Water, Wastewater & Stormwater Systems

CAROLINA NORTH

The UNIVERSITY *of* NORTH CAROLINA *at* CHAPEL HILL

Water, Wastewater, Stormwater Draft Goals and Metrics

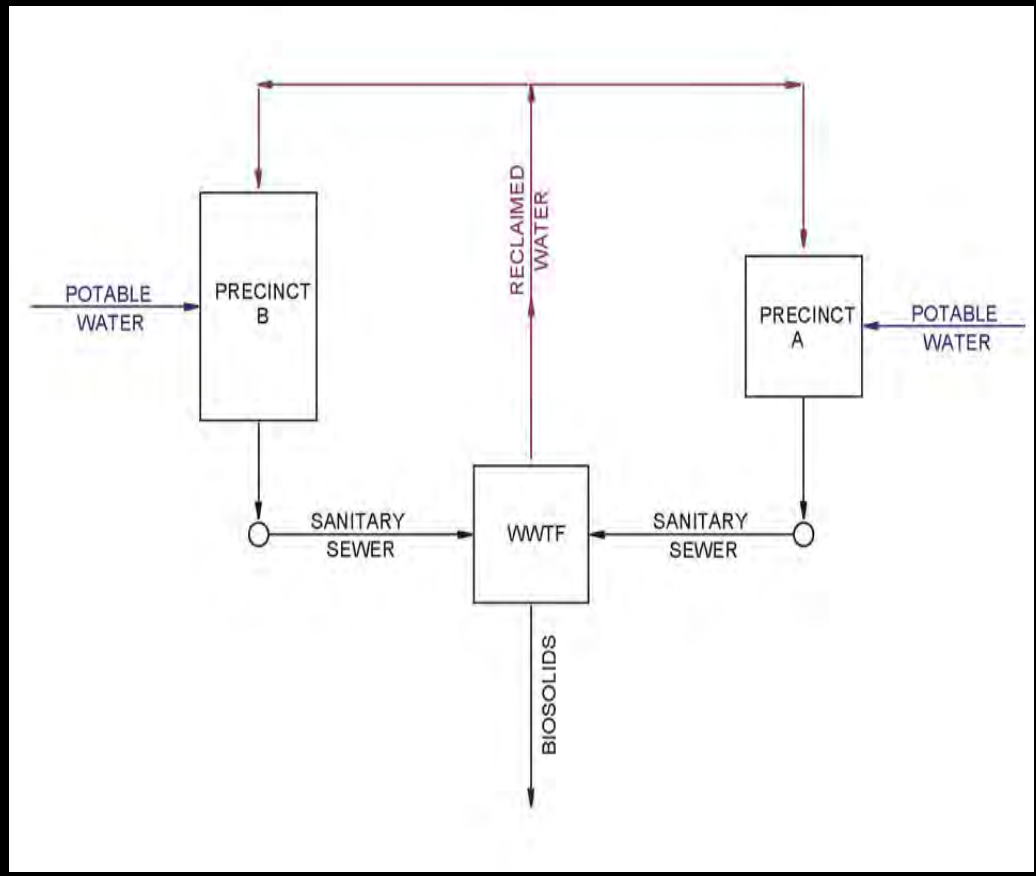
- Implement potable water conservation strategies
  - Possible metrics
    - Use potable water only when intended for direct human contact
    - Utilize water conserving building plumbing fixtures in all buildings

Water, Wastewater, Stormwater Draft Goals and Metrics

- Consider alternate and/or supplemental sources for potable water
  - Possible metrics
    - 100% of roof runoff shall be collected and treated to drinking water standards to supplement the potable water supply
    - Evaluate the groundwater conditions in each phase of development and use groundwater as a supplemental source of potable water when practical and safe

Water, Wastewater, Stormwater Draft Goals and Metrics

- Separate potable water and reclaimed water infrastructure
  - Possible metrics
    - Building and site piping networks shall be separated into potable water and reclaimed water piping systems



Water, Wastewater, Stormwater Draft Goals and Metrics

- Reclaim and re-use stormwater and wastewater
  - Possible metrics
    - 100% of stormwater shall be collected for re-use
    - 100% of wastewater shall be collected for re-use
    - 100% of biosolids from wastewater shall be collected for re-use on or off site
    - 100% of gray water shall be separated from waste water for re-use

Water, Wastewater, Stormwater Draft Goals and Metrics

- Maintain flexibility to treat wastewater on site
  - Possible metrics
    - 100% of wastewater shall be treated on site

Water, Wastewater, Stormwater Draft Goals and Metrics

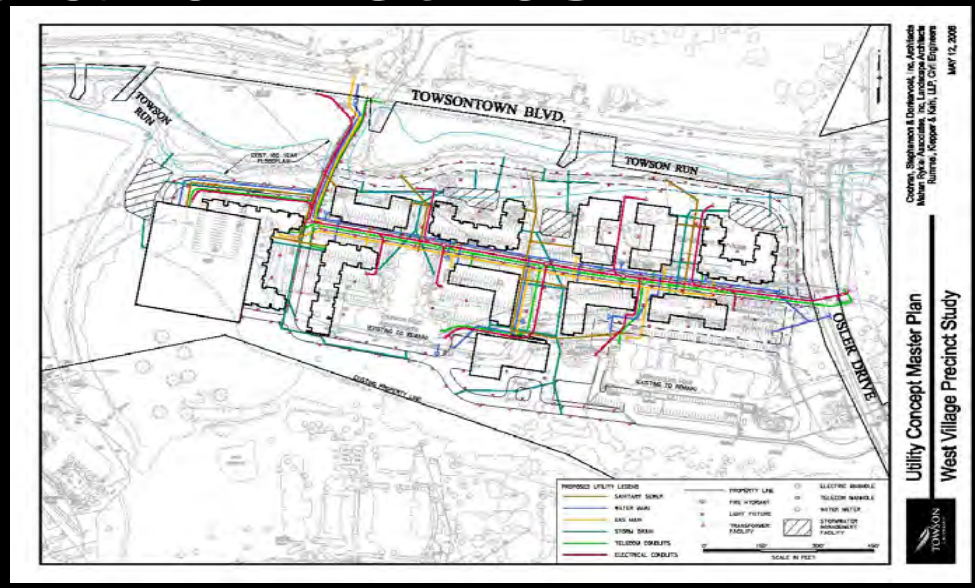
- Integrate research opportunities with innovative technologies while addressing regulatory requirements
  - Possible metrics
    - Prepare a code analysis prior to implementation of innovative technologies and provide accepted research documenting viability of innovative technologies

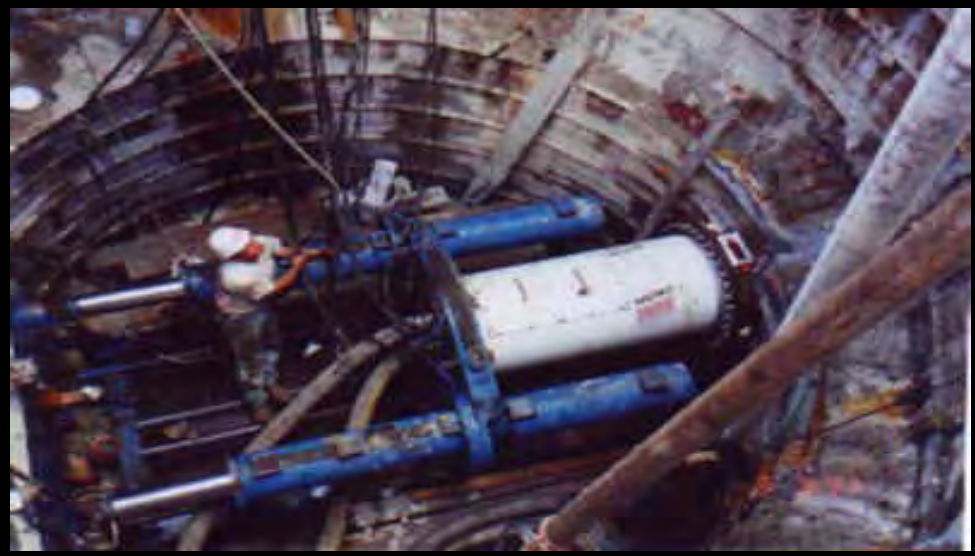
Water, Wastewater, Stormwater Draft Goals and Metrics

- Stormwater systems shall replicate natural hydrology within disturbed and undisturbed areas
  - Possible metrics
    - Manage runoff from the built environment close to its source
    - Provide water quality treatment for all impervious areas
    - Collect and re-use the runoff from impervious areas
    - Reduce impervious surfaces by X% compared to existing conditions within each phase of development
    - Reduce rate and volume of stormwater from proposed development to X% of pre-development levels in 2 and 10 year storm events
    - At a minimum, meet the stormwater management criteria of the Town of Chapel Hill for new development. In addition, treatment strategies shall be capable of limiting nitrogen export to 4.8 lb/acre/yr and phosphorus export to 0.8 lb/acre/year in accordance with the Jordan Lake Watershed Draft Criteria established by the North Carolina State Environmental Management Commission

Water, Wastewater, Stormwater Draft Goals and Metrics

- Implement utility corridors and trenchless technologies to limit land disturbance
  - Possible metrics
    - Utility mains, distribution lines and services shall be within centralized utility corridors and/or shall utilize trenchless technology systems for installation and repair





Water, Wastewater, Stormwater Draft Goals and Metrics

- Maintain Flexibility and Adaptability while Utilizing Proven Innovative Systems
  - Possible metrics
    - Innovative systems shall have a proven track record of success in at least X similar applications
    - All systems shall be designed for expansion and/or adaptability for future phases of development

Water, Wastewater, Stormwater Draft Goals and Metrics

- Develop standardization of innovative systems for each phase of development
  - Possible metrics
    - After evaluation of the innovative systems that may be applicable to each phase of development, select no more than X innovative technologies for each system

Water, Wastewater, Stormwater Draft Goals and Metrics

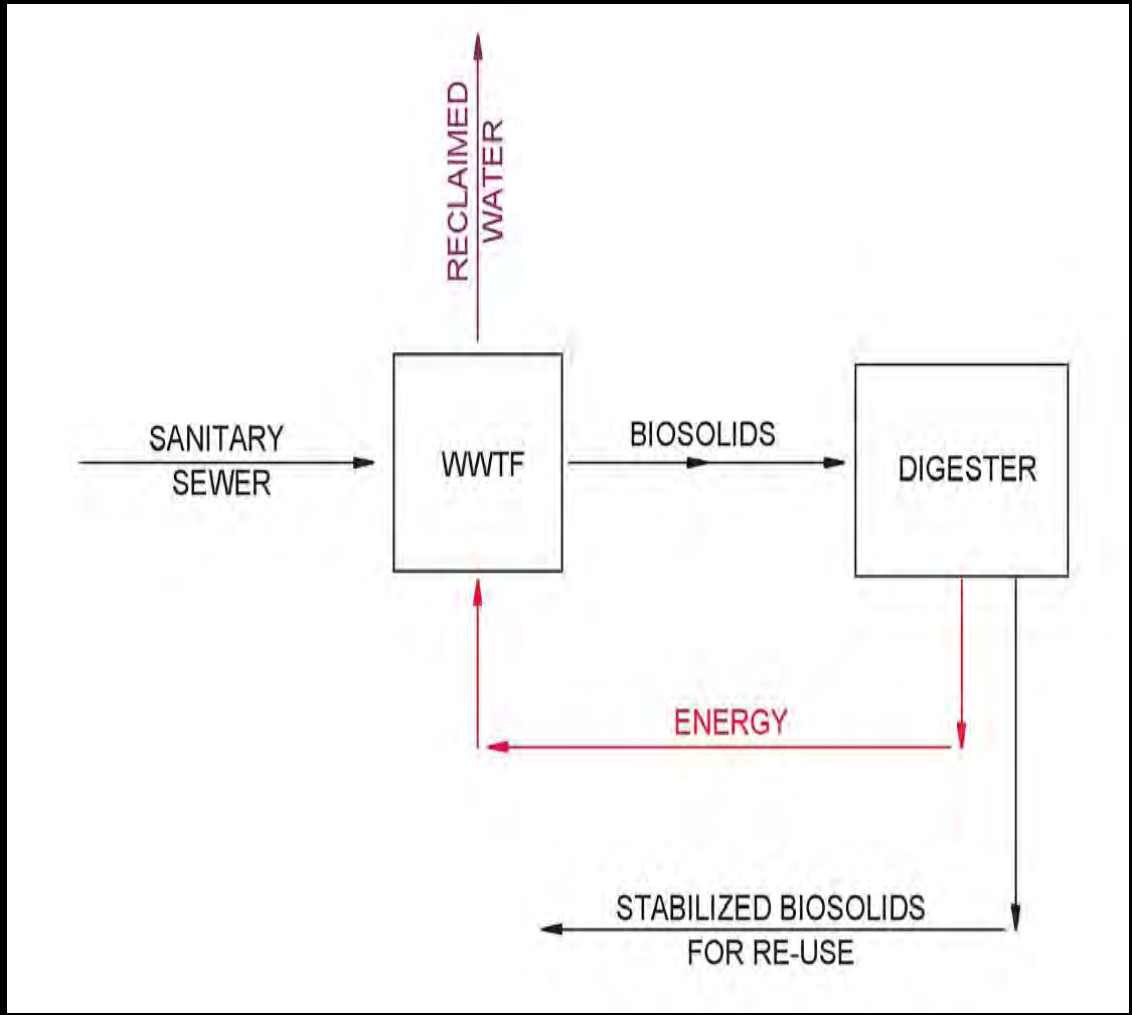
- Develop Operations & Maintenance strategies for all innovative systems
  - Possible metrics
    - Each innovative technology selected for the utility systems shall have an operations and maintenance manual jointly prepared by the professional engineer of record and the manufacturer

Water, Wastewater, Stormwater Draft Goals and Metrics

- Integration of design, operation, maintenance and intended use of spaces
  - Possible metrics
    - Execute a Memorandum of Agreement to be signed by the design consultant(s), owner(s) and user(s) establishing the accepted use, operation and maintenance of the facility

Water, Wastewater, Stormwater Draft Goals and Metrics

- Consider energy efficiency of on-site systems
  - Possible metrics
    - Evaluate the energy efficiency of the on-site systems and provide a means to collect and re-use waste by-products from the systems



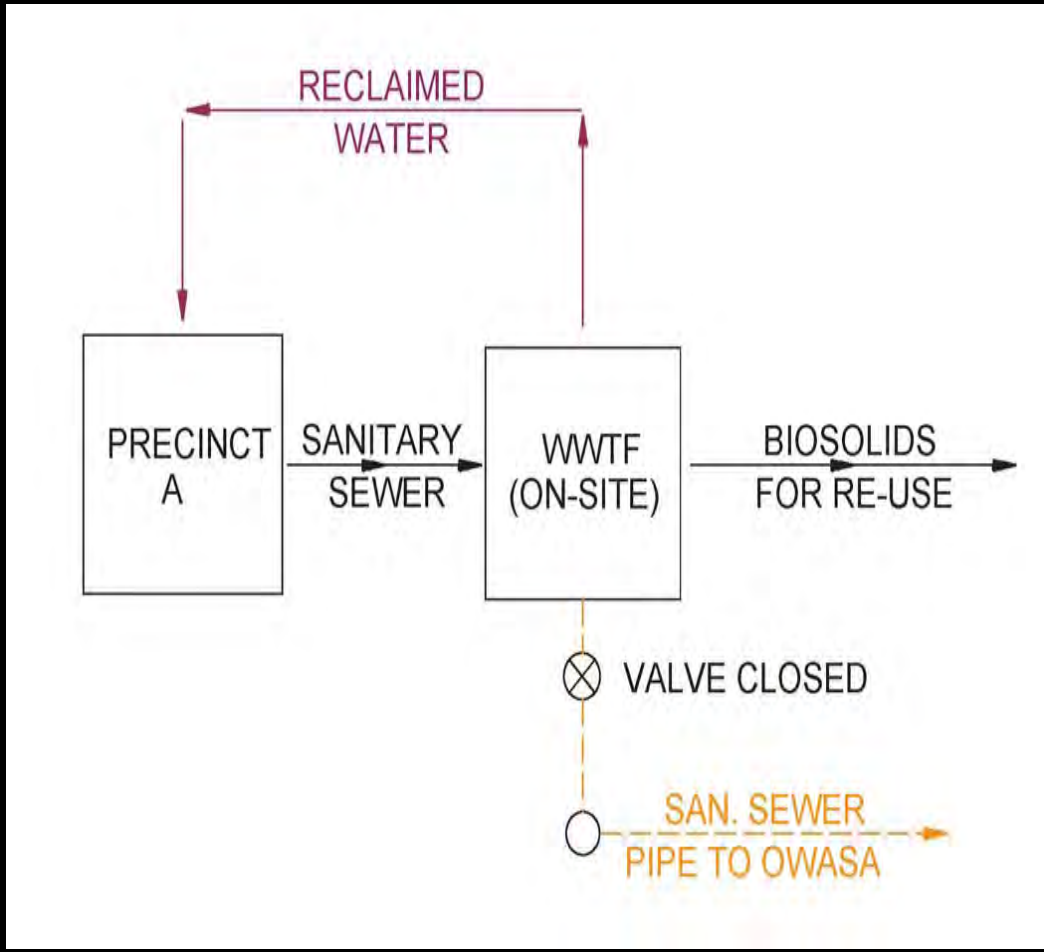
Water, Wastewater, Stormwater Draft Goals and Metrics

- Explore means to develop innovative mechanisms to fund innovative systems
  - Possible metrics
    - Develop a funding strategy for implementation of innovative systems in each phase of development

http://www.greencampus.harvard.edu/gclf/

Water, Wastewater, Stormwater Draft Goals and Metrics

- Develop redundancy / backup for innovative systems
  - Possible metrics
    - Evaluate the need for redundancy in each of the innovative technologies and develop a strategy for implementation of back-up procedures for each system



Water, Wastewater, Stormwater Draft Goals and Metrics

- Implement strategy for reduction and re-use of solid waste
  - Possible metrics
    - Solid waste shall be collected on-site and re-used or removed from the site in accordance with an established recycling program