2010 COMPREHENSIVE PLAN

INFRASTRUCTURE

ELEMENT

December 2005

The Honorable John Peyton
Mayor

Brad G. Thoburn
Director of Planning & Development

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT
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CITY OF JACKSONVILLE

The Honorable John Peyton, Mayor

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INTRODUCTION

Pursuant to the requirements of Chapter 163, Part II, Florida Statutes (F.S.) and Chapter 9J-5, Florida Administrative Code (FAC), the City of Jacksonville adopted the 2010 Comprehensive Plan, which included a Natural Groundwater Aquifer Recharge Subelement of the Infrastructure Element, on September 1990. Section 163.3191, F.S. requires that the plan be updated periodically. Prior to the update of the plan, the local governments are required to prepare an Evaluation and Appraisal Report (EAR) on the adopted plan. The City of Jacksonville's EAR was submitted to the Florida Department of Community Affairs for review on September 1, 1997 and determined to be sufficient on October 31, 1997.

The EAR for the 2010 Comprehensive Plan comprises the 1990 -1995 period. The EAR summarizes the condition of the element at the time of adoption of the 2010 Comprehensive Plan (1990) and the conditions at the time of preparation of the EAR (1995), analyzes the changes since adoption, identifies the success or failure in implementing the policies and recommendations in the plan and the reasons thereof, analyzes the impact of any unforeseen problems or opportunities presented, and identifies the mandatory statutory and rule changes since the adoption of the Plan. Based on this analysis, the report makes recommendations for revisions to update the Plan.

The update of the Infrastructure Element, presented in the following pages, reflects all the changes recommended in the EAR. Objectives and policies requiring only one time action by the City, which have already been implemented and require no further action, have been deleted. Other more ongoing policies in which action recommended in the adopted plan has been completed but should continue, and policies which have been partially implemented, have been modified appropriately. Finally, some new policies have been added as recommended in the EAR and mandated by updates to the Florida Statutes and Florida Administrative Code. Various editorial and other appropriate organizational name changes have been made as well.

In addition to the aforementioned revisions, the Background Report of this document has also been updated to support the amended Goals, Objectives and Policies.

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DECEMBER 2005

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT

INFRASTRUCTURE ELEMENT

NATURAL GROUNDWATER AQUIFER RECHARGE

A

GOALS, OBJECTIVES AND POLICIES

GOALS, OBJECTIVES AND POLICIES

GOAL 1

Manage the fresh groundwater resources in the City to assure an adequate quantity and quality of water for potable, commercial, industrial, utility and agricultural uses. Such City management shall be in compliance with all State, regional and federal rules, regulations, laws and mandates as applicable.

Issue: Management of the Natural Groundwater Aquifer

As a coastal City, freshwater quality contamination from adjacent and underlying saline waters poses a threat to existing resources. Due to a long-term rainfall deficiency, increasing impervious areas, decreasing the opportunity of recharge and increasing groundwater withdrawals; a net depressurization of the Floridan Aquifer has occurred. The depressurization of the aquifer has been projected to continue to decline. This depressurization of the aquifer results in a thinner freshwater lens and the potential for significant saline contamination. Moreover, aquifer depressurization increases the potential for downward migration of surface contamination and induces more rapid vertical flow decreasing the natural cleansing contact time in the geologic regime and thereby degrading water quality. The City must manage the natural groundwater aquifer so as to assure adequate freshwater resources for existing and projected uses.

Objective 1.1 The City shall quantify at least once every five years the existing uses and project the future uses of fresh groundwater resources.

Policies

1.1.1 The City's Environmental Quality Division (EQD) shall request from the St. Johns River Water Management District (SJRWMD) existing permitted users of water with approved future increases in fresh groundwater allocations for the duration of existing consumptive use permits, and the identification of the area location and producing zone of the hydrogeologic regime from which the withdrawals are made.

1.1.2 The City's Environmental Quality Division shall coordinate with the SJRWMD, USGS, and other appropriate agencies to estimate the non-consumptive use permitted existing withdrawals within the City and establish or estimate the withdrawal zones of such uses. These water uses shall be located by area.

1.1.3 JEA shall utilize the projected land uses, population, and other industry forecasts as applied to accepted unit water consumption rates to identify by area the projected demand within the City and to quantify potential future water requirements.

1.1.4 The Environmental Quality Division (EQD), and JEA shall annually review the City regulations regarding water use to ensure consistency with all applicable laws and regulations.

1.1.5 JEA shall maintain, as a component of the City's water master plan, a Resource Management Plan which ensures adequate available City wide resources and that water withdrawals comply with City standards.

1.1.6 The Environmental Quality Division (EQD) and JEA shall compare projected water demand with best current groundwater resource assessments to determine if adequate capacity is available and shall update this analysis every five (5) years.

Objective 1.2 Upon establishment by the St. Johns River Water Management District (SJRWMD) the City shall utilize the developed Groundwater Basin Resource Availability Inventory (GWBRAI).

Policies

1.2.1 The City shall utilize the SJRWMD hydrogeologic study defining groundwater basins and associated recharge areas for groundwater resource management and planning purposes.

1.2.2 The EQD and the JEA shall follow the SJRWMD and the Water Resources Management Plan delineation of site specific areas in the groundwater basin deemed prone to contamination or overdraft resulting from current or projected development, and establish the best management practices for implementation to mitigate or avoid resource degradation within two years of the SJRWMD determination.

1.2.3 The City shall continue to coordinate with the SJRWD and utilize the best available resources and information to protect the functions of the natural groundwater aquifer recharge areas and to discourage urban sprawl.

1.2.4 Within two years of receipt, the EQD shall adopt the criteria and inventory developed by the SJRWMD and the Water Resources Management Plan establishing minimum seasonal surface and groundwater levels within the City.

1.2.5 The EQD shall require construction of and JEA shall construct future groundwater developments in areas identified by the SJRWMD or other appropriate agencies as suitable for future water resource development within the groundwater basin.

1.2.6 JEA shall continue to study existing sources of waste water discharge suitable for reuse as well as the feasibility of integrating the coastal cities' (Atlantic Beach, Neptune Beach and Jacksonville Beach) well fields with the City of Jacksonville regional system.

1.2.7 JEA shall continue to determine potential quantities of water available for consumptive use by the City to assure that adequate resources are developed. The City shall utilize water conservation and water reuse practices to supplement and increase the effecti ve life of its groundwater resources.

1.2.8 Within two years of establishment by the SJRWMD and the Water Resources Management Plan of prime recharge areas for the Floridan Aquifer, the Planning and Development Department shall prepare maps of such design ated areas showing the special zoning and land use consideration the City has established for such areas.

1.2.9 The EQD shall enforce the SJRWMD developed reuse rules for "critical water supply areas" as required by Chapter 17 -40, F.A.C. Pursuant to requirements imposed on the City's consumptive use permits, the EQD shall require use of reclaimed water in critical water supply areas where economically feasible.

1.2.10 JEA shall comply with the SJRWMD developed mitigation criteria for adverse impacts to th e water resource system and existing legal users of water within the time -frames specified by the SJRWMD in any individual finding or within one (1) year if no implementation schedule is specified by the SJRWMD.

1.2.11 The Environmental Quality Division (EQD) shall request the SJRWMD to establish a guideline water use budget for the City in light of existing and future needs in comparison with resource condition assessments.

1.2.12 Upon identification by the SJRWMD, the City shall give high priority status to prime aquifer recharge areas, by giving extra matrix ranking points to sites located in such areas in comparison with other sites being considered in local land acquisition programs and request the SJRWMD to do this or mandate this for areas outside the City.

<u>Objective 1.3</u> Establish a City well head protection and regulation program. Request SJRWMD to review its policies in order to ensure that surface water and groundwater sources suitable for public supply, agricultural, commercial or other uses shall receive appropriate protection for that use relating to both quality and quantity parameters.

Policies

1.3.1 The City has adopted and implemented a wellhead protection program in accordance with Subsection 1428(a) of the Safe Drinking Water Act and in conjunction with the FDEP, SJRWMD, USGS and related agencies.

1.3.2 JEA shall develop guidelines for the delineation of wellhead protection areas in accordance with the federal, State and related agencies guidelines and SJRWMD activities within one year of receipt of such information.

1.3.3 JEA shall comply with applicable federal regulations for wellhead protection as amended or revised by Public Law 93-523.

1.3.4 The EQD shall develop and maintain a groundwater resource management program which is designed to protect the Floridan Aquifer such that the fresh water quality is not degraded beyond acceptable raw water characteristics for associated treatment facilities required to meet Chapter 17-550, F.A.C., as amended, and/or the Federal Safe Drinking Water Act requirements.

1.3.5 The EQD shall continue the City well permitting program which requires permits for drilling and operation; and for capping, filling and plugging of abandoned well; and which requires valves on all free flowing wells which are required to be closed when not in use.

1.3.6 The EQD and the JEA shall jointly protect the areas within the existing public supply wellhead protection areas by implementing:

a) a program to inventory contaminated sites;

b) best management practices for contamination control; and best management practices to remove or limit existing pollution sources in the areas delineated.

1.3.7 The EQD and the JEA shall continue to work with the SJRWMD to ensure that water for nonpotable uses be obtained from the lowest

quality water source, in proximity to the demand, consistent with the intended use in compliance with the State Water Policy, Chapter 17-40, F.A.C.

1.3.8 The City shall incorporate freshwater demand reduction practices as appropriate within the City Building Code. New freshwater conservation methods or technologies shall be distributed to City water users through the water conservation education program of JEA.

1.3.9 JEA shall, continue to maintain, develop pricing, rates and/or charges to equitably recover costs and not provide volume discounts for customer class utilization in excess of the water need.

1.3.10 The City shall ensure that its Ordinance Code reflects the SJRWMD water shortage restriction/regulation duties with enforcement provisions.

1.3.11 The EQD shall develop a Groundwater Recharge Area Protection Program to achieve protection of the City's groundwater aquifer recharge areas as identified by the SJRWMD.

1.3.12 The EQD shall establish legal descriptions and mapping for SJRWMD delineated prime aquifer recharge areas within two (2) years of SJRWMD determination of such areas in the City.

1.3.13 The City shall request the SJRWMD to identify areas of critical concern considering regional groundwater flow for areas containing:

a) aquifer recharge;

b) aquifer contamination; and

c) aquifer saltwater encroachment.

1.3.14 The Planning and Development Department in conjunction with the EQD and the JEA, and the Public Works Department, shall develop land use, drainage, development criteria and other revisions to the Land Development Regulations in compliance with Section 163.3202(1), F.S., to protect the prime aquifer recharge areas and to a lesser extent the areas of critical concern which buffer the prime aquifer recharge areas within one (1) year of such designation.

1.3.15 The EQD shall develop and implement an aquifer recharge plan for

principal aquifers which protects and/or enhances the contributory water quality and maintains or increases the volume of freshwater available for recharge.

1.3.16 Within 2 years after the determination by the SJRWMD of Floridan Aquifer Prime Recharge Areas the EQD shall submit revisions to City's Ordinance Code which protect and conserve the recharge areas of the Floridan Aquifer within the City's jurisdiction as the City's primary source of potable water.

1.3.17 The City will prohibit, in areas determined to be prime Floridan Aquifer Recharge Lands, industrial activities, septic tank and commercial activities utilizing or producing hazardous materials as identified by the Florida Department of Environmental Protection.

1.3.18 The EQD shall develop and implement regulations for irrigational practices, fertilization practices, and pesticide/biocide application practices within prime aquifer recharge areas and areas of critical concern to minimize leaching of contaminants into the fresh groundwater regime.

1.3.19 The EQD and the JEA shall continue the cooperative groundwater quality testing and level monitoring program with the USGS and SJRWMD and expand the monitoring locations to include both recharge and recharge buffer areas, within one (1) year after identification of such areas.

1.3.20 The City shall request the SJRWMD to investigate the feasibility and/or desirability of such practices as recharge enhancement through water detention, retention ponds, flow diversion, swale systems, effluent reuse and other techniques.

1.3.21 The EQD shall implement a system of incentives and deterrents for the development of potential prime recharge areas, buffer areas, well head protection areas and non-protected areas.

1.3.22 The EQD shall request the SJRWMD to study the potential of the development of salinity barriers with storm water and/or reclaimed water to effect a repressurization of the aquifers and increase the thickness of the freshwater lens.

Issue: Development of a Water Reuse Program

The St. Johns River Water Management District has mandated that a reuse ordinance be considered by the City Council. The City has adopted a water reuse ordinance (Chapter 733 Ordinance Code). The ordinance includes areas identified as reuse zones, requirements for new developments within the designated reuse zones; utilization of reclaimed water for irrigation where available; registration of water wells within the designated reuse zones; requirements for new developments to utilize or incorporate groundcovers, ornamentals and lawns which require low levels of irrigation; and a requirement that industries utilizing non-potable process and cooling water accept and utilize city reuse water in place of Floridan Aquifer water. The above reuse program shall be complemented with a comprehensive water conservation program.

Objective 2.1 The Water and Sewer Business Unit of JEA shall, implement the water reuse ordinance (Chapter 733, City of Jacksonville Ordinance Code) in compliance with the City's consumptive use permit requirements issued by the SJRWMD.

Policies

2.1.1 The reuse ordinance includes the following:

1. Designated reuse zones as identified by the SJRWMD.

2. A requirement that all new development within reuse zones shall include a reclaimed water irrigation system constructed to applicable standards. The reuse ordinance defines the types and sizes of development which are appropriate to be served by a reclaimed water irrigation system.

3. A definition of the users required to accept and utilize reclaimed water when made available by the City.

4. The registration and permitting of wells of all sizes located within the SJRWMD identified reuse zones.

5. The requirement of return flow wells for heat pump discharges.

2.1.2 The City shall request that SJRWMD require all non-potable consumptive use permits holders in the City to accept and utilize reuse water when made available by the City.

<u>Objective 2.2</u> JEA shall continue and expand the City's water conservation and demand reduction program in order to reduce per capita consumption of potable water by 10% by 1995.

2.2.1 JEA shall continue to utilize potable water conservation strategies and techniques in the operation of the City's water facilities.

2.2.2 The City shall require demand reduction fixtures and low water use building techniques.

2.2.3 The approval of new water system connections shall be conditioned upon compliance with City Code to assure the use of water conservation practices and techniques.

2.2.4 The City's landscape and tree protection regulations require low water use features and vegetation and water conserving irrigation practices.

2.2.5 The City shall enact a water conservation ordinance.

2.2.6 JEA in cooperation with other departments shall implement a water conservation public education program.

INFRASTRUCTURE ELEMENT

NATURAL GROUNDWATER AQUIFER RECHARGE

B

DEFINITIONS

DEFINITIONS

Artesian Well - a well that penetrates a confined aquifer in which the water level in that veil rises above the top of that aquifer.

EQD - Air and Water Quality Division

Conservation - actions which result in a reduction of water demand or protection or preservation of the quality or quantity of the water supply source, classified as either user conservation or resource conservation.

Demand Conservation - water conservation activities such as; pricing structures, public education, water reuse systems, water saving fixtures, or other regulation.

Development - a material change in the use of character of the land including, but not limited to, the placement of any structure or site improvements on the land.

Domestic Consumption - water used in direct human contact for drinking, cooking, bathing, and cleaning purposes inside a residential or commercial establishment.

EPB - City of Jacksonville Environmental Protection Board.

EPA - United States Environmental Protection Agency.

FAC - Florida Administrative Code.

FDEP - Florida Department of Environmental Protection.

FGS - Florida Geological Survey

Floridan Aquifer - those earth materials first penetrated at varying depths greater than two hundred fifty feet (76.3m) below the ground surface in the City and that compose one or more of the following stratigraphic formations: limestone of the Ocala Group, Avon Park Limestone, Lake City Limestone or Oldsmar Limestone. The approximate depth to which wells first penetrate the Floridan Aquifers is shown in the 1978 Water Resources Investigation report, 77-144, prepared by the United States Geological Survey, or as revised.

Free Flowing Wells - those wells which are uncapped or leaking and which are releasing groundwater under pressure from an aquifer to flow freely to grade level.

F.S. - Florida Statutes.

FSDWA - Florida Safe Drinking Water Act

Groundwater - water beneath the surface of the ground, whether or not flowing through known definite channels.

Groundwater Resource Management - all actions which are necessary to accomplish the objectives of the City's Ordinance Code associated with protection of Jacksonville's groundwater resources.

GWBRAI - Ground Water Basin Resource Availability Inventory project directed by the St. Johns River Water Management District.

Irrigation - the method by which water is artificially applied to land surfaces, for the purpose of supplementing natural rainfall.

JEA – Water, Sewer, and Electric Utility serving community in and around Duval County; previously known as the Jacksonville Electric Authority.

Monitoring Well - an artificial excavation having a permanent casing which is only used for locating and sampling groundwater quality and/or quantity.

Natural Drainage Features – the naturally occurring features of an area which accommodate the flow of significant amounts of stormwater, such as streams, rivers, lakes, sloughs, floodplains and wetlands.

Natural Drainage Flow – the pattern of surface and storm water drainage through or from a particular site before the construction or installation of improvements or prior to regrading.

Non-Potable water - water which is not approved as meeting health standards applicable to potable water or which is generally undesirable for domestic use.

Piezometer Well - an artificial excavation not having a permanent casing which is only used on a temporary basis, maximum three months, to locate groundwater levels or identify areas of groundwater contamination.

Potable Water - water used for drinking, culinary purposes, personal hygiene or other domestic purposes which is approved as meeting the standards contained in F.A.C. Rules 100-4, 17-550, or 17-555, F.A.C.

Potable Water Wellfield – The site of one or more water wells which supply potable water for human consumption to a water system which serves at least 15 service connections used by yard-round residents or regularly serves at least 25 year-round residents.

Prime Recharge Area - a land surface area where water enters the ground and causes recharge to an aquifer as defined by the SJRWMD and satisfies the requirements of Chapter 373.0395 and 373.0397, FAC.

Public Water Supply System - any water system meeting the requirements of either F.A.C. Rules 17-550, 17-555, or 17-560, F.A.C., for "community or non-community" or F.A.C. Rule 100-4, for "other public" categories. Such systems serve more than four private residences, or commercial facilities serving the public at least sixty (60) days per year.

Reasonable Beneficial Use - the use of water in accordance with Chapter 373, F.S. and standards promulgated by the SJRWMD.

Recharge Area - location where the replenishment of groundwater in an aquifer occurs, primarily as a result of rainfall infiltration and secondarily by the movement of water from adjacent aquifers or surface water bodies. Such areas have been classified as having generally no recharge, low to moderate recharge, high recharge or prime recharge (also see Prime Recharge).

RESD - Regulatory and Environmental Services Department.

Resource Conservation - actions necessary to protect the City's water supply sources such as well head protection, identification of and protection from groundwater contamination or degradation by such as salt water intrusion, developing alternative water supply sources and encouraging their use.

Shall - the word "shall" is used to indicate a mandatory action.

Should - the word "should" is used to indicate an action that is strongly advised.

SJRWMD - St. Johns River Water Management District.

Supply Conservation - water conservation activities such as water metering, leak detection and repair, utility water audits, pressure reduction and wellfield management.

Tent Well - wells used for monitoring, sampling, location or improving groundwater quality and resolving groundwater pollution problems (also see Monitor Well).

User Conservation - functions generally recognized as the responsibility of the water user or water supplier. These functions are classified as either supply conservation or demand conservation.

USGS - United States Geological Survey.

Waste - the flow of water as defined in Section 373.203(4), F.S., and as further defined by the Board in a manner consistent with Section 373.203(4), F.S.

Water Source Heat Pump - includes single or reverse cycle mechanical devices for heating or cooling which require the use of water as a medium for heat transfer.

Well - any artificial excavation on submerged or unsubmerged land, excepting wells covered by Chapter 377, F.S., pertaining to oil and gas well, having a diameter of not more than 120 inches (304.3 cm) the intended use of which is for the location, acquisition, development or artificial recharge of water.

Well Head Protection Area - An area consisting of a 750-foot radial setback distance around a Public Potable Water well or Wellfield where the most stringent measures are provided to protect the ground water source for a potable water well and includes the surface and subsurface area surrounding the well.

WMD - Water Management District.

DRAINAGE SUB-ELEMENT

MAY 2000

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT

2010 COMPREHENSIVE PLAN

INFRASTRUCTURE ELEMENT

DRAINAGE

A

GOALS, OBJECTIVES AND POLICIES

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT

GOALS, OBJECTIVES, AND POLICIES

GOAL 1

The Public Works Department shall provide a stormwater management system which will increase the efficiency of the existing systems, create regional facilities where appropriate and improve water quality by reducing non-point sources of pollution.

Issue: Challenges in the Administration of a Large Drainage Network

With the advent of the consolidated government, the Public Works Department became the manager of one of the largest drainage networks in the United States. The network was a combination of piecemeal systems built by private development and public works and natural drainage systems. Prior to the development of water quality rules by the Florida Department of Environmental, Protection, most drainage systems directly discharged into the ditches, streams and rivers without treatment.

Stormwater retrofitting of existing systems to comply with current water quality standards is expensive and within the Core City can be impossible with the physical restraints of existing roads and buildings.

With the adoption and implementation of the 2010 Comprehensive Plan, the Drainage Subelement and the Master Stormwater Management Plan, the situation is starting to turn around. With the large area of the City and the fast rate of growth, a great deal still needs to be accomplished.

Objective 1.1 The City shall develop a Geographic Information System (GIS) with the capability to include data regarding the existing drainage system, land use, soil types, and topographic information.

Policies

1.1.1 By 2005 the Public Works Department will perform a ground reconnaissance to inventory all systems.

1.1.2 The Public Works Department shall prepare base maps showing the existing infrastructure and natural drainage system by 2005.

1.1.3 Upon implementation of the GIS, the Public Works Department shall require the submittal of "as-built" data in a format compatible with the GIS to facilitate the up-date of the system.

Objective 1.2 **The City has completed a Master Stormwater Management Plan (MSMP). The information in the plan will be utilized in the development of operational criteria for the drainage system. Through this process, the Public Works Department will analyze its existing stormwater management system and correct existing deficiencies by coordinating the increase in the capacity of the system, thereby encouraging infill development in the Urban Area. With completion of each phase of the MSMP, the City shall amend the 2010 Comprehensive Plan to include changes recommended in design standards and revise the Capital Improvements Element as necessary.**

Policies

1.2.1 The City shall revise the 2010 Comprehensive Plan to implement the results of the MSMP.

1.2.2 Based on the recommendations in the MSMP, the City shall reassess projects for stormwater improvements in the Capital Improvements Element and annually revise the Five Year Capital Improvement Program accordingly.

1.2.3 The Subdivision Standards and Policy Advisory Committee shall revise the Land Development Procedures Manual to incorporate special basin criteria, recommended as part of the MSMP.

1.2.4 The City shall establish and continue to utilize the three Levels of Service (LOS) standards for drainage facilities.

These Levels of Service (LOS) standards define the depth of flooding allowed within and adjacent to the street rights of way. The design storm, which shall be used, will be a 5-year design storm.

LOS A - for new systems: Hydraulic grade line at or below inlet grate.

LOS B - for retrofitted new systems: Flooding of streets and some yard area.

LOS C - for existing systems: Flooding up to the structures.

Issue: Level of Service Standards

New development will be regulated to ensure that its post-development runoff to City systems does not exceed the pre-developed discharge volume and/or rate to ensure that

the level of service of the existing stormwater system is not compromised. Development orders will be denied for developments unable to meet this criteria.

The pre- and post-developed runoff volumes and/or rates will be established either by the use of an approved hydrologic model or, in smaller cases, by the comparison of volumes and/or flows based upon the rational method (where a rainfall intensity or volume is multiplied by the area of the site, and its pre- and post-developed runoff coefficients). A full discussion of the development requirements is contained in the City of Jacksonville, Land Development Procedures Manual.

Where:

Service Level A is the most advanced level of stormwater protection available and comprises the complete removal of stormwater from street surfaces during the design rainfall event. All stormwater is captured by the collection system and overland flow and street storage conditions are eliminated. Significant ponding does not occur and confined areas are drained without surcharge. This level of service obviates the health and safety concerns associated with minor flooding, eliminates transportation hazards and prevents vehicular flooding. The hydraulic grade line is generally at or below the inlet throat.

Service Level B is the next level of protection and comprises the prevention of significant levels of yard flooding but includes some flooding of street and yard areas. The sources of Level B flooding are overland flow of off-site stormwaters, surcharging of the stormwater collection system, or the ponding of confined waters. The impacts on residents in Level B service areas are primarily nuisance flooding problems related to temporary impassability of streets. The flooding of major roadways is limited to the outer lane areas but which does not prevent travel. There may be flooding of a limited duration along minor streets and flooding of yards is generally limited to 50% of the grassed area between street and structure. There is no flooding of structures. The hydraulic grade line is at or slightly above the inlet throat.

Service Level C is the minimum level of stormwater protection provided and comprises the prevention of flooding in structures or appurtenant components of residential, commercial or institutional structures. Sources of flooding in Level C situations are via overland flow, surcharging of the stormwater collection system, or ponding of confined waters. Flooding of major roadways precludes the use of outer traffic lanes while travel in inner lanes is possible but difficult. Flooding of minor streets precludes travel and flooding of front yards up to the front face of the structure, but no structure flooding is indicated based on a five year storm frequency. The hydraulic grade line is significantly above the inlet throat.

New stormwater systems will be required to function at Level A. These areas are not so constrained as developed areas and enough engineering latitude is available to provide Level A.

1.2.5 The Public Works Department shall ensure that developments will not impact the existing drainage facilities by requiring pre/post development discharge restrictions or providing an analysis on the existing drainage facility to prove no adverse impacts.

Objective 1.3 Stormwater runoff from new development shall be treated in accordance with all applicable federal, State, regional and local standards. Stormwater from existing systems which are retrofitted shall be treated to the best available technology.

Policies

1.3.1 The City shall require stormwater treatment on all new developments. Treatment volume shall be based on Chapter 17.40.420, *Florida Administrative Code (F.A.C)* or current St. Johns River Water Management District (SJRWMD) rules. The City reserves its right to participate in all SJRWMD permitting, administrative and judicial appellate procedures; however, a SJRWMD issued permit, which is administratively and judicially final, will be accepted as demonstrating compliance with SJRWMD rules.

1.3.2 In existing areas stormwater retrofitting, is proposed in the MSMP, and in which traditional treatment methods are impractical, other "best management practices" shall continue to be utilized.

1.3.3 The City shall utilize construction standards for stormwater treatment facilities contained in the Land Development Procedures Manual.

1.3.4 The City shall continue to require annual reports from the maintenance entities of all stormwater treatment facilities to ensure their proper operation.

Objective 1.4 The City shall maximize the efficiency of operations of its stormwater facilities through scheduled and proper maintenance.

Policies

1.4.1 The City shall maintain a method for financing the operation and management of stormwater facilities. The funding shall be used to reduce existing flooding, improve water quality, and preserve or restore the values of the natural systems.

1.4.2 The funding established pursuant to Policy 1.4.1 shall be used in part to ensure continued proper operation, maintenance, and functioning of stormwater facilities.

<u>Objective 1.5</u> The City shall continue to protect existing streams, rivers, and floodways through its development review process to ensure that no harm is done to the natural drainage system.

Policies

1.5.1 The Public Works Department shall continue to review each proposed new development and determine if it may do harm to the natural drainage system.

1.5.2 The Public Works Department shall continue to deny permits to any new development that fills a flood plain without compensation for the fill by excavating an equal volume or improvement to the drainage system or a combination of both.

<u>Objective 1.6</u> The City shall coordinate extension of its drainage facilities through new developments as part of its current permitting process.

Policies

1.6.1 The Public Works Department shall require that proposed development drainage facilities are adequate in capacity to serve the proposed development along with any contributing off-site drainage.

1.6.2 The Public Works Department shall continue to require that the drainage systems downstream of a proposed development have the capacity or hydraulic gradient to accept the proposed development's discharge, or that the proposed development improves the downstream drainage system.

INFRASTRUCTURE ELEMENT

DRAINAGE

B

DEFINITIONS

DEFINITIONS

Attenuation - To limit stormwater flow to reduce downstream impacts. (See also Detention).

Best Management Practices (BMPs) - Means whereby pollutant loading to downstream elements are reduced. BMPs can be either structural (see Stormwater Tr eatment Facility) or non-structural practices. Non-structural practices include but are not limited to inlet cleaning, street sweeping, and detention pond maintenance.

Capacity Analysis - A determination of a stormwater management facility's ability to provide a given level of service.

Capital Improvement Plan or Program - A projected schedule of capital projects based on estimated costs and expected funding levels.

Conveyance - Transport of stormwater via pipe and/or open channel system(s).

Coastal High Hazard Areas – The evacuation zone for a Category 1 hurricane as established in the regional hurricane evacuation study applicable to the local government.

Design Capacity - The amount of flow a storm sewer system is designed to manage, usually expressed in cubic feet per second for flow and cubic feet or acre feet for storage.

Detailed Basin Plan or Study - An in-depth investigation into the drainage needs of a particular drainage basin. Usually limited to large basins where the expected improvements will entail large expenditures and phasing.

Detention or To Detain - To temporarily store stormwater in such a way as to limit its flow, either to limit downstream impacts or provide treatment for water quality.

Detention Basin - A stormwater facility designed to capture and limit stormwater flow (by releasing it at a reduced rate) in order to reduce downstream impacts or to treat stormwater to improve its quality.

Ditch - An open stormwater conveyance facility with side slopes steeper than three units horizontally to one unit vertically.

Drainage Basin - Any land area from which the runoff collects at a common point or receiving water.

Exfiltration Trench - A subsurface facility designed to convey stormwater into the underlying soil, providing treatmen t through filtration and volume reduction.

Flood- Prone Area - Areas which flood which may not be identified on the FEMA FIRM maps.

Impervious - Land surfaces which do not allow (or minimally allow) the penetration of water. An increase in the amount of impervious area will increase the rate and volume of runoff from a given drainage basin.

Inlet - A structure which allows stormwater to flow into a conveyance system.

Level of Service (LOS) - An indicator of the extent of or degree of service provided by , or proposed to be provided by, a facility based on and related to the operational characteristic of the facility. The LOS shall indicate the capacity per unit of demand for each facility .

Master Stormwater Management Plan (MSMP) - A comprehensive plan detailing water quantity and quality issues on the primary drainage system.

Models - Approximations of the hydraulics and hydrology of a drainage basin based upon mathematical derivations of quantifiable relationships between various factors. These factors usually include, but are not limited to, area, slope, drainage system characteristics, rainfall and land use.

Natural Drainage Features - Naturally occurring features of an area which accommodate the flow of a significant amount of stormwater, such as streams, rivers, lakes, sloughs, floodplains and wetlands.

Natural Drainage Flow - The pattern of surface and stormwater drainage through or from a particular site before the construction or installation of improvements or prior to regrading.

Outfall - Location where stormwater flows out of a given system. The ultimate outfall of a system is usually a "receiving water".

Percolation - The ability of water to pass through a porous medium; in most cases, the soil.

Pervious - Land surfaces which allow the penetration of water. A decrease in pervious area will increase the rate and volume of runoff from a given drainage basin.

Receiving Water - A body of water which serves as the receptacle for stormwater flow. Generally defined as lakes, rivers, bays and oceans.

Retention or To Retain - To store stormwater to prevent its discharge into receiving waters or to provide a storage facility for stormwater where no outfall is available.

Retention Basin - A stormwater facility which has no structural outfall and the discharge from which is limited to percolation, evaporation and evapotranspiration.

Storm Sewer Capacity - The ability of a storm sewer system to manage runoff, expressed in cubic feet per second for flow and cubic feet or acre feet for storage.

Stormwater - Flow of water which results from and which occurs immediately after a rainfall event.

Stormwater Solid Waste Facilities – Structures or systems designed for the collection, processing or disposal of solid wastes, including hazardous wastes, and i ncludes transfer stations, processing plants, recycling plants, and disposal system.

Stormwater Management System - A system which has the meaning described in Rule 17-40.210(21) F.A.C. (1992)

Stormwater Treatment Facility - A structural "best management practice" (BMP) designed to reduce pollutant loading on a receiving water by either reducing the volume of flow; biological uptake of pollutants, the limiting the loading of pollutants or by allowing pollutants to settle out of stormwater flow. Structura l BMPs include but are not limited to detention basins, retention basins, open bottom inlets, undercut ditches, exfiltration trenches and swales.

Surcharge - Flow out of a stormwater facility resulting from flow in excess of its designed capacity at a poi nt upstream from the outfall.

Swale - An open stormwater conveyance facility with side slopes equal to or greater than three units horizontally to one unit vertically (generally very shallow).

Shall - The word "shall" is used to indicate a mandatory acti on.

Should - The word "should" is used to indicate an action that is strongly advised.

SANITARY SEWER SUB-ELEMENT

MAY 2000

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT

2010 COMPREHENSIVE PLAN

INFRASTRUCTURE ELEMENT

SANITARY SEWER

A

GOALS, OBJECTIVES AND POLICIES

GOALS, OBJECTIVES AND POLICIES

GOAL 1

JEA shall provide for economically and environmentally sound regional wastewater collection and treatment systems which protect the public health and investment in existing facilities, promote beneficial land use and growth patterns, and discourage urban sprawl.

Issue: Regionalization of Wastewater Treatment Plants

In the past, the wastewater disposal needs associated with development outside the core district of the City were characterized by the use of either package wastewater treatment plants or septic tank systems. The ability of the surface waters and subsurface environment to assimilate the effluent from these systems was soon outgrown by the City's tremendous population increase.

Subsequent to consolidation, the City Council adopted the "Water Quality Management Program" which, after evaluating the City's water quality situation, concluded, "the most realistic method of reaching the goal of maximum water pollution control is through the consolidation of the numerous wastewater collection, transmission and treatment systems on a regional basis."

The phasing out and connection to a regional wastewater system of these package treatment plants and septic tanks in designated failure areas, coupled with a programmed expansion of the City's wastewater facilities to accommodate future needs, are essential components of a regional solution to the City's water quality problems, associated with improperly treated wastewater.

Objective 1.1 In order to discourage urban sprawl, and correct existing deficiencies, JEA shall provide regional wastewater facilities in concert and conformance with the Public Facilities Map as adopted in the Capital Improvements Element.

Policies

1.1.1 JEA shall provide for regional wastewater facilities associated with development within the Urban Area as defined in the Future Land Use and Capital Improvements Element, excluding improvements within the service area of an investor-owned public utility company of regional status.

1.1.2 JEA shall provide regional wastewater facilities associated with development within the Suburban Area as defined in the Capital

Improvements Element excluding improvements within the service area of an investor-owned public utility company of regional status.

1.1.3 The JEA shall not invest in sanitary sewer facilities in the Rural Area as defined in the Future Land Use and Capital Improvements Element, except where necessary to protect the public health or safety, or encourage mixed use or regional economic development. The JEA and the Department of Planning and Development shall coordinate on the placement of these lines to ensure compliance with the City's Comprehensive Plan and its urban and suburban boundaries.

1.1.4 Appropriate interim facilities will be permitted within the City as provided in Objective 1.2 and associated policies.

1.1.5 The City shall, through its Land Development Regulations, preserve utility corridors so that future development can be served in a cost effective manner.

1.1.6 All City owned wastewater facilities shall be constructed in accordance with the City's Utility Standards and Specifications, Land Development Procedures Manual, FDEP regulations and other applicable requirements.

1.1.7 The City shall incorporate incentives in its Land Development Regulations which encourage development, and redevelopment in areas where the public wastewater system has or will have adequate capacity. Developments which qualify for mixed use and/or regional economic development must also undergo land use amendments to expand the suburban boundaries to incorporate these areas.

<u>Objective 1.2</u> In order to discourage urban sprawl and prevent adverse impacts to groundwater, surface water, and quality of life, the City will require that all nonregional wastewater treatment facilities identified pursuant to Environmental Protection Board (EPB) Rule 3 discontinue operation by 2010. Additionally, the City shall continue to regulate the use of on-site disposal facilities to assure compliance with federal, State, regional, and local regulations, and install regional facilities in accordance with the Capital Improvements Element in order to reduce the number of septic tanks in new developments.

Policies

1.2.1 JEA shall continue its efforts toward the acquisition of nonregional investor or community owned public utility companies where analysis of the acquisition indicates that the costs of acquiring, integrating, and

upgrading the facilities to City standards will be offset by the existing and projected rate base of the utility.

1.2.2 No new wastewater treatment facility discharges shall be permitted to the tributaries of the St. Johns River within the City.

1.2.3 The City shall not permit septic tanks for the disposal or discharge of industrial wastes.

1.2.4 Existing septic tanks for estimated wastewater flows of 600 or less gallons per day (gpd) shall connect to the collection system of a regional utility company provided that gravity service is available via a facility within a right-of-way or easement, which abuts the property.

1.2.5 Existing septic tanks for estimated wastewater flows exceeding 600 gallons per day (gpd) shall connect to the collection system of a regional utility company provided that a facility abuts or is within 50 feet of the property.

1.2.6 Within the Urban and Suburban Areas as defined in the Future Land Use and Capital Improvements Elements, new septic tanks will be generally discouraged; however, they may be permitted as interim facilities, provided the following requirements are satisfied:

1. Single family/commercial (estimated flows of 600 gpd or less):

    a. Requirements of Chapter 64E-6, Florida Administrative Code (F.A.C.) are accommodated.

    b. The collection system of a regional utility company is not available through gravity service via a facility within a right-of-way or easement which abuts the property.

2. Commercial (above 600 gpd)

    a. Requirements of Chapter 64E-6, F.A.C. are accommodated.

    b. The collection system of a regional utility company is not within 50 feet of the property.

3. Subdivision (commercial or single family):

    a. Requirements of Chapter 64E-6, F.A.C. are accommodated.

b. The collection system of a regional utility company is greater than 1/4 mile from the proposed subdivision.

c. Each lot is a minimum of 1/2 acre unsubmerged property.

d. Alternative (mounded) systems are not required.

1.2.7 Subdivisions permitted under the criteria of Policy 1.2.6 above shall be required to install dryline sewer systems when programmed improvements are identified in the Capital Improvements Element which will make connection to the JEA Collection System available within a five (5) year period.

1.2.8 The City shall continue the effort to phase out septic tanks in defined failure areas in conformance with Chapter 751, Ordinance Code (Septic Tank Superfund).

1.2.9 Septic tanks shall be permitted in Rural Areas, provided they meet the requirements of Chapter 64E-6, F.A.C., and that all lots created after shall have a minimum of 1 acre of unsubmerged property.

1.2.10 Nonregional wastewater facilities may be permitted as interim facilities, provided all of the following requirements are satisfied:

1. The facility meets all federal, state, regional, and local environmental regulations.

2. The developer shall operate and maintain the facilities

3. The developer provides for phase out costs where appropriate.

4. The developer enters into an agreement with the City, specifying the date and manner of phase out.

5. The facility operator will reimburse the City for costs of enforcement of violations of water quality standards and effluent limitations.

Issue : Level of Service Standards

Level of Service (L.O.S.) standard is an indicator of the extent or degree of service provided by or proposed to be provided by a facility based on and related to the

operational characteristics of the facility. A unit contribution rate is calculated by combining average daily residential, commercial, industrial and infiltration/inflow (I/I) contributions, measured in gallons per capita per day (gpcd). This can then be used in conjunction with projected population growth to estimate the future demand on the wastewater treatment facility.

The older a system is, the more likely this system is to experience a high I/I, which can be attributed to leaking joints, pipe and manhole deterioration, and illegal connections (roof drains, cooling water, stormwater, etc.). I/I on existing systems can be controlled through rehabilitation and renewal projects, while I/I from proposed facilities is controlled through inspections and regulation of connections.

<u>Objective 1.3</u> JEA shall provide adequate wastewater facility capacity to meet future needs.

Policies

1.3.1 To assure an adequate Level of Service, wastewater facilities within the City shall meet the following standards:

1. Effluent discharge from wastewater treatment plants shall meet all federal, State, and local standards.

2. Proposed wastewater collection, transmission, treatment, and disposal facilities shall be designed and constructed to maintain the capacity associated with the following wastewater generation rates:

Residential	100 Gallons per capita per day (GPCD) (includes an Infiltration/Inflow factor of 25 GPCD)
Non-Residential	flows to be evaluated on a site specific basis using Section 10D-6 48(1), F.A.C.

Peak Flows will be determined in accordance with "Recommended Standards for Sewage Works", latest edition (Ten State Standards) and the Water Pollution Control Federation Manual of Practice #9.

1.3.2 No development order authorizing new development or a significant expansion of an existing user shall be issued for any area of the City served by a wastewater facility which does not meet the standards in Chapter 9J-5.0055(2)a 1.-3., F.A.C. Specifically, the necessary facilities are in place, the necessary facilities will be in place when the

development impacts occur, the necessary facilities are under construction or the necessary facilities are guaranteed by an enforceable development agreement.

1.3.3 JEA shall monitor the Levels of Service of each facility and determine the impact of a proposed development or redevelopment on the adopted Level of Service (LOS) for use by agencies which issue development orders or permits

Issue: Maintenance and Rehabilitation of Existing Facilities

The efficiency of the wastewater collection, treatment and disposal system is directly affected by the condition of the various parts of the system. A degradation in any part of the system may reduce the capacity of the system to treat flow or to maintain the quality of treatment required by existing regulations.

An aggressive rehabilitation and replacement program on the existing collection system coupled with tighter control of construction methods on proposed systems are imperative to the reduction of I/I and the efficient operation of the system.

The quality of wastes entering the wastewater treatment facility can greatly influence the reliability of the facility. Ordinances and regulations currently exist concerning the pretreatment of certain industrial discharges which must be strictly enforced to assure the efficiency of the treatment facility.

Proper planning, design, permitting, maintenance and inspection activities are essential to insure that the adopted Level of Service (LOS) standard is maintained and the expensive replacement of facilities will not be required prematurely.

Objective 1.4 JEA shall plan and provide for regional facilities to accommodate the ultimate needs of the community through implementation of the projects listed in the Capital Improvements Element.

Policies

1.4.1 Wastewater system improvements will be evaluated for funding in accordance with the following general criteria:

1. Improvements which are necessary to protect the health, safety and environmental integrity of the community, consistent with the policies of this Comprehensive Plan and applicable federal, state, regional and local regulatory requirements.

2. Improvements which are necessary to meet existing deficiencies in capacity or in performance. These include the

retrofit of deteriorating facilities which fail or threaten to fail to meet health, safety or environmental standards.

3. Improvements which extend regional service to previously unserved developed areas within the Urban and Suburban Areas as identified in the Capital Improvements Element.

4. Improvements which have been identified in adopted functional plans and which address system details beyond the scope of this Subelement, but which are consistent with the goals, objectives and policies of this Comprehensive Plan.

5. Cost-effective improvements to expand capacity, maximize operational efficiency, and increase productivity.

1.4.2 Wastewater facility improvements shall be undertaken in conformance with the schedule included in the Capital Improvements Element.

<u>Objective 1.5</u> JEA shall provide regional wastewater treatment facilities to accommodate the adopted Level of Service standards.

Policies

1.5.1 JEA shall protect existing treatment facilities from adverse impacts due to discharge of deleterious wastewater to the system, by vigorous enforcement of Chapter 750, Ordinance Code, as it pertains to "Use of Public Sewers".

<u>Objective 1.6</u> The WSBU shall maintain existing collection systems, and inspect new construction in order to ensure compliance with the adopted Level of Service standards and maximize the use of existing facilities.

Policies

1.6.1 JEA shall maintain an inventory of all facilities which identifies location, physical characteristics, age, service condition and structural condition.

1.6.2 JEA shall continue the rehabilitation and replacement program directed at the older portions of the existing system.

1.6.3 All required federal, State, regional and local permits shall be obtained before JEA undertakes or authorizes a contractor to undertake construction and/or operation of facilities.

1.6.4 The City shall inspect construction of all new facilities to be dedicated to the City to ensure the use of the best construction methods.

1.6.5 The City shall annually evaluate the City Standards and Specifications and the Land Development Procedures Manual.

1.6.6 JEA will not allow connections directly into its major force main system, as defined in the Wastewater Master Plan, in a manifolding manner except as designated in the plan.

1.6.7 JEA shall maintain an automated wastewater management information system for facility records, mapping, Geographical Information System, preventive maintenance, stock and inventory control and other related functions.

Issue: Disposal of Sludge Solids

The by-products of wastewater treatment are: water of a sufficiently high quality that it is acceptable for re-entry into the natural environmental system and the accumulated solids separated from the liquids during processing. These solids are called sludge and must be treated and disposed of in as safe a manner and as the liquid portion of wastewater.

Objective 1.7 JEA shall provide adequate sludge utilization/disposal facilities capable of handling all sludge generated at JEA wastewater treatment facilities.

Policies

1.7.1 JEA shall monitor current sludge volumes and future population projections to predict future needs.

1.7.2 JEA shall schedule and design construction projects for sludge management facilities to meet identified needs.

INFRASTRUCTURE ELEMENT

SANITARY SEWER

B

DEFINITIONS

DEFINITIONS

Best Construction Methods - Those methods delineated in the City standards and specifications.

Biochemical Oxygen Demand (BOD) - The quantity of oxygen used in the aerobic stabilization of wastewaters and polluted waters. The standard 5-day BOD value is commonly used to define the strength of municipal wastewaters, to evaluate the efficiency of treatment by measuring oxygen demand remaining in the effluent and to determine the amount of organic pollutant in surface waters.

Community Owned Public Utility Company - A water or sewer utility owned by nonprofit corporations providing service to members who own and control such nonprofit corporations, associations, or cooperatives.

Development - Has the meaning described in §380.04, *Florida Statutes.*

Domestic Waste - Human body waste and household - type wastes, including bath and toilet type wastes, laundry wastes, kitchen wastes, and other similar wastes from household or established appurtenances.

Effluent - Wastewater or other liquid discharged from a treatment process or treatment plant.

EPB - Jacksonville Environmental Protection Board.

Exfiltration - Sewage leaving sewers through defective joints and cracks in pipes and manholes.

Industrial Wastes - Wastewater not otherwise defined as domestic sewage waste. Includes wastewater from floor drains in buildings and industrial or manufacturing parks, commercial laundry facilities, wastewater from animal holding facilities, etc.

Infiltration/Inflow - Groundwater entering sewers and building connections through defective joints and cracks in pipes and manholes.

Inflow - Water discharged into service connections and sewer pipes from foundation and roof drains, outdoor paved areas, cooling water from air conditioners, and unpolluted discharges from businesses and industries.

Influent - Wastewater or other liquid (raw or partially treated) flowing into a reservoir, basin, treatment process, or treatment plant.

Interceptors - Mean conduits which carry flows from the collector sewers to the point of treatment or disposal of the wastewater.

Investor Owned Public Utility Company - A water or sewer utility which, except as provided in Section 367.022, F.S. is providing, or proposes to provide, water or sewer service to the public for compensation.

JEA – Water, Sewer & Electric Utility serving community in and around Duval County previously known as Jacksonville Electric Authority.

Level of Service - An indicator of the extent or degree of service provided by, or proposed to be provided by a facility based on and related to the operational characteristics of the facility. Level of service shall indicate the capacity per unit of demand for each public facility.

Lift Station - A pumping facility which discharges flow directly into a gravity conduit.

Local Collection Mains - Conduits which gather flows from individual buildings and transport the material to an interceptor or main sewer.

NPDES - National Pollution Discharge Elimination System

Parshall Flume - A critical depth meter which establishes a mathematical relationship between the stage 'h' and the discharge 'Q'. It is for measuring the flow in open channels.

Point Source - Specific point of discharge of a pollutant.

Point Source Pollution - Any source of water pollution that constitutes a discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

Primary Treatment - The removal of between 30 to 35 percent of the organic materials and up to 50 percent of the solids from the sewage. This is commonly referred to as physical treatment because screens and settling tanks are the most common methods of removal.

PSC - Public Service Commission.

Regional Wastewater Facilities - Those facilities identified in the WSBU Wastewater Master Plan.

Sanitary Sewer Facilities - Structures or systems designed for the collection, transmission, treatment, or disposal of wastewater and includes trunk mains, interceptors, treatment plants and disposal systems.

Secondary Treatment - Secondary treatment processes remove between 80 and 90 percent of total organic materials and suspended solids from sewage. This level of treatment generally requires multiple steps involving one biological process and one or more processes for removal of suspended solids.

Septic Tank - Any in-ground or above-grade wastewater treatment facility discharging an effluent to the ground or surface waters of under 5,000 gallons per day (gpd). Or an underground tank used for the deposition of domestic-type wastes. Bacteria in the waste decomposes the organic matter, and the sludge settles to the bottom. The effluent flows through drains into the ground. Sludge must be pumped out at regular intervals.

Shall - the word "shall" is used to indicate a mandatory action.

Should - the word "should" is used to indicate an action that is strongly advised.

Sludge - The accumulated solids separated from liquids during processing, or the precipitate resulting from chemical treatment, coagulation, or sedimentation of wastewater.

STS - Septic Tank Superfund.

Total Suspended Solids - The sum of all solids that float on the surface of, or are in suspension in wastewater and that are largely removable by treatment processes.

Urban Sprawl – A land use pattern typically characterized by the following:

- Premature conversion of agricultural areas beyond urban and suburban service boundaries into urban uses beyond the planning time frame horizon covered in the City's Comprehensive Plan.
- "Leapfrog" development patterns
- Large areas of low-density, single-use development

Development may occur beyond urban and suburban boundaries provided that it is mixed-use in nature. Otherwise, development beyond such boundaries is considered urban sprawl and is to be discouraged.

Wastewater - A combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and storm water that may be infiltrated.

Wastewater Facilities - Structures or systems designed for the collection, transmission, treatment or disposal of wastewater and includes trunk mains, interceptors and treatment plants.

SOLID WASTE SUBELEMENT

MAY 2000

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT

INFRASTRUCTURE ELEMENT

SOLID WASTE

A

GOALS, OBJECTIVES AND POLICIES

GOALS, OBJECTIVES, AND POLICIES

GOAL 1

The City of Jacksonville shall provide for an integrated solid waste management system which protects the public health, sanitation, and environment and provides for operational efficiency and beneficial land use and growth patterns.

Issue: Reduction of the Volume of Solid Waste Requiring Land Disposal

The continued landfilling of solid waste will remain a necessity in the foreseeabl e future. The development of alternatives for reduction of the volume of solid waste requiring landfill disposal is rapidly becoming an additional necessity. The incorporation of various alternatives for the reduction of solid waste requiring disposal is known as integrated solid waste management. This approach allows each community to select options, such as source reduction, reuse, recycling, composting and environmentally safe technologies to reduce reliance on landfills as the only option.

The State of Florida provided emphasis to the necessity to reduce the amount of solid waste landfilled by passage of the 1988 Solid Waste Management Act, Chapter 403 (Part II), F.S.

Objective 1.1 The Solid Waste and Resource Management Department shall plan and implement an integrated solid waste management system to reduce the volume of solid waste disposed in landfills in Jacksonville. An integrated solid waste management system consists of a combination of solid waste management and disposal options which work together to meet the community's needs for safe and effective solid waste disposal.

Policies

1.1.1 Landfills shall be designated to receive those items that cannot be reused, composted, recycled, or processed for volume reduction in a technologically reasonable and economically practical manner.

1.1.2 The integrated solid waste management program shall focus on the proper management of solid waste, conservation of resources and optimize landfill capacity.

Objective 1.2 Solid Waste and Resource Man agement Department (SWRM) shall meet and exceed the state recycling goal. The Solid Waste and Resource Management Department shall develop by 1993 recycling, reuse and reduction programs for the residential, commercial, and industrial sectors.

Policies

1.2.1 The Solid Waste and Resource Management Department shall maintain the residential recycling program to include all residences within the City.

1.2.2 Recycling programs designed to separate newspaper, glass, plastics, and metal products; office papers, paperboard, corrugated papers and organic materials from the solid waste generated by commercial and industrial businesses shall be implemented by the private sector.

1.2.3 The Solid Waste and Resource Management Department shall continue to develop programs for the commercial/industrial sectors to examine their individual waste streams to determine those materials which may be reused, recycled or composted.

1.2.4 The Solid Waste and Resource Management Department shall continue to implement public education and awareness programs contingent upon the availability of State grant funding to inform both the residential and the commercial/industrial sectors of the City of the need to reduce, recycle, reuse, and compost solid waste.

1.2.5 The Solid Waste and Resource Management Department shall maintain a program for the mulching/composting of organic materials. The Solid Waste and Resource Management Department shall encourage back yard composting through public education and awareness programs contingent upon the availability of State grant funding.

1.2.6 The City of Jacksonville shall continue to follow procurement procedures that promote a greater use of recycled paper.

1.2.7 The Solid Waste and Resource Management Department shall apply for grant funds and such other revenue sources that may be available when needed for development of recycling, reuse, and reduction programs.

1.2.8 The Solid Waste and Resource Management Department shall continue to develop, improve, and expand the waste reduction, reuse, and recycling programs to include additional materials, methods, or technologies.

1.2.9 The City shall continue to implement the existing mandatory residential recycling program to separate newspaper, glass, plastics,

and metal products, and subject to the availability of markets, a residential recycling program for paperboard, corrugated papers, and mixed papers. The residential recycling program shall permit the resident to market his or her own recyclable materials.

Issue: Development Operation and Maintenance of Solid Waste Management Facilities in Strict Compliance With Environmental Laws, Regulations and Guidelines

Environmental concerns deal with the effects a solid waste management facility may have on the ecosystem. These include impacts on wetlands, critical habitat, groundwater, surface water and air quality.

The siting, design, operation and monitoring of solid waste management facilities is governed by federal, State and local laws, regulations, and guidelines. Feder al and State laws, regulations, and guidelines are implemented through the United States Environmental Protection Agency (EPA), and the State of Florida Department of Environmental Protection (FDEP), respectively.

The State of Florida strengthened the env ironmental regulation of solid waste management facilities with passage of the 1988 Solid Waste Management Act. This Act includes provisions to ban landfill disposal of certain items (batteries, tires, waste oil) and to regulate disposal of bio-hazardous wastes.

Additional factors of environmental concern in the siting, design, and operation of solid waste management facilities in the City of Jacksonville include: the presence of vast wetlands areas and their associated ecosystems; the predominance of san dy soils which allow rapid recharge of underground aquifers; and a high groundwater elevation which necessitates construction of landfills above the ground surface.

Objective 1.3 The Solid Waste and Resource Management Department shall continue to operate solid waste management facilities in compliance with applicable air, groundwater, and surface water pollution standards established by federal, State, and local laws, regulations and guidelines.

Policies

1.3.1 The Solid Waste and Resource Management Department shall identify, plan, and implement improvements to solid waste management facilities which are necessary to meet environmental performance standards and other applicable regulations.

1.3.2 The Solid Waste and Resource Management Department sh all close and monitor the City's completed landfills in compliance with standards established by federal, state, and local laws, regulations, and guidelines.

1.3.3 The Solid Waste and Resource Management Department shall continue to implement a public education program on the proper disposal of potentially hazardous wastes with the purpose of reducing the amount of these wastes entering the solid waste stream.

1.3.4 The Solid Waste and Resource Management Department shall continue to implement a permanent local "Amnesty Days" program to facilitate proper collection and disposal of household hazardous wastes.

1.3.5 The Solid Waste and Resource Management Department shall continue to operate a training program for landfill operations personnel to improve identification and proper handling of potentially hazardous materials.

1.3.6 The Solid Waste and Resource Management Department shall require a training program for landfill operations personnel to improve the operation and management of the City's landfills.

1.3.7 By 2002 the Solid Waste and Resource Management Department shall develop criteria for identifying and establishing the priority for cleanup of old dump sites within the City's jurisdiction

1.3.8 The Solid Waste and Resource Management Department shall coordinate with the Regulatory and Environmental Services Department (RESD) and other State and local agencies when implementing hazardous waste programs by regularly scheduled meetings and correspondence between the appropriate Departments.

1.3.9 The City shall adopt Land Development Regulations that prohibit new development in the vicinity of solid waste management facilities which is incompatible with the operation of such facilities. Section 656.401 Ordinance Code of the City of Jacksonville now contains performance standards, guidelines, and criteria for these regulations.

1.3.10 Peripheral buffers and landscaping shall be required at new or expanding solid waste facilities to minimize impacts to the surrounding area.

Issue: Development and Maintenance of Adequate Solid Waste Management Facilities

The City of Jacksonville has experienced first hand the difficulties of maintaining adequate landfill capacity. In the late 1970's, ten landfills were operating in Duval County. Currently,

only one landfill remains open, focusing the City's attention on the solid waste disposal problems. The City was forced, in this situation, to reopen East Landfill to fully utilize the remaining unused capacity. The City's attempts to provide additional, needed landfill capacity faced strong opposition from citizens located near the proposed new facility. Environmental concerns resulted in further delays and modification of the facility design. The rapidly increasing costs to properly develop, operate, close and monitor landfills; and increased public opposition to siting and development of solid waste management facilities emphasize the necessity for long-range planning to address the development and maintenance of adequate solid waste management and disposal capacity.

<u>Objective 1.4</u> The Solid Waste and Resource Management Department shall plan solid waste management facility additions, expansions, and improvements to meet the present needs and support the anticipated future growth.

Policies

1.4.1 The Solid Waste and Resource Management Department shall establish a long-range planning program to address the available capacity of solid waste management facilities for a minimum 20-year planning period.

1.4.2 The Solid Waste and Resource Management Department shall conduct an annual review of solid waste generation, disposal rates, and facility capacity to evaluate future needs.

1.4.3 The Solid Waste and Resource Management Department shall identify and evaluate funding alternatives for the continued development and operation of the integrated solid waste management system.

1.4.4 The City shall operate all of its solid waste management facilities in a manner that will protect the public health, welfare and safety, and control costs and performance. The City shall establish regulations to require all private solid waste management facilities to be operated in a manner that will protect the public health, welfare and safety and control costs and performance.

1.4.5 The City shall identify solid wastes generated within and outside of Duval County, and adopt controls using waste flow legislation to direct components of the waste stream to processing facilities prior to final disposal consistent with Policy 1.1.1 of this element. The City may opt not to accept for disposal at City owned landfills waste generated outside of the County. Waste that is dedicated to joint ventures with adjacent counties pursuant to an interlocal agreement, shall be accepted for disposal at a rate to be established.

1.4.6 The City's adopted Level of Service (LOS) standard for solid waste disposal shall be a solid waste generation rate of 6.7 lbs. per capita per day.

1.4.7 No development order shall be issued for any area of the City served by a solid waste disposal facility which does not meet the standards of Chapter 9J-5.0055, F.A.C. Specifically, the necessary facility is in place at the time the development permit is issued; or a development permit is issued subject to the condition that the necessary facilities and services will be in place when the impacts of the development occur; or the necessary facilities and services are guaranteed in an enforceable development agreement which guarantees that the necessary facilities will be in place when the impacts of the development occur.

Issue: Proper Handling and Disposal of Both Hazardous and Non-hazardous Solid Waste

The improper disposal of solid waste presents unacceptable risks to a community's health and well being. The indiscriminate dumping of both hazardous and non-hazardous solid waste is a multifaceted problem that requires multifaceted solutions. Adequate facilities should be provided to allow the convenient, proper disposal of all waste materials. A public education program should educate individuals as to the proper methods of waste disposal. Enforcement of laws requiring proper disposal of wastes must provide a deterrent to potential violators.

Objective 1.5 The City shall continue to implement programs to address the problems of illegal dumping of both hazardous and non-hazardous waste materials.

Policies

1.5.1 The City shall improve the enforcement of existing City ordinances, Florida Statutes, and federal laws concerned with illegal dumping by increasing the enforcement staff.

1.5.2 The City shall continue to operate a comprehensive program concerning illegal dumping which includes education, public awareness, and enforcement penalties.

INFRASTRUCTURE ELEMENT

SOLID WASTE

B

DEFINITIONS

DEFINITIONS

Aerobic Composting - The activity of aerobic microbes (requiring the presence of oxygen) during the composting process.

Anaerobic Bioconversion - The conversion of biodegradable organic matter into biogas, composed of methane and carbon dioxide, through the activity of bacteria in an anaerobic (no oxygen present) environment.

Anaerobic Composting - The activity of anaerobic bacteria (requiring the exclusion of oxygen from the process) during the composting process.

Commercial Wastes - Wastes generated by the commercial and institutional sectors. Physical characteristics of these wastes are similar to those of residential wastes, in that they consist largely of combustible materials in the form of paper and food waste from offices, restaurants, retail establishments, schools, hospitals, motels and churches.

Composting - The process by which biological decomposition of the organic constituents of solid waste under controlled conditions occurs.

Development - Has the meaning described in §380.04, *Florida Statutes.*

Facility Availability - Whether or not a facility is available in a manner to satisfy the Concurrency Management System.

Hazardous Waste - A solid waste, or a combination of solid wastes which, because of its quantity, concentration, or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or may pose a substantial present or potential hazard to human health or the environment when improperly transported, disposed of, stored, treated or otherwise managed.

Industrial Wastes - Wastes generated by industrial processes and manufacturing operations, excluding hazardous wastes. These wastes also include general industrial housekeeping and support activity wastes.

Integrated Solid Waste Management System - A combination of solid waste management and disposal options which meet the community's needs for safe and cost -effective solid waste disposal.

Landfill or Sanitary Landfill - Land on which solid waste is accepted for disposal in accordance with Chapter 62-701, FAC.

Level of Service (LOS) - An indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of Service shall indicate the capacity per unit of demand for each public facility.

Recycling - Any process by which solid waste, or materials which would othe rwise become solid waste, are collected, separated, or processed and reused or returned to use in the form of raw materials or products.

Residential Wastes - Mixed household wastes generated by the general population.

Shall - Used to indicate a mandatory action.

Should - Used to indicate an action which is strongly advised.

Solid Waste - Sludge from a waste treatment works, water supply treatment plant, or air pollution control facility or garbage, rubbish, refuse, or other discarded material including solid, liquid, semisolid or contained gaseous material resulting from domestic, industrial, commercial, mining, agricultural or governmental operations.

Solid Waste Facility - Structures or systems designed for the collection, processing or disposal of solid waste, including hazardous wastes and includes transfer stations, processing plants, recycling plants and disposal systems .

Solid Waste Management Facility - Any solid waste disposal area, volume reduction plant, transfer station, or other facility, the purpose of which is resource recovery or the disposal, recycling, processing or storage of solid waste.

Special Wastes - Wastes having special characteristics or requiring special handling. These wastes include tires, oversize bulky wastes, asbestos, liquids, sludges, containers, and materials generated in demolition and construction projects.

Yard Wastes - Vegetative matter resulting from landscaping maintenance and land clearing operations. These wastes are generated in both the residential, commerc ial and industrial sectors.

2010 COMPREHENSIVE PLAN

INFRASTRUCTURE ELEMENT

POTABLE WATER

DECEMBER 20005

JACKSONVILLE PLANNING AND DEVELOPMENT DEPARTMENT

2010 COMPREHENSIVE PLAN

INFRASTRUCTURE ELEMENT

POTABLE WATER

A

GOALS, OBJECTIVES AND POLICIES

GOALS, OBJECTIVES AND POLICIES

GOAL 1

JEA shall regionalize water facilities in a manner which adequately corrects existing deficiencies, accommodates future growth, increases system capacity, acquires investor owned systems and incorporates private package plants into the regional system, and interconnects water systems where required while complying with all federal, State, regional and local regulations.

Issue: Expansion of Water System Network

The City's (JEA) water system has developed from a central regional facility to a system of two multiple plant networks. Twenty-eight plants are integrated into the two water networks. Historically, the raw water quality required only aeration and chlorination to render it potable and to meet all drinking water standards. Adoption of the Federal Safe Drinking Water Act and amendments and the State of Florida's enforcement of this act with equal or more stringent regulation requires that the JEA modify existing operations to meet these newly adopted standards. Considering the age of the existing system, modification, rehabilitation, renewal, and replacement of the existing water system will be required.

To meet the City's continued growth, expansion of the existing system is required. This expansion program must meet the potable, industrial, commercial, irrigation and fire protection needs of the City.

Objective 1.1 In order to discourage urban sprawl, to maximize the use of existing facilities, and to coordinate the increase in the capacity of facilities to meet future needs of the City, the JEA shall provide regional water facilities in concert and conformance with the Public Facilities Map as adopted in the Capital Improvements Element.

Policies

1.1.1 JEA shall provide for regional water facilities associated with development within the Urban Area as defined in the Capital Improvements Element, excluding improvements within the service area of an investor-owned public utility.

1.1.2 JEA shall provide for regional water facilities associated with development within the Suburban Area, as defined in the Capital Improvements Element, excluding improvements within the service area of an investor-owned public utility. The Suburban Areas should be reviewed in the development of the 2020 Comprehensive Plan.

1.1.3 When requested by the Duval County Health Department and where the public water system is available to provide service, the JEA shall inter-tie with private water systems whose water treatment facilities are not in compliance with federal, State, or local regulations.

1.1.4 Investor-owned public utilities, and all parties connecting to them, shall be required to install facilities in compliance with Chapters 654 and 750, Ordinance Code.

1.1.5 Non-regional utility water treatment facilities shall continue to be phased-out and systems intertied to regional water treatment facilities.

1.1.6 JEA shall continue to acquire community and/or investor-owned public utility companies and integrate the systems into the regional network, where analysis of the acquisition indicates that the costs of acquiring, interconnecting and upgrading the facilities to current standards will be offset by the existing and projected rate base of the utility.

1.1.7 All public water supply systems shall be constructed and operated in accordance with all applicable federal, State, regional and local regulations which apply to potable water systems.

1.1.8 All community and/or investor-owned public utility systems involved in the purchase and sales transactions shall be inspected for compliance with existing federal, State, regional and local health and regulatory standards. The acquiring entity shall be notified of all system deficiencies prior to acquisition.

1.1.9 JEA shall prepare an annual report summarizing existing capacity and demand information for the water system.

1.1.10 JEA shall continue to allocate sufficient funding to support staffing, equipping and monitoring of water quality standards in order to maintain compliance with all federal, State and regional requirements.

1.1.11 JEA shall continue to inventory, classify and determine the useful life of its existing water system assets and renew and replace these assets when they become outdated, inefficient, or unusable.

1.1.12 All JEA water systems within the City shall be constructed in accordance with JEA Standards and Specifications, Land Development Procedures Manual, Florida Department of

Environmental Protection (FDEP) regulations and other applicable requirements.

1.1.13 JEA shall implement the Five-Year Water System Capital Improvement Program which shall be updated annually and amended as appropriate.

1.1.14 New non-regional water facilities may be allowed as appropriate interim facilities, provided the following requirements are satisfied:

1. The facility meets all federal, State, regional and city environmental regulations;

2. The developer provides for all operation and maintenance costs;

3. The developer provides for phase out costs where appropriate;

4. The developer enters into an agreement with JEA specifying the date and manner of phase out;

5. The facility operator will reimburse JEA for costs of enforcement of violations of water quality standards; and

6. Minimum fire protection levels of service as specified in Policy 1.3.1 are provided for.

1.1.15 The City shall amend the 2010 Comprehensive Plan to implement the Water System Master Plan.

Issue: Water Resource Planning

Appropriate water resource planning is essential to the continued operations of existing facilities. Over the past fifty years the Floridan Aquifer potentiometric surface elevation has significantly decreased, indicating that the productive, high quality water bearing aquifer system has been stressed. This decline has occurred adjacent to the surrounding saline and sulfate containing bodies of water. The potential for raw water quality degradation becomes greater as the decline continues. Protected high quality raw water reserves and proper management and modification of existing water supply facilities is required to ensure the provision of potable water in an economical and environmentally sound fashion.

Objective 1.2 JEA shall develop and maintain a comprehensive water resources management plan for the City's present and future service areas, with the primary objective being the provision of an adequate supply of high-quality water, carefully planned and properly managed with due regard for the environment.

Policies

1.2.1 JEA shall analyze the water quality of its existing water supply wells and implement improvements, modifications, and/or operational strategies to improve the developed raw water quality.

1.2.2 JEA shall investigate the water resources of the City and identify areas for new water supply development in order to meet the City's future water supply requirements. The program shall be coordinated with the St. Johns River Water Management District.

1.2.3 The City shall implement the Wellhead Protection Ordinance to protect its potable water supply source. Improperly constructed or maintained Hawthorne Group and Floridan Aquifer private wells in proximity to a Public Potable Water well within Duval County are potentially harmful to the drinking water supply of the City of Jacksonville. A Pathway Focused Approach to prevent migration of contamination from the shallow aquifer into the Floridan aquifer is reasonable and prudent to protect public water supplies. The intent of this policy is to protect and safeguard the health, safety and welfare of the residents of Duval County by establishing a Pathway Focused Approach to wellhead protection that safeguards the Floridan aquifer from intrusion of any contaminants that may jeopardize present and future public water supply wells.

Within the wellhead protection area, the following shall apply:

1. Within a 500-foot radius around an existing Public Potable Water well, those actions and uses established by the Florida Department of Environmental Protection in Rule 62-521.400, Fla. Admin. Code shall be prohibited.

2. No existing private wells shall be deepened and no new wells shall be constructed within designated Wellhead Protection Areas that penetrate a portion of the Hawthorne Group or the Floridan Aquifer without first obtaining a well construction permit from the City of Jacksonville Environmental Quality Division (EQD) as provided in Environmental Protection Board Rule 8 and including a review of areas of known contamination at or near the proposed or existing well location. All new wells within such areas must be fully grouted.

3. Abandonment of existing wells shall be in accordance with applicable SJRWMD requirements and a copy of the plugging and abandonment report shall be submitted to the EQD.

1.2.4 JEA shall acquire land to obtain water and water rights for municipal uses and purposes. Such acquisition shall be conducted in areas that are selected to produce high quality and quantity of water, with minimal impact to the resource and with consideration given to reasonable cost of development. Such future supplies shall be developed in a manner as will give priority to reducing environmental effects of excessive withdrawals from concentrated areas. JEA shall request that the SJRWMD conduct investigations and develop data for use by the City in conducting this program.

1.2.5 JEA shall identify, evaluate, and select the most cost-effective means of ensuring an adequate water supply including groundwater supply, reuse of treated wastewater, surface water supply, demand reduction, conservation, and peak saving through system integration. This evaluation shall be conducted as a part of the Water System Master Plan Update and in conjunction with the SJRWMD.

1.2.6 Lands currently owned by the City and its various agencies shall be utilized to the maximum extent possible for water resource development prior to acquiring additional lands.

1.2.7 The transfer of water within the public utility system for purposes of water supply, water quality and/or water management shall be carried out in place of the construction of new treatment facilities which have higher capital or operating costs than the transfer facilities.

1.2.8 The water supply needs of areas from which water is withdrawn by JEA must be provided for in all future water resource development projects.

Issue: Level of Service Standards

The Level of Service (LOS) is an indicator of the extent or degree of service provided by a facility based on the operational requirements of the customers served. The unit demand rate is calculated by combining all uses and dividing by the population served. This unit demand rate is measured in gallons per capita per day (gpcd). The level of service unit demand rate is used in conjunction with projected population growth to estimate the future demands on the water system. Based on the future supply requirements and engineering design standards, minimum storage capacity and pressure levels were established for the Water Service Area.

Objective 1.3 JEA shall provide adequate water facility capacity to meet future needs.

Policies

1.3.1 To assure that an adequate Level of Service is provided by water facilities within the Water Service Area, the following standards shall be met:

1. Existing and proposed water facilities shall be designed and constructed in such a manner as to maintain the capacity associated with the following water consumption rates:

   Residential - 100 gallons per capita per day (GPCD)

   Non-Residential - As it applies to non-residential land uses, demand for potable water will be evaluated on a site specific basis, in accordance with Table PW-1.

TABLE PW-1
COMMERCIAL WATER DEMAND IN THE UNITED STATES [1]

TYPES OF ESTABLISHMENTS	GPD
Airports (per passenger)	3-5
Apartments, multiple family (per resident)	60
Bath house (per bather)	10
Camps:	
Construction, semipermanent (per worker)	50
Day with no meals served (per camper)	15
Luxury (per camper)	100-150
Resorts, day and night, with limited plumbing (per camper)	50
Tourist with central bath and toilet facilities (per person)	35
Cottages with seasonal occupancy (per resident)	50
Courts, tourist with individual bath units (per person)	50
Clubs:	
Country (per resident member)	100
Country (per non-resident member present)	25
Dwellings:	

[1] **Goodman, Alvin S. "Principals of Water Resource Planning", Prentice Hall copyright 1984**

TABLE PW-1 COMMERCIAL WATER DEMAND IN THE UNITED STATES [1]	
TYPES OF ESTABLISHMENTS	**GPD**
Boarding houses (per boarder)	50
Additional kitchen requirements for non-resident boarders	10
Luxury (per person)	100-150
Multiple family apartments (per resident)	40
Rooming houses (per resident)	60
Single family (per resident)	50-75
Estates (per resident)	100-150
Factories (gal. Per person per shift)	15-35
Hotels with private baths (two persons per room)	60
Hotels without private baths (per person)	50
Institutions other than hospitals (per person)	5-125
Hospitals (per bed)	250-400
Laundries, self-service (gal. Per washing, per customer)	50
Motels with bath, toilet and kitchen facilities (per bed space)	50
Motels with bed and toilet (per bed space)	40
Parks:	
Overnight with flush toilets (per camper)	25
Trailers with individual bath units (per camper)	50
Picnic Areas:	
With bath houses, showers, and flush toilets (per picnicker)	20
With toilet facilities only (gal. Per picnicker)	10
Restaurants with toilet facilities (per patron)	7-10
Without toilet facilities (per patron)	21-23
With bar and cocktail lounge (additional quantity (per patron)	2
Schools:	
Boarding (per pupil)	75-100

TABLE PW-1 COMMERCIAL WATER DEMAND IN THE UNITED STATES [1]	
TYPES OF ESTABLISHMENTS	**GPD**
Day with cafeteria, gymnasium and showers (per pupil)	25
Day with cafeteria, but no gymnasiums or showers (per pupil)	20
Day without cafeteria, gymnasiums or showers (per pupil)	15
Service stations (per vehicle)	10
Stores (per toilet room)	400
Swimming pools (per swimmer)	10
Theaters:	
Drive-in (per car space)	5
Movie (per auditorium seat)	5
Workers:	
Construction (per person per shift)	50
Day (school or offices per person per shift)	15

2. The water supply system within the City shall operate with a rated capacity which is no less than 5 per cent above the historical maximum daily flow.

3. Minimum Pressure--All systems and grids:

CONDITION	**PRESSURE**
Minimum	20 psi
Normal Operations	40 to 80 psi

4. Storage Volume

   a. System-wide storage capacity for the regional system for finished water shall equal no less than 17 percent of system-wide average daily demand.

   b. Nongrid systems without ground or elevated storage reservoirs shall provide for ten (10) minute retention time within the hydropneumatic tank and adequate and redundant well capacity to meet the fire peak demand condition of the system.

5. Fire Flow

Unless otherwise stipulated by the City Public Safety Department, minimum fire flows based on land use shall be maintained as follows:

LAND USE	**GALLONS PER MINUTE (GPM)**
Single Family	500
2-family homes and Mobile Homes	750
Multi-family Residential, and Commercial	1,500
Institutional and Industrial	2,000

1.3.2 No development order authorizing new development or a significant expansion of an existing user shall be issued for any area of the City served by a water facility which does not meet the standards in Chapter 9J-5.0055 (3)(a) 1, 2., F.A.C. Specifically, the necessary facilities will be in place and available to serve the new development when the development impacts occur, or the necessary facilities are guaranteed by an enforceable development agreement, issued pursuant to Chapter 163.3220, *F.S.;* or Chapter 380, *F.S.*

1.3.3 The City shall establish procedures and programs to monitor Levels of Service (LOS) of each facility for use by agencies which issue development orders or permits within the time required by Section 163.3202, F.S.

1.3.4 All improvements for replacement, expansion or increase in capacity shall be compatible with the adopted Level of Service standards for water usage.

1.3.5 Through permit review and enforcement of State and local laws, JEA shall ensure the continued distribution of potable water through both public and private water systems in compliance with the above specified Level of Service (LOS) standards.

Issue: Optimization of Existing Water System Operations

JEA's long term water supply goal is to continue providing a safe water supply at a level sufficient to meet the requirements of its existing and future users. To accomplish this, JEA must correct existing facility deficiencies, maximize and optimize utilization of existing facilities and expand the water supply system in a coordinated fashion.

Objective 1.4 JEA shall plan and provide regional facilities to accommodate the ultimate needs of the community through implementation of the projects listed in the Capital Improvements Element.

Policies

1.4.1 Water system improvements will be evaluated for funding in accordance with the following general criteria:

1. Improvements which are necessary to protect the health, safety and environmental integrity of the community which are consistent with the policies of the 2010 Comprehensive Plan and the applicable federal, State, regional and local regulatory requirements.

2. Improvements which are necessary to meet existing deficiencies in capacity or performance or reliability. These include the rehabilitation or replacement of deteriorating facilities which fail or threaten to fail to meet health, safety or environmental standards.

3. Improvements which extend regional service to previously unserved areas within the Urban and Suburban Areas as defined in the Future Land Use Element.

4. Improvements which have been identified in adopted functional plans and address system details which are beyond the scope of the comprehensive plan for water facilities and are consistent with the goals, objectives and policies of the 2010 Comprehensive Plan.

5. Cost-effective improvements to expand capacity, maximize operational efficiency and increase productivity.

6. JEA shall attempt to optimize use of existing facilities through improvements, expansion and modification of process control system and improvements to operational procedures before spending additional public funds for new facilities.

1.4.2 Water facility improvements will be undertaken in conformance with the schedule included in the Capital Improvements Element.

Objective 1.5 JEA shall provide regional water supply and treatment capacity to maintain the adopted Level of Service standards.

Policies

1.5.1 JEA's water treatment facilities shall supply water which meets all applicable federal, State, regional and local standards.

Objective 1.6 JEA shall maintain the existing transmission and distribution system, and provide inspection on new construction so as to ensure the maintenance of the adopted Level of Service standards.

Policies

1.6.1 JEA shall maintain an inventory of all water treatment facilities which identifies location, physical characteristics, age, service condition and structural condition.

1.6.2 JEA shall continue an aggressive rehabilitation and replacement program directed at the older portions of the utility's existing system.

1.6.3 All required federal, State, regional and local permits shall be obtained before JEA undertakes, or authorizes contractors to undertake, construction and/or operation of new facilities.

1.6.4 JEA shall provide for the inspection of new water facilities construction to insure that the City standards are enforced.

1.6.5 JEA shall install utility transmission mains of a size adequate for projected future needs along the major water demand corridors.

1.6.6 The City shall, through modifications to Building and Zoning Codes and Land Development Procedures Manual, pursue redevelopment and renewal in areas already serviced by utilities to attain the optimum use of existing services and promote urban infill.

1.6.7 JEA shall continue and expand existing beneficial water system programs including but not limited to:

1. Backflow prevention program
2. Leak detection program
3. Valve and hydrant operation, marking and testing program
4. Meter testing program
5. Instrumentation and control systems replacement program
6. Operator training program
7. Water conservation program

1.6.8 JEA shall continue to utilize a system-wide, computer-based hydraulic analysis program for the determination of facility and growth needs and shall recalibrate the model every five years as part of the update of the water system master plan.

1.6.9 JEA shall conduct a water system audit periodically to minimize unaccounted for water and improve water records and accountability within its water system.

1.6.10 JEA shall on a continuing basis loop appropriate water mains toreduce dead ends, improve system water quality, increase reliability, and enhance pressure and fire protection capabilities.

1.6.11 JEA shall continue to evaluate its emergency power capability in order to ensure compliance with accepted engineering practices, utility standards and regulatory requirement.

1.6.12 JEA shall develop and maintain an automated water system management information system for its water facility records, mapping, preventive maintenance, stock and inventory control and other related functions.

Issue: Water Reuse and Conservation

The St. Johns River Water Management District (SJRWMD) has mandated that a reuse ordinance be considered by the City Council. The ordinance should include areas identified as reuse zones, requirements for new developments within the designated reuse zones; utilization of reclaimed water for irrigation where available; registration of water wells within the designated reuse zones; requirements for new developments to utilize or incorporate ground covers, ornamentals and lawns which require low levels of irrigation. A requirement that industries utilizing non-portable process and cooling water accept and utilize City reuse water in place of Floridan Aquifer water. The above reuse program shall be complemented with a comprehensive water conservation program.

Objective 1.7 JEA shall continue to enforce the City's reuse ordinance in compliance with the City's consumptive use permit requirements as issued by the SJRWMD.

1.7.1 JEA shall periodically evaluate its reuse ordinance to ensure its effectiveness.

1.7.2 The City shall request that SJRWMD amend all non-potable consumptive use permits in Jacksonville issued by the SJRWMD to require that the permit holder accept and utilize reuse water when made available by the City.

Objective 1.8 **JEA shall continue and expand the Citywide water conservation and demand reduction programs in order to reduce per capita consumption of potable water by ten percent (10%) by 2005.**

Policies

1.8.1 JEA shall establish and utilize potable water conservation strategies and techniques in the operation of City potable water facilities.

1.8.2 The approval of new water system connections shall be conditioned upon compliance with the Building Code requirements for demand reduction fixtures and low water use techniques.

1.8.3 The City shall continue to implement requirements for low water use features and vegetation and water conserving irrigation practices in its landscape and tree protection regulations.

1.8.4 The City shall continue to implement its water conservation ordinance.

1.8.5 JEA in cooperation with other departments shall establish and maintain a water conservation public education program.

1.8.6 The City shall request that SJRWMD amend all non-potable consumptive use permits in Jacksonville issued by the SJRWMD to require that the permit holder accept and utilize reuse water when made available by the City.

INFRASTRUCTURE ELEMENT

POTABLE WATER

B

DEFINITIONS

DEFINITIONS

Coastal High Hazard Areas – The evacuation zone for a Category one hurricane as established in the regional hurricane evacuation study applicable to the local government.

Community Owned Public Utility Company - A water or sewer utility owned by non-profit corporations providing service solely to members who own and control such non-profit corporations, associations or cooperatives.

Community Water System - A public water system which regularly serves twenty-five year round residents.

Cone of Influence - An area around one or more major waterwells, the boundary of which is determined by the government agency having specific statutory authority to make such a determination based on groundwater travel or draw down depth.

Conservation Uses - Activities within land areas designated for the purpose of conserving or protecting natural resources or environmental quality and includes areas designated for such purposes as flood control, protection of quality or quantity of groundwater or surface water, flood plain management, fisheries management, or protection of vegetative communities or wildlife habitats.

CUP - Consumptive Use Permit - A permit for any use of water which reduces the supply from which it is withdrawn or diverted. A consumptive use permit must be obtained from the Governing Board of the St. Johns River Water Management District before withdrawal of water shall be commenced for quantities set forth in Chapter 40D - 2.031, F.A.C.

DCHD - Duval County Health Department

FDEP - Florida Department of Environmental Protection

GPCD - Gallons Per Capita Per Day

Investor Owned Public Utility Company - A water or sewer utility company which, except as provided in Section 367.022, F.S., is providing or is proposed to provide, water or sewer service to the public for compensation.

JEA – Water, Sewer & Electric Utility serving community in and around Duval County; previously known as Jacksonville Electric Authority.

MG - Million Gallons

MGD - Million Gallons Per Day

Non-Community Water System - A public water system which provides water for human consumption and serves at least 25 individuals at least 60 days out of the year, but which is not a community water system.

PSC - Florida Public Service Commission

Potable Water - Water satisfactory for drinking, culinary, and domestic purposes.

Potable Water Facilities - A system of structures designed to collect, treat, or distribute potable water, and includes water wells, treatment plants, reservoirs, and distribution mains.

Potable Water Well Fields - The site of one or more water wells which supply potable water for human consumption to a water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

PSI - Pounds per square inch, a measure of pressure

Public Water System - A system that provides water for human consumption to at least twenty-five individuals at least sixty days out of the year.

Shall - The word "shall" indicates a mandatory action

Should - The word "should" indicates an action that is strongly advised.

SJRWMD - St. Johns River Water Management District, Chapter 373 Florida Statutes

Water Recharge Areas - Lands or water areas through which groundwater is replenished.

Water Wells - Wells executed, drilled, dug, or driven for the supply of industrial, agricultural or potable water for general public consumption

Wellhead Protection Area - An area consisting of a 750-foot radial setback distance around a Public Potable Water well or Wellfield where the most stringent measures are provided to protect the ground water source for a potable water well and includes the surface and subsurface area surrounding the well.