

*Recommendations for a  
Comprehensive Stormwater and Floodplain Management Program  
for the  
Town of Chapel Hill and southern Orange County  
(A Final Report to Chapel Hill Town Council prepared by the  
Stormwater Utility Development and Implementation Study Committee)  
November 26, 2001*

## INTRODUCTION

### A) Abstract

1. This report provides the Town Council an implementation plan designed to proactively meet the present and future stormwater and floodplain management program needs for Chapel Hill. When implemented, this program will benefit the Town and possibly surrounding areas in southern Orange County in three principal areas:
  - (a) Provide proactive programs and services that would address stormwater and floodplain management issues to better protect the health and safety of the general public and the natural aquatic environment while meeting new regulatory mandates; and
  - (b) Reduce the negative impacts and disruption of the economy and local governmental services due to flooding.
  - (c) Provide stable financing to replace or supplement Town expenditures currently made from the general fund, the capital improvement fund, and bond funds for stormwater management, drainage maintenance and floodplain management programs and services;
2. This report includes an analysis of current stormwater and floodplain management programs in Chapel Hill, as well as current programs in Carrboro, Orange County and UNC-Chapel Hill. The analysis highlights areas of current multi-jurisdictional cooperation and makes recommendations for enhanced cooperation. See Appendix A, *Stormwater Management Program Analysis* used as the basis used for these recommendations.

On August 23, 1999, the Town Council authorized establishing a new Stormwater Utility Development and Implementation Study Committee to prepare a report regarding

implementation and operation of a Stormwater Utility to serve Chapel Hill and possibly surrounding areas. The charge to the Committee included examining the following:

- Organization and management control system
- Budget areas and services to be provided
- Staffing and equipment needs
- Rate structure and basis for user fees
- Annual revenues and expenses

The committee discussed this issue and deemed it necessary to first consider the problems, goals and needs of the community at-large prior to making substantive utility recommendations.

On February 12, 2001, the Council received a Committee progress report and authorized the charge of the Committee be expanded to include analysis of inter-jurisdictional stormwater management issues on a watershed-wide basis with the goal of achieving regional (Southern Orange County) consensus and cooperation where practicable.

3. This report consists of three sections and Appendix A:

**Section I - Needs Assessment and Goals**

**Section II - Areas of Cooperation in Southern Orange County**

**Section III – Adequacy and Recommendations for Enhancements in Chapel Hill**

**Appendix A – Southern Orange County Stormwater Management Program Analysis**

## **B) Policy Basis for Comprehensive Stormwater and Floodplain Management**

1. 2000 Comprehensive Plan

The policy basis for much of the committee's work is set forth in the Town's 2000 Comprehensive Plan, adopted by the Council on May 8, 2000. The adopted actions recommend improved stormwater management programs and practices in Chapel Hill as a response to federally mandated water quality regulations and local needs. The Plan recommends implementing further stormwater management financing, regulations, policies, incentives, and programs to conserve valuable natural resources, including stream corridors and floodplains, and to pursue water quality improvement.

Specific strategies identified in the Plan are:

**Strategy 9F-1:** Improve existing stormwater management practices.

**Strategy 9F-2:** Develop and implement an effective water quality performance review process.

**Strategy 8A-3:** Preserve open space in residential developments through the application of conservation development principles.

The stated *actions* and *measures of progress* as a means of improving water quality in this section of the 2000 Comprehensive Plan are "...to evaluate low impact development sedimentation control requirements and **develop a dedicated source of funding with a stormwater utility no later than January 31, 2004**".

## 2. Previous Stormwater Committee Reports and Recommendations

This Committee's work builds on two previous reports presented to Council in 1994 and 1999. Each of these reports identified continuing stormwater and floodplain management needs in Chapel Hill:

- a) *Town of Chapel Hill Stormwater Management Committee, Final Report (November 1994)* – Identifies water quantity and water quality issues and recommends five specific policies and other regulatory program changes to improve the Town's Stormwater Management Program.
- b) *Town of Chapel Hill Stormwater Utility Technical Review Committee Report (January 1999)* - Concludes that it would be feasible and practical to formulate a public enterprise stormwater utility, based on user fees, to finance a comprehensive Stormwater Management Program for Chapel Hill and possibly the surrounding areas.

## SECTION I

### Needs and Goals for Comprehensive Stormwater and Floodplain Management in southern Orange County

#### Introduction

The Stormwater Utility Development and Implementation Study Committee has defined the stormwater management needs and goals of Chapel Hill and of the southern Orange County region in general. These needs and goals were derived from the two previous reports described above, the 2000 Comprehensive Plan and a public charette held by this Committee. In addition to the Committee members, public officials and staff, OWASA staff, citizens, engineers and planners and local business interests attended the charette.

The Committee developed broad-based stormwater and floodplain management goals to serve as guideposts in creating an effective stormwater management partnership involving the four political entities of Chapel Hill, Carrboro, unincorporated Orange County and UNC- Chapel Hill. These goals included, but were not limited to, goals required by NPDES Phase II permitting.<sup>1</sup>

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<sup>1</sup> National Pollutant Discharge Elimination System Phase II (NPDES Phase II) is a U.S. Environmental Protection Agency mandate which will require each affected jurisdiction to submit a permit application to the N.C. Division of Water Quality by March 3, 2003. This mandate requires that the jurisdictions meet six specified minimum measures.

## A) Needs for Stormwater and Floodplain Management

The Committee identified the following needs to be addressed by comprehensive stormwater and floodplain management programming:

### 1) Flooding and Flood Damages

The recent flood damages to the Eastgate Shopping Center and Piney Mountain Road were only the latest in a long list of flooding trouble spots in the four-jurisdiction area. Many other flood damages occur to residential and commercial and public properties that do not involve the floodplain and are associated with localized drainage systems.

Key community challenges involving flooding and flood damages include:

- a) Managing stormwater runoff increases resulting from development and other types of development induced hydrologic alterations
- b) Mitigating the negative impacts caused by flooding to existing development
- c) Addressing and managing functionally obsolete drainage infrastructure systems
- d) Addressing inadequate watershed response information such as stream gauge and precipitation data
- e) Addressing decreases in naturally vegetated buffers or floodplains
- f) Addressing National Flood Insurance Program (NFIP) issues such as digital mapping, map amendments and revisions, public education and flood hazard mitigation

### 2) Water Quality and Riparian Area Health

Urbanized watersheds causes local surface water quality to decline and stream characteristics to become altered. Local stream health is important for many reasons, including that it is a water supply source for Jordan Lake. Key issues necessary for the improvement of impaired water quality and riparian area health in southern Orange County is the management of stormwater runoff from development and the use, preservation and management of the riparian areas adjacent to streams.

Additionally, enhanced programming is necessary to further assess ambient water quality, identify stream classifications (type), prioritize restoration needs, identify and eliminate illegal discharges and connections, perform benthic monitoring<sup>2</sup> and accurately map the stream systems on global information system (GIS). Mapping and managing this information using GIS as a tool would assist to

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<sup>2</sup> Benthic monitoring is necessary to classify streams (ephemeral, intermittent, or perennial) and to evaluate stream health through benthic macroinvertebrate indicator species utilizing a protocol that has been developed and approved by the State of North Carolina Division of Water Quality.

efficiently prioritize improvement activities and to take intervention actions involving adverse or illegal conditions.

Key community challenges involving water quality and riparian health improvements include:

- a) Addressing stream chemistry and benthic sampling/monitoring, data management and interpretation
  - b) Classification, mapping and prioritization of streams
  - c) Public awareness, education and involvement
  - d) Addressing illegal pollutant sources, discharges and connections and taking elimination actions
  - e) Addressing riparian area uses
  - f) Addressing best management practices (BMP) use for post-development treatment of polluted stormwater
- 3) National Pollutant Discharge Elimination System Permitting (NPDES Phase II)

In conjunction with the above local needs, responding to federal and state regulatory mandates regarding water quality is necessary. The NPDES Phase II program mandates that "urbanized areas" must plan and submit a permit by March 3, 2003 to manage non-point source pollutants found in stormwater. Actual programs and activities must be fully implemented within five years of the initial permit submittal. Many of the local jurisdiction's water quality needs may be addressed cooperatively to efficiently meet these permitting mandates. See Section II of this report.

Staff representatives of the four jurisdictions in the committee have participated in a jurisdictional self-assessment outlined in Appendix A. This self-assessment was used as a guide, in part, to formulate Section II of this report.

Appendix A, entitled *Southern Orange County Stormwater Management Program Analysis*, summarizes current stormwater programming, including adequacies, areas in need of improvement and strategies to meet the defined stormwater and floodplain management goals for southern Orange County.

## **B) Goals for Stormwater and Floodplain Management**

Based on the work of the previous two stormwater management committees, the policy statements of the 2000 Comprehensive Plan, and the public charette conducted in December, 2000, the Committee has defined the following goals:

- 1) To prevent or reduce non-point source pollution to the maximum extent practicable
- 2) To prevent flood damages caused by new development and reduce flood risk to existing development through mitigation strategies

- 3) To reduce the negative impacts and disruption of the economy and local governmental services due to flooding and flood damages
- 4) To protect or enhance the surface water resources, water quality, riparian buffers and natural wildlife habitat
- 5) To effectively educate and incorporate citizens, businesses and institutions in stormwater management issues and programs
- 6) To promote inter-jurisdictional cooperation and programs that ensure a uniform and consistent application to meet the stated goals
- 7) To ensure compliance with state and federal regulatory mandates for water quality protection and floodplain management

## SECTION II

### **Areas of Program Cooperation for southern Orange County**

*(This section is a result of the Council resolution expanding the charge of the Committee to analyze inter-jurisdictional stormwater management issues on a watershed-wide basis with the goal of achieving regional consensus and cooperation where practicable (2001-02-12/R-8))*

#### **Introduction**

Cooperation on a watershed-wide basis, where it is practical and feasible, is an efficient and effective means of addressing stormwater and floodplain management issues. Cooperation can provide consistency and communication regarding initiatives that might not have been as effectively implemented on an individual basis. It also provides a basis upon which to plan and prioritize efforts needed by the community-at-large, including certain areas mandated by NPDES Phase II.

Carrboro, Chapel Hill, unincorporated Orange County and UNC- Chapel Hill reported on their current efforts and needs to achieve various goals as defined by the Committee. An analysis of these findings, as described in Appendix A of this report, shows that the four jurisdictions are satisfactorily working toward meeting many of the goals independently, but that there are four particular program areas in which they could cooperate to create more effective stormwater and floodplain management programming. In some areas, such as the established ambient water quality sampling and reporting agreement between Chapel Hill and Carrboro, the cooperative efforts are already underway. The committee recommends building upon the existing programs and expanding on them in new cooperative programs.

Since the jurisdictions prefer to continue to primarily operate as separate entities in their drainage and stormwater management activities, they will continue to fundamentally structure, finance and manage stormwater issues internally. Section III of this report describes the committee's recommendations to the Council regarding enhanced program and service elements of a stormwater and floodplain management program for Chapel Hill.

## A) Programs for Jurisdictional Cooperation

As provided by the supporting details found in Appendix A, Section IV, Strategies for Improvement, the Committee identified four feasible and practical programs for cooperation and three general programs in which the jurisdictions should continue to implement stormwater management programs internally.

### 1) Water Quality and Benthos Monitoring

To monitor, address or maintain the high surface water quality that our citizens expect and public health demands, the jurisdictions must sample and analyze (on an established frequency-basis) the chemical and biological constituents in the surface water and the benthic organisms present in the streambeds.

On several levels, cooperative efforts are underway to monitor water quality between the four jurisdictions and with OWASA staff. These informal efforts and formal agreements are working fairly well on the basis of transferring information. However, nothing is in place regarding formalized follow-up actions between all jurisdictions. The Committee recommends that these jurisdictions and OWASA continue cooperating in this manner and further develop a more comprehensive level of monitoring and follow-up activities.

One such action should be to develop an illicit connection/discharge identification and elimination program that crosses political boundaries on a watershed-wide basis. This is an NPDES Phase II requirement for each jurisdiction and by combining efforts each jurisdiction could likely realize a significant efficiency and cost-effectiveness in individual staff time and associated expenses. A multi-jurisdictional "water quality hotline" and a formalized education program would benefit this cooperative program as well. Another monitoring technique recommended is to purchase, install and manage a distributed series of rain and stream gauges to provide positive benefits for the entire community. (Addresses Goals 2, 5 and 7.)

**Recommendation: THE COMMITTEE RECOMMENDS THAT THIS PROGRAM BE ENHANCED.**

### 2) Public Education Program

Citizens from all the jurisdictions routinely come into contact with our streams and lakes. Some of their activities foster clean water and do not cause further flood risks. Some of their actions can introduce pollutants to the water or cause flooding problems to neighbors or other areas.

Many citizens are simply unaware of issues related to stormwater, water quality and drainage issues in general. Many issues can be presented to the general public. With increased understanding, the public would cause less negative

impacts and would alert officials of observed real problems. The overall effect would result in net cost savings, reduced pollutants and less property damages due to flooding.

Citizens may not realize that dumping grass clippings, woody debris or applying fertilizer near a ditch or creek adds significantly to nutrient loading or may cause flooding problems. These practices can become a chronic burden on public maintenance services or the downstream property owner. Many citizens and businesses do not know if their property is at risk due to flooding or understand that federally backed flood insurance is available to provide a protection to their investment and livelihood.

None of the four jurisdictions has a public education program for stormwater or floodplain management and water quality issues. The Committee recommends that the jurisdictions pursue a unified public education program to meet local needs as well as the NPDES Phase II mandated needs. Since there are existing and developing materials and programs currently available by the State, the Triangle J Council of Governments and others, this cooperative effort need not create every material and program from scratch. (Addresses Goal 6 and 7.)

**Recommendation: THE COMMITTEE RECOMMENDS THAT THIS PROGRAM BE IMPLEMENTED.**

**3) A Partnership in Digital Flood Mapping and Database Management**

When a developer submits a development plan adjacent to a stream in one of the jurisdictions, questions arise about the location of the floodplain. Although the jurisdictions promote "Do No Harm" as a standard for new construction, it is not always known by officials where the actual floodplain boundary is located and how to address flood hazard mitigation efforts locally. This problem is primarily due to outdated Flood Insurance Rate Maps (FIRM) for all jurisdictions.

Fortunately, the Federal Emergency Management Administration (FEMA) and the N.C. Division of Emergency Management (NCDEM) are working with Carrboro, Chapel Hill, and Orange County to provide updated regulatory maps. These maps will be in digital format, due to be completed (as preliminary versions) in August 2002. It is anticipated that these digital maps will show changes to the floodplain boundary in some areas. In Chapel Hill, this may affect the Resource Conservation District (RCD) boundary as well.

Our region will be required to adopt these new maps within six months of final completion as participants in the National Flood Insurance Program (NFIP). Due to limited funding, the new digital maps may prove to be partially sufficient, in terms of the streams studied in sufficient detail. It may be determined that additional engineering studies and mapping will be needed at the local level, depending upon development and flooding issues in the watershed.



The proper dissemination and understanding of this map information to the public will be vital. The data will be used for many purposes; by mortgage lenders to determine flood risk, map revisions and amendments, hazard mitigation planning and grant applications, further engineering studies and other uses. Chapel Hill and Carrboro have signed a Memorandum of Understanding with FEMA under the Cooperative Technical Partnership (CTP) program. Efforts must now be made to determine what cooperative should be carried out between the communities. The Committee recommends that this digital flood mapping effort be fully explored at the local level by working with NCDDEM in managing and maintaining this data locally.

A related challenge is that digital data may be reported differently by the jurisdictions. Fortunately, the regional GIS Users Group is working to eliminate those differences. The Committee recommends that the jurisdictions continue to pursue a uniform and consistent digital standard and create easy access to the data.

**Recommendation: THE COMMITTEE RECOMMENDS THAT THIS PROGRAM BE IMPLEMENTED.**

**4) Sedimentation and Erosion Control (S&EC)**

Erosion adds soil particles and pollutants to streams and the resulting deposition of sediment can increase flooding and maintenance requirements and destroy habitat. Orange County is performing S & EC inspection and enforcement for itself and for Carrboro and Chapel Hill. Because the University of North Carolina at Chapel Hill is exempt from the County requirements, the North Carolina Division of Land Quality is responsible for S & EC permitting and enforcement on the University property.

The Orange County S & EC staff members are doing an effective regulatory job given the limited staff resources. They also have a new and expanding role in enforcing both the Neuse River Basin Rules and NPDES Phase II measures as dictated by their newly adopted Stormwater Ordinance on March 9<sup>th</sup>, 2001.

The University plans to develop more than five million square feet over the next eight years associated with the O-I4 Zoning District; further development is expected to occur in association with the UNC Master Plan activities on the main campus and on the largely undeveloped Horace Williams tract. The Committee believes that the significant University growth will limit State's inspection capabilities and effectiveness and that Orange County capabilities to effectively issue permits, routinely inspect construction sites and enforce land disturbance regulations in southern Orange County will be pushed beyond its level of adequate capability.

The Committee recommends that Orange County be given sufficient resources to ensure routine inspections in the four jurisdictions' growing development areas, including University developments. On State-owned lands, the committee believes that an inspection agreement may be possible between the State and Orange County, where the County would perform routine inspections and report to the State. Additionally, the Committee believes that the University should investigate utilizing the more stringent Orange County S&EC design criteria. The State would continue to perform all enforcement activities under this consideration. The Committee also recommends that the jurisdictions review and utilize regulatory fines for those who do not meet the minimum sedimentation and erosion control requirements. S&EC is an NPDES Phase II permit requirement. (Addresses Goals 5 and 7.)

**Recommendation: THE COMMITTEE RECOMMENDS THAT THIS PROGRAM BE ENHANCED.**

**C) Areas for jurisdiction-specific stormwater management**

The committee believes that there are areas where current stormwater programming within each jurisdiction should remain separated. This is primarily due to the institutional and practical realities of existing programs and the complexities of the suggestion of merging programs, such as capital improvements or maintenance.

The following general areas are recommended to remain jurisdictionally separated:

- 1) **NPDES Phase II permits-** The committee understands that each jurisdiction plans to submit its own permit application to the North Carolina Division of Water Quality to receive an NPDES Phase II stormwater permit. This process may require that a Notice of Intent (NOI) or General Permit be submitted by March 3, 2003, detailing how they will meet the six minimum measures over a five-year implementation period. However, several of the six minimum measures required, such as public education and erosion control, are included in the above cooperative programs recommended. Therefore, the responsibilities and details must be clearly worked out locally in considering these cooperative efforts prior to submittal of the individual permits. (Addresses Goals 1, 4, 5, 6 & 7)
- 2) **Stormwater and Drainage Infrastructure-** Each jurisdiction remains responsible for inventory and GIS mapping, drainage maintenance and capital improvements of their stormwater infrastructure. (Addresses Goals 3, 4 and 5)
- 3) **Housekeeping-** Each jurisdiction is responsible for housekeeping tasks such as street sweeping and incorporating best management practices (BMP) into public facility design and practice. (Addresses Goals 4 and 5.)

### SECTION III

#### **Chapel Hill's Stormwater and Floodplain Management Program: Adequacy and Recommendations for Enhancements**

##### **Introduction**

The purpose of this section is to evaluate and review the adequacy of the Town's existing stormwater and floodplain management, drainage maintenance and water quality programs and services and to make recommendations for enhancements. Secondly, this section describes estimated costs for current stormwater programs and for purposes of clarity, the estimated cost projections for implementing the NPDES Phase II water quality permit program, without considering any other program enhancements that this report recommends.

Appendix A was developed for the purpose of analyzing current program adequacies and areas in need of enhancement. This Appendix was used, in part, as a guide for the development of the Town's program enhancement recommendations.

##### **A) Current Chapel Hill Stormwater and Floodplain Management Program and Imperative For Program Enhancements**

The Town's existing stormwater and floodplain management programs and services are performed at the highest possible level of service, given the staff and financial resources available. These programs and services are the responsibility of several Town Departments. The following are general departmental programs and services currently in place:

###### **Public Works Department Drainage Maintenance Program:**

- Right-of-way drainage maintenance
- Capital Improvements
- Street Sweeping
- Debris Removal
- Drainage Assistance Program

###### **Engineering Department Stormwater and Floodplain Management Program:**

- Water Quality Sampling
- Development Drainage Design Review
- Stormsewer Infrastructure Inventory and GIS Mapping
- Stormwater Facility Bonds and Inspection (Water Supply Watershed areas)
- Design Manual and Standard Details
- Best Management Practice Standards
- Technical Assistance
- Bridge Replacement and Capital Improvements
- National Flood Insurance Program Administration

- Resource Conservation District Determinations and Mapping

Inspections Department Program:

- Building Permits and Inspections
- Building Finish Floor Elevation Verification
- Building Code and Development Ordinance Enforcement

Planning Department Programming:

- Preliminary Plan Review
- Permit Administration
- Development Ordinance and Comprehensive Plan Administration

With the current staffing and financial resources, the Town is sometimes unable to promptly and effectively meet current stormwater and floodplain management and drainage program and service needs, including the items listed above. There are several key factors leading to the conclusion that an enhancement of existing programs are necessary in order to operate effectively in meeting current needs, and to prepare to meet new needs.

The following statements are a synthesis of the items described in Appendix A that indicates a need for stormwater program enhancements:

- 1) Development permit review requirements for stormwater management are increasing
- 2) Constructed stormwater management facilities (public and private) are increasing
- 3) Town costs to provide drainage maintenance and capital improvements are increasing
- 4) Drainage Assistance Program (public/private projects) requests and project costs are increasing
- 5) Functionally obsolete and failing public drainage systems are increasing
- 6) Public and private property damages due to flooding are increasing
- 7) NPDES Phase II regulations mandate an increase in Town stormwater management programming and resources
- 8) Revised Flood Hazard Maps will identify expanded or modified areas of flood hazards requiring increased Town floodplain management and mitigation activities
- 9) Opportunities and needs for public education, grants and cooperative efforts will require increasing Town resources

The Committee understands that the Town's citizens expect the highest possible level of stormwater management programming and service that will ensure a safe and healthy environment. The Committee also understands that our citizens are reluctant to pay additional taxes to provide the expected services. However, additional funding resources are necessary to provide for the services and programs this Committee is recommending.

**B) NPDES Phase II Stormwater Permit Program: Sample Cost Projections**

The fiscal projections below are for demonstrative purposes to show estimated current stormwater management and maintenance costs in Chapel Hill and possible future costs of stormwater programming. This assumes no increases to the current programming with the exception of meeting the NPDES Phase II permitting program mandates. The EPA has established an estimated cost range from \$2.50 to \$7.50 per capita per year for this water quality permit requirement. All population projections are estimates only, not taken from most current census.

The fiscal projections also do not take into consideration any cost savings due to the effectiveness of cooperative efforts, which would serve to reduce the costs at the local level. The amount of this cost savings has not yet been determined.

The sample projections assume a modest \$2.50 per capita per year for FY 2003 and increasing to \$7.50 per capita per year by FY 2007, assuming full NPDES Phase II implementation. These projections suggest that modest program costs could increase by 17% in fiscal year 2003 with a limited NPDES Phase II startup program, and by 26% in fiscal year 2007 assuming full Phase II implementation. This assumes no real increases to current stormwater and floodplain management, capital improvements and maintenance programming.

The cost per capita per year of \$30.07 represents a *moderate* Stormwater Management Program, based on typical costs nationwide for similar programs. Comprehensive (or proactive) stormwater and floodplain management programs can cost in excess of \$50.00 per capita per year, based on figures for existing programs nationally.

1. Estimated Current Town Program Costs (FY '00)  
(administrative costs not included)

-Drainage Maintenance/Street Sweeping:.....\$ 700,000  
-Engineering:.....\$ 250,000

-Total Current General Fund Stormwater Program Costs: \$950,000

**-Total Current Stormwater Program cost per capita (FY '00): \$20.41**  
(assumes population of 46,545)

2. Estimated Town Program Costs including limited NPDES Phase II permit requirements for startup\* (FY '03):

(assumes 3% increase per year for current programs & limited NPDES Phase II startup costs)

-Drainage Maintenance/Street Sweeping:.....\$ 765,000  
-Engineering:.....\$ 273,000

-NPDES Phase II start-up (year one): .....\$ 123,000  
(assumes \$2.50 per capita)

-Total Estimated Stormwater Program Costs (FY '03): \$1,161,000

**-Total Estimated Stormwater Program cost per capita (FY '03): \$23.85**  
(assumes population of 48,669)

*\*A limited initial approach to NPDES Phase II might include one new technician level position, requiring existing staff to absorb most additional tasks/responsibilities.*

3. Estimated Town Program Costs with full NPDES Phase II implementation (FY '07)

*(assumes 3% inflation per year for current programs & five year NPDES Phase II implementation period)*

-Drainage Maintenance/Street Sweeping:.....\$ 860,000

-Engineering:.....\$ 306,000

-NPDES Phase II start-up (year five): .....\$ 387,502  
(assumes \$7.50 per capita)

-Total Estimated Stormwater Program Costs (FY '07): ..... \$1,553,502

**-Total Estimated Stormwater Program cost per capita (FY '07): \$30.07**  
(assumes population of 51,667)

**SECTION IV**

**Conclusions and Recommendations**

**Introduction**

Resulting from the committee's discussions surrounding the many issues of a comprehensive stormwater and floodplain management program in southern Orange County, the committee has developed the following conclusions and recommendations for Council to consider.

**A) Conclusions**

- 1) The NPDES Phase II program requires the Town of Chapel Hill to submit a permit application no later than March 3, 2003.
- 2) The Chapel Hill community desires a level of service beyond that required to just meet the requirements of the NPDES Phase II program.

- 3) The Committee identified the key issues and areas of cooperation regarding stormwater and floodplain management in and around Chapel Hill. The Committee believes that further defining the issues, priorities and opportunities for cooperation involving the four jurisdictions will be productive.
- 4) The Committee identified moderate increases in projected costs to meet minimum NPDES Phase II mandates, assuming no other real increases in existing stormwater and floodplain management services in and around Chapel Hill.
- 5) The Committee identified that additional local needs and associated programs will be best addressed by the implementation of a stormwater utility to provide a stable revenue stream to fund such a program within Chapel Hill.
- 6) The Committee identified that a detailed program analysis in Chapel Hill including alternative levels of service and a recommendation on how to proceed is needed. A fully qualified professional working with Town staff and a citizen's advisory committee best accomplishes this.

## **B) Recommendations**

Therefore, the Committee requests that Council consider acting on the following:

- 1) Initiate formal discussions with appropriate officials of neighboring jurisdictions and OWASA with the goal of implementing the four areas of cooperation described in Section II of this report. These areas include:
  - Water quality and benthic monitoring and identification and elimination of illegal discharges
  - Public Education
  - Digital Flood Mapping and other NFIP activities
  - Sedimentation and Erosion Control activities
- 2) Discuss with the neighboring jurisdictions and OWASA the establishment of a small inter-jurisdictional *Stormwater Management Work Group*. This group of selected individuals is envisioned to be a continuing work group that will have as its mission the implementation of the areas of inter-governmental cooperation in stormwater and floodplain management, such as a public education program. Tasking will include detailing areas in which cooperation may occur which is both feasible and mutually beneficial. It is envisioned that each jurisdiction may formally appoint two persons (one staff member and one citizen) and the group will meet at least quarterly. This group will also be tasked to define how the NPDES Phase II permit may include these combined efforts.
- 3) Authorize the Manager to obtain the services of a professionally experienced consultant to develop the details of and an implementation schedule for the proposed Chapel Hill stormwater utility. The utility will carry out a comprehensive stormwater and floodplain management program in Chapel Hill and may provide selected services to other jurisdictions. Particular attention will be given to ensuring inter-jurisdictional cooperation to increase the effectiveness

of the program and to reduce the costs. The consultant will work with Town staff and the *SWAC* (see Item #4) to recommend ways for the utility to have a stable and reliable source of revenue, billing, collection and accounting system, and a means of implementing a public communications and education program. The consultant will also define at least three levels of service with the minimum being the resources required to satisfy the requirements of the NPDES Phase II program with no enhancements to the current program.

- 4) Establish a citizen's *Stormwater Action Committee (SWAC)* tasked to work with Town staff and the professional consultant for the detailed definition and recommendation of an enhanced Stormwater and Floodplain Management Program, financed by a public enterprise stormwater utility. This committee would consist of Town residents only and would serve as citizen liaisons during the utility development. Current committee members who are Town citizen's might serve as initial members.

## ATTACHMENTS

- 1) Appendix A: Southern Orange County Stormwater Management Program Analysis