

DRAFT

11/24/03

Program Elements Report

This report discusses key elements and associated costs necessary to address Stormwater Management Program priorities identified by the Committee and Town staff. The discussion is general in nature with supplemental details included to differentiate between a “minimal approach”, a “moderate approach” and an “aggressive approach” for provision of stormwater management services within the Town’s jurisdiction. The cost estimates are based on the Consultant’s experience with similar stormwater management programs operating in other communities and related to the Town of Chapel Hill.

The Program development involves a “building block” approach in which the foundations of the Program are laid while the most pressing current problems are addressed at an adequate level. The distribution of costs associated with the Program efforts will change as we identify and focus on those Program elements that will be approached aggressively at the outset of the Program implementation, and those for which action will be deferred until future years as the Program develops.

Each Program priority is addressed with consideration given to the Committee’s input on program priorities and appropriate response strategies. The currently proposed Program does not include costs for accounting, general overhead, or other miscellaneous Program costs that may be incurred depending on the final stormwater utility that is implemented.

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.

Program Coordinator – Priority #8: Establish clear stormwater program leadership that the public recognizes.
– Priority #9: Integrate programs to utilize resources efficiently.

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:

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.

Minimal	Moderate	Aggressive
\$130,000	\$220,000	\$270,000

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 National Pollutant Discharge Elimination System, Phase II (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.

Public Education and Outreach - Priority # 5: Develop a formal public education and involvement program.

Minimal: \$0.25 per month 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 month 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.

Minimum	Moderate	Aggressive
\$ 12,500	\$ 25,000	\$ 64,000

- Drainage Assistance Program – Priority #6: Define the level of service and performance standards for the Town’s Stormwater Program.
 – Priority #9: Integrate programs to utilize resources efficiently.

The 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.

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.

Minimum	Moderate	Aggressive
\$ 15,000	\$ 50,000	\$ 100,000

Hazard Mitigation and Floodplain Management – Priority #2: Address stormwater quantity (flooding) as an integral component within the program.

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.

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.

Minimum	Moderate	Aggressive
----------------	-----------------	-------------------

\$40,000	\$80,000	\$160,000
----------	----------	-----------

Stream Restoration Program - Priority #3: Address stormwater quality as an integral function within the program.
 - Priority #4: Protect and restore natural stream corridors.

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.

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.

Minimum	Moderate	Aggressive
\$10,000	\$50,000	\$75,000

Technology Utilization – Priority #8: Establish clear stormwater program leadership that the public recognizes.
 - Priority #9: Integrate programs to utilize resources efficiently.

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.

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.

Minimum	Moderate	Aggressive
\$20,000	\$50,000	\$70,000

- Finance and Billing** – Priority #1: Develop and implement a comprehensive Stormwater Program Master Plan that supports all of the stormwater program priorities.
- Priority #10: Establish an understanding of the stormwater system as a “utility”.

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.

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.

Minimum	Moderate	Aggressive
\$ 60,000	\$ 85,000	\$125,000

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.

Illicit Connection Detection and Elimination

- Priority #3: Address stormwater quality as an integral function within the program.
- Priority #7: Ensure compliance with Federal and State regulatory mandates.

The Town is required 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.

Minimal: By year 2005, the Town would have the ordinance amended to meet the NPDES Phase II minimum measure, 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 allow.

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 to 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 where pollution source(s) might originate.

Minimum	Moderate	Aggressive
\$30,000	\$70,000	\$90,000

Industrial Permit Compliance/Good Housekeeping Program

- Priority #7: Ensure compliance with Federal and State regulatory mandates.

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.

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.

Minimum	Moderate	Aggressive
\$2,000	\$10,000	\$15,000

Erosion and Sediment Control - Priority #3: Address stormwater quality as an integral function within the program.

- Priority #7: Ensure compliance with Federal and State regulatory mandates.
- Priority #9: Integrate programs to utilize resources efficiently.

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.

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.

Minimum	Moderate	Aggressive
\$0	\$ 60,000	\$ 120,000

Engineering, Modeling and Planning – Priority # 1: Develop and implement a comprehensive Stormwater Program Master Plan that supports all of the stormwater program priorities.

Engineering design and facility planning are important components of a comprehensive Stormwater Management Program. They are both involved in the study, design, regulatory compliance and inspection of community stormwater management system components including streams, engineered structures, riparian areas and other drainage infrastructure.

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 will not provide the analysis of smaller watershed and basins but will 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 modeling and basin 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 will 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 modeling and basin plans of largest basins by year 2006 and establish schedule to complete modeling and basin plans of smaller basins by year 2008. Install rain and stream gauges as necessary to collect data for analysis of smaller basins.

Minimum	Moderate	Aggressive
\$40,000	\$200,000	\$325,000

- Development Review - Priority #4: Protect and restore natural stream corridors.
 - Priority #6: Define the level of service and performance standards for the Town's Stormwater Program.
 - Priority #7: Ensure compliance with Federal and State regulatory mandates.

Development review for stormwater management and Resource Conservation District regulations has increased significantly with the adoption of the Land Use Management Ordinance. 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.

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.

Minimum	Moderate	Aggressive
\$0	\$60,000	\$90,000

Operations – Priority #2: Address stormwater quantity (flooding) as an integral component within the program.

- Priority #3: Address stormwater quality as an integral function within the program.
- Priority #6: Define the level of service and performance standards for the Town’s Stormwater Program.

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.

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.

Minimum	Moderate	Aggressive
\$10,000	\$150,000	\$210,000

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.

NPDES Phase II Compliance - Priority #7: Ensure compliance with Federal and State regulatory mandates.

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 generally meet the minimum requirements of the Town’s NPDES-II permit application. Implementation of Moderate or Aggressive measures would exceed the NPDES-II permit requirements in most cases.

- Capital Improvements** – Priority # 1: Develop and implement a comprehensive Stormwater Program Master Plan that supports all of the stormwater program priorities.
- Priority #2: Address stormwater quantity (flooding) as an integral component within the program.
 - Priority #3: Address stormwater quality as an integral function within the program.
 - Priority #4: Protect and restore natural stream corridors.
 - Priority #9: Integrate programs to utilize resources efficiently.

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.

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.

Minimum	Moderate	Aggressive
\$200,000	\$400,000	\$600,000