



North Carolina Department of Environment and
Natural Resources

Public Water System Capacity Development Guidance Document

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Public Water Supply Section
Division of Environmental Health
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Contents

Chapter 1 - Introduction	1
Chapter 2 - Water System Capacity Development Overview	2
To whom do these requirements apply?	2
What is capacity development?	2
What are the components of capacity?	2
Technical Capacity	2
Managerial Capacity	3
Financial Capacity	3
How will the capacity development program be implemented?	3
What agencies will be involved in evaluating system capacity?	4
Chapter 3 - Authorization to Construction and Final Approval Overview	5
Systems required to obtain Authorization to Construct	5
Systems required to obtain Final Approval	5
Why is it important to obtain Authorization to Construct and Final Approval?	5
Is an authorization to construct or final approval transferrable?	5
Chapter 4 - Construction Authorization Requirements for Demonstration of Capacity	6
General requirements for obtaining Authorization to Construct	6
Application for approval of plans and specifications	6
Engineer's Report	6
Engineering Plans and Specifications	7
Water System Management Plan	8
System Organization	8
Ownership	9
Management Qualifications	9
Management Training	10
System Policies	10
System monitoring, reporting and record keeping procedures	12
Financial Plans	13
Chapter 5 - Requirements for Final Approval	15
General requirements for Final Approval	15
Engineer's Certification	15
Operation and Maintenance Plan	15
Emergency Management Plan	15
Applicant Certifications	16
Chapter 6 - Legal Authority for the Capacity Development Program	17
Statutory Authority	17
Regulatory Authority	17
Attachment 1: Sample Engineering Plans and Specifications Approval	
Attachment 2: Sample Authorization to Construct	
Attachment 3: Sample Final Approval	
Attachment 4: Approval Process Flow Chart	
Attachment 5: Application for Approval of Engineering Plans and Specifications	
Attachment 6: Unit of Local Government Estimated Revenue, Expend. and Rate Structure Form	
Attachment 7: Financial Plan Budget Worksheets	
Twenty Year Equipment Replacement Cost Plan Instructions	
Worksheet 1: Twenty Year Equipment Replacement Cost Plan	
Water System Budget Instructions	
Worksheet 2: Water System Budget	
Five Year Budget Projection Instructions	
Worksheet 3: Five Year Budget Projection	
Attachment 8: Water System Management Plan Certification Form	
Attachment 9: Applicant Certification Form	

Chapter 1 - Introduction

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) requires each State to develop a program to ensure that all new community water systems and new non-transient, non-community water systems demonstrate the technical, managerial, and financial capacity to comply with each national primary drinking water regulation in effect or likely to be in effect prior to commencing operation. The North Carolina General Statutes provide the authority for the State to adopt and enforce rules to regulate water systems and to establish criteria and procedures to ensure an adequate supply of drinking water. This includes authority for the Department of Environment and Natural Resources (Department) to approve the design and construction of new and expanding public water systems, as well as review documentation that demonstrates that the system will be capable of complying with drinking water rules.

This *Public Water System Capacity Development Guideline Document* is designed to help new and expanding community water systems and non-transient, non-community water systems comply with all applicable requirements. It provides general background information on the purpose and objectives of North Carolina's capacity development program and discusses the criteria the Department will use to evaluate the technical, managerial, and financial capacity.

Specifically, this Guideline Document provides information on:

- ?? **Water system approval**, including descriptions of the engineering plans and specifications, the Engineer's Report, and the Water System Management Plan (WSMP) that each new or expanding community water system and non-transient, non-community water system must submit to the Department.
- ?? **Required water system documentation**, including forms needed to apply for water system approval.
- ?? **The approval process**, including how the Department will evaluate the information submitted.
- ?? **The Department's authority.**

PLEASE NOTE: This Guideline Document is intended to provide you with all the information you need to begin the water system approval process. You should use this information in conjunction with the *Rules Governing Public Water Systems* (the Rules) because some of the information presented here is summarized. The Rules are the controlling authority.

If you need more assistance or information about the water system approval process, please contact the Department's Public Water Supply Section at (919) 733-2321.

Chapter 2 - Water System Capacity Development Overview

To whom do these requirements apply?

Technical, managerial and financial capacity requirements apply to all new and expanding community water systems and non-transient, non-community water system approved for operation on or after October 1, 1999.

As defined in the Rules:

?? " Public water system" means a system for the provision to the public of piped water for human consumption if the system serves 15 or more service connections or regularly serves 25 or more individuals.

?? " Community water system" means a public water system that serves 15 or more service connections or regularly serves at least 25 year-round residents.

?? " Non-transient, non-community water system" means a public water system that is not a community water system and regularly serves at least 25 of the same persons for at least 6 months a year.

What is capacity development?

The Department defines capacity development as:

The process of a water system becoming self-sustaining in a changing environment by acquiring and maintaining adequate technical, managerial, financial, and operational capabilities to enable it to consistently provide safe drinking water meeting all State and national drinking water regulations reliably on a long-term basis.

A system has developed capacity when it has acquired, and can maintain, adequate technical, managerial, financial, and operational capabilities to be self-sustaining for an indefinite period of time.

What are the components of capacity?

Capacity has three components: technical, managerial, and financial. Adequate capability in all three areas is necessary for a system to demonstrate capacity.

?? *Technical Capacity* is the physical and operational ability of a water system to meet SDWA and State requirements. It refers to the physical components of the water system, including the adequacy of source water and the adequacy of treatment, storage, and distribution infrastructure. Technical capacity also refers to the ability of system personnel to adequately operate and maintain the system and implement required technical knowledge.

Key areas of concern when evaluating technical capacity are source water adequacy, infrastructure adequacy, operation and maintenance procedures, and operator certification.

?? *Managerial Capacity* is the ability of a water system to conduct its affairs in a manner enabling the system to achieve and maintain compliance with SDWA and State requirements. Managerial capacity refers to the system's institutional and administrative capabilities.

Key areas of concern when evaluating managerial capacity include ownership accountability; the overall organizational structure of the system; defined lines of authority and responsibility between owners, managers, operators, and customers; managerial and decision-making processes; and appropriate experience and expertise of managerial personnel.

?? *Financial Capacity* refers to a water system's ability to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with SDWA and State requirements.

Key areas of concern when evaluating financial capacity include reliable cost and revenue projections that demonstrate revenue sufficiency, and sound fiscal management and control policies and procedures.

How will the capacity development program be implemented?

The water system approval process will be used to gather information necessary for the Department to determine if a system has adequate technical, managerial, and financial capacity. Water system approval is a three-part process:

1. The applicant must submit engineering plans and specifications [Rule .0308]. The Department will review and, if appropriate, approve the plans and specifications. A sample engineering plans and specification approval letter is presented as **Attachment 1**.
2. The applicant must submit an Engineer's Report and Water System Management Plan (WSMP) [Rule .0307 (b) and (c)]. Following completion and submittal of these documents and approval of the engineering plans and specifications, the Department will issue an Authorization to Construct letter [Rule .0305 (a)]. A sample Authorization to Construct letter is presented as **Attachment 2**.
3. After construction, an engineer must certify that the system was built according to the approved plans and specifications [Rule .0303 (a)]. The applicant must certify that an Operations and Maintenance Manual and an Emergency Management Plan have been completed [Rule .0305 (c)]. The Department will determine if the system has complied with all applicable rules and will, if appropriate, issue a Final Approval letter [Rule .0309 (a)]. A sample Final Approval letter is presented as **Attachment 3**.

A flow chart of the authorization process is provided as **Attachment 4** and more detailed descriptions of the documents that must be submitted are provided in Chapter 4.

What agencies will be involved in evaluating system capacity?

?? The Department of Environment and Natural Resources

The Department is the State agency responsible for implementing the new capacity development program. The Department is organized into divisions and programs. The Division of Environmental Health's Public Water Supply Section will oversee the capacity development program. The Department works closely with the North Carolina Utilities Commission and the Local Government Commission.

?? The North Carolina Utilities Commission

All privately owned, for-profit systems must obtain an Order Granting Franchise and Approving Rates or an Order Recognizing Continuous Extension and Approving Rates from the North Carolina Utilities Commission (NCUC). Copies of these documents must be included in the WSMP before the Department will issue an Authorization To Construct letter. The Department will rely on the NCUC's review process to ensure that all privately owned, for-profit systems demonstrate adequate financial capacity.

For more information on how to apply for a franchise or continuous extension, please call the North Carolina Utilities Commission at (919) 733-7328.

?? The Local Government Commission

The Local Government Commission (LGC) oversees the financial practices of local government, requiring that each local government operates under an annual balanced budget ordinance. The LGC conducts annual reviews of the financial health of local governments and must certify that a unit of local government is able to incur debt prior to allowing them to accept a loan or issue a bond. The Department will rely on the LGC review process to ensure that all new government-owned systems, including municipality owned systems, demonstrate adequate financial capacity.

Chapter 3 - Authorization to Construction and Final Approval Overview

Systems required to obtain Authorization to Construct

All new community water systems and non-transient, non-community water system (and existing systems planning to expand service) are required to obtain construction authorization from the Department. No construction may be undertaken and no contract for construction, alteration, or installation may be entered into until the Department issues an Authorization to Construct letter.

Systems required to obtain Final Approval

Final Approval from the Department must be obtained prior to placing into service any new system, or expansion or alteration to an existing system.

Why is it important to obtain Authorization to Construct and Final Approval?

Obtaining Authorization to Construct and Final Approval is required by regulation. Systems that begin construction or operation prior to receiving necessary approvals are subject to enforcement action and administrative penalties. The Department may impose an administrative penalty on a person who violates the requirement. Each day that the violation continues is considered as a separate violation and the maximum penalty amount is \$25,000 per day. In addition, the Department may file suit in superior court for an injunction to prevent operation of an unapproved system.

Completing the water system approval process demonstrates that a water system has completed a planning process. Planning is critical for all water systems. With increasing drinking water requirements, running a water system like a business has become essential. A system that lacks technical, managerial, and financial capacity will have problems complying with SDWA and State requirements. Requiring water systems to complete the planning process will help ensure that they have adequate technical, managerial, and financial capacity and that the public will be provided with safe drinking water.

Is an Authorization to Construct or Final Approval transferrable?

An Authorization to Construct is valid for 24 months from the date of the letter. If ownership changes before the Department issues a Final Approval, the new owner must submit a new WSMP, and secure Final Approval.

Chapter 4 - Construction Authorization Requirements for Demonstration of Capacity

General requirements for obtaining Authorization to Construct

Prior to construction or contracting for construction, alteration, or expansion of a water system several documents that describe the technical, managerial, and financial capabilities of the system must be submitted. The Department will review the documents and if appropriate, issue an Authorization to Construct.

1. *Application for approval of plans and specifications* [Rule .0304]

An application must be signed and submitted by the current owner. A copy of the application is provided as **Attachment 5**.

2. Engineer's Report [Rule .0307 (b)]

The Engineer's Report shall contain a system description for the entire project including; where applicable:

- | | |
|---|--|
| ?? A description of any existing water systems related to the proposed project. | ?? Identification of the service area. |
| ?? Name and address of the applicant. | ?? A description of the service area. |
| ?? A description of future service areas for 5-, 10-, 15-, and 20-years. | ?? Consideration of alternatives to constructing a new water system. |
| ?? Financial considerations (for systems seeking financial assistance from the State). | ?? Populations records and trends. |
| ?? Present and anticipated water demands. | ?? Present and future yield from the sources of supply. |
| ?? Character of the sources of supply (for example, hydrological data). | ?? Proposed water treatment processes. |
| ?? Copies of any agreements to purchase water. | ?? Design basis of the source, treatment, and distribution systems. |
| ?? Useful life of all sources, treatment, and transmission facilities. | ?? Prioritized list of infrastructure improvements (for existing systems). |
| ?? Maximum daily treated water supply and maximum daily demand (for existing systems intending to alter or expand a distribution system). | |

The Report must be prepared by a professional engineer licensed to practice in the State of North Carolina and must bear an imprint of the engineer's registration seal.

You must submit the Engineer's Report at least 60 days before the date by which you want the Department to respond. If the Department needs additional information, or if the engineer needs to make revisions, additional time will be required for review.

Send the Report, in **TRIPLICATE**, to the Public Water Supply Section, Division of Environmental Health, 1634 Mail Service Center, Raleigh, NC 27699-1634.

3. *Engineering plans and specifications*¹ [Rule .0308]

Engineering plans shall be legible prints having black, blue, or brown lines on white background, shall not be more than 36" wide and 48" long, not less than 24" wide and 36" long, and contain:

- ?? General system information (name of owner, location of project, scale used to prepare plans etc.).
- ?? Preliminary plot plan or map.
- ?? General map of the entire water system.
- ?? Detailed map of source(s) of supply.
- ?? Layout and detailed plan of all system facilities.
- ?? The north point.

Specifications shall contain details on the material, equipment, workmanship, test procedures, and specified test results.

¹Units of local government that have adopted a Department-approved water system extension policy may be excluded from the requirement to submit engineering plans and specifications for water main extensions. However, other specific conditions apply. Please see 15A NCAC 18C .0305(c).

Engineering Plans and Specifications must be prepared by a professional engineer licensed to practice in the State of North Carolina and must bear an imprint of the engineer's registration seal.

You must submit the plans and specifications at least 30 days prior to the date by which you want the Department to respond. If Department needs additional information, or if the engineer needs to make revisions, additional time will be required for review.

Send the plans and specifications, in **TRIPPLICATE**, to the Public Water Supply Section, Division of Environmental Health, 1634 Mail Service Center, Raleigh, NC 27699-1634.

The system must be constructed in accordance with the approved plans and specifications. If changes are necessary, other than minor alterations, revised plans and specifications must be submitted to the Department. The Department must approve the revised plans and specifications before making changes to the system.

4. *Water System Management Plan* [Rule .0307 (c)]

The WSMP must document, where applicable, the ability of the current owner and any entity that assumes ownership of the water system within the first 24 months of operation to finance, operate, and manage the system in accordance with the Rules Governing Public Water Systems. The WSMP must include information on:

a. System organization [Rule .0307 (c) (1)]

Provide a clear description of the organization of the water system and define the roles and responsibilities of each member of the water system staff. This information can help to prevent confusion, mistakes, and misunderstandings in the responsibilities for daily operation and management of the system. The system organization description should include:

?? A description of organizational structure or an organizational chart showing reporting relationships.

?? A description of the primary responsibilities of all key personnel (including boards of directors or councils) involved in the management and operation of the system. It is important to define the positions that have responsibility and authority to set policies; prepare and approve the budget; authorize expenditures; hire, fire, and supervise employees; perform required monitoring and reporting; prepare and approve reports to the public and regulatory agencies; resolve consumer complaints; and make technical decisions concerning the operation of the system.

?? Copies of any contracts for the management or operation of the water system by persons or agencies other than the system's owner. Contracts should detail the responsibilities and decision making authorities of the contractor in a manner to assure that all essential functions are covered.

b. Ownership [Rule .0307 (c) (2)]

The WSMP must clearly identify the owner of the water system and should include:

?? Identification of ownership structure (sole proprietor, corporation, limited liability company, homeowner association, nonprofit organization, local government unit, state or federal agency, or other legal entity) and disclose if the ownership of the system is going to change once the system is constructed.

?? Mailing and street address of the owner, and physical location of the water system.

?? Disclose any encumbrances, trust indentures, bankruptcy decrees, legal orders or proceedings, or other items that may affect or limit the owner's control over the system. The WSMP should document that these will not impair the owner's ability to comply with the Rules Governing Public Water Systems.

?? Describe the legal authority, such as ownership, leases or recorded easements allowing inspection, repair and maintenance of system components. Also include a description of any limitations on the owner's control over the system.

c. Management qualifications [Rule .0307 (c) (3)]

Competent management and operation of a public water system is critical to providing a safe and reliable water supply to system customers. These tasks have become extremely sophisticated and with the adoption of new drinking water standards and an increased emphasis on consumer education and involvement, the job can be expected to become even more complex. In order to ensure compliance with existing requirements and to stay current with new requirements, new technologies, and newly identified hazards, all water system personnel must be adequately trained. Your WSMP should describe:

?? The qualifications of the owners and managers of the water system. This could include among other things a list of public water systems previously or currently owned as well as any systems previously or currently operated under contract for another owner.

?? The training the owners, managers and operators have received pertaining to owning, managing or operating a water system such

as a list of continuing education classes. Also include operator certification documentation.

- ?? The name and Public Water Supply Identification Number of all public water systems owned within the last five years as well as any systems operated under contract for another owner within the last five years.
- ?? Administrative penalties previously assessed and a description of how the owner will prevent similar violations at this system.

d. Management training [Rule .0307 (c) (4)]

To stay current with advanced utility practices, new regulatory requirements, new technologies, and new hazards, the system should have a program to provide for continuing education. Adequate training and continuing education are essential components of assuring a safe and potable water supply to customers. Your WSMP should describe how you plan to keep managerial staff educated. Examples include requiring membership and involvement in a utility professional organization, attending relevant workshops and conferences (e.g. NC Rural Water Association Annual Conference, NC AWWA/WEA Annual Conference), and sponsoring and/or conducting in-house training sessions.

e. System policies [Rule .0307 (c) (5)]

Defining internal water system policies is an important component of protecting public health. Policies can outline the position of a utility on many issues. Effective policy has many forms; it can be as simple as a one-paragraph statement on meter reading or as complicated as a cross connection control policy. One policy may address many issues (e.g. meter reading schedule, access to property procedures, and notification procedures) while others may provide more comprehensive information regarding one issue. Establishment of policies will assure that both the customer and the provider have the information necessary for the successful transaction of business. At a minimum, the system should develop and submit policies on:

- i. *Cross-connection control.* This policy should define the water system's position on, and responsibility for protecting its distribution system from back-siphonage. Cross-connection control policies should include details concerning how and when a hazard survey may be conducted, who is required to have a control device (and under what circumstances), the type of device required for specific hazards and how it will be installed, how often it will be checked and by whom, and how the cross-connection control policy will be enforced. Such policies should ensure compliance with the system's cross connection control program and all applicable State and Federal regulations.

- ii. *Customer information, complaints, and public education.* The purpose of policy making in this area is to define the level and frequency of communication that customers should expect from the system. These policies should include details concerning the dissemination of educational information such as baseline water quality data and consumer confidence reports, goals for customer participation in initiatives such as conservation or source water protection, and details of the ways in which customers can become involved and express their concerns.

- iii. *Budget development and rate structure.* These policies outline and describe measures that the system has taken to ensure financial solvency necessary for long-term financial viability. They demonstrate the equity and stability of the water system's financial structure and establish long term planning goals.
 - ?? Budget development. Describe how budgets will be developed, managed, and reviewed. Include statements on how operating and emergency cash reserves will be funded. If you will develop and adopt a budget in an open forum, you should describe the process and provide information on how customers can participate.

 - ?? Rate Structure. You should outline the system's rate structure, include a list of rates, explain who is effected, and how rates are established. You should also include procedural information for customers on how to participate in the rate-setting process (if possible). The utility's relationship with outside commissions and other bodies that influence or regulate rates should also be explained.

 - ?? Fees. Policies should include a section detailing connection fees, water meter deposits, late fees, and other fees required in addition to the water delivery rate.

- iv. *Response and notification if water quality violations occur.* These policies will outline actions to provide customer with instructions in the event of problems, repairs, or emergencies. Notification procedure policy statements should map lines of communication from the utility to the customer. The system should detail the ways in which it will contact customers. The notification process may change based on the immediacy of the situation (i.e. bill stuffers, flyers, television/radio announcements, hand delivered notices). An outline of procedures and a list of those responsible for the dissemination of emergency notification information, in particular, should be developed. The frequency of communication should also be outlined. For example, after a boil water notice is issued, there should be a written procedure detailing how customers will know when the emergency has passed and the water is once again safe to drink.

- v. *Customer Connection, disconnection, billing and collection.* This should include a discussion of the utility's position on providing new customer connections, conditions for disconnecting an existing service, billing and collection, maintenance and repair activities which may disrupt service, and meters.
 - ?? For new connections, the policies should describe the design standards, including metering and cross-connection. For developer extensions, the policy should define the engineering and design requirements, costs and financing.
 - ?? For disconnecting an existing service, the policy should clearly define the conditions under which this would occur, such as non-payment of bills and the notice procedure that will be followed to implement the policy.
 - ?? For bill procedures, the policy should describe how and when bills will be sent. Statements regarding the responsibility of customers to pay should explicitly state the time schedules for payment (including grace periods) and the steps that will be taken if payments are not made on a timely basis.
 - vi. *Safety procedures.* These policies should discuss health and safety requirements that apply to employees and contractors responsible for operation and maintenance of the system. Method used to ensure that applicable safety standards and requirements are met should be identified.
- f. System monitoring, reporting, and record keeping procedures [Rule .0307 (c) (6)]
 For system monitoring, the applicant should document the procedures that will be followed to ensure that the system complies with the monitoring and reporting requirements for assuring that the source water quality, the treatment process, and the water delivered to consumers is meeting appropriate standards. The procedures should describe the monitoring program (location, frequency, and parameter), and the reporting procedures. The procedures on record keeping should state that data will be reported in accordance with Rule .1525 and .1526.
- g. Financial plans [Rule .0307 (c) (7)]
 To demonstrate adequate financial capacity, systems must document that they have sufficient revenues to meet all projected expenses for operating and maintaining the system.
- i. Units of local government incurring debt must submit a statement from the Local Government Commission stating that debt issue has been approved; or
 - ii. Units of local government not incurring debt must submit the following:

- (I) a statement from the unit of local government documenting that they are in compliance with the North Carolina General Statutes, Chapter 159, Article 3, The Local Government Budget and Fiscal Control Act; and
 - (II) estimated revenues, expenditures and rate structure for the construction, operation and maintenance, administration and reasonable expansion of the project. This information shall be provided on a form designated by the Department **(see Attachment 6)** and shall demonstrate that revenues are greater than expenses.
- iii. Privately owned, for-profit systems must submit North Carolina Utilities Commission's Order Granting Franchise and Approving Rates or Order Recognizing Continuous Extensions and Approving Rates.
- iv. All other community water systems and non-transient, non-community water system must demonstrate:
- ?? A positive cash flow for the upcoming five year period.
 - ?? Adequate capital to finance equipment replacement. Describe reserve accounts, loans or other capital you plan to use to finance equipment replacement for a 20-year period. **Attachment 7, Worksheet 1** is a 20-year equipment replacement cost plan that will help you estimate annualized equipment replacement costs.
 - ?? An operating cash reserve greater than or equal to one-eighth of the annual operating, maintenance and administrative expenses of the water system that will be fully funded at the end of the first year of operation.
 - ?? An emergency cash reserve greater than or equal to the cost of replacing the largest capacity pump that will be fully funded at the end of the fifth year of operation.
- The applicant may forgo the operating and emergency cash reserve if they own multiple water systems showing reserves affording greater or equal capabilities, or showing equivalent financial capacity to comply with requirements.
- ?? Budget and expenditure control procedures.
 - ?? Adoption of generally accepted accounting procedures.

Three budget worksheets are provided in **Attachment 7**: Worksheet 1 will help you prepare the twenty year equipment replacement costs, Worksheet 2 will help you prepare a budget including reserve accounts, and Worksheet 3 provides information on a five year budget projection. These worksheets will help you financially account for your water system.

You do not have to use these worksheets to document financial capacity. Other formats may be used to document the required information.

h. Water System Management Plan Certification [Rule .0303 (b)]

The WSMP must include a certification that states the information in the WSMP is true, accurate, and complete. The certification must be signed by the responsible individual (i.e. president, general partner, ranking elected official) or a duly authorized representative and submitted on a form provided by the Department. A copy of the form is provided as **Attachment 8**.

You must submit the WSMP at least 60 days before you want the Department to respond. If the Department needs additional information, or if the applicant needs to make revisions, additional time will be required for review.

Send the WSMP, in **TRIPLICATE**, to the Public Water Supply Section, Division of Environmental Health, 1634 Mail Service Center , Raleigh, NC 27699-1634.

Chapter 5 - Requirements for Final Approval

General requirements for Final Approval

Before a system can be placed into service Final Approval must be issued from the Department. To obtain Final Approval, the applicant must complete construction, modifications, or alterations and submit the following documentation:

1. *Engineer's Certification [Rule .0303 (a)]*

The applicant must ensure that an engineer's certification is submitted after construction is complete. This certification must state that construction was completed in accordance with approved engineering plans and specifications. The certification must be signed and sealed by a registered professional engineer and be based upon observations made during, and upon completion of, construction.

2. *Operation and Maintenance Plan [Rule .0307 (d)]*

An Operation and Maintenance (O&M) Plan that describes routine operation and maintenance procedures for treatment facility components, pumps, meters, valves, blowoffs, hydrants, backflow devices, storage tanks, and any other system components requiring routine operation and maintenance must be developed. The O&M Plan must be available to the Department upon request and accessible to the operator on duty at all times.

3. *Emergency Management Plan [Rule .0307 (e)]*

An applicant for the community water system must develop an Emergency Management Plan that identifies the personnel responsible for emergency management including, system, local, state and federal contacts; identifies foreseeable natural and human-caused emergency events including water shortages and outages; describes the system's emergency response plan and notification procedures; and identifies and evaluates all facilities and equipment whose failure would result in a water outage or water quality violation.

An applicant for a non-transient non-community water system need only develop an Emergency Management Plan that contains the positions and phone numbers of responsible persons to contact in the event of an emergency, including system, local, state and federal emergency contacts.

The Emergency Management Plan must be available to the Department upon request and should be accessible to personnel responsible for emergency management and the operator on duty at all times.

- 4.. Applicant Certification [*Rule .0303 (c)*]
The applicant must submit a signed certification, prior to Final Approval, stating that the requirements in 15A NCAC 18C .0307 (d) (O&M Plan) and .0307 (e) (Emergency Management Plan) have been satisfied. The certification must be signed by the responsible individual (i.e. president, general partner, ranking elected official) or a duly authorized representative and submitted on a form provided by the Department. A copy of the required certification form is provided as **Attachment 9**.

Chapter 6 - Legal Authority for the Capacity Development Program

Statutory Authority

The North Carolina General Statutes §130A-315 and §130A-317 provide the authority for the State to adopt and enforce rules to regulate water systems and to adopt rules and establish criteria and procedures to ensure an adequate supply of drinking water. This includes authority for the Department to approve the design and construction of new Public water systems, as well as review information that demonstrates that the system will be capable of complying with drinking water rules.

Regulatory Authority

The *Rules Governing Public Water Systems* describe the regulatory requirements of the capacity development program. Capacity development is addressed in several sections of the Rules:

Section .0301 describes the applicability of the rules.

Section .0302 describes how to submit the documentation.

Section .0303 describes the submissions required from an engineer and from the applicant, including required certifications.

Section .0304 describes who must apply.

Section .0305 describes the approvals necessary prior to contracting or beginning construction. All documents required by this process are identified.

Section .0306 describes what must occur if changes are made after the Department approves the engineering plans or specifications.

Section .0307 outlines the required components of the Engineer's Report, the WSMP, the Operation and Maintenance Plan, and the Emergency Management Plan.

Section .0308 outlines the required components of the engineering plans and specifications.

Section .0309 describes the requirements for final approval.

Section .1304 describes operation and maintenance requirements.

**Attachment 1: Sample Engineering Plans and Specifications
Approval**

SAMPLE

Date

Re: **Engineering Plans and Specifications
Approval**

This is not an Authorization to Construct

Dear :

Enclosed please find one copy of the "Application for Approval..." together with one copy of the referenced engineering plans and specifications bearing the Division of Environmental Health stamp of approval Supply Section Chief for the referenced project. These engineering plans and specifications are approved under Department Serial Number _____, dated .

Engineering plans and specifications prepared by _____, P.E., call for .

The enclosed approval contains conditions on the project as follows:

Please note that an "Authorization to Construct" requires both this approval of Engineering Plans and Specifications and submittal of a complete Engineer's Report and Water System Management Plan. No construction shall be undertaken, and no contract for construction, alteration, or installation shall be entered into until the Department issues an Authorization to Construct letter in accordance with 15A NCAC 18C .0305(a).

One copy of each enclosed document is being forwarded to our Regional Office. The third copy is being retained in our permanent files.

If we can be of further service, please call on us at (919) 733-2321.

Sincerely,

J. Wayne Munden, P.E., Head
Technical Services Branch
Public Water Supply Section

JWM//

Enclosures: Approval Documents

cc: , Regional Engineer
County Health Department

Attachment 2: Sample Authorization to construct

SAMPLE

Date

Re: **Authorization to Construct**

Dear:

This letter is to confirm that a complete Engineer's Report and a Water System Management Plan have been received, and that engineering plans and specifications have been approved by the Department for **(insert project name & Serial No.)**.

The Authorization to Construct is valid for 24 months from the date of this letter. Authorization to Construct may be extended if the Rules Governing Public Water Supplies and site conditions have not changed. The Authorization to Construct and the engineering plans and specifications approval letter, shall be posted at the primary entrance of the job site before and during construction.

Approval must be secured from the Department before any construction or installation if:

- ? Deviation from the approved engineering plans and specifications is necessary; or
- ?? There are changes in site conditions affecting capacity, hydraulic conditions, operating units, the function of water treatment processes, the quality of water to be delivered, or conditions imposed by the Department in any approval letters.

Upon completion of the construction or modification and in accordance with Rule .0303, the applicant shall submit a certification statement signed and sealed by a registered professional engineer stating that construction was completed in accordance with approved engineering plans and specifications, including any provisions stipulated in the Department's engineering plan and specification approval letter. Prior to Final Approval, the applicant shall submit a signed certification stating that the requirements in 15A NCAC 18C .0307 (d) and (e) have been satisfied and if applicable, a completed application for an Operating Permit and fee. Once the certification statements and operating permit application and fee, if applicable, are received and determined adequate, the Department will grant Final Approval in accordance with Rule .0309 (a). Therefore, no construction, alteration, or expansion of a water system shall be placed into service until Final Approval has been issued by the Department.

If we can be of further assistance, please call (919)733-2321.

Sincerely,

Engineer
Public Water Supply Section



State of North Carolina

NC DENR Department of Environment and Natural Resources

Public Water System
Authorization to Construct

Public Water System Name: _____

Project Name: _____

Serial No: _____

Issued To: _____

Issue Date: _____

Expiration Date: _____

In accordance with NCAC 18C.0305, this Authorization to Construct must be posted for inspection at the primary entrance of the job site during all construction.

Attachment 3: Sample Final Approval

SAMPLE

Date

Re: **Final Approval**

Dear :

The Department received an engineer's certification statement from on and an applicant's certification statement from on . The engineer's certification verifies that the construction of the referenced project has been completed in accordance with the engineering plans and specifications approved under Department Serial Number , on . The applicant's certification verifies that an Operation and Maintenance Plan and Emergency Management Plan have been completed and are accessible to the operator on duty at all times and available to the Department upon request.

The Department has determined that the requirements specified in 15A NCAC 18C .0303 (a) and (c) have been met and therefore issues this **Final Approval** in accordance with Rule .0309 (a).

Please contact us at 733-2321 if you have any questions or need additional information.

Sincerely,

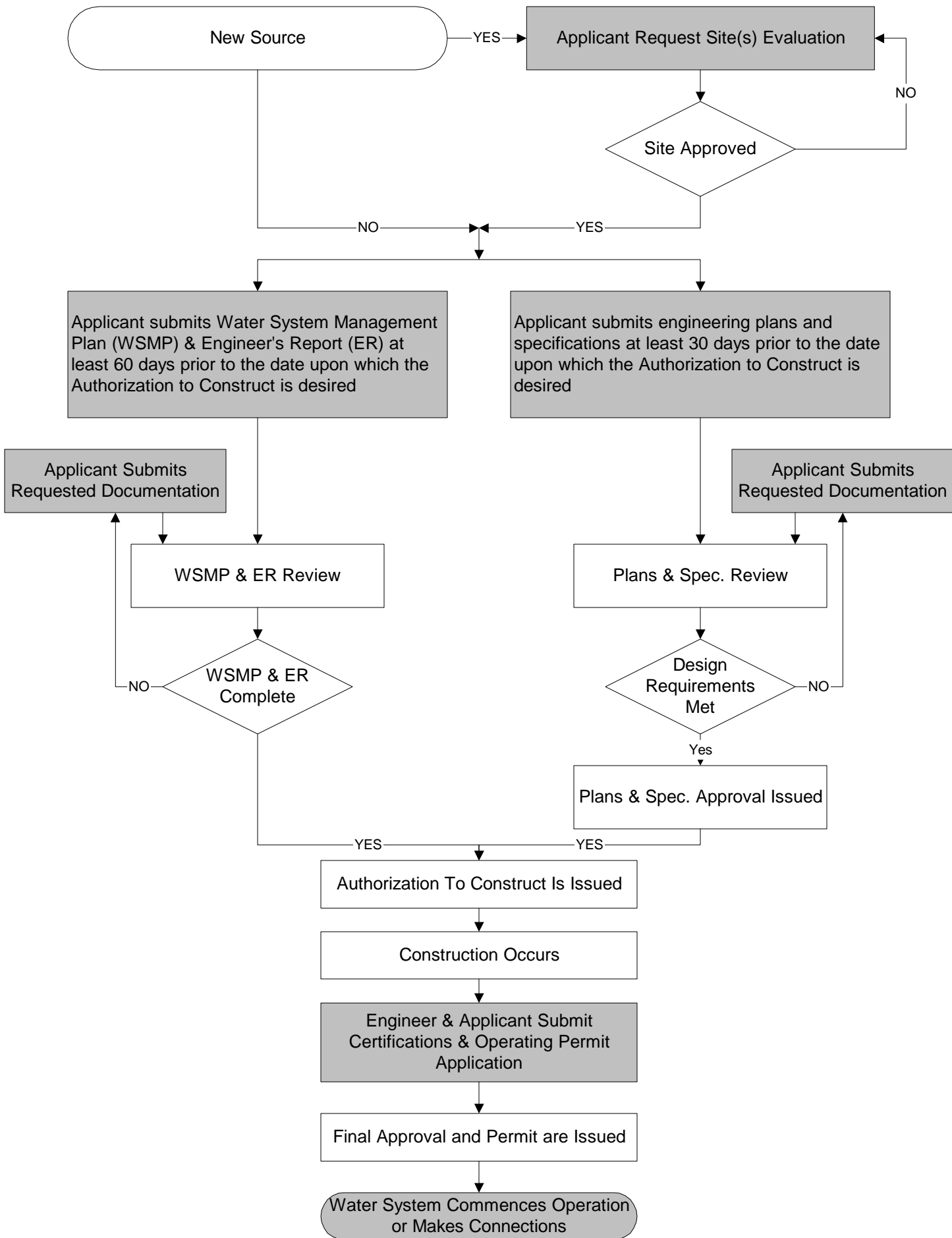
J. Wayne Munden, P.E., Head
Technical Services Branch
Public Water Supply Section

JWM/JCL/

cc: , Regional Engineer
County Health Department

Attachment 4: Approval Process Flow Chart

WATER SYSTEM APPROVAL PROCESS



Attachment 5: Application for Engineering Plans and Specifications Approval

Refer to most recent plan review application, available at:

<http://www.deh.enr.state.nc.us/pws/index.htm>

**Attachment 6 : Units of Local Government Estimated Revenue,
Expenditures and Rate Structure Form**

**STATE OF NORTH CAROLINA
DEPARTMENT OF STATE TREASURER**

State and Local Government Finance Division
and the Local Government Commission
325 North Salisbury Street, Raleigh, North Carolina 27603-1385

PROJECTION OF WATER AND SEWER NET REVENUES

Unit: _____
Fund: _____

Complete only if the proposed financing is for water or sewer facilities. Where separate accounting funds are maintained for each system, one schedule may be completed for proposed water bonds and one for proposed sewer bonds. Water and sewer operations may be consolidated when either water or sewer financing or both are proposed. Use actual amounts on modified accrual basis of accounting (budgetary basis) from latest audit report.

		Fiscal Year _____	Fiscal Year _____	
REVENUE		1. Actual Revenue for Last Complete Fiscal Year	Estimated Increase or (Decrease)	1+2+3 Estimated Revenue for Fiscal Year After Completion of Project
			2. Due to Normal Growth and Rate Changes	3. Due to Expanded System
Operating Revenues:				
	Customer charges			
	Impact fees			
	Tap fees			
	Other revenue			
	Total			
Non-operating Revenues				
	Interest			
	Restricted sales tax			
	Other			
	Total			
Total Revenues				

		Fiscal Year _____	Fiscal Year _____	
EXPENDITURES		1. Actual Revenue for Last Complete Fiscal Year	Estimated Increase or (Decrease)	1+2+3 Estimated Revenue for Fiscal Year After Completion of Project
			2. Due to Normal Growth and Rate Changes	3. Due to Expanded System
Operating Expenditures				
Administration	Salaries			
	Other			
Operations	Salaries			

Total Expenditures				
Excess Revenue over Expenditures				

Projection of water and sewer net revenues (continued)

	Actual Expenditures for Last Complete Fiscal Year	Estimated Expenditures First Fiscal Year After Completion of Project
Other (Do not include depreciation):		
Debt Principal		
Interest		
Capital outlay		
Capital reserve		
Transfer to (from) other funds		
Other		

Total Other		
Net Income (Loss)		

Number of Customers		Current	After Completion of Project
Water	Residential		
	Commercial		
Sewer	Residential		
	Commercial		

	Current	After Completion of Project	Percentage of Change
Rate and Fee Structure			
Indicate monthly cost for an average residential customer:			
Average gallons per month (for residential customer):			
WATER			
Rate (Include minimum cost/thousand gallons, etc.)-residential			
Average monthly bill within city limits			
Average monthly bill outside city limits			
SEWER			
Rate (Include minimum, etc.)-residential			
Average monthly bill within city limits			
Average monthly bill outside city limits			

TAP FEE POLICY _____

IMPACT FEE POLICY _____

Attachment 7: Financial Plan Budget Worksheets

Twenty Year Equipment Replacement Cost Plan Instructions

As part of your financial capacity documentation, the Department requires you to demonstrate that you have adequate capital to finance the replacement of system parts for the next 20 years. Worksheet 1 walks you through the process of evaluating the technical condition of your system and determining the amount you should have in capital to replace system components. The worksheet has you annualize the costs so that you can include them in your budget and 5-year budget projection.

Please note: this calculation does not include system components that are expected to extend beyond the 20 year period. However, you should complete this replacement plan process every few years to capture the costs of components with remaining useful life that may have recently dipped below 20 years, and to subtract the costs of equipment that has been replaced and will not need to be re-replaced within next 20 year period.

The annualized cost of system components (column E in worksheet 1) is the key to determining your system's expected replacement expense. The following is a narrative description of how annualized cost is calculated:

Example: Assume that your system's distribution main is 10 years old, has a useful life of 20 years, and will cost \$2,000 to replace. Subtracting the main's age from its useful life will result in a total of 10 years of useful life remaining. Dividing the replacement cost by the useful life remaining ($\$2,000/10$ years) yields an annualized cost of \$200 per year. In other words, if you were to put \$200 in the bank every year for the next 10 years, you will have saved \$2,000 (the cost of a new distribution main) by the time the old pipe will likely need replacing (excluding any interest you may make on your savings).

When you have completed Worksheet 1, the final figure in Column G will be the amount that you should plan to spend (or save) each year for replacement costs (this figure should be included on Line II(M) of Worksheet 2).

The following worksheets are examples that you may use to help determine if you have adequate financial capacity. You may use these worksheets or create your own.

Worksheet 1: Twenty Year Equipment Replacement Cost Plan

If necessary, change the major equipment column to match the equipment in your system. Then answer the following questions:

- A. **Estimated Age:** How old is this piece of equipment (years)?
- B. **Useful Life:** How long (total) should this piece of equipment function reliably and safely (years)?
- C. **Remaining Useful Life:** Subtract Column A from Column B.
- D. **Replacement Cost:** How much would it cost to replace this piece today?²
- E. **Annualized Cost:** Calculate the annualized cost by dividing Column D by Column C.
- F. ✓: Place a "✓" in this column if the number in Column C is more than 20 years.
- G. **Total (\$):** Add up all annualized costs in column E that do not have a "✓" next to them.

	A	B	C	D	E	F	G
Major Equipment	Estimated Age	Useful Life	Remaining Useful Life	Replace. Cost	Annualized Cost	✓	Total (\$)
Intake Structures							
Wells and Springs							
Treatment							
Storage Equipment							
Pumps							
Distribution Pipes							
Valves							
Service Lines							
Hydrants							
Backflow Prevention							
Lab/Monitoring							
Tools, Shop Equip.							
Meters							
Other							

² If you don't know how much it will cost to replace certain parts, you may need to talk to equipment suppliers or other system personnel for estimates.

Water System Budget Instructions

Worksheet 2 is a water system budget used to help you financially account for your water system and demonstrate a positive cash flow.

The revenues and expenses you should include on Worksheet 2 should be limited to those related to your water system. If you are budgeting for a non-transient, non-community water system, you will need to be aware of the distinctions between water system expenses and the costs associated with other aspects of your organization. For example, while the total cost for electricity incurred by the water system will probably be included in its overall budget, perhaps only 15% of your organization's electricity use is devoted to water provision. You will need to break-down your revenues and costs in terms of what portion you use to provide water.

Upon completion of Worksheet 2, you should have a rough estimate of your water system's net income for your first year of operation. If this net income (cash flow) is positive, it is a good indication of adequate financial capacity. If your net income is negative, you will need to think about ways that your organization can increase revenues or decrease costs associated with your water system. The following explanations apply to specific lines of the budget worksheet:

Line II(I) Operating Reserve: An operating reserve is essentially the "Check-book balance" that a system should maintain to meet cash flow needs and provide contingency funds for unforeseen operating emergencies. The Department requires the amount in your operating reserve to be 1/8 of your system's total annual operating, maintenance, and administrative costs. The operating reserve should be fully funded in the first year of system operation. To determine how much money should be in your operating reserve, add up the expenses from Lines II(A) through II(H) and divide by 8.

Line II(J) Emergency Reserve: The emergency reserve exists to protect against the facility breakdowns and failures that can threaten a system's ability to provide adequate and safe drinking water to customers. The amount in the emergency reserve should be enough to cover the cost of replacing your system's largest capacity pump. The emergency reserve must be fully funded within the first 5 years of system operation. To complete this line, determine how much the largest capacity pump would cost to replace and divide by the number of years you plan to take to fully fund the reserve (from 1 to 5).

Line II(L) Depreciation: Depreciation refers to the decrease in the value of property and equipment over time. If it is not a practice of your system to account for depreciation, leave the depreciation expense line blank. Also leave the depreciation line blank if you contribute to a depreciation fund each year and the amount that you contribute is greater than or equal to your annual depreciation expense. However, if you do not have a replacement fund or contribute significantly less to your replacement fund than the value of your depreciation expense, enter the value of your depreciation expense on Line II(L).

Worksheet 2: Water System Budget

For the year ending _____, 20____

I. Revenues

\$ Amount

A. Water Revenue. How much does your system earn per year by providing water (flat-rate charge, portion of rent, metered water, etc.)? _____

B. Other Revenue. How much money do you dedicate to water provision or system maintenance/upgrades (loans, interest, reserve accounts, etc.)? _____

Total Revenue (I.A + I.B) (I)

II. Expenses

A. System Maintenance. How much do you spend on water system maintenance, improvements, and replacements per year (parts, supplies, labor, etc.)? _____

B. System Utilities. How much do you spend on water-related utilities per year (electricity for pumps, purchased water, etc.)? _____

C. Operators and Employees. How much do you spend on water system operator and employee salaries and benefits per year? _____

D. Office Supplies and Postage. How much do you spend on water system-related office supplies and postage per year (e.g., computer software, postage for bills, etc.)? _____

E. Insurance. How much do you spend on water system-related insurance per year? _____

F. Contract Services. How much do you spend on water-related contract services per year (legal, accounting, engineering, consulting, etc.)? _____

G. Property. How much do you spend for water system-related property per year (land, rent, property taxes, etc.)? _____

H. Sampling & Monitoring. How much does it cost to sample and monitor your water each year (include lab costs, chemicals, monitoring equipment, etc.)? _____

I. Operating Reserve: (Sum of II(A) through II(H)) _____ ÷ 8 = _____

J. Emergency Reserve:
(Cost of largest cap. pump) _____ ÷ (Yrs to fund:1-5) _____ = _____

K. Loan Principal and Interest. How much do you pay (total) in principal and interest costs for water system-related loans per year? _____

L. Depreciation. How much does your water system equipment depreciate per year? _____

M. Equipment Replacement. How much do you plan to spend on equipment replacement this year? (Column G, Worksheet 1) _____

N. Other. Do you have any other water system-related expenses not included above (reserves, etc.)? Explain: _____

Total Expenses (Add II.A through II.N) (II)

III. Net Income

(I) Minus (II) Equals

Five Year Budget Projection Instructions

You are required to prepare an "analysis that compares anticipated revenues with planned expenditures for a five year period that demonstrates a positive cash flow in each year" as part of your demonstration of financial capacity. Worksheet 3 will help you do this by asking you to project your budget through a 5-year budget cycle.

The Five-Year Budget Projection Worksheet contains line items for the same budget categories used in Worksheet 2 (with the exception of "Rollover"²). Your job is to determine how much you will earn (revenue) or spend (expenses) per line item during each of the next 5 years. You've already completed Year 1; simply copy the figures you came up with on Worksheet 2 in the Year 1 column.

The cost projection process involves more than simply multiplying current costs by the expected inflation rate for the next five years. You should include in your calculations a 5% inflation rate (particularly for goods and services) unless your system has documented different rates but you must also consider the variety of influences and interconnections that exist among the various budgetary categories to make accurate estimates. If your net income is positive for each year, you will have demonstrated the required positive cash flow for the 5-year period.

Instructions for Worksheet 3

1. Transfer revenue, expenses, and totals from Worksheet 2 into the Year 1 column.
2. Use the three lines at the bottom of the worksheet to calculate net income for Year 1 (subtract total water system expenses (Line 2) from total water system revenue (Line 1)).
3. Transfer Year 1 Net Income (Line 3) to the rollover line for Year 2.
4. Estimate totals for each line item in Year 2 and calculate total water system revenue, expenses, and net income as you did for Year 1.
5. Transfer the net income for Year 2 to the rollover line for Year 3.
6. Repeat steps 4 and 5 for the remaining years.

² The net income earned in one year may be "rolled over" to help fund the following year of water system operation. You will not have any rollover funds in year 1 (as a new system) or in future years if the system did not have a positive net income in the preceding year. The net income from Year 1 will become the rollover total for Year 2, the net income for Year 2 will become the rollover for Year 3, and so on.

Worksheet 3: Five Year Budget Projection

		Year 1	Year 2	Year 3	Year 4	Year 5
I. Revenue	Rollover					
	A) Water Revenue					
	B) Other Revenue					
1) Total WS Revenue = Rollover+A+B						
II. Expenses	A) System Maintenance					
	B) System Utilities					
	C) Operators & Employees					
	D) Office Supplies and Postage					
	E) Insurance					
	F) Contract Services					
	G) Water System Property					
	H) Sampling & Monitoring					
	I) Operating Reserve					
	J) Emergency Reserve					
	K) Loan Principal and Interest					
	L) Depreciation					
	M) Equipment Replacement Cost					
	N) Other					
2) Total WS Expenses (A through N)						

1) Total WS Revenue					
minus 2) Total WS Expenses					
3) Net Income					

Attachment 8: Water System Management Plan Certification Form



**State of North Carolina
Department of Environment and Natural Resources**

Water System Management Plan Certification

All persons, including units of local government, intending to construct, alter, or expand a community water systems or new non-transient, non-community water systems must develop and submit a Water System Management Plan (WSMP) completed in accordance with North Carolina Rules 15A NCAC 18C .0307(c). The WSMP must include certification that the information in the WSMP is true, accurate, and complete. No construction may be undertaken and no contract for construction, alteration or installation may be entered into until the Department issues an Authorization to Construct letter. This authorization requires the completion and submittal of the Engineer's Report and Water System Management Plan and approval of the engineering plans and specification by the Department.

The signature below will certify that a WSMP has been completed in accordance with 15A NCAC 18C .0307(c), and that the information in the WSMP is true, accurate, and complete.

Certification must be provided by the following individual or their duly authorized representative:

1. For a corporation, limited liability company, home owner association or non-profit organization: *a president, vice president, secretary, or treasurer.*
2. For a partnership or sole proprietorship: *by a general partner or the proprietor.*
3. For a municipality, State, Federal or other agency: *by either a principal executive officer or ranking elected official.*

I certify, under penalty of law, that I, or personnel under my direction or supervision, have completed a WSMP in accordance with 15A NCAC 18C .0307(c). Based on my evaluation of the plan, or my inquiry of the person or persons directly responsible for preparing the WSMP, the information contained in the WSMP is, to the best of my knowledge and belief, true, accurate, and complete.

Signature: _____ Name(Print): _____
Title: _____ Date: _____
Project Name: _____ System Name: _____
Serial No: _____ PWS I.D. No: _____

Attachment 9: Applicant Certification Form



**State of North Carolina
Department of Environment and Natural Resources**

Applicant Certification Form

In accordance with 15A NCAC 18C .0303 (c), a signed applicant certification must be submitted to the Department, stating that the Operation and Maintenance (O&M) Plan and the Emergency Management Plan requirements have been satisfied and that the system will have a certified operator as required by Section .1300. No construction, alteration, or expansion of a community or non-transient, non-community public water system shall be placed into final service or made available for human consumption until the applicant has submitted the certification and has received Final Approval from the Department.

Certification must be provided by the following individual or their duly authorized representative:

1. For a corporation, limited liability company, home owner association or non-profit organization: *a president, vice president, secretary, or treasurer.*
2. For a partnership or sole proprietorship: *by a general partner or the proprietor.*
3. For a municipality, State, Federal or other agency: *by either a principal executive officer or ranking elected official.*

By the signature below I certify, under penalty of law:

1. The following actions have been completed for the construction, alteration, or expansion of the water system, as defined in the project documents;

?? I, or personnel under my direct supervision, have completed an O&M Plan and an Emergency Management Plan in accordance with 15A NCAC 18C .0307(d) and (e). Based on my evaluation of the plans, or my inquiry of the person or persons directly responsible for preparing the O&M Plan and Emergency Management Plan, the information contained in the plans is, to the best of my knowledge and belief, true, accurate, and complete.

2. The following actions will be completed before the construction, alteration, or expansion of the water system, as defined in the project documents is placed into final service or made available for human consumption;

?? In accordance with 15A NCAC 18C .0307(d), the O&M Plan will be made accessible to the system operator on duty at all times and available to the Department upon request.

?? In accordance with 15A NCAC 18C .0307(e) the Emergency Management Plan will be made accessible to the system operator on duty at all times and available to the Department upon request.

?? In accordance with 15A NCAC 18C .0303(c), the system will have a certified operator as required by 15A NCAC 18C .1300.

Signature: _____ Name(Print): _____

Title: _____ Date: _____

Project Name: _____ System Name: _____

Serial No: _____ PWS I.D. No: _____