9.0 General Infrastructure Element

The purpose of this element is to ensure adequate provision of public facilities and services required to meet the future needs of the University, including the following:

1. Provision of adequate stormwater management capacity to protect the welfare of both the University's and host community's residents and prevent water damage to public and private property.
2. Provision of sufficient potable water to meet anticipated University needs.
3. Provision of adequate sanitary sewer and treatment capacity to meet anticipated University needs.
4. Provision of adequate solid waste handling and disposal capacity to meet anticipated University needs.

DRAINAGE and STORMWATER: Prior to 1993 the level of stormwater management required at Florida Agricultural and Mechanical University (FAMU) was limited to only collection, conveyance and disposal. Since 1993 FAMU has constructed stormwater management facilities (SWMF) for treatment and attenuation of stormwater runoff for all new construction projects. These SWMFs have been designed per state and local governing agencies. They provide stormwater management functions for the localized stormwater runoff for each new construction project in accordance with the current Development Agreement with the City of Tallahassee and state regulatory requirements. FAMU will continue to provide stormwater management for each project and will endeavor to incorporate innovative approaches to the reduction of runoff such as Low Impact Development (LID) and Green Infrastructure. This approach to new development and redevelopment will manage the stormwater as close as possible to its source by using such LID techniques as rain gardens, rain barrels, cisterns, green roofs, bio-retention areas, grey water harvesting, pervious pavement, and other techniques. These sustainable stormwater practices when applied on a large scale can contribute significantly to FAMU's stormwater management. Along with the use of these sustainable techniques to reduce stormwater runoff, FAMU should endeavor to develop a regional stormwater facility with the City of Tallahassee.

WATER: The majority of the water distribution facilities including water mains, water meters, and fire hydrants are currently operated and maintained by the City of Tallahassee. In most cases, FAMU is only responsible for the water service laterals routed between the water supply main and the individual buildings. Due to the projected increase in student enrollment over the five to ten year planning period, it is believed that water consumption will also increase substantially during the same time period. To ensure adequate water supply and pressure in the future, FAMU will endeavor to complete a water distribution analysis (in coordination with the City of Tallahassee) and study of the entire water system, which serves the campus. All water distribution deficiencies determined by the study shall be made known to the City of Tallahassee for correction by the appropriate agency. As previously identified in the Inventory and Analysis report, a visual analysis of the existing water line maps indicates that some lines should be considered for upsizing to provide FAMU a consistent 10 or 12 inch loop to feed all minor loops. These lines are primarily on Osceola Street, MLK Drive, and Gamble Street and are indicated on Figure 9.2 A and 9.2 B.

SEWER: FAMU is only responsible for the sewer collection system located on campus. The regional sewer collection system (off campus) and associated wastewater treatment plant are the responsibility of the City of Tallahassee. Therefore, it is critical that there exist close coordination between FAMU and the City of Tallahassee in order to maintain adequate sewer collection, wastewater treatment and disposal through and beyond this planning period. The Inventory & Analysis report identified that many of the sewer lines are 6-inch clay lines nearing their life expectancy and should be considered for replacement. It is recommended that FAMU in...
cooperation with the City conduct a systematic video inspection and inflow/infiltration analysis of all sewer lines on campus. This inspection would identify lines that are in need of repair and lines that are a source of inflow and infiltration. Reduction of inflow and infiltration could essentially increase the current capacity. There are several trenchless techniques in which pipes can be relined or even increased in size without excavation. Additionally, to support the identified campus expansion areas for beyond the next 5 years, new sewer lines will be required in these areas.

**SOLID WASTE:** Solid waste is currently being collected and disposed of by the City of Tallahassee. FAMU is only responsible for the collection and disposal of yard trash and debris. Solid waste is currently either recycled or sent to the Leon County landfill. The operation and maintenance of the landfill is the responsibility of Tallahassee-Leon County. To be consistent with the policies within the county's comprehensive plan, FAMU shall adopt a recycling goal to reduce the solid waste volume by at least thirty (30) percent from existing levels.

Figures 9.1A thru 9.3B Future Utility Improvements Map (North and South), depict the proposed locations for known water, and sewer, and stormwater improvements occurring as a result of this plan's implementation. These improvements are preliminary and final routing of these infrastructure items cannot be defined until plans for expansion are developed.
9.0 General Infrastructure Element

STORMWATER MANAGEMENT SUB-ELEMENT

GOAL 1: Florida Agricultural and Mechanical University (FAMU) shall provide adequate stormwater management/drainage capacity to protect the welfare of both the University and City of Tallahassee residents and to prevent water damage to public and private property.

Objective 1.1: It shall be the responsibility of FAMU to ensure that all construction projects on the campus included in this Master Plan are consistent with the City of Tallahassee land development regulations that implement the Comprehensive Plan and all applicable statutory requirements for permit review with the Northwest Florida Water Management District (NWFWMD) Environmental Resource Permit (ERP). FAMU branch campus locations shall adhere to all local governing regulations as well as the NWFWMD. All policies and objectives shall also apply to the branch campuses with the appropriate regulatory agency applied.

Policy 1.1.1
FAMU shall adopt a level-of-service standard for stormwater management and drainage which meets State of Florida water quality regulations and other applicable local, state and federal regulations. The level-of-service standard for FAMU shall be consistent with the City of Tallahassee and NWFWMD levels of service for drainage and stormwater management water quality.

Policy 1.1.2
FAMU shall require that the provision of stormwater management/drainage components associated with new construction projects be constructed in accordance with adopted level-of-service standards prior to occupancy of any new University building.

Policy 1.1.3
FAMU shall correct any stormwater management/drainage improvement mandated by state regulatory agencies. No mandates requiring stormwater management/drainage improvements exist at this time.

Policy 1.1.4
FAMU shall coordinate the on-campus and off-campus drainage improvements with the Northwest Florida Water Management District (NWFWMD) and the City of Tallahassee Growth Management Department. FAMU will submit plans and/or drainage calculations to the NWFWMD and the City of Tallahassee, Growth Management Department for review prior to campus development and/or start of construction. FAMU will submit to NWFWMD and the appropriate local governing agency for improvements on branch campuses.

Policy 1.1.5
FAMU shall endeavor to conduct, in conjunction with the City of Tallahassee, a master drainage study to determine if an off-campus regional stormwater facility can be developed which could provide stormwater management for FAMU’s future development.
Policy 1.1.6
FAMU shall endeavor to develop innovative and sustainable Low Impact Development (LID) and Green Infrastructure techniques. Techniques shall include but are not limited to rain barrels, rain gardens, cisterns, green roofs, bio retention areas, grey water harvesting, and pervious pavement.

Policy 1.1.7
FAMU shall endeavor to seek demonstration projects, grants, and appropriations to establish itself as an educational source and model for LID and Green infrastructure techniques.

Policy 1.1.8
FAMU shall maintain the quality of on-campus jurisdictional wetland resources, natural stormwater management, and hydrological areas by requiring that on-campus stormwater run-off meet all water quality regulations of the NFWFMD and University level-of-service standards identified.

Policy 1.1.9
Following identification of any needed system improvement or expansion project, FAMU shall reprioritize the projects in its 14.0 Capital Improvement Element and shall subsequently amend this Master Plan Update to reflect same.

POTABLE WATER SUB-ELEMENT

GOAL 2: Florida Agricultural and Mechanical University (FAMU) shall ensure adequate provision of potable water supply and distribution for domestic use and fire protection use which meet the current and projected needs of the University. All goals, policies and objectives shall also apply to the branch campuses with the appropriate regulatory agency applied.

Objective 2.1: FAMU shall provide water distribution system to meet and maintain adopted level-of-service standards for water supply and system working pressures.

Policy 2.1.1
FAMU shall establish and adopt a level-of-service standard for water demand for the entire campus of fifty-five (55) gallons per day (GPD) per FTE [full-time equivalent (FTE) student). This standard shall not conflict with the City of Tallahassee standards for level-of-service and concurrency for potable water currently set at one hundred sixty (160) gallons per day per capita.

Policy 2.1.2
FAMU shall establish and adopt a level-of-service standard for fire pressure flows of two thousand (2,000) gallons per minute at twenty (20) pounds per square inch (PSI) minimum. This standard shall not conflict with the City of Tallahassee standards for level of service for fire pressure flows.

Policy 2.1.3
FAMU shall endeavor to coordinate with the City of Tallahassee concerning a "Potable Water System Analysis.” This analysis includes, at a minimum, the following efforts:
• Evaluation of the existing water distribution system against the University's adopted level-of-service standards.
• Evaluation of preliminary potable water improvements shown on Figures 9.1A and 9.1B of this element and revision of preliminary improvements as necessary.
• Identification of specific deficiencies within the existing system.
• Identification of corrective measures and determination of associated costs to upgrade the existing system to meet the adopted level-of-service standards.
• Evaluation of off-campus potable water impacts on the city's potable water facilities and analysis of factors or conditions affecting continued service to the University.
• Establishment of priorities for implementing the identified corrective actions.

Policy 2.1.4
By the end of the planning period, FAMU shall endeavor to continue to upgrade the water distribution system to correct deficiencies and improve water flow and working pressure for domestic and fire protection use as determined by the "Potable Water System Analysis."

Policy 2.1.5
FAMU shall amend this Master Plan Update, as needed, to incorporate the results of the "Potable Water System Analysis." Such amendments shall include, at a minimum, the timing, phasing and priority requirements for the necessary improvements identified within the analysis. This plan amendment shall consider a "cost sharing agreement" with the City of Tallahassee for the required off-campus water improvements.

Policy 2.1.6
FAMU shall create and execute a formal Development Agreement with the City of Tallahassee that addresses, at a minimum, the assessment and mitigation of off-campus impacts on the city's potable water facilities and the city's capabilities to provide continued service to FAMU.

Objective 2.2: FAMU shall ensure adequate provision of potable water service in support of projected facilities growth in accordance with the University's adopted level-of-service standards.

Policy 2.2.1
FAMU shall continue to ensure that improvements to or expansion of the potable water system as identified in the "Potable Water System Analysis" required to maintain the University's adopted level-of-service standards are to be constructed prior to occupation of any new or expanded facility.

Policy 2.2.2
FAMU shall continue to coordinate with the City of Tallahassee for the construction of additional water main services as required and identified within the Potable Water System Analysis.

Policy 2.2.3
Following implementation of any system improvement or expansion project, FAMU shall reprioritize the remaining projects in its 14.0 Capital Improvement Plan.
Element and shall subsequently amend this Master Plan Update to reflect improvements.

Objective 2.3: FAMU shall establish practices to protect and conserve potable water sources.

Policy 2.3.1
As part of the Design Review Committee review procedures (15.0 Architectural Design Guidelines), FAMU shall ensure that construction specifications require water-conserving fixtures and grey water use for all new construction or renovation projects.

Policy 2.3.2
FAMU shall encourage water conservation habits by the students and employees through distribution of informational literature and periodic conservation awareness workshops.

Policy 2.3.3
FAMU shall pursue the practice of using non-potable water for irrigation purposes. Such consideration shall include the University’s existing on site wells presently used to provide chilled water.

Policy 2.3.4:
FAMU shall comply with conservation and protection practices established in the 13.0 Conservation Element of this Master Plan Update.

SANITARY SEWER SUB-ELEMENT

GOAL 3: Florida Agricultural and Mechanical University (FAMU) shall ensure adequate provision of sanitary sewer collection and disposal to meet the current and projected needs of the University. All goals, policies and objectives shall also apply to the branch campuses with the appropriate regulatory agency applied.

Objective 3.1: FAMU shall provide sanitary sewer collection and disposal system to meet and maintain its adopted level-of-service standards.

Policy 3.1.1
FAMU shall establish and adopt a level-of-service standard for sanitary sewer collection capability of fifty (50) GPD per FTE. This standard shall not conflict with the City of Tallahassee standards for level-of-service and concurrency for sanitary sewer collection and disposal currently set at a minimum of one hundred and forty (140) gallons per capita per day (GPCD) for all land use zones.

Policy 3.1.2
By the end of the planning period, FAMU shall endeavor to complete a "Sanitary Sewer Collection and Disposal System Analysis." The scope of the "Sanitary Sewer Collection and Disposal System Analysis" shall include, at a minimum, the following efforts:

- Evaluation of the existing system against the University's adopted level-of-service standard.
- Evaluation of the existing system by video inspection and inflow and infiltration measurements.
- Evaluation of preliminary sanitary sewer improvements shown on Figures 9.2A and 9.2B of this element and revision of preliminary improvements as necessary.
- Identification of specific deficiencies in the existing system. Identification of corrective measures and determination of associated costs required to achieve the University's adopted level-of-service standard.
- Establishment of priorities for implementing the recommended corrective actions.

Policy 3.1.3
FAMU shall amend this campus Master Plan, as needed, to incorporate the results of the "Sanitary Sewer Collection and Disposal System Analysis." Such amendments shall include, at a minimum, the timing, phasing and priority requirements for necessary improvements identified within the analysis.

Objective 3.2: FAMU shall provide adequate sanitary sewer collection and treatment service in support of projected facilities growth in accordance with the University's adopted level-of-service standards.

Policy 3.2.1
As part of the "Sanitary Sewer Collection and Disposal System Analysis" and based on forecasts through the planning period, FTE counts provided in 2.0 Academic Program Element, FAMU shall perform an analysis of projected sanitary sewer collection and disposal needs requirements against the University's level-of-service standards. The scope of the portion of the "Sanitary Sewer Collection and Disposal System Analysis" addressing future needs shall include, at a minimum, the following efforts:
- Identification of long-range needs through the planning period.
- Forecasts of system deficiencies.
- Identification of projects required to address these shortfalls and determination of associated costs.
- Establishment of priorities for future sanitary sewer collection and treatment service projects to be implemented prior to initiation of new construction projects.

Policy 3.2.2
FAMU shall establish that expansion of the sanitary sewer collection system in accordance with the recommendations of the "Sanitary Sewer Collection and Disposal System Analysis" required to maintain the University's adopted level-of-service standards shall be constructed prior to occupation of any new or expanded facility.

Policy 3.2.3
FAMU shall coordinate with the City of Tallahassee for the planning, design or construction of any new city sewer distribution lines providing service to the University.

Policy 3.2.4
FAMU shall continue to utilize the City of Tallahassee sanitary sewer transmission and treatment system.
Policy 3.2.5
Following implementation of any system improvement or expansion project, FAMU shall reprioritize the remaining projects in its 14.0 Capital Improvement Element and shall subsequently amend this Comprehensive Master Plan to reflect same.

Policy 3.2.6
FAMU shall create and execute a formal Development Agreement with the City of Tallahassee that addresses, at a minimum, the assessment and mitigation of off-campus impacts on the city's sanitary sewer facilities and the city's capabilities to provide continued service to FAMU.

SOLID WASTE SUB-ELEMENT

GOAL 4: Florida Agricultural and Mechanical University (FAMU) shall ensure adequate provision of solid waste handling and disposal capacity to meet current and projected University needs. All goals, policies and objectives shall also apply to the branch campuses with the appropriate regulatory agency applied.

Objective 4.1: FAMU shall maintain the services of the City of Tallahassee to provide solid waste handling and disposal services to meet the University's adopted level-of-service standards for current and future needs of the University.

Policy 4.1.1
FAMU shall endeavor to establish and adopt a level-of-service standard as shown in Table 9.1:

Table 9.1 Solid Waste Level-of-Service Standards (in pounds/FTE/day)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>7.2</td>
</tr>
<tr>
<td>2012</td>
<td>7.25</td>
</tr>
<tr>
<td>2013</td>
<td>7.30</td>
</tr>
<tr>
<td>2015</td>
<td>7.35</td>
</tr>
</tbody>
</table>

Source: continuation of County LOS based on LOS of 6.95 in 2006 and .05 annual increase

Policy 4.1.2
FAMU Plant Operation and Maintenance (POM) Division shall maintain a monitoring program to estimate the solid waste generation at the University.

Policy 4.1.3
FAMU shall continue to utilize the City of Tallahassee for solid waste handling and transporting services.

Policy 4.1.4
FAMU shall continue to rely upon Tallahassee-Leon County for the provision of acceptable disposal facilities.
Policy 4.1.5
FAMU shall create and execute a formal Development Agreement with the City of Tallahassee that addresses, at a minimum, the assessment and mitigation of off-campus impacts on the city’s solid waste disposal facilities and the city’s capability to provide continued service to FAMU.

Policy 4.1.6
FAMU shall, if necessary, amend this master plan in the event that future deficiencies for the construction of solid waste disposal facilities are recognized through the annual monitoring program and shall, at that time, establish the priority, timing and phasing of recommended improvements.

Objective 4.2: FAMU shall provide appropriate locations and screening materials for all exterior solid waste containers.

Policy 4.2.1
By the end of the planning period, FAMU shall endeavor to review the locations of existing dumpsters and other exterior solid waste containers in accordance with established University Landscape Design Guidelines.

Policy 4.2.2
FAMU shall continue to implement appropriate relocations and screening projects for those solid waste facilities that are not consistent with the University’s Landscape Design Guidelines.

Policy 4.2.3
Following implementation of any system improvement or expansion project, FAMU shall reprioritize the remaining projects in its 14.0 Capital Improvement Element and shall subsequently amend this Master Plan Update to reflect same.

Objective 4.3: FAMU shall reduce the solid waste stream from the University operations and shall strive to increase recyclable volumes by thirty (30) percent more than present per FTE equivalent rates.

Policy 4.3.1
By the end of the planning period, shall endeavor to promote recycling through periodic educational emphases for the student and employee bodies.

Policy 4.3.2
FAMU shall maintain existing and secure additional recycling containers from the City of Tallahassee and place these strategically throughout the University’s facilities for ease of use.