
FAU TREASURE COAST MASTER PLAN

STORM WATER MANAGEMENT SUB-ELEMENT

Goal 1

To provide adequate stormwater management facilities and services to meet the present and future needs of the University and to protect the public and property.

Objective 1A

Obtain and maintain GIS (Geographic Information System) format, accurate records of the stormwater facilities.

Policy 1A-1

Engineering surveys shall be provided to obtain detailed data for implementation of accurate records, and to identify condition of the facilities.

Policy 1A-2

Maintain, update and keep current, an accurate GIS format of stormwater facilities.

Objective 1B

Comply with regulatory agencies. Establish current permit with SFWMD and NPCID.

Policy 1B-1

FAU shall obtain a current Environmental Resource Permit (ERP) from the South Florida Water Management District.

Policy 1B-2

Determine policy from the South Florida Water Management District for stormwater management for future development; comply with requirements of SFWMD.

Policy 1B-3

Determine and comply with the requirements and restrictions for development in flood areas as designated by FEMA and/or SFWMD; evaluate impact of flood area development.

Objective 1C

Properly maintain the stormwater management facilities.

Policy 1C-1

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An inspection, cleaning, maintenance and repair program for all facilities shall be developed and implemented. The maintenance program shall be implemented on a continuing, regularly scheduled basis with major repairs prioritized and scheduled based on funding.

Objective 1D

Expand, revise and supplement the existing stormwater management system to support expansion and new facilities.

Policy 1D-1

Facility planning and expansion must consider requirements for adequate stormwater management.

Policy 1D-2

A master stormwater management study compatible with and coordinated with facility planning shall be established by the end of 2001. This study shall address the data and analysis requirements contained in Rules 6C-21.2078(1) and (2), F.A.C., and shall also:

- Establish the priorities for the replacement, correcting stormwater management facility deficiencies and providing for future facility needs; and
- Establish the timing and phasing requirements and identify the projected funding sources for stormwater management facility improvements to meet future needs.

FAU shall amend the adopted campus master plan as needed to incorporate the results and recommendations contained in the stormwater management study.

Policy 1D-3

Optimize ground storage (percolation) as a method of stormwater management. Plan to maintain open areas suitable for ground storage.

Policy 1D-4

The following priorities are established for stormwater management facilities:

1. By the end of 2002, establish a plan and priority for funding drainage improvements required for new facility expansion. Monitor and amend plan as necessary.
2. Monitor existing facilities to insure that they are operating at optimum capacity;

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3. Insure that the water management tracts are maintained by the jurisdictional agencies responsible for same;
4. Construct new facilities to discharge to the south perimeter water management tract as phases of new construction occur;
5. Obtain a South Florida Water Management District Environmental Resource Permit (SFWMD ERP) for each new phase of development, in compliance with the approved SFWMD Conceptual Permit.

These priorities shall be reviewed periodically and revised as needed to reflect changing conditions. The adopted campus Master Plan shall be amended as needed to reflect changes in these.

Policy 1D-5

Annually review future construction programs and priorities for deficiency remediation as part of the capital improvements procedures of the BOR to ensure capacity and capital improvements required to meet future University needs are provided when needed, based on needs identified in other master plan elements.

Policy 1D-6

Stormwater management facilities shall be constructed with each phase of new construction; no new construction shall commence without accessory drainage facilities. Further, no new drainage facilities shall be constructed without first obtaining a SFWMD ERP for the development phase.

Objective 1E

Consider in all future planning for downstream improvements the protection of natural stormwater management and hydrological areas and protecting the quality of receiving waters. At properties where natural features still exist either on or near campus, protect these natural drainage and hydrological areas.

Policy 1E-1

Use environmentally-friendly designs, such as detention systems, ground storage (percolation), littoral treatment, metered-release devices, porous or vegetative liners, and minimize impervious surfaces, etc., as appropriate and as called for by state design guidelines, to protect natural stormwater management and hydrological areas from erosion and contamination and to mitigate impacts of campus generated stormwater.

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Policy 1E-2

It shall be the policy of the University that no stormwater discharges may cause or contribute to a violation of water quality standards in waters of the State.

Policy 1E-3

FAU shall continue to mitigate University-generated stormwater and minimize stormwater-borne pollutants through the implementation of a system of Best Management Practices (BMPs), which includes, but is not limited to:

1. Incorporating stormwater management retention and detention features into the design of parks, trails, commons, and open spaces, where such features do not detract from the recreational or aesthetic value of a site.
2. Use of slow release fertilizers and/or carefully managed fertilizer applications timed to ensure maximum root uptake and minimal surface water runoff or leaching to groundwater.
3. Educating maintenance personnel about the need to maintain motor vehicles to prevent the accumulation of grease, oil and other fluids on impervious surfaces, where they might be conveyed to surface and ground waters by runoff, and the need to regularly collect and dispose of yard debris.
4. Avoid the widespread application of broad spectrum pesticides by involving only purposeful and minimal application of pesticides, aimed at identified target species.
5. Coordinating pesticide application with irrigation practices to reduce runoff and leaching into groundwater.
6. Use of turf blocks to minimize impervious surface area.
7. Incorporating features into the design of fertilizer and pesticide storage, mixing and loading areas that are designed to prevent or minimize spillage.
8. Pursue licensing for grounds superintendents and staff to use restricted pesticides and to ensure that fertilizers will be selected and applied to minimize surface water runoff and leaching to ground water.

Policy 1E-4

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The FAU Office of Facilities Planning shall review all proposed construction and development on campus to ensure that any proposed increase in campus impervious surfaces shall be implemented only upon a finding that existing facility capacity is already on-line to accommodate the increased need, or that additional capacity will be funded and on-line at the time of need.

Objective 1F

Establish minimum, acceptable levels of service for stormwater management.

Policy 1F-1

FAU shall establish a level of service standard for stormwater management which complies with water quality and quantity standards of the Florida Administrative Code, Chapters 17-3 and 17-25 for stormwater management facilities.

Policy 1F-2

Stormwater management facilities shall be designed to meet the following:

- Allow no 100-year flood waters in buildings.
- Runoff from 100-year storm event in excess of facility capacity will be accommodated by overland flow.
- Underground pipes will be designed for a 10-year storm event.
- Open channels (ditches and tributary canals) will be designed for a 25-year storm event.
- Open channel capacity shall be adequate for all runoff from a 25-year storm event in excess of the underground pipes capacity.

Policy 1F-3

The University shall utilize ground storage (percolation) to the maximum extent possible.

Objective 1G

Coordinate the provision of increased facility capacity to meet future needs of the university.

Policy 1G-1

Each phase of development shall provide for additional stormwater facilities to "stand alone" and provide for discharge of individual phases directly to the water management tracts within the campus.

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Policy 1G-2

A "conceptual" phased development plan for the campus shall be permitted through South Florida Water Management District (SFWMD) during the initial (i.e., Phase 1) campus development, which will be the basis for future facility needs.

Policy 1G-3

Each phase of development, upon construction completion, shall be "released" from the SFWMD through a *Construction Certification*.

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POTABLE WATER SUB-ELEMENT

Goal 2

To provide adequate facilities and services for potable and fire water to support the mission of the University.

Objective 2A

Provide fire protection for the campus.

Policy 2A-1

The main distribution system and appurtenances shall be designed and implemented to provide adequate fire flow and coverage and to comply with requirements of local and state fire officials.

Policy 2A-2

New buildings will have fire sprinkler systems.

Policy 2A-3

Deadend mains shall be avoided within reason and commensurate with development.

Policy 2A-4

The campus distribution system shall have a minimum of two and preferably three connections to the off-site water distribution system.

Objective 2B

Plan phase implementation to coincide with and support campus expansion, minimize initial costs and provide adequate service.

Policy 2B-1

The initial distribution system shall begin at the existing on-site system connection and will be a deadend line for Phase 1.

Policy 2B-2

A looped campus system via a second connection toward Indian River Community College (IRCC) shall be implemented with Phase 2 of the campus expansion.

Policy 2B-3

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An additional distribution loop shall be implemented at Phase 3 connecting one dead line of Phase 1 with the loop connection to N.W. California Blvd.

Policy 2B-4

The initial water distribution system, Phase 1, shall be completed for the initial campus development. Future phases of the distribution system shall be completed for the campus 5 and 10 year development. Long-range distribution may be completed after 10 years of development.

Policy 2B-5

Future expansion and related water requirements shall be reviewed annually to determine adequacy of planned water facility improvements.

Objective 2C

Initiate and maintain adequate records of the water distribution facilities.

Policy 2C-1

An accurate and complete water atlas shall be prepared and maintained current.

Objective 2D

Utilize licensed, public utility companies for potable water supply and distribution.

Policy 2D-1

On-campus water mains, appurtenances and meters shall be owned and maintained by the public utility company, St. Lucie West Utilities' Water Department.

Policy 2D-2

The campus distribution system shall not be master metered; buildings or building clusters shall be metered.

Policy 2D-3

Easements shall be granted and access provided for maintenance by the St. Lucie West Utilities.

Policy 2D-4

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On-and off-site water mains and appurtenances shall be owned and maintained by St. Lucie West Utilities Water Department.

Policy 2D-5

An Agreement shall be executed between the University and the St. Lucie West Utilities for establishing rates, demands and responsibilities for maintenance, repair, expansion and service

Policy 2D-6

Maintain close liaison with the St. Lucie West Utilities on campus demands, problems and projected growth.

Policy 2D-7

Invoiced water quantities shall be monitored and checked against prior records and calculated demands to verify meter accuracy and to detect leaks in service laterals.

Objective 2E

Coordinate closely with the St. Lucie West Utilities Water Department on initial and projected future water demands of the campus.

Policy 2E-1

A procedure shall be established and responsibility assigned for regularly scheduled coordination meetings with appropriate utility company officials relative to the University's water needs.

Policy 2E-2

Future expansion programs shall be reviewed periodically and priorities established for deficiency remediation as part of the capital improvements procedures of the BOR.

Objective 2F

Protect and conserve potable water resources.

Policy 2F-1

Re-use water shall be utilized for irrigation.

Policy 2F-2

Building service lines shall have backflow preventors.

Policy 2F-3

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Water conservation awareness shall be emphasized; educational programs shall be implemented.

Policy 2F-4

Low volume plumbing fixtures shall be utilized throughout the campus.

Policy 2F-5

A leak detection and repair program on building service lines shall be implemented and maintained.

Policy 2F-6

Water consumption records shall be monitored to identify abnormal data.

Objective 2G

Determine water consumption per unit (FTE) for future planning.

Policy 2G-1

Monitoring and records of potable water consumption and campus population (FTE) shall be maintained.

Objective 2H

Establish minimum levels to be maintained for potable and fire flow water.

Policy 2H-1

Water quality must meet State and County Health Department and other regulatory agencies' requirements.

Policy 2H-2

Distribution system shall provide a minimum static pressure in all mains of 65 psi; a minimum residual pressure at building plumbing fixtures of 40 psi; a minimum fire flow of 2,000 gpm, with a minimum residual pressure of 35 psi.

Policy 2H-3

Water distribution facilities should be planned and designed at a minimum for the following unit capacities:

- Average daily use - 30 gpcd
- Peak daily rate - 80 gpcd

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(gpcd - gallons per FTE per day, FTE - Full Time Equivalent student)

These values should be checked periodically against records. As a new level of service is periodically determined, the adopted campus master plan will be amended as necessary to reflect the change.

Objective 2I

Provide potable water service to support future expansion and new programs.

Policy 2I-1

The campus Physical Plant Department shall coordinate closely with all departments, programs, activities and projections for impact on potable water demands.

Policy 2I-2

The campus Physical Plant Department shall provide cost data for expanded potable water service for University capital improvements planning.

See Potable Water Distribution Map, Figure 9.1.

The on-campus mains will be owned and operated by the St. Lucie West Utilities Water Department.

The initial connection for the campus distribution system is to the 8-inch off-campus main on N.W. University Blvd. and will supply the Phase 1 system. A second off-campus connection to the 12-inch main on N.W. California Blvd. will be implemented at the end of Phase 1, creating one looped system and extending service eastward. Future phases will create a second loop and extend service further northward.

All campus mains will be 8-inch diameter. Building service laterals will be sized with building design.

Major Elements (all lengths are approximate):

Phase 1	1000 Linear Feet 8-inch Main	3 Fire Hydrants
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SANITARY SEWER SUB-ELEMENT

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Goal 3

To provide adequate sanitary sewage facilities and services to support the mission of the University.

Objective 3A

Provide an adequate, low maintenance and economical gravity collection system on campus.

Policy 3A-1

Gravity lines shall be sized for peak discharge flowing full, except all mains 15-inches in diameter and over shall be sized for peak discharge flowing 1/2 full.

Policy 3A-2

Velocity in gravity lines shall not be less than 2 feet per second. Minimum allowable slopes shall be:

8-inch diameter	--	0.4%
10-inch diameter	--	0.275%
12-inch diameter	--	0.20%
15-inch diameter	--	0.15%

Policy 3A-3

Sewer lines shall not be located under buildings nor structures.

Policy 3A-4

Sewer lines shall not be connected to swimming pool drains, storm drains, roof drains, yard drains and other appurtenances that collect storm water.

Policy 3A-5

Adequate grease traps shall be provided on all applicable waste lines.

Policy 3A-6

Gravity sewer line design and construction shall comply with the requirements and criteria of St. Lucie West Utilities (SLWU), as a minimum.

Policy 3A-7

Facilities remote from the campus core, such as recreation areas and entrance gates, will be served by small satellite pump stations and force mains to the nearest gravity main.

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Objective 3B

Provide an efficient and adequate pump station and force main system to convey sewage to off-site mains.

Policy 3B-1

Pump station shall comply with the requirements and criteria of SLWU, as a minimum.

Policy 3B-2

Pump station shall have duplex pumps, each pump sized for peak flow. Pump cycles should not exceed 5 or 6 per hour. Equipment shall include alternators and flow recording devices.

Policy 3B-3

Connections for emergency by-pass pumping with auxiliary power shall be provided.

Objective 3C

Plan phase implementation to coincide with and support campus expansion, minimize initial cost and provide adequate service.

Policy 3C-1

Pump station shall be located to minimize initial cost of gravity lines and to prevent excessive length of force main.

Policy 3C-2

Implement gravity lines in phases to serve building expansion from south to north.

Policy 3C-3

Phase 1 of the sanitary sewer collection system shall consist of the pump station, force main, connection to the force main on Main Street and gravity lines to serve the initial development in the western portion of the campus.

Policy 3C-4

Phases 2, 3 and 4 of the sanitary sewer collection system will provide additional gravity collection lines and appurtenances in the campus core area as the campus expands eastward.

Policy 3C-5

Outlying areas remote from the campus core shall be served by University owned, small, satellite pump stations and force mains.

Policy 3C-6

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Phase 1 of the Sanitary Sewer Collection System shall be completed for the initial campus development. Future phases of the Sanitary Sewer collection system shall be completed for the Campus 5 and 10- year development.

Policy 3C-7

Future expansion and related sewage requirements shall be reviewed annually to determine adequacy of planned facility improvements, to establish priorities and to identify capital improvements.

Objective 3D

Utilize licensed, public utility companies for sanitary sewage collection, treatment and disposal.

Policy 3D-1

On-campus sewer mains and appurtenances, pump station and force main shall be owned, maintained and operated by the utility company, SLWU.

Policy 3D-2

Easements shall be granted and access provided for maintenance and repairs by SLWU.

Policy 3D-3

On- and off-campus sewer mains, appurtenances, pump station and force main shall be owned, maintained, operated and repaired by the utility company, SLWU.

Policy 3D-4

An Agreement shall be executed between the University and SLWU for establishing rates, demands and responsibilities and for providing service, maintenance, repair and expansion.

Policy 3D-5

Close liaison with SLWU on campus demands, problems and projected growth shall be maintained.

Policy 3D-6

Campus Physical Plant shall implement and maintain routine inspection of building service laterals to prevent and/or identify leaks, clogging, damage and deterioration.

Objective 3E

Initiate and maintain adequate records of the sewage collection facilities.

Policy 3E-1

Accurate and complete drawings of all facilities shall be prepared and maintained current.

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Objective 3F

Coordinate closely with SLWU on initial and projected future sewage quantities of the campus.

Policy 3F-1

A procedure shall be established and responsibility assigned for regularly scheduled coordination meetings with appropriate utility company officials relative to the University's growth and sewage needs.

Policy 3F-2

Future expansion shall be reviewed periodically and priorities established for deficiency remediation as part of the capital improvement procedures of the BOR.

Policy 3F-3

Campus sewage generation shall be monitored and compared with campus population to determine unit demand. Data shall be applied to projected, future enrollment for estimating increased capacity to meet future needs.

Objective 3G

Determine sewage generation per unit (FTE) for future planning.

Policy 3G-1

Monitoring and records of sewage quantities and campus population (FTE) shall be maintained.

Objective 3H

Establish minimum levels of service to be established for sewage collection facilities. Refer to Objective 3A.

Policy 3H-1

Sewer facilities shall comply with the requirements and standards of the Florida Department of Environmental Protection, the County Health Department and SLWU.

Policy 3H-2

Sewage collection facilities shall be planned and designed at a minimum for the following unit capacities:

- Average daily flow - 20 gpcd
- Peak daily flow rate - 50 gpcd

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(gpcd - gallons per FTE per day, FTE - Full Time Equivalent student)

These values should be checked periodically against records. As a new level of service is periodically determined, the adopted campus master plan will be amended as necessary to reflect the change.

Objective 3I.

Provide sanitary sewer service to support future expansion and new programs.

Policy 3I-1

The campus Physical Plant Department shall coordinate closely with all departments, programs, activities and projections for impact on sanitary sewer service.

Policy 3I-2

The campus Physical Plant Department shall provide cost data for expanded sanitary sewer service for University capital improvements planning.

The on-campus mains will be owned and operated by SLWU. The mains are indicated on the map in phases of implementation.

The pump station modifications (if any), and the initial gravity collection lines in the western portion of the campus will be provided in Phase 1. The pump station modifications will be designed and constructed to allow additional pumps or pump replacement as demand increases.

Additional gravity collection mains and appurtenances will be added in subsequent phases as the campus expands.

Gravity collection mains will be 8-inch. Building service laterals will be sized with building design.

Major Elements:

Phase 1	1,000 linear feet of 8-inch gravity main; 4 manholes.
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SOLID WASTE SUB-ELEMENT

Goal 4

To provide adequate solid waste disposal services and facilities to support the mission of the University.

Objective 4A

Implement an efficient and economical waste disposal operation

Policy 4A-1

Dumpster load per pick-up shall be maximized to the extent possible.

Policy 4A-2

Dumpster locations and pick-up schedules shall be monitored and adjusted as required to achieve Policy 4A-1.

Policy 4A-3

Composting of vegetation and landscape refuse shall be implemented, encouraged and maximized. The College of Science shall advise on the techniques and benefits of composting.

Objective 4B

Implement an effective recycling program.

Policy 4B-1

Recycling containers for each material shall be available at strategic locations to encourage and simplify recycling.

Policy 4B-2

On-campus recycling awareness and emphasis campaigns shall be conducted. Recognition (awards) shall be made for entities (departments, etc.) achieving recycling success.

Objective 4-C

Increase safety and reduce potential dangers from handling and disposal of hazardous waste.

Policy 4C-1

Assign responsibility for all hazardous materials used on campus.

Policy 4C-2

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Provide hazardous material storage facilities that are safe and that comply with all regulatory requirements.

Policy 4C-3

Monitor and track all hazardous material from arrival on Campus through use, post-use storage and final disposal.

Objective 4-D

Coordinate closely with the appropriate local government on present and future projected solid waste disposal requirements for the University.

Policy 4D-1

The University shall establish a procedure and assign responsibility for regularly scheduled coordination meetings with appropriate County officials.

Policy 4D-2

The University shall independently check with the State Department of Environmental Protection on the permitting status and the permitted life of the County's landfill and incinerator disposal facilities. FAU shall pursue any interlocal agreements or memoranda of understanding necessary to ensure that solid waste collection and disposal services will be supplied to the campus to meet the future needs of the University.

Policy 4D-3

The University shall establish a procedure and assign responsibility for regularly scheduled coordination with Jennings Waste Management to provide data on campus expansion, projected growth and solid waste disposal requirements.

Policy 4D-4

Campus growth and future expansion programs shall be monitored and reviewed and priorities established to prevent deficiencies and to identify waste disposal costs.

Objective 4E

Determine quantity of solid waste generated compared to campus student population to determine a unit waste per capita; update as required.

Policy 4E-1

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The quantity of solid waste shall be determined annually from the University's and County's Study and agreement to establish disposal costs.

Policy 4E-2

FAU Boca Raton campus solid waste level of service shall be utilized for planning and operation until local campus data is sufficient to establish level of service.

Policy 4E-3

Solid waste service shall be based on a generation per FTE of 0.18 ton per year. Solid waste density shall be 0.067 ton per cubic yard.

Dumpsters are owned by the collection contractor, Jennings Waste Management. Waste goes to the St. Lucie County Solid Waste Divisions (SLCSWD) disposal site, Jennings Waste Management will furnish recycling containers unless FAU wants to handle their own recycling. Glades Road Landfill on Midway Road between I-95 and Florida's Turnpike.

Objective 4F

Coordinate solid waste service to comply with phased developments of the campus.

Policy 4F-1

Dumpsters and recycling containers shall be provided and located for each phase of campus development.

Policy 4F-2

Jennings Waste Management and SLCSWD shall be advised of each phased development.

Policy 4F-3

Jennings Waste Management and SLCSWD shall be notified, in advance, of solid waste requirements for each campus phase of development.

Jennings Waste Management has an exclusive franchise to serve St. Lucie West which includes the FAU campus.

Dumpsters will be furnished and owned by Jennings Waste Management.

Waste will be disposed of at the St. Lucie County Solid Waste Division's Glades Road Landfill.

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There are no distribution and collection system lines nor infrastructure nor treatment facilities relative to solid waste. The solid waste is disposed of at the SLCSWD site.

Portable dumpsters and portable recycling containers are the only "facilities". Dumpsters will be owned and maintained by Jennings Waste Management. Recycling containers can be provided by Jennings Waste Management or can be University owned.

Placement of dumpsters and pick-up schedule to be determined from joint study by the University Physical Plant and Jennings Waste Management. Operations should be closely monitored and adjusted as required to provide optimum utilization of dumpsters.

Policy 4F-4

Coordinate with and advise Jennings Waste Management of dumpster and recycling container requirements for each phase of campus development; initial phase, 5 year and 10 year.

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RE-USE WATER SUB-ELEMENT

Goal 5

To provide adequate re-use water for irrigation of all landscaped areas in the campus.

Objective 5A

Obtain an adequate and economical supply of re-use water to supply the campus irrigation system.

Policy 5A-1

One connection to the offsite, re-use water main, on N.W. University Drive shall be obtained.

Policy 5A-2

Utilization of this connection, including installation of metering and control devices, shall be deferred until required.

Policy 5A-3

The connection at N.W. University Drive will be utilized for the initial phases of campus development.

Policy 5A-4

The campus irrigation system shall be designed and implemented to function within the constraints of the re-use supply from offsite.