows:

Alternative 1-Flat Rate Fee: This alternative assumes a single-family residential monthly flat rate fee of \$4.78 for a single-family residential property, regardless of the actual property size and total impervious surface area on the property. This fee is based on the 3015 square foot ERU area determined to be the mean impervious surface area found on a statistical sampling of single-family residential properties in Chapel Hill.

Non single-family residential properties would be assessed a fee based on a multiple of ERU's determined by dividing the actual impervious surface area by 3015 square feet. The monthly fee amount would be the resultant number of ERU's multiplied by \$4.78.

Under this alternative, there are a total 37,602 ERU's in the service area.

Alternative 2-Variable (tiered) Rate Fee: This alternative provides for fees that vary depending on the measured impervious surface area found on each single-family residential property in Chapel Hill. It assumes three tiers broken down as follows:

- 1) Tier One: 0 through 2000 square feet of impervious surface area  
\$2.92 per month
- 2) Tier Two: 2001 through 4000 square feet of impervious surface area  
\$5.84 per month
- 3) Tier Three: Greater than 4000 square feet of impervious surface area  
\$8.76 per month

Non single-family residential properties would be assessed a fee based on a multiple of ERU's determined by dividing the actual impervious surface area by the tier one ERU of 2000 square feet. The monthly fee amount would be the resultant number of ERU's multiplied by \$2.92.

Based on the preliminary analysis, there are less than 1,000 single-family residential property parcels within the Town Limits that would be in the Tier One category. The majority of single-family residential properties in Town are in Tier Two, with the remainder in Tier Three.

It is estimated that the tiered rate system would shift the total program contribution by 6-7% toward single-family residential rate payers as compared to the distribution if a flat rate is selected. The tiered rate system would require a higher level of administrative oversight, which would be factored into the final cost model if the Council selects this alternative.

The rate model allows for specific program modifications with instantaneous program cost impacts. The cost model includes both personnel costs associated with administration, operations, engineering, inspections, etc. and non-personnel costs associated with equipment, master planning, vehicles, capital improvements, etc.

## **VII. Billing and Collections**

If a stormwater utility were to be established, it would be necessary to concurrently establish a billing and collections system. Billing and collection alternatives were evaluated with consideration of the following issues:

1. Cost to establish and operate system
2. Linkage between property-owner address and property street address
3. Ease of database maintenance and up-date
4. Linkage to ALL properties within Town limits
5. Support necessary for accounting and collections process

Four billing alternatives were evaluated:

1. Use existing OWASA utility billing system – The OWASA billing system is based on billing property residents using water and sewer services. The system database includes only those properties that have a water meter installed. It does not include properties that do not receive OWASA services, and many billing addresses are for property residents, not property owners. A stormwater utility billing database would need to include the property-owner address of ALL properties in Chapel Hill. It was determined that the OWASA billing database would require significant modification to be useful for a stormwater utility.
2. Use existing Orange County property tax billing system – The Orange County property tax billing system is well-suited for use by a stormwater utility. The system database includes property parcels linked to property owners. A review of the database suggests that it is comprehensive and includes virtually every Orange County property parcel within the Chapel Hill Town Limits. It does not include the Chapel Hill property parcels on the east side of Town that extend into Durham County. Separate arrangements would need to be made to include those parcels in the stormwater utility billing system database.
3. Use contract billing services - This alternative would require that the Town provide a complete billing database to the contractor, and pay for the services of preparing and mailing the bills, and collecting on delinquent accounts.

4. Establish an independent Town billing system- This alternative would require significant additional staff and office resources, and was considered to be the least practical alternative.

Based on evaluation of each alternative, the recommendation is to further investigate use of the Orange County tax billing system. If this alternative proved to be practical, it would be necessary for the Town to enter into an inter-local agreement with the County, establish a master account file, and perform quality assurance on the database in sufficient time to have the Orange County tax bill modified to include the stormwater utility fee. The issue of dealing with Town properties in Durham County would also have to be resolved.

Making arrangements for a billing system is a critical path item on the proposed schedule for implementation of a stormwater utility by July 1, 2004.

## **VIII. Issues and Options Needing Decisions**

If the decision is made to proceed with further work on developing and implementing a Chapel Hill Stormwater Management Utility, decisions on the following issues and options would be necessary in order to establish the final fee rate:

### Flat Fee Rate versus Tiered Fee Rate

A tiered fee rate is recommended. Implementing the three-tier residential property based fee as described previously would provide equity throughout rate base. The more impervious surface you have on your property, the more you pay. A tiered fee approach would require commitment of more resources to measure and maintain an accurate impervious coverage database for every property parcel in Town. The stormwater utility would need to invest in the on-going maintenance of this data for the purpose of accountability and revenue generation.

### Credits and Exemptions

In general practice and through utility law, the users of a utility service (e.g., water, gas, electric) pay for services rendered including infrastructure necessary for delivery of those services. Primary stormwater management services rendered include construction, operation and maintenance of natural and constructed drainage conveyance facilities, compliance with applicable regulatory requirements, and compliance with Town Council policy directives. The users who would pay for stormwater management services are all owners of properties that generate runoff requiring stormwater management facilities and/or services.

The amount that different property owners pay could be modified by factors such as credits or exemptions related to special circumstances. We recommend that, if a utility is established, all property owners pay their fair share as calculated by the applicable fee rate. During the first year of the utility operation, a detailed study of potential credits and exemptions would be prepared for the Town Council's consideration at the end of program year one. Decisions made at that time could require modification in the program and/or the fee rate depending on utility revenue changes that would accompany granting of credits or exemptions to users who previously were assessed at the full fee rate.

### Ability to Pay

The issues of ability to pay, ownership of the parcel, tax status of the owner and other complexities have not been discussed in detail. Further consideration should be given to how Town properties are charged; how all other government entities are treated; whether low-income property owners would receive special consideration, etc. We would expect these matters to be included in the first-year study of potential exemptions.

### University Properties

Our recommendations and proposals for establishing a local stormwater utility include University-owned properties in the rate base.

We acknowledge that the University has and will invest substantially in good stormwater management practices and improvements. Examples of this include new construction in the University's OI-4 Development Plan area and the University's commitments to important stormwater management improvements and practices as part of its NPDES-II Permit Application.

The University presently takes the view that it should be exempt from paying stormwater utility fees to the Town, as noted in the attached letter from University Vice Chancellor Nancy Suttentfield (Attachment #3). We believe that it would be reasonable to expect that the University should pay fees in fair relation to the demand for service that its facilities place on the Town's stormwater management system. We also believe that the University's stormwater management improvements would merit credits because they would reduce the demand for service on the Town's drainage system. Finally, we believe that further consideration is needed before a final decision is made on this issue.

## IX. Schedule

The following schedule lists key action steps necessary for implementation if a stormwater utility effective July 1, 2004:

		1/19	2/2	2/16	3/1	3/15	3/29	4/12	4/26	5/10	5/24	6/7	6/21	7/5	8/1	Ongoing
1/26	Schedule Public Hearing date by resolution	■														
1/26	Mgr given authority to negotiate billing services		■													
2/10	Final Policy Review Committee Meeting		■													
2/16	Presentation to Council			■												
2/16	Public Forum			■												
3/1	Ordinance establishment of utility and rate				■											
3/1	Initiate expanded public education program				■											
3/1	Ordinance establishment of utility and rate				■											
3/22	Mgr authorized to executive interlocal agreement					■										
4/1	Initiate finalizing Master Account File						■									
5/1	Deliver master account file to billing party for testing							■	■	■	■	■	■	■	■	■
4/1	**Public Information program re stormwater management							■	■	■	■	■	■	■	■	■
7/1	Utility impelmentaiton date													■		

\*\*Note: The Public Information Plan is included as Attachment #2. It would provide a coordinated and targeted program of public education and involvement in advance of and following implementation of a stormwater utility.

Stormwater management work that will be necessary in 2004-05 regardless of whether or not a stormwater management utility is implemented on July 1, 2004.

1. NPDES-II Permit requirements (Year 2 of permit) include: preparation of education materials and distribution of mailers, municipal operations/good housekeeping staff training, participation in NC Big Sweep, implementation of improved post-construction development practices, and continuing storm sewer inventory development.
2. Application and administration of the Land Use Management Ordinance and other regulations regarding development review, inspections, Resource Conservation District administration, National Flood Insurance Program administration, floodplain management and mitigation grant activities, water quality sampling, response to citizen's requests for drainage assistance.
3. Participation in Jordan Lake total maximum daily load (TMDL) nutrient loading limits stakeholder discussions. (This is a critical watershed activity that will potentially impact the stormwater management regulations of the Town.)
4. Improve and expand the Town's Geographic Information System (GIS) database for use in watershed analysis, stream classification activities and on-going watershed planning initiatives through State mitigation grants.

These required and expanding program elements will be primarily the responsibility of the Town Engineering Department. Two full-time stormwater management staff presently work in the department. The current workload is daunting, and the Engineering Department is unable to allocate additional time and resources to properly manage or perform additional responsibilities and tasks.

If the implementation of a stormwater utility is deferred past July 1, 2004, we think that the Town will need to budget for an additional staff engineer to assist current staff in managing the existing and upcoming requirements of the Town's stormwater management program.

### **CONCLUSION**

We request that the Council consider the information and recommendations included in this report regarding further development of a proposed Stormwater Utility to provide a stable and sufficient source of revenue to support a comprehensive stormwater management program to serve Chapel Hill.

If the Council wishes to proceed with the recommended stormwater management program on a schedule that would establish a stormwater utility with a starting date of July 1, 2004, then the next steps would involve calling a Public Forum on February 16, 2004 and directing the Town Manager to begin formal discussions with the Orange County Manager regarding setting up a stormwater utility billing system in conjunction with the already established property tax billing system administered by the County.

### **ATTACHMENTS**

1. Recommended Stormwater Management Roles
2. Recommended Public Education Program
3. Letter from Nancy Suttentfield, Vice Chancellor for Finance and Administration, UNC-Chapel Hill

REVISED: 1/29/04 GS