

ORANGE WATER AND SEWER AUTHORITY

MEETING OF THE BOARD OF DIRECTORS

MARCH 23, 2006

The Board of Directors of the Orange Water and Sewer Authority (OWASA) met in regular session on Thursday, March 23, 2006, at 7:00 P.M., at Chapel Hill Town Hall.

Directors present: Michael A. (Mac) Clarke, Chair; Penny Rich, Vice Chair; Randy Kabrick, P.E., Secretary; Terri Buckner; Milton S. Heath, Jr.; Marge Anders Limbert; Mark Marcoplos; Gordon Merklein; and Laura Sandvik.

Others present: Ed Kerwin, Imtiaz Ahmad, Mary Darr, Patrick Davis, Greg Feller, John Greene, Ed Holland, Andrea Orbich, and Kevin Ray of the OWASA staff; Robert Epting, Esquire, Epting and Hackney; Ray DuBose, Director of Energy Services and Meg Holton, Water, Wastewater, and Stormwater Manager, University of North Carolina at Chapel Hill (UNC); Carlos Lima, St. Thomas More Catholic Church; and Julie McClintock.

There being a quorum present, Chair Mac Clarke called the meeting to order.

MOTIONS ACTED UPON

1. Penny Rich moved to adopt the minutes of the February 9, 2006, Meeting of the Board of Directors. The motion was seconded by Milton Heath and carried by unanimous vote.

2. Penny Rich moved to adopt the minutes of the February 9, 2006, Closed Session of the Board of Directors for the purpose of discussing land acquisition and instructing Counsel and staff regarding negotiations. The motion was seconded by Milton Heath and carried by unanimous vote.

3. Penny Rich moved to adopt the minutes of the March 9, 2006, Closed Session of the Board of Directors for the purpose of discussing land acquisition and instructing Counsel and staff regarding potential litigation. The motion was seconded by Milton Heath and carried by unanimous vote.

4. BE IT RESOLVED THAT the Orange Water and Sewer Authority adopt the "Resolution Approving a Water Reuse System Contract with the University of North Carolina at Chapel Hill." (Resolution so titled attached hereto and made a part of these minutes. Motion by Mark Marcoplos, seconded by Terri Buckner, and carried by unanimous vote.)

5. BE IT RESOLVED THAT the Orange Water and Sewer Authority adopt the resolution titled "Resolution Reclassifying the Administrative Assistant Position to a Utility

Manager Generalist Position.” (Resolution so titled attached hereto and made a part of these minutes. Motion by Randy Kabrick, seconded by Penny Rich, and carried by unanimous vote.)

6. BE IT RESOLVED THAT the Orange Water and Sewer Authority adopt the resolution titled “Resolution Amending the Personnel Policy to Include Early Hire for Training.” (Resolution so titled attached hereto and made a part of these minutes. Motion by Milton Heath, seconded by Laura Sandvik, and carried by unanimous vote.)

7. Randy Kabrick moved that the Board convene in a Closed Session for the purpose of discussing land acquisition. The motion seconded by Laura Sandvik and carried by unanimous vote.

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ITEM ONE: ANNOUNCEMENTS

CONFLICT OF INTEREST

Mac Clarke said any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time. There were none.

CLOSED SESSION

Mac Clarke said following the Board meeting, the Board will convene in a Closed Session for the purpose of discussing property acquisition.

MORGAN CREEK TRAIL CONCEPT

Mac Clarke announced that OWASA received a request to appoint a representative to the Morgan Creek Trail Committee and that OWASA’s representative will be Stuart Carson, Engineering Manager for the Capital Improvement Program.

COMMUNITY OUTREACH MEETING

Mark Marcoplos announced that OWASA will hold the second Community Outreach meeting on Thursday, April 27, 2006 at 7:00 P.M. at Chapel Hill Town Hall.

COMMITTEE MEETING

Penny Rich announced a Human Resources (HR) Committee meeting on Thursday, April 13, 2006 at 5:30 P.M. in the OWASA Boardroom to discuss alternative employee compensation strategies.

REPORT ON N.C. WATER AND SEWER RATES AND UTILITY PRACTICES

Milton Heath said the recent study by Jeff Hughes, UNC School of Government, regarding rates and practices of North Carolina water and sewer systems will be beneficial to OWASA in the upcoming rate study.

ANNUAL CHLORINE DISINFECTION

Greg Feller said that annual chlorine disinfection of drinking water will end on March 31, 2006 and chloramine disinfection will resume on April 1, 2006.

OWASA LAKES WILL OPEN FOR RECREATION ON SATURDAY, MARCH 25, 2006 (LIGHTNING BROWN DAY)

Greg Feller said that University Lake and the Cane Creek Reservoir will reopen for boating, fishing and other recreation on Saturday, March 25, 2006. March 25th is celebrated as Lightning Brown Day at the lakes, and boat rental and lake use fees for OWASA customers will be waived except for electric trolling motor rentals.

APPLE CHILL STREET FAIR

Greg Feller said that OWASA will have a booth on West Franklin Street for the annual street fair on Sunday, April 23, 2006, from 1:00 P.M. to 6:00 P.M.

AMERICAN WATER WORKS ASSOCIATION (AWWA) 2006 PUBLIC COMMUNICATIONS ACHIEVEMENT AWARD

Ed Kerwin announced that OWASA received the AWWA's 2006 Public Communications Achievement Award. Mr. Kerwin presented Greg Feller with an Outstanding Achievement Award. Mr. Feller expressed his appreciation and thanks to Board of Directors for their guidance and support and to OWASA employees for their excellent communications and service to customers.

RAY KNIGHT

Ed Kerwin announced that Ray Knight, Utility Mechanic I in the Water Distribution and Sewer Collection Departments, won first place for his safety talk on Construction Site Safety at the Mid-State Safety Council's Safety Talk Contest. Mr. Knight will participate in the State-wide competition.

ITEM TWO: PETITIONS AND REQUESTS FROM THE PUBLIC, THE BOARD AND THE STAFF

Mac Clarke asked for petitions and requests from the public, the Board and the staff. There were none.

ITEM THREE: MINUTES

Penny Rich moved to adopt the minutes of the February 9, 2006, Meeting of the Board of Directors. The motion was seconded by Milton Heat and carried by unanimous vote. Please see Motion No. 1 above.

Penny Rich moved to adopt the minutes of the February 9, 2006, Closed Session of the Board of Directors for the purpose of discussing land acquisition and instructing Counsel and staff regarding negotiations. The motion was seconded by Milton Heath and carried by unanimous vote. Please see Motion No. 2 above.

Penny Rich moved to adopt the minutes of the March 9, 2006, Closed Session of the Board of Directors for the purpose of discussing land acquisition and instructing Counsel and staff regarding potential litigation. The motion was seconded by Milton Heath and carried by unanimous vote. Please see Motion No. 3 above.

ITEM FOUR: PUBLIC COMMENT ON PROPOSED WATER REUSE SYSTEM PROJECT WITH THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Mac Clarke said OWASA has been working with the University of North Carolina (UNC) at Chapel Hill on this project for approximately two years. He said the detailed contract was in agenda packages, and that rather than doing a presentation on the details, the Board would take public comments at this time.

Julie McClintock applauded the University, Board and staff for undertaking water reuse to reduce water consumption. While she supports this project she wants to be sure the rate payers are getting a fair deal. Ms. McClintock requested the Board revisit the issue of assumed lost revenues from reduced water sales which she feels will lead to higher rates for the general rate base and suggested considering this issue as part of the upcoming rate study.

Ray DuBose, Director of Energy Services for UNC, spoke on behalf of the University in support of the water reuse system contract and encouraged the Board to approve the draft resolution that was before them.

Mark Marcoplos said he supports the Water Reuse System Contract and believes the approval of this contract will provide for the future of OWASA customers in the most resource efficient path and at the least cost for customers. Mr. Marcoplos stated the contract has been thoroughly reviewed and is a significant contribution to the community by OWASA and the University all through good faith negotiations.

Milton Heath reminded the Board of the obligation in the Bond Order to set the lowest rates possible consistent with OWASA's obligation to provide proper and efficient service. This is the balance the Board is trying to obtain in a serious commitment and can be used in the upcoming rate study which is an opportunity for the OWASA Board to determine how it will address the potential loss of revenue as a result of the Water Reuse System.

Mac Clarke said the Water Reuse System Contract is a critical project for the future of the community's water supply. The importance of reuse is recognized on a broader basis, OWASA has received nearly \$2.5 million in State (Clean Water Management Trust Fund) and Federal grants to assist in the development of this project. Mr. Clarke acknowledged the support provided by Congressman David Price for the acquisition of the Federal grant funds. It is also important to note that in the contract, the OWASA Board retains the right to determine the appropriate rates and charges for the supply of reuse water, just as is done for potable water and sewer service; every Board is cognizant of the necessity that those rates are fairly and properly structured and have due regard for an appropriate division of costs.

Mark Marcoplos moved to adopt the Resolution Approving a Water Reuse System Contract with the University of North Carolina at Chapel Hill. The motion was seconded by Terri Buckner and carried by unanimous vote. Please see Motion No. 4 above.

ITEM FIVE: RESOLUTION RECLASSIFYING THE VACANT ADMINISTRATIVE ASSISTANT POSITION TO THE NEW POSITION OF UTILITY MANAGER GENERALIST

The Board received a presentation by Ed Kerwin, who requested the reclassification of the vacant Administrative Assistant position to a new position of Utility Manager Generalist.

Randy Kabrick moved to adopt the Resolution Reclassifying the vacant Administrative Assistant position to the new position of Utility Manager Generalist. The motion was seconded by Penny Rich and carried by unanimous vote. Please see Motion No. 5 above.

ITEM SIX: RESOLUTION TO AMEND THE PERSONNEL POLICY TO INCLUDE EARLY HIRES FOR TRAINING AND KNOWLEDGE TRANSFER

The Board received a presentation by Ed Kerwin, who requested amending the Personnel Policy to include a section under the Position Classification Plan titled Early Hires for Training and Knowledge Transfer.

Milton Heath moved to adopt the resolution to amend the Personnel Policy to include Early Hires for Training and Knowledge Transfer. The motion was seconded by Laura Sandvik, and carried by unanimous vote. Please see Motion No. 6 above.

ITEM SEVEN: STATUS REPORT ON WATER SUPPLY AND DEMAND CONDITIONS

The Board received a presentation on status of OWASA's water supply and demand conditions from Ed Holland.

Mark Marcoplos suggested increasing the emphasis on compliance with the year-round conservation measures throughout the service area.

Milton Heath observed that he regularly sees restaurants serving water without a request.

Laura Sandvik agreed with Mr. Heath's observation and suggested that staff communicate with local restaurants and possibly provide information to remind restaurant patrons why water is not served automatically.

Terri Buckner noted her concern that global climate change may cause more intense and frequent droughts. She asked if staff had made any efforts to consult weather experts about possible effects on our future water supply.

Mr. Holland noted Dr. Larry Band's research project and offered to invite him back to make a progress report to the Board.

ITEM EIGHT: REPORT FROM THE AD HOC COMMUNITY OUTREACH COMMITTEE

The Board received and supported the Ad Hoc Community Outreach Committee's outline and format for the Community Outreach meeting scheduled for April 27, 2006 at 7:00 P.M. at the Chapel Hill Town Hall.

ITEM NINE: CLOSED SESSIONS

Randy Kabrick moved that the Board convene in a Closed Session for the purpose of discussing land acquisition. The motion was seconded by Laura Sandvik, and carried by unanimous vote. Please see Motion No. 7 above.

There being no further business to come before the Board, the meeting was adjourned at 8:45 P.M.

**RESOLUTION APPROVING A WATER REUSE SYSTEM CONTRACT
WITH THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**

WHEREAS, OWASA and the University of North Carolina at Chapel Hill (“the University”) have a shared commitment to manage water resources in a sustainable manner; and

WHEREAS, OWASA and the University have jointly undertaken a comprehensive study of the technical and economic feasibility of using reclaimed water to meet certain non-potable water needs on the University’s main campus; and

WHEREAS, OWASA and the University concur that the development of a water reclamation and reuse system would provide many important benefits to OWASA, the community, the environment, and the University including lowering the risk of water shortages during future droughts; optimizing the use of locally-controlled water resources; deferring or eliminating certain long-term capital improvements, including more costly water supply sources; and further improving the quality of surface waters; and

WHEREAS, OWASA and the University have negotiated, and now desire to enter into a detailed contract relating to the design, construction, financing, and operation and maintenance of a water reuse system; and

WHEREAS, OWASA held a public meeting on March 23, 2006 for the purpose of receiving questions, comments and feedback from the public on the proposed project and contractual arrangement; and

WHEREAS, the OWASA Board of Directors, following careful consideration of the comments received, and the benefits and costs of the planned water reuse system, now desires to formally enter into a contract with the University for said purpose;

NOW, THEREFORE, BE IT RESOLVED:

1. That the Board of Directors of Orange Water and Sewer Authority hereby approves the “Contract Between Orange Water and Sewer Authority and the University of North Carolina at Chapel Hill Regarding Construction, Operation and Use of Water Reuse System,” (the Water Reuse System Contract) dated March 23, 2006, a copy of which is attached hereto as Exhibit 1.

2. That the Board of Directors hereby authorizes and directs the Executive Director to execute the Water Reuse System Contract, or an amended version thereof provided such amended version is consistent with the primary principles, terms, and conditions included in the attached Contract.

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3. That the Board of Directors directs the Executive Director to move forward with all engineering design work and related tasks to successfully develop the water reuse system consistent with the terms and conditions of the Water Reuse System Contract.

Adopted this 23rd day of March, 2006.

FINAL DRAFT CONTRACT
BETWEEN
ORANGE WATER AND SEWER AUTHORITY
AND
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
REGARDING
CONSTRUCTION, OPERATION AND USE OF WATER REUSE SYSTEM

THIS CONTRACT, made and entered into this ___ day of _____, 200_ between the ORANGE WATER AND SEWER AUTHORITY, a political subdivision of the State of North Carolina, organized and existing under North Carolina General Statute 162A, hereinafter referred to as “OWASA”, and THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL, hereinafter referred to as “the UNIVERSITY”,

WITNESSETH:

THAT WHEREAS, OWASA owns and operates the water and sewer utility systems serving the Chapel Hill – Carrboro community, which includes the UNIVERSITY; and

WHEREAS, in February, 2004, recognizing the many important benefits of water reuse, OWASA and the UNIVERSITY approved a Letter of Understanding setting forth the guiding principles and general framework for a water reuse system contract relating to the joint development of a water reclamation and reuse system that would initially serve the UNIVERSITY’s main campus area, but would be expandable to serve others in the community consistent with the terms of this Contract;

NOW, THEREFORE, in consideration of the foregoing and the premises and the mutual covenants and agreements herein contained, and in consideration of other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, OWASA agrees to produce and deliver and the UNIVERSITY agrees to accept and use reclaimed water in accordance with the following terms and conditions.

SECTION 1. DEFINITIONS

For the purposes of this Contract, the following terms shall have the following meanings:

- (a) “Conditional Final Acceptance” means OWASA’s agreement to accept and place into service specified Reclaimed Water System improvements completed by the UNIVERSITY, subject to the required conditions of this Contract.
- (b) “Final Acceptance” means OWASA’s agreement to accept full responsibility for the operation, maintenance, repair, and replacement of applicable Reclaimed Water System improvements.
- (c) “North Carolina Division of Water Quality” means the agency in North Carolina State Government that is responsible for administering and enforcing the State’s regulations, policies, and programs relating to the design, permitting, construction, operation,

management, and monitoring of systems for the production, delivery, and use of Reclaimed Water.

- (d) "Onsite Use System" means all lines, appurtenances and facilities on the UNIVERSITY's side of the Reclaimed Water meter that are required to accept, deliver, treat, and use Reclaimed Water supplied by OWASA.
- (e) "Reclaimed Water" means water that is produced following treatment at OWASA's Mason Farm Wastewater Treatment Plant and meeting the applicable State Standards for Reclaimed Water, and the "University Standards" as defined in this Contract.
- (f) "Reclaimed Water Customer" means any customer or facility that is connected to and receives or may receive Reclaimed Water from OWASA's Reclaimed Water System other than users located on the UNIVERSITY's property, all of whom will be served by the UNIVERSITY.
- (g) "Reclaimed Water System," "Water Reuse System" or "System" means the facilities and appurtenances, up to and including the reclaimed water meter, that are required to produce and deliver Reclaimed Water from OWASA's Mason Farm Wastewater Treatment Plant to the UNIVERSITY and all distribution lines and appurtenances required to distribute Reclaimed Water throughout the UNIVERSITY's main campus to the various points of delivery for use by the UNIVERSITY. The System may be extended in the future to serve other Reclaimed Water Customers, consistent with the terms of this Contract.
- (h) "Reclaimed Water System – Phase I Improvements" means the Reclaimed Water System improvements that are to be initially constructed, operated, and maintained pursuant to this Contract.
- (i) "Service" means making Reclaimed Water available at the UNIVERSITY's service meter, boundary, or other connection point, regardless of the quantity of Reclaimed Water the UNIVERSITY causes to pass through its connection for use.
- (j) "State Standards" means the State of North Carolina's rules and regulations pertaining to the treatment, delivery, and use of reclaimed water, as such may be amended or superseded from time to time.
- (k) "University Standards" means those water quality specifications described in Section 3.C.2 of this Contract (as amended from time to time) with which OWASA must comply, in addition to any State Standards, as a condition to the UNIVERSITY's purchase of any Reclaimed Water.

SECTION 2. RECLAIMED WATER SYSTEM DEVELOPMENT

A. Reclaimed Water System

OWASA and the UNIVERSITY shall jointly plan, design, and construct, and OWASA shall operate and maintain, a Reclaimed Water System that provides Reclaimed Water for use by the UNIVERSITY in accordance with applicable laws and regulations governing said System and uses.

The Reclaimed Water System shall initially consist of the Reclaimed Water System – Phase I Improvements that are completed in accordance with this Contract and with applicable laws and regulations governing said System and uses. The Reclaimed Water System shall be designed and extended to accommodate the orderly development of the System.

B. The Reclaimed Water System – Phase I Improvements

1. The Reclaimed Water System – Phase I Improvements and their respective capacities to be allocated to the benefit of the UNIVERSITY include:
 - (i) a Reclaimed Water Pumping Station, being located at OWASA’s Mason Farm Wastewater Treatment Plant and having a peak pumping capacity of approximately 2,163 gallons a minute;
 - (ii) a Reclaimed Water Storage Tank, being located at OWASA’s Mason Farm Wastewater Treatment Plant and having a nominal storage capacity of 0.6 million gallons, which is intended to be sufficient to provide a 4.8-hour storage capacity at a maximum-day demand of 3.0 million gallons a day (mgd);
 - (iii) a Reclaimed Water chemical treatment system being located at OWASA’s Mason Farm Wastewater Treatment Plant and consisting of supplemental chlorine disinfection and pH control designed for a peak flow rate of 3.0 million gallons a day;
 - (iv) a Reclaimed Water transmission main, which shall be 24 inches in diameter and begin at OWASA’s Mason Farm Wastewater Treatment Plant and connect to the UNIVERSITY Improvements, as defined in Section 2.B.4.a, at the intersection of Skipper Bowles Drive and the UNIVERSITY’s steam tunnel currently under construction. The Reclaimed Water transmission main shall have a capacity to convey approximately 10.0 million gallons a day at a maximum operating pressure of 186 psi at the Mason Farm Wastewater Treatment Plant Reclaimed Water Pumping Station; and
 - (v) all of the distribution piping and meters installed by the UNIVERSITY, all of which are generally shown in Exhibit A.

Subject to the provisions of Section 2.C, the Reclaimed Water System – Phase I Improvements will be designed and constructed to accommodate to the extent practical, orderly and cost-effective capacity expansions and extensions that may be needed to meet additional future Reclaimed Water demands..

The capacities described above may be changed by written agreement of OWASA’s Executive Director and the UNIVERSITY’s Associate Vice Chancellor for Campus Services.

2. Schedule for Completion of the Reclaimed Water System – Phase I Improvements

OWASA and the UNIVERSITY hereby agree to use their best efforts to complete and place into full operation the Reclaimed Water System – Phase I Improvements on or before November 1, 2008.

3. OWASA’s Responsibilities for Planning, Designing, Contracting for, Constructing and Managing the Reclaimed Water System – Phase I Improvements

In the development of the Reclaimed Water System OWASA shall serve as the lead agency, and in so doing will:

- (i) Cause to be prepared the final plans, designs, and specifications for the Reclaimed Water System – Phase I Improvements to be located on OWASA’s Mason Farm Wastewater Treatment Plant property and the Reclaimed Water transmission line up to the intersection of Skipper Bowles Drive with the UNIVERSITY’s Manning Drive Steam Tunnel. Plans and specifications for all improvements to be paid for by the UNIVERSITY shall meet the UNIVERSITY’s requirements and shall be approved in writing by the UNIVERSITY prior to either party undertaking any construction.
- (ii) Apply for all permits required to construct, operate, maintain, extend, enlarge, or otherwise improve the Reclaimed Water System. Where applicable, OWASA will require the UNIVERSITY to submit applicable plans and specifications and other information and permit processing fees to OWASA.
- (iii) Cause to be constructed the Reclaimed Water System – Phase I Improvements located on OWASA’s Mason Farm Wastewater Treatment Plant property and the Reclaimed Water transmission line up to the intersection of Skipper Bowles Drive with the UNIVERSITY’s Manning Drive Steam Tunnel.
- (iv) Cause to be prepared any required standards and specifications, public education and training programs, operations and maintenance plans, financing plans, and other policies, programs, and materials related to the operation and maintenance of the Reclaimed Water System.

4. UNIVERSITY’s Responsibilities for Designing, Contracting for, and Constructing the Reclaimed Water System UNIVERSITY Improvements

- a. The UNIVERSITY shall cause to be constructed, and shall convey to OWASA free and clear of all encumbrances and at no cost to OWASA, all distribution lines and appurtenances required to distribute Reclaimed Water throughout the UNIVERSITY’s main campus to the various points of delivery for use by the UNIVERSITY and its users (“UNIVERSITY Improvements”). The UNIVERSITY shall submit to OWASA plans and specifications for the UNIVERSITY Improvements prepared by the UNIVERSITY’s professional engineers who must be registered in the State of North Carolina. Plans and specifications shall meet OWASA’s requirements and shall be approved in writing by OWASA prior to the UNIVERSITY’s undertaking of any construction.

- b. Upon completion of construction, the UNIVERSITY shall dedicate to OWASA all UNIVERSITY Improvements including all mains, service connections and appurtenances, up to and including the Reclaimed Water meters, paid for and installed by the UNIVERSITY. OWASA shall accept title to and responsibility for ownership and maintenance of the UNIVERSITY Improvements caused to be constructed by the UNIVERSITY, provided said UNIVERSITY Improvements have passed certain tests, including, without limitation, purity tests, pressure tests, and valve tests, arranged, witnessed, and approved by OWASA or its representatives, to determine whether said UNIVERSITY Improvements are constructed in accordance with the approved engineering plans and specifications.
- c. The UNIVERSITY will furnish OWASA with digital and mylar copies of the as-built drawings of the UNIVERSITY Improvements in a form acceptable to OWASA and certified by the UNIVERSITY's engineer of record, showing specific locations of all facilities, including all lines, mains, valves, and fittings within the UNIVERSITY Improvements.
- d. The UNIVERSITY represents and warrants that the UNIVERSITY Improvements will be constructed and installed in accordance with the plans and specifications approved in writing by OWASA. As security for the UNIVERSITY's performance of this warranty, the UNIVERSITY shall cause its contractors to deliver to OWASA a standard State of North Carolina required construction warranty to remain in full force and effect for a period of not less than one (1) year from the date of Conditional Final Acceptance.
- e. The UNIVERSITY shall, in accordance with the terms of this Contract and at its sole expense design, construct, own, operate, and maintain the Reclaimed Water service lines, Reclaimed Water treatment facilities, and Reclaimed Water pressure control devices that may be required by the UNIVERSITY and that are located on the UNIVERSITY's side of the Reclaimed Water meters (the "Onsite Use System").
- f. OWASA acknowledges that prior to entering into this Contract, the UNIVERSITY, in reliance on the Letter of Understanding between the parties dated February 19, 2004, has contracted for and partially installed piping to support the Reclaimed Water System and OWASA agrees to accept such installations upon completion of construction⁴ in accordance with Technical Memorandum MC-4 included as Exhibit E to this Agreement.

C. Future Extensions and Connections

1. OWASA may approve extensions, enlargements, improvements and connections to the Reclaimed Water System not inconsistent with the terms of this Contract and applicable laws and regulations. OWASA shall have sole local authority to approve extensions, enlargements, improvements and connections to the Reclaimed Water System subject to the UNIVERSITY's right to approve any extensions, enlargements, improvements and connections located on or serving the UNIVERSITY's property.

2. OWASA will ensure that no new Reclaimed Water Customers will be added to the Reclaimed Water System except consistent with Section 3.F and Section 5.D of this Contract.

SECTION 3. OWASA'S OBLIGATION TO PROVIDE RECLAIMED WATER

A. Ownership, Operation, and Maintenance of and Access to the Reclaimed Water System

After acceptance, OWASA will own, operate, and maintain all Reclaimed Water System mains, service connections and appurtenances, up to and including the Reclaimed Water meters; provided; however, that OWASA and the UNIVERSITY may agree to alternative service connection and metering arrangements for buildings in existence prior to the date of this Contract, as specified in the "Supplemental Understanding of Operating Protocols for the Reclaimed Water System" which is included as Exhibit B and which may be modified from time to time as specified in Section 6.A of this Contract. Title to the Reclaimed Water shall pass from OWASA to the UNIVERSITY once it has passed through the Reclaimed Water meter(s) located on the UNIVERSITY's premises.

B. Quantity, Flow Rates, Pressure

Following completion of the Reclaimed Water System – Phase I Improvements, OWASA will make a good faith effort to maintain a continuous and uninterrupted delivery of Reclaimed Water in such quantity as may be required by the UNIVERSITY, up to the capacities specified under Section 2.B and as may be increased in the future in accord with this Contract. OWASA will make a good faith effort to operate and maintain the Reclaimed Water System at the same level of service and reliability standards that are applied to OWASA's potable water system and to maintain pressures needed to operate at a hydraulic grade line elevation range of between 551 feet and 591 feet mean sea level at the existing and proposed UNC Chiller Facilities.

C. Quality of Reclaimed Water

OWASA will make a good faith effort to assure that at all times Reclaimed Water delivered by OWASA to the UNIVERSITY meets all rules, regulations and permit conditions of all applicable governmental agencies exercising jurisdiction over OWASA's production and delivery of Reclaimed Water.

OWASA will make a good faith effort to provide the UNIVERSITY with high quality Reclaimed Water that meets the non-potable needs of the UNIVERSITY. OWASA agrees that the quality of the Reclaimed Water will meet or exceed the following standards:

1. State Standards

OWASA agrees to provide Reclaimed Water of at least the minimum quality required by the State Standards.

2. UNIVERSITY Standards for Reclaimed Water Quality

In addition to meeting the above-specified State Standards, OWASA will convey and transfer to the UNIVERSITY Reclaimed Water that meets the additional “UNIVERSITY Standards” specified in the “Supplemental Understanding of Operating Protocols for the Reclaimed Water System” which is included as Exhibit B and which may be modified from time to time as specified in Section 6.A of this Contract.

In the event Reclaimed Water quality falls outside the Desired Quality Specifications for more than eight (8) hours, OWASA agrees to notify the UNIVERSITY and the UNIVERSITY may at that time refuse to accept Reclaimed Water until such time as OWASA has addressed the problem to the satisfaction of the UNIVERSITY. In the event one or more of the monitored contaminants exceeds the “Reject Quality Specifications” as specified by the UNIVERSITY Standards, OWASA must immediately notify the UNIVERSITY. The UNIVERSITY may refuse to accept or use the Reclaimed Water at any of the UNIVERSITY’s facilities whenever Reclaimed Water quality falls outside the “Reject Quality Specifications” as defined in Exhibit B, as measured by the UNIVERSITY or OWASA. In such events, OWASA shall supply the University with an adequate quantity of potable water according to the provisions of the Water Utility Agreement of Sale and Purchase. In the event that Reclaimed Water exceeding the “Reject Quality Specifications” enters the distribution piping or is detected at any point of use, OWASA agrees to arrange to flush all non-complying water from the system prior to initiating Reclaimed Water service to the UNIVERSITY’s Reclaimed Water using facilities. OWASA agrees to discontinue the delivery of Reclaimed Water to the on-site Reclaimed Water Storage tank upon notice that one or more water quality parameters fall outside the respective “Reject Quality Specification” values specified in Exhibit B.

3. Wastewater Generated by UNIVERSITY Facilities Using Reclaimed Water

OWASA agrees to accept wastewater discharges generated by each of the UNIVERSITY’s facilities using Reclaimed Water provided that said discharges from each facility shall: (a) meet the requirements of OWASA’s Sewer Use Ordinance which may be amended from time to time to assure the safe and reliable operation of OWASA’s wastewater collection, treatment and disposal system, and (b) be subject to any applicable high-strength surcharges specified in OWASA’s sewer rates, fees and charges. However, this provision shall not apply to constituents already present in the Reclaimed Water produced by OWASA, and delivered to UNC, excepting those introduced by the UNIVERSITY to the Reclaimed Water stream, that may cause the concentrated discharge from any UNC Reclaimed Water using facility to exceed the Local Limit concentrations identified in the OWASA Sewer Use Ordinance after eight (8) cycles of concentration.

D. Monitoring Provisions

To assure compliance with the UNIVERSITY Standards, OWASA agrees to perform the monitoring services as specified in the “Supplemental Understanding of Operating Protocols for the Reclaimed Water System” which is included as Exhibit B and which may be modified from time to time as specified in Section 6.A of this Contract. All costs of said monitoring services will be recovered by the rates OWASA establishes for Reclaimed Water Service.

E. Provisions for Backup Supply During Interruption of Reclaimed Water Service

The parties acknowledge that emergency failures of pressure or supply due to main supply breaks, power failure, flood, fire, acts of God, civil commotion, strikes, earthquake or other catastrophe may occur which could prevent OWASA from delivering Reclaimed Water to the UNIVERSITY pursuant to this Contract. Upon the occurrence of such events, it is the intention of the parties that OWASA shall be relieved of the responsibility for providing Reclaimed Water for such a period when it is not reasonably within its ability or control to do so.

In any event OWASA cannot deliver Reclaimed Water as agreed to under this Contract, OWASA shall notify the UNIVERSITY of such circumstance and shall supply, through the potable water connection, the UNIVERSITY with an adequate quantity of potable water according to the provisions of the Water Utility Agreement of Sale and Purchase.

OWASA will take immediate action to resolve any interruption of Reclaimed Water service to the UNIVERSITY as soon as practical. OWASA will allow the UNIVERSITY to maintain alternate supply connections as a back-up water supply in the event that Reclaimed Water service is temporarily unavailable.

F. Limitations on Supply and Use of Reclaimed Water

1. The Parties agree that the UNIVERSITY shall have a priority right of first use on all the Reclaimed Water produced by the Reclaimed Water System – Phase I Improvements described in Section 2.B.1, up to the capacities specified in said Section or to such increased capacities as may be developed in the future in accord with this Contract.
2. OWASA may provide Reclaimed Water Service to other non-UNIVERSITY Reclaimed Water Customers provided that: (a) OWASA determines that the provision of Reclaimed Water Service to other Reclaimed Water Customers will not impede OWASA's ability to meet its obligations to the UNIVERSITY as specified in this Contract and (b) that if Reclaimed Water demands of other Reclaimed Water Customers are being met from the capacity of the Reclaimed Water System – Phase I Improvements described in Section 2.B then Reclaimed Water Service to the UNIVERSITY will not be reduced until after Reclaimed Water Service to all other Reclaimed Water Customers has been discontinued.
3. It is the intention of OWASA to assure that the Reclaimed Water System is of adequate capacity so that it will not be necessary to exercise the right of limitation as specified above and OWASA will use its best efforts to that effect.

SECTION 4. UNIVERSITY'S SYSTEM OWNERSHIP AND OBLIGATIONS REGARDING RECLAIMED WATER

A. Ownership, Operation, and Maintenance

The UNIVERSITY will own and maintain all Onsite Use System improvements required for the UNIVERSITY to use Reclaimed Water.

To assure OWASA's ability to meet its obligations under this Contract, the UNIVERSITY, at no cost to OWASA, will grant to OWASA licenses required for the installation, operation, maintenance, repair, and replacement of the Reclaimed Water System improvements located on the UNIVERSITY's property. Said licenses shall be requested and granted in a manner consistent with the licensing provisions specified in the Water Utility and Sewer Utility Agreements of Sale and Purchase between the UNIVERSITY and OWASA.

B. Reclaimed Water Uses and Demands

1. Reclaimed Water shall be used only in accordance with applicable State laws and regulations.
2. The UNIVERSITY shall make a written request to OWASA for any approval to connect to the Reclaimed Water System or to modify the UNIVERSITY's existing uses of Reclaimed Water at a specific facility. For any facilities which are projected to cause the Reclaimed Water demands to exceed the capacities specified in Section 2.B.1, OWASA shall have the right to determine whether, when, and if so upon what conditions such request shall be approved in accordance with Section 5.D. OWASA will conduct an on-site inspection of the Reclaimed Water System connection and the facilities where Reclaimed Water is proposed to be used.
3. OWASA shall have the right to conduct additional on-site inspections of each facility at which Reclaimed Water is being used, provided that at least three (3) days advance notice is given to the UNIVERSITY.
4. Exhibit C lists the UNIVERSITY's facilities that are currently anticipated to use Reclaimed Water from OWASA. Additional uses by the UNIVERSITY may be developed and provided Reclaimed Water Service by OWASA in accordance with this Contract.
5. Upon completion and start-up of the Reclaimed Water System – Phase I Improvements, it is estimated that the UNIVERSITY will use, and OWASA will supply a presently anticipated annual average of 0.53 million gallons of reclaimed water per day beginning by November, 2008. It is understood that this initial reclaimed water demand may increase to an annual average of 0.66 million gallons per day if UNC Hospitals agrees to use a presently-anticipated annual average per day of 0.130 million gallons of reclaimed water for cooling tower make-up at its two existing chiller facilities. The UNIVERSITY shall make a good faith effort to use OWASA's Reclaimed Water rather than potable water in said amount, or in higher amounts as the UNIVERSITY may need and as OWASA may supply in accord with this Contract. In the event that the UNIVERSITY must temporarily discontinue using Reclaimed Water at any facility as a result of planned or unplanned maintenance, the UNIVERSITY will restore the use of Reclaimed Water at that facility as soon as practical.
6. Any supply of Reclaimed Water to UNC Hospitals shall be provided through the UNIVERSITY.
7. Each service connection to the Reclaimed Water System shall be separately metered. The UNIVERSITY and OWASA agree that any Reclaimed Water Meters or other

devices installed to measure and control the amount of Reclaimed Water delivered to the UNIVERSITY's facilities shall be:

- (i) purchased from OWASA and installed at the UNIVERSITY's sole expense;
 - (ii) flow meters and other devices of standard make and type approved by OWASA for which replacement parts and service are reasonably available;
 - (iii) installed in accordance with OWASA's standards and specifications, and so as to be readily accessible for reading, testing, maintenance, and replacement. Access shall be provided to OWASA and its personnel;
 - (iv) adequately maintained by OWASA; and
 - (v) tested by OWASA for accuracy when requested by the UNIVERSITY, with the understanding that OWASA will provide the test results to the UNIVERSITY.
8. The UNIVERSITY shall have sole responsibility for the sequencing, tie-in, and operation of back-up potable water supply or other backup water supply sources for the UNIVERSITY's facilities that are connected to the Reclaimed Water System.
9. The UNIVERSITY shall be solely responsible for the physical separation of lines and connections to the UNIVERSITY's Onsite Use System. The Onsite Use System shall be constructed to prevent backflow of Reclaimed Water and any other non-potable water source into the public potable water system. The UNIVERSITY shall install, operate, test, and maintain approved backflow prevention assemblies as required herein or as may be required by OWASA's Cross Connection Control Ordinance and applicable State regulations.

C. Prohibitions and Restrictions on Use of Reclaimed Water

1. Reclaimed Water from OWASA shall not be used by the UNIVERSITY for any purposes not otherwise approved by OWASA and allowed by the applicable regulatory agencies.
2. The UNIVERSITY may distribute Reclaimed Water to any users that the UNIVERSITY is permitted by the Water Utility Agreement of Sale and Purchase to serve. The University may recover its costs in the same manner and to the same extent as the UNIVERSITY operates its current potable water distribution system pursuant to the Water Utility Agreement of Sale and Purchase.
3. The University shall be solely responsible for assuring that no Reclaimed Water received from OWASA is distributed, used or consumed other than in compliance with all applicable local, State and Federal rules, standards, and statutes, or other law.

D. Exclusive Use of Reclaimed Water From OWASA

The UNIVERSITY agrees that it will obtain all of its Reclaimed Water requirements from OWASA. Nothing in this Contract shall limit the UNIVERSITY's right to build and operate systems for the treatment and reuse of wastewater, process water, rainwater, groundwater, or other water generated by the UNIVERSITY's property and facilities. The UNIVERSITY may not introduce any other source of water into the Reclaimed Water System.

E. Backup Supply During Interruption of Reclaimed Water Demands

The parties acknowledge that emergency failures of pressure or supply due to main supply breaks, power or equipment failure, flood, fire, acts of God, civil commotion, strikes, earthquake or other catastrophe may occur which would prevent the UNIVERSITY from using Reclaimed Water pursuant to this Contract. The parties agree that the UNIVERSITY shall not be required to use Reclaimed Water for such a period when it is not reasonably within its ability or control to do so.

SECTION 5. FINANCING OF THE RECLAIMED WATER SYSTEM

A. Financial Sustainability of Reclaimed Water System

1. The Reclaimed Water rates, fees, and charges established by OWASA will recover all of OWASA's direct and indirect expenses for developing, operating, and maintaining the Reclaimed Water System.
2. No costs of the Reclaimed Water System shall be paid with revenues generated by OWASA's potable water system or generated by OWASA's sewer system rates, fees, or charges.
3. Revenues generated by the Reclaimed Water rates, fees, and charges shall be used solely for the Reclaimed Water System. Revenues from the Reclaimed Water System shall not be used to offset or recover the potable water revenue reduction that is or may be associated with the sustainable water management practice of using Reclaimed Water instead of potable water to meet non-potable water needs.

B. Financing the Initial Development of the Reclaimed Water System

1. The UNIVERSITY shall be solely responsible for paying all costs for the design, construction, construction management and inspection of the Reclaimed Water System – Phase I Improvements, except to the extent that OWASA may receive and apply Federal or State grant funds to offset the UNIVERSITY's cost for initial development of said improvements. The amount of any construction contract for the Reclaimed Water System – Phase I Improvements, plus an approved contingency (collectively, the "Total Construction Amount") to cover change order items which may be approved by OWASA's Executive Director, must have the UNIVERSITY's prior written approval in order to qualify for reimbursement by the UNIVERSITY. Any increases to the Total Construction Amount must have prior written UNIVERSITY approval in order to qualify for reimbursement by the UNIVERSITY.
2. The UNIVERSITY shall reimburse OWASA for the costs OWASA incurs for planning, designing and constructing the Reclaimed Water System – Phase I Improvements described in Section 2.B.3, except to the extent that OWASA may receive and apply Federal or State grant funds to offset the University's cost for initial development of said improvements. The parties agree to develop a procedure for UNIVERSITY reimbursement of the approved costs of OWASA's design, construction, construction management, and inspection of the part of the Reclaimed Water System that the parties

agree that OWASA will construct. The reimbursement procedure must have the approval of the University's bond counsel.

C. Establishment of Reclaimed Water Rates, Fees and Charges

OWASA shall establish and periodically amend the rates, fees, and charges for providing Reclaimed Water service. The rates, fees, and charges shall be set at levels that are sufficient to recover the costs that OWASA incurs to provide Reclaimed Water service, and to provide adequate reserves for maintenance and replacement of the system. OWASA shall follow "cost-of-service" rate-making principles for setting the rates, fees, and charges sufficient to pay the costs of Reclaimed Water services and facilities provided by OWASA.

Exhibit D is a list of the cost-of-service components that will be included in the determination of the initial rates, fees, and charges for Reclaimed Water service. To assure recovery of OWASA's anticipated fixed costs for the Reclaimed Water System, the UNIVERSITY will pay a minimum monthly service charge as determined by OWASA, without regard to the amount of Reclaimed Water used by the UNIVERSITY. The UNIVERSITY also agrees to pay a separate commodity charge per 1,000 gallons of Reclaimed Water used. No seasonal, inclining block, or other conservation rate structure will be imposed for Reclaimed Water service to the UNIVERSITY unless mutually agreed upon in writing by both parties.

As determined necessary, OWASA may from time to time modify the cost-of-service components and cost-of-service calculations to assure full and fair recovery of OWASA's costs for providing Reclaimed Water Service. The methodology for calculating the General and Administrative and Other components of the rates, fees, and charges for Reclaimed Water Service listed in Exhibit D shall be used as the basis for determining said costs for the first five (5) full OWASA fiscal years of operation of the Reclaimed Water System.

OWASA shall provide the UNIVERSITY the opportunity to review and comment on proposed Reclaimed Water rates, fees, and charges. The notification and comment process will be comparable to that provided for in the Water Utility Agreement of Sale and Purchase between OWASA and the UNIVERSITY.

The UNIVERSITY will not be required to pay Reclaimed Water System Availability Fees or similar capital buy-in charges for any connections to the Reclaimed Water System – Phase I Improvements. In the event the UNIVERSITY's total Reclaimed Water demands exceed the capacities specified in Section 2.B.1, or are otherwise increased in accordance with this Contract, the parties shall finance future extensions and connections in accordance with Section 5.D.

D. Financing Future Extensions and Connections to the Reclaimed Water System

Subject to the provisions of Section 3.F. of this Contract, OWASA may extend the Reclaimed Water System providing Reclaimed Water Service in or to other areas to serve other Reclaimed Water Customers.

Consistent with the provisions of the Water Utility and Sewer Utility Agreements of Sale and Purchase, OWASA shall adopt and maintain a basic policy with respect to the extension of the Reclaimed Water System which provides, to the extent possible, that the ultimate cost of any such extensions shall be borne by those parties primarily benefiting from such extensions.

Reclaimed Water Customers connecting to the Reclaimed Water System shall be required to pay all applicable Reclaimed Water service availability charges, connection fees, and other charges established by OWASA. The UNIVERSITY shall not be entitled to any revenues or reimbursements OWASA receives from future Reclaimed Water Customers, as any Reclaimed Water System availability fees OWASA receives will be applied to the capacity expansion and improvements to the Reclaimed Water System.

If in the future, the UNIVERSITY determines and advises OWASA that the UNIVERSITY requires Reclaimed Water in excess of the capacities described in Section 2.B, OWASA, in consultation with the UNIVERSITY, shall determine how best to meet the UNIVERSITY's needs, and, before undertaking such improvements or expansions, shall obtain the approval of the UNIVERSITY as to how to finance the same, and as to the terms and conditions under which the additional capacity will be developed and provided to the UNIVERSITY.

SECTION 6. OTHER PROVISIONS

A. Operating Protocols

OWASA and the UNIVERSITY agree to develop and implement monitoring and reporting procedures, billing and payment procedures, communications and emergency response plans, public information and training programs, notification procedures, and other operating protocols relating to the Reclaimed Water System, as generally described in Exhibit B, "Supplemental Understanding of Operating Protocols for Reclaimed Water System." OWASA's Executive Director and the UNIVERSITY'S Associate Vice Chancellor for Campus Services may, upon mutual agreement, amend said Supplemental Understanding without the necessity of formally amending this Contract.

B. Plans for Reclaimed Water System Improvements or Connections

The parties agree to notify each other in writing as to any plans for extending, enlarging, improving, or connecting to the Reclaimed Water System in accordance with this Contract. Each party shall make its best effort to provide said notification within thirty (30) days following the development of any concept plan for extending, enlarging, improving, or connecting to the Reclaimed Water System.

C. Parties to Be Notified

All notices required to be given, or which may be given by either party to the other, shall be deemed to have been fully given and fully received when made either by personal delivery to, and acknowledgment of receipt by the following offices, or in writing and deposited in the United States mail, registered and postage prepaid and addressed to the respective offices as follows:

OWASA: Executive Director
Orange Water and Sewer Authority
400 Jones Ferry Road
P.O. Box 366
Carrboro, NC 27510-0366

UNIVERSITY: Associate Vice Chancellor for Campus Services
The University of North Carolina at Chapel Hill
305 South Building
Campus Box #1000
Chapel Hill, NC 27599-1000

D. Assignment of Contract

In the event of a transfer by any means of the assets and liabilities of OWASA, OWASA shall have the right to transfer all or any part of the Reclaimed Water System to another public utility and to assign all or any part of its rights and obligations under this Contract to another public utility who shall be bound by and accept, and be exclusively responsible for all applicable terms and conditions of this Contract.

E. Contract Amendments

This Contract may be amended at any time by mutual written consent of both parties.

F. Severability

Should any part, term, or provision of this Contract be decided by a final judgment of a court to be illegal or in conflict with any law of the State of North Carolina, or otherwise be rendered invalid, unenforceable, or ineffectual, the remaining provisions of this Contract shall not be affected and shall be valid and enforceable to the fullest extent permitted by law.

G. Resolution of Disputes

OWASA and the UNIVERSITY shall negotiate in good faith and attempt to resolve any dispute which may develop hereunder. If they are unable to resolve a dispute hereunder, either party may serve upon the other a request for voluntary mediation by a neutral mediator who shall be chosen by the parties to conduct the mediation within thirty (30) days of his or her selection, or whenever later the parties may agree.

H. Planning for Water Reuse at Carolina North

OWASA and the UNIVERSITY agree to jointly evaluate the feasibility of developing a reclaimed water system to serve the UNIVERSITY's proposed Carolina North project.

SECTION 7. REGULATORY APPROVALS; ENTIRE AGREEMENT

A. Agreement Subject to Regulatory Approval of Reclaimed Water System

OWASA’s obligations under this Contract are contingent upon its obtaining all necessary approvals and permits from all governmental agencies exercising jurisdiction over the production, treatment, and delivery of Reclaimed Water.

B. Contract Constitutes the Entire Agreement

This Contract constitutes the entire agreement and understanding between the parties, and supersedes all offers, negotiations and other agreements concerning the production, delivery, and use of Reclaimed Water.

All exhibits annexed hereto form material parts of this Contract.

SECTION 8. TERM OF AGREEMENT

In light of the obligations undertaken by the parties herein, this Contract shall be perpetual.

IN WITNESS WHEREOF, the parties hereto have executed this Contract the day and year first above written.

ORANGE WATER AND SEWER AUTHORITY

By _____

ATTEST:

By _____

THE UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

By _____

ATTEST:

By _____

**EXHIBIT A
GENERAL LOCATION OF
RECLAIMED WATER SYSTEM – PHASE I IMPROVEMENTS**

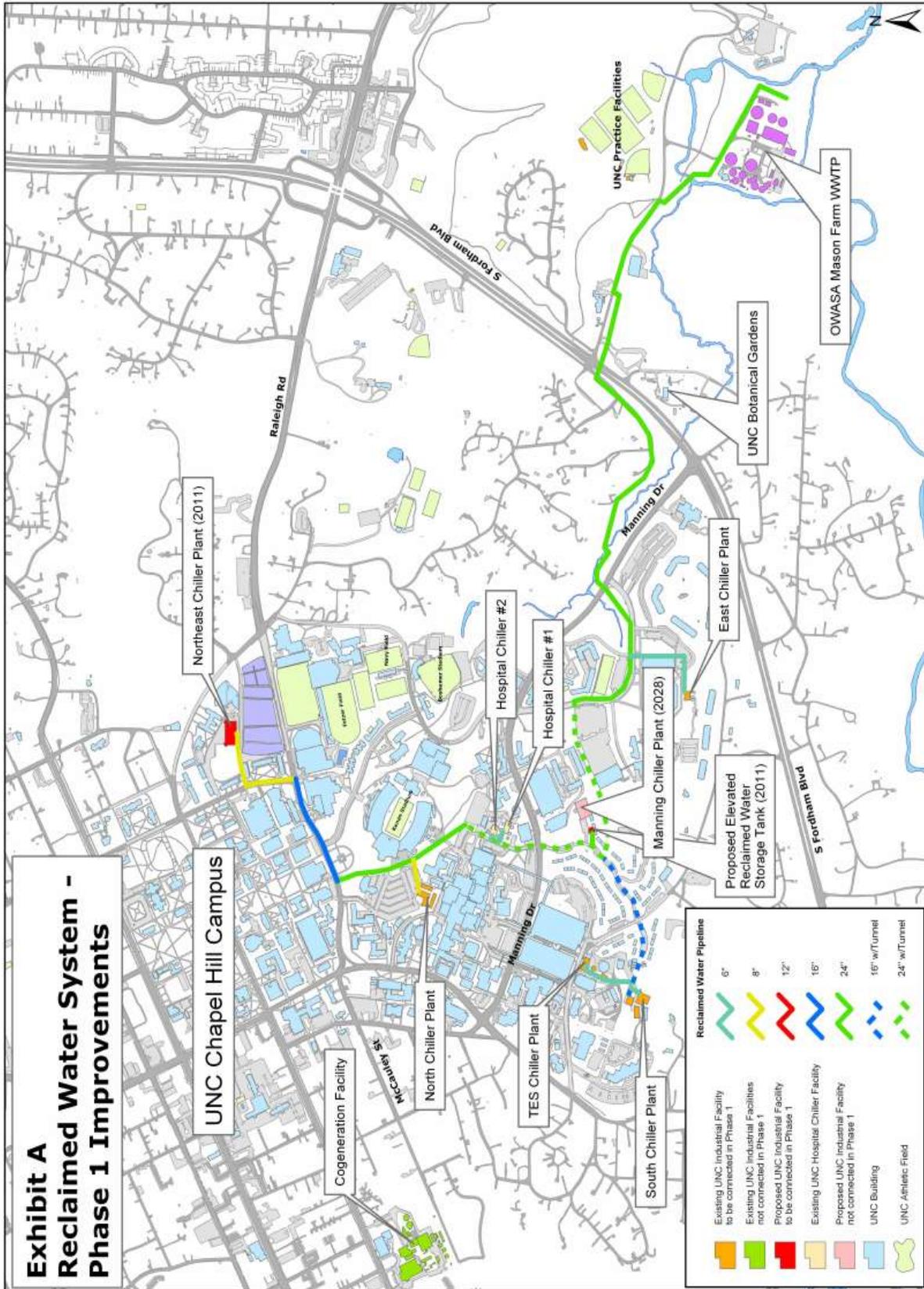


EXHIBIT B

SUPPLEMENTAL UNDERSTANDING OF OPERATING PROTOCOLS FOR THE RECLAIMED WATER SYSTEM

OWASA and the UNIVERSITY agree that the following protocols will apply to the operation of the Reclaimed Water System. This Exhibit may be amended on behalf of the parties upon mutual written agreement by OWASA's Executive Director and the UNIVERSITY'S Associate Vice Chancellor for Campus Services without the necessity of the formal amendment of the Water Reuse System Contract between OWASA and the UNIVERSITY.

A. Supplemental UNIVERSITY Standards for Reclaimed Water Quality

In addition to all the requirements of OWASA's Mason Farm Wastewater Treatment Plant NPDES permit and State Standards, OWASA shall produce Reclaimed Water for the UNIVERSITY's points of use that has undergone tertiary filtration, UV-irradiation and free-chlorine disinfection (as evaluated in the Final Report titled, "Evaluation of the Proposed OWASA Water Reclamation System for Production of Non-Potable Reuse Water for UNC Chapel Hill" dated December 2004, by Mark Sobsey, Ph.D. et al) and complies with all of the following water quality specifications (the "UNIVERSITY Standards"):

<u>Control Parameters</u>	<u>Desired Quality Specifications</u>	<u>Reject Quality Specifications</u>
Turbidity	<3 NTU	>5 NTU
pH	7.00 – 7.40	< 7.0 and > 7.4
Free Chlorine Residual	>0.5 mg/l to 2.0 mg/l	< 0.5 and > 2.0 mg/l
Ammonia-Nitrogen	<0.5 mg/l as NH ₃	>2.0 mg/l as NH ₃
Total Phosphorus	<1.0 mg/l as PO ₄	>3.0 mg/l as PO ₄
Carbonaceous Biological Oxygen Demand	Permit Limit	Permit Limit
Fecal Coliform	Permit Limit	Permit Limit

Fecal coliform will have minimum limits in accordance with North Carolina reclaimed water standards (currently 14 FCU/100 mL monthly average and 25 FCU/100 mL daily maximum).

B. Monitoring and Reporting

1. OWASA shall develop and implement a Reclaimed Water System water quality monitoring program that meets all applicable regulatory requirements and that also provides timely and accurate information needed for system operation, maintenance, and quality assurance and control. OWASA will monitor the quality of Reclaimed Water produced at the Mason Farm Wastewater Treatment Plant, and in representative locations in the Reclaimed Water System.

OWASA shall:

- (i) install and maintain continuous monitoring and recording devices as specified below;
- (ii) maintain all monitoring records required by the applicable regulatory agencies;
- (iii) prepare and submit any reports and notices required by said agencies, and provide the UNIVERSITY with copies of said reports or notices; and
- (iv) advise the UNIVERSITY of any unusual results or water quality conditions as soon as practical following the discovery of such results or conditions.

2. Monitoring Parameters and Frequencies

To ensure compliance with UNIVERSITY Standards, OWASA agrees to perform all of the following routine monitoring. In addition, OWASA agrees to install the identified online process monitoring analytical instruments to insure water quality remains within the designated acceptable ranges at all times. Provision shall be made to telemeter (via telephone, radio, or web based) all monitoring data and information (real-time) to the UNIVERSITY and integrate into its existing Chilled Water SCADAs system via new Reclaimed Water input/monitoring screens. All of the following parameters shall be monitored in accordance with the designated methodology and/or frequency:

<u>Control Paramaters</u>	<u>Monitoring Frequency</u>
pH	Continuous recording analyzers (2) locations on OWASA site ⁽¹⁾
Free Chlorine Residual	Continuous recording analyzer at the OWASA plant site
Ammonia-Nitrogen	Continuous recording analyzer will be installed by OWASA for overall WWTP operations
Fecal Coliform	Weekly grab sample taken inside the Reclaimed Water storage tank prior to pump suction

Anions and Cations

Composite sampling will be performed on a monthly basis by OWASA staff; however, analysis will be done by University's contractor; two (2) ½-liter bottles

(1) Two independent pH probes installed downstream of the acid injection point and in-pipe mixer. Probe #1 is used for automatic adjustment of the acid feed rate.. The second probe will serve to deactivate acid feed pumps and send a Low pH alarm in the event the pH drops to 0.5 SU below the minimum setpoint or send a High pH alarm in the event pH increases to 0.5 SU above maximum setpoint.

C. Billing for Reclaimed Water Services

OWASA shall provide the UNIVERSITY with periodic itemized statements of the applicable charges for Reclaimed Water service provided during the proceeding reading period. Statements will be issued on a monthly basis, or on a less frequent basis as determined appropriate by OWASA. Within twenty-one (21) days of the receipt of said statement, the UNIVERSITY shall pay to OWASA their respective applicable charges for the provision of Reclaimed Water service. The amount of Reclaimed Water delivered shall be determined by OWASA based on the actual measurements recorded by the Reclaimed Water meter. In the event an actual measurement is unavailable, OWASA shall estimate the amount of Reclaimed Water used; provided that said estimate is developed in a manner consistent with the practice OWASA uses to make estimates of potable water use.

D. Communications and Emergency Response Plan

OWASA and the UNIVERSITY shall prepare and implement a Reclaimed Water System communications and emergency response plan that includes contact information and clearly defines each party's respective roles and responsibilities in communications and emergency response.

E. Public Information, Education, and Training

OWASA and the UNIVERSITY shall develop, implement, and maintain a comprehensive Reclaimed Water System public education and training program. The program shall be designed to inform, educate and train the various agencies, businesses, contractors, and individuals that may use, come into contact with, or install systems associated with the distribution and use of Reclaimed Water. Training sessions shall include education on lawful uses of Reclaimed Water, policies and regulations governing the operation and maintenance of the Reclaimed Water System and the UNIVERSITY's Onsite Use Systems, and emergency notification procedures in the event of breaks, leaks, spills, and cross-connections.

Target audiences shall include, but shall not be limited to, the following:

- (i) OWASA staff;
- (ii) UNIVERSITY staff;
- (iii) Residential, commercial, and institutional Reclaimed Water Customers;

- (iv) Plumbing contractors;
- (v) Landscaping and lawn care companies;
- (vi) Irrigation system installers, operators, and support service providers;
- (vii) Tank truck drivers; and
- (viii) Construction companies and contractors.

All Reclaimed Water System valves, storage facilities, and outlets shall be specially color coded, tagged or labeled to inform the public or employees that the water is not intended for drinking. Where appropriate, such warning shall inform the public or employee to avoid contact with the Reclaimed Water. Permanent notification shall be posted at all facilities that use Reclaimed Water, advising the public and employees that the Reclaimed Water is not intended for drinking.

F. Notices of Reclaimed Water Spills, Leaks, or Discharges

The UNIVERSITY shall, as soon as possible, notify OWASA by telephone and in writing of any Reclaimed Water use not authorized by this Contract, including, but not limited to, spills, leaks, discharges, or releases of a material volume. Telephone and written notices must be provided in the manner and within the timeframe specified by the applicable regulatory agencies. At a minimum, telephone notice shall be given as soon as possible after any unauthorized use, and written notice shall be given within 5 working days of any unauthorized use. Written notice shall be provided using the form provided as Attachment #1, as may be amended from time to time by OWASA.

The UNIVERSITY shall, as soon as possible, notify both OWASA and the North Carolina Division of Water Quality by telephone and in writing of any spills, leaks, discharges, or releases of Reclaimed Water into or adjacent to the waters of the State. Telephone notice shall be given as soon as possible after any spills, leaks, discharges, or releases, intended or unintended. Written notice shall be given within 5 working days of any spills, leaks, discharges, or releases, intended or unintended, and on the form provided as Attachment #1, as may be amended from time to time by OWASA.

G. Reclaimed Water Service Connections for New and Existing Buildings

For new Reclaimed Water connections, Reclaimed Water meters will be located outside the building unless otherwise approved by the Executive Director of OWASA. For buildings that existed prior to the date of this Contract, the Executive Director may allow the UNIVERSITY to locate the Reclaimed Water meter inside the building subject to certain conditions, including but not limited to:

- (i) the meters and other devices must be of standard make and type approved by OWASA for which replacement parts and service are reasonably available;
- (ii) the meter must be installed in accordance with OWASA's standards and specifications;
- (iii) OWASA and its personnel must be assured access to the meter for monitoring, testing, repair, and replacement;
- (iv) the UNIVERSITY must provide written assurance that OWASA will not be in any way responsible or liable for any damage associated with the malfunctioning of the Reclaimed Water service line or Reclaimed Water meter inside the building.

APPROVED BY:

Executive Director
Orange Water and Sewer Authority

Date

Associate Vice-Chancellor for Campus Services
University of North Carolina at Chapel Hill

Date

ATTACHMENT #1

RECYCLED WATER USER NOTIFICATION OF UNAUTHORIZED USE

Facility Information

User/Facility Name: _____

Facility Contact Name: _____ Telephone: _____

Approved Use(s): _____

Summary of Unauthorized Use

Description of Unauthorized Use or Noncompliance (include a sketch showing location and discharge point and flow route): _____

Estimated Volume of Reclaimed Water Involved: _____ gallons

Discharge of Reclaimed Water did did not occur into or adjacent to waters of the State.
If applicable, provide name of water body: _____

Cause of Noncompliance: _____

Duration: Start Date: _____ Time: _____

End Date: _____ Time: _____

Potential Hazards to Human Health or the Environment: _____

Actions Taken

Any Monitoring Data Collected? Yes No (if Yes, please attach any monitoring data collected for this occurrence)

Actions Taken to Mitigate Adverse Effects: _____

Actions Taken to Correct and Prevent Recurrence of the Problem: _____

Verification Information

Report Submitted By: _____ / _____
(Name) (Title)

Date Reported: _____ Signature: _____

Mail to: OWASA, Reclaimed Water Services, P.O. Box 366, Carrboro, NC 27510-0366

EXHIBIT C
PHASE 1
TABLE OF PROJECTED WATER DEMANDS BY FACILITY

Facility Name	Initial Year Projected Demand			2018 Projected Demand		
	Annual Average Daily Demand (MGD)	Peak Day Demand (MGD)	Peak Hour Demand (GPM)	Annual Average Daily Demand (MGD)	Peak Day Demand (MGD)	Peak Hour Demand (GPM)
UNC Campus						
East Chiller	0.034	0.118	82	0.090	0.275	190
South Chiller	0.250	0.874	606	0.368	0.874	606
Thermal Energy Storage Chiller	0.079	0.276	191	0.116	0.276	191
North Chiller	0.167	0.584	405	0.252	0.627	435
Northeast Chiller (2011)	0.000	0.000	0	0.194	0.459	319
Combined Annual Average UNC Demand (MGD)	0.530			1.020		
Diversified Peak Day UNC Demand (MGD)		1.588			2.500	
Diversified Peak UNC Demand (GPM)			1,102			1,736
UNC-HOSPITAL						
UNC-Hospital Chiller Facility #1	0.062	0.147	280	0.113	0.280	280
UNC-Hospital Chiller Facility #2	0.068	0.188	147	0.075	0.199	147
Combined Annual Average Hospital Demand (MGD)	0.130			0.188		
Diversified Peak Day Hospital Demand (MGD)		0.335			0.479	
Diversified Peak Hospital Demand (GPM)			427			427
Total Phase 1 Projected Diversified Demands						
	0.660	1.923	1,529	1.208	2.979	2,163

EXHIBIT D
COST OF SERVICE COMPONENTS FOR RATE DETERMINATION

Major Cost Category	OWASA Cost Components	General Methodology/Approach	Fixed or Variable Cost
Capital	Debt and Up-Front Cash-Financing for Initial System Development – Net of Grant Funding Received	Not Applicable if UNC pays for upfront capital or if OWASA capital costs are paid with or are to be reimbursed with grant funding. Otherwise, based on (a) debt service payment required to cover any system development costs debt-financed by OWASA at 1.0 coverage and (b) amortization of OWASA cash-financing for system development costs such as engineering and design over a twenty-five year period at 1.0 coverage at the same interest rate applicable to debt service payment in (a) or the prevailing market rate if all system development costs incurred by OWASA are cash-financed.	Fixed
Operations And Maintenance	Variable Operating Costs: Energy Hypochlorite Acid Allocated Operating Costs: Laboratory Pump Station Maintenance On-line Monitors Pipeline Maintenance WWTP Operators	UNC reclaimed water avg day demand in gal.*TDH of system*0.746*OWASA total cost of power per kWh for pumping*24*365/(1440*3960*0.8*0.93) mg/l dose*8.34*UNC reclaimed water avg day demand in million gal* (1/1.002)*365*unit cost of chemicals in million gal. Unit cost of chemicals per million gallons*UNC reclaimed water avg day demand in million gallons * 365 In-house laboratory staff time as well as sampling and analytical cost services In-house staff time and contract labor Annual replacement cost, maintenance, and in-house staff time Water Distribution department cost*(Length of reclaimed water pipe/Length of potable water, and reclaimed water pipe) In-house staff time	Variable Variable Variable Fixed Fixed Fixed Fixed Fixed
General and Administrative	General System Management Office of the Executive Director Customer Service Engineering and Planning Human Resources Finance and Accounting Purchasing Business Information	Total Department Cost*(Weighted average percentage of General and Administrative cost components other than Office of the Executive Director water, and sewer costs excluding capital) Total Department Cost*(Total number of reclaimed water meters/Total number of OWASA water and reclaimed water meters) Total Department Cost*(Department in-house staff time for reclaimed water/Total department in-house staff time) Total Department Cost*(Full time equivalents allocated to reclaimed water/Total OWASA utility staff-time equivalents) Total Department Costs*(Reclaimed water revenues/Total OWASA water, sewer, and reclaimed water revenues) Total Department Costs*(Total reclaimed water operations and maintenance costs/Total OWASA water, sewer, and reclaimed water operations and maintenance costs) Total Department Costs*(Full-time equivalents allocated to reclaimed water/Total OWASA utility staff time equivalents)	Fixed Fixed Fixed Fixed Fixed Fixed
Other	Debt Service Coverage Rehabilitation & Replacement Fund Contingency Fund	Debt service coverage required in bond covenant/loan agreement, applicable only if OWASA incurs debt for reclaimed water capital costs that are not reimbursed or will not be reimbursed in the future with grant funding 0.50% of total cumulative capital investment in reclaimed water system by UNC and OWASA 5.0% of annual reclaimed water operations and maintenance costs	Fixed Fixed Fixed
		TOTAL OF ALL OWASA COST COMPONENTS FOR RECLAIMED WATER:	Reclaimed Water Rate

Exhibit E

TECHNICAL MEMORANDUM MC-4

Revision 2

TO: UNC at Chapel Hill Reclaimed Water Project Team

FROM: Kevin Eberle, PE, McKim & Creed

DATE: October 4, 2005 (Original Issue)
December 13, 2005 (Revision 1)
December 16, 2005 (Revision 2)

SUBJECT: Reclaimed Water Transmission and Distribution System
Interim Acceptance Testing Requirements
For Reclaimed Water Infrastructure Under Construction Prior to March
2008

Background

UNC and OWASA are working cooperatively to construct a reclaimed water system consisting of treatment, storage, pumping, transmission and distribution piping to serve a variety of industrial cooling demands on the UNC Chapel Hill campus. After signing a letter of intent with OWASA, UNC began looking for opportunities to couple reclaimed water transmission line construction to on-going utility construction projects throughout the campus. This had the benefit of reducing capital cost, minimizing the impact to the traveling public, and expediting construction. With these benefits in mind, UNC coupled construction of approximately 4,400 lf of 16" and 24" reclaimed water transmission main with the on-going Manning Drive Steam Plant and Utility Distribution Tunnel. This work has now been completed and certain sections have been flushed (using 2" blow-offs), filled, and pressure-tested. The remaining sections are currently being prepared for flushing, testing and acceptance from the Contractor.

Although these reclaimed water line segments are completed, final completion of the rest of the system is not projected until March 2008. Therefore, final flushing (to obtain scouring velocities), pressure and acceptance testing of the entire system cannot be completed until that time. In the meantime, UNC initiated discussions with OWASA with the intention of coming to a consensus as to an interim protocol for integrity testing, flushing standards, and interim acceptance by UNC for isolated pipe segments that are completed in advance of the main reclaimed water system.

Current AWWA, State NCDENR and OWASA water line standards and specifications were reviewed during a joint meeting between UNC and OWASA staff on September 26, 2005. A summary of pertinent information is tabulated in Table 1.

Both parties understand the importance of verifying and maintaining the initial integrity and cleanliness of the new Reclaimed Water Line segments (RWL). However, it was agreed that proper flushing of large diameter, isolated pipe segments was not practical for the following reasons:

1. A source of flush water is not currently available at the rate and volume required to achieve AWWA recommended flushing velocities.
2. The size and number of pipeline blow-offs on the recently completed pipeline segments are insufficient to obtain AWWA recommended flushing velocities.
3. Even if items #1 above can be overcome, then disposal of flush water would present a significant impediment regarding shear volume, flowrate and water quality.

As a result of initial discussions, UNC and OWASA established the following interim guidelines for integrity testing, pipeline cleanliness, and acceptance testing for isolated RWL segments completed in advance of the main reclaimed water transmission system.

Interim Pipeline Cleanliness Verification

1. UNC shall stress the importance of keeping new reclaimed water lines clean and free of debris with their contractors during construction activities. Such precautions as using temporary caps on linework during construction activities to prevent contamination of debris and soil shall be standard protocol.
2. Completed reclaimed water pipeline sections shall be visually inspected for cleanliness using in-situ pipe cameras, lamp or mirror testing, or by monitoring the discharge from 2" blow-offs during filling for evidence of silt/mud, debris, or other contaminants. The contractor shall be required to collect samples from the pipeline during filling and shall perform turbidity testing to confirm pipeline cleanliness.

***OWASA ENGINEERING STAFF COMMENT: WE DO NOT KNOW HOW THIS WOULD BE ACCOMPLISHED. UNLIKE A SEWER MAIN, ACCESS WOULD BE DIFFICULT. ALSO, DEFLECTIONS COULD BE A PROBLEM. LAMP AND MIRROR MAY NOT BE POSSIBLE. ***

3. All RWL segments shall be chlorinated to achieve a minimum total residual chlorine concentration of not less than 5 ppm. The contractor shall be required to maintain the total residual chlorine concentration at or above 2 ppm for 30 minutes. At the end of the chlorination period, the contractor shall collect two samples for bacteriological testing. Fecal counts shall be no greater than the concentrations required under the current OWASA potable water standards.

Interim Pipeline Integrity Testing

1. After filling and flushing to remove entrained air, pipeline segments shall be pressure tested at a pressure of 150% of design working pressure, but no less than 200 psi for two hours. Maximum allowable leakage shall be per AWWA standards.

Temporary System Integrity Monitoring Prior to Final Ownership Transfer

1. Due to the extensive amount of construction that is on-going on the UNC campus, UNC will require construction contractors to leave the new pipeline segments full of water and under pressure (100 psi minimum pressure). Each contractor shall install temporary piping and pressure gages as necessary to allow UNC staff to periodically monitor system pressure and to periodically boost system pressure. This interim integrity monitoring system will allow UNC to accurately and timely locate pipe failures which may occur from adjacent construction activities.

Pipeline Acceptance, Integrity, and Cleanliness Testing to be Completed at Time of Ownership Transfer

1. OWASA's construction contractor responsible for construction of the reclaimed water transmission mains onto the UNC Campus shall be responsible for performing all required integrity, cleanliness and water quality testing on the transmission mains installed under their contract. In addition, prior to making connections to line segments installed by others under previous contracts with UNC or OWASA, the contractor shall verify the integrity of the previously constructed pipeline segments (confirmed via pressure testing) prior to connection to the new system.
2. The entire reclaimed water system (including the new transmission main and all previously constructed distribution pipe segments) shall then be filled with chlorinated reclaimed water.
3. The entire reclaimed water transmission and distribution system shall then be back-flushed from the UNC campus to the OWASA Mason Farm Wastewater Treatment Facility. The flush water shall either be collected in the new reclaimed water storage tank (for return to the head of the plant for biological treatment prior to discharge) or discharged directly to Morgan Creek (if water quality satisfies minimum NPDES permit requirements).
4. This flushing protocol shall be repeated as necessary until OWASA is satisfied contaminants have been adequately flushed from the new pipeline.
5. Following flushing, the reclaimed water system shall be filled with chlorinated reclaimed water for pressure testing. To facilitate removal of trapped air, it is likely that flushing will be required throughout the distribution system using blow-offs with drainage directed to the sanitary sewer.
6. The entire system shall be pressurized per AWWA standard specifications (150% of the design operating pressure or 200 psi minimum for two hours).
7. Following acceptable acceptance testing, the system shall be deemed fully operational and put into operation after completion of required startup testing.

Reclaimed Water Meter Locations

OWASA agreed that retrofitted, existing chillers (i.e. North, South, and East Chillers) may have the new reclaimed water meters located inside the physical plant with the following conditions:

1. An isolation valve shall be installed on the service connection line outside the building and in a location fully accessible by OWASA personnel. This valve shall be the boundary between OWASA and UNC for the purpose of designating ownership, maintenance and repair responsibilities. The valve shall be located at, or as close as possible, to the tap connection to the Reclaimed Water main.
2. UNC shall provide OWASA with legal access to the meter inspection and maintenance purposes, and shall provide a remote read-out device mounted on the face of the building in a location and of a model suitable to OWASA for reading of the meter.
3. Even though the meters are to be located within the UNC chiller buildings, OWASA shall maintain ownership of the meter and shall periodically calibrate the meters to insure accuracy and fairness in reporting.

External reclaimed water meters in vaults shall be incorporated into the design of any new or future chiller facilities on the UNC campus as well as part of all other reclaimed water using facility designs.

Table 1
Comparison of Potable Water Transmission and Distribution Piping Testing Requirements

Parameter	NCDENR Public Water Supply	OWASA	AWWA
Filling	No Standard	Fill at rate 1 fps while necessary measures are taken to remove air for the lines.	Fill at rate to expel air in the pipeline. Provide adequate air removal devices.
Pressure Testing	Per AWWA Standards	To be witnessed by OWASA Authorized Representative. Test at a pressure of 150% of design working pressure, but no less than 200 psi for two hours. Maximum allowable leakage per OWASA Table 6A.	Test at a pressure of 150% of design working pressure, but no less than 200 psi for two hours. Maximum allowable leakage same as OWASA Table 6A.
Flushing	No Standard	After system has been filled for a minimum of 24 hours, begin flushing at a velocity of not less than 2.5 fps to remove sediment. All flushing shall be completed though adequately sized blow offs per OWASA Standards (minimum 6" for line size 16" or larger). A minimum of two complete pipeline volumes is required. Dechlorination and disposal per NCDENR requirements.	After system has been filled for a minimum of 24 hours, begin flushing at a velocity of not less than 2.5 fps to remove sediment. All flushing shall be completed though adequately sized blow offs. A minimum of two complete pipeline volumes is required. Dechlorination and disposal as required by State or Local requirements.

*** OWASA ENGINEERING STAFF COMMENT: Flushing velocity to remove sediment and debris would be 2.5 fps normally if the intent was to "flush" the pipe to make sure it was clean before sampling. The interim measures being followed are an attempt to keep from having to flush the lines at 2.5 fps at the time purity samples are taken. Scouring velocity may not be needed if "clean" installation techniques have been followed. ***

**RESOLUTION RECLASSIFYING THE VACANT ADMINISTRATIVE ASSISTANT
POSITION TO THE NEW POSITION OF UTILITY MANAGER GENERALIST**

WHEREAS, the Executive Director has determined that the currently vacant Administrative Assistant position is no longer needed; and

WHEREAS, the Executive Director has determined there is short- and long-term need for additional senior management level assistance throughout the organization to ensure staffing needs are met; and

WHEREAS, the Executive Director recommends that the vacant Administrative Assistant position be reclassified to the new position of Utility Manager Generalist;

NOW, THEREFORE, BE IT RESOLVED:

1. That the Board of Directors of the Orange Water and Sewer Authority approves the reclassification of the vacant Administrative Assistant position to the new position of Utility Manager Generalist Grade 31 (\$56,542–\$81,986).
2. That this reclassification shall become effective upon adoption of this resolution.
3. That the Schedule of Employee Classification and Authorized Compensation adopted on June 9, 2005 be amended to reflect this new job classification.
4. That the Executive Director is authorized to establish a detailed job description for this new position.

Adopted this 23rd day of March, 2006.

**RESOLUTION TO AMEND THE OWASA PERSONNEL POLICY TO INCLUDE
EARLY HIRES FOR TRAINING AND KNOWLEDGE TRANSFER**

WHEREAS, the Orange Water and Sewer Authority (OWASA) desires to have very high service quality; and

WHEREAS, early hiring in anticipation of an expected retirement or resignation will capitalize on the knowledge and skills of employees in key positions;

NOW, THEREFORE, BE IT RESOLVED:

1. That the OWASA Board of Directors amends the OWASA Personnel Policy to include a section on Early Hires for Training and Knowledge Transfer as shown in Attachment A.
2. That the said policy is effective upon adoption of this resolution.

Adopted this 23rd day of March, 2006.

SECTION 10. POSITION CLASSIFICATION PLAN

G. Early Hires for Training and Knowledge Transfer

When an incumbent employee in a key position has given written notice of plans to retire or resign, the Authority's service objectives may be best met if a new employee is hired for training and knowledge transfer purposes before the incumbent leaves.

The Executive Director is authorized to immediately recruit, select, and hire a new employee under these circumstances. The Executive Director is authorized to determine when and for what period of time (not to exceed 12 months) the Early Hire may occur. The Executive Director will give the Board of Directors advance notice when he/she elects to make an Early Hire under this policy.