

PROJECT BLUE SPRING

ORANGE CITY'S INTEGRATED WATER RESOURCES MANAGEMENT & RESILIENCY PLAN

Cooperation is Key

Cooperation among Volusia County and Cities is critical to solve our water issues. Volusia County governmental entities have numerous water issues that must be addressed to ensure sustainability and growth. These issues include the Blue Spring protection MFLs, which will lower the amount of potable water available from the Aquifer, septic tank replacement, advanced sewer treatment plant treatment to lower effluent nutrient(s), reclaimed water use expansion, and aquifer recharge to compensate for withdrawals. This document will discuss the City's efforts, separately and in partnership with other cities, counties, and government entities to address water resources issues to protect our Blue Spring while accommodating future growth.



Stewardship of Blue Spring through Comprehensive Water Resource Projects

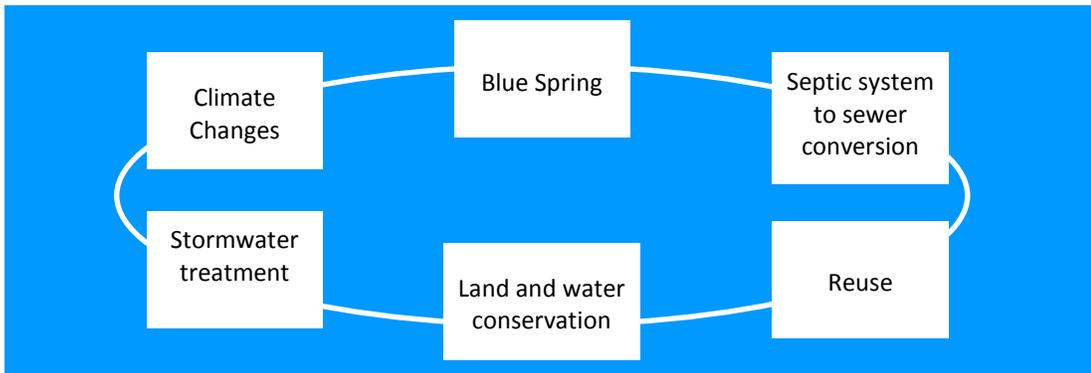
Orange City is a leader in natural resource protection. The City is proud of its treasured natural resources, such as Blue Spring, and is striving to protect them through comprehensive management of water resources while ensuring public health. Using the principles of integrated resource planning, this is achieved with a program called **Project Blue Spring**. The City is totally committed to this goal of comprehensive environmental protection, from the Council down to the staff. Project Blue Spring, much like the resource it is meant to protect, is a "living" program that will be continually updated to include the latest information and technological advancements to protect public health and our natural resources.



Project Blue Spring Components

Springs protection is a priority for the State of Florida. The St. Johns River Water Management District (SJRWMD) has identified Blue Spring as one of the top three springs prioritized for protection by their agency. Water is a valued commodity throughout the world. A 2015 American Water Works Association (AWWA) State of the Water Industry report states that three of the top five concerns identified by respondents include financing for system improvements, long-term supply availability, and public understanding of the value of water.

An integrated planning effort considers all facets of water: resource protection, funding and rates, resiliency in extreme weather conditions, conservation and sustainability in implementing new water infrastructure projects, and impacts due to climate change. All past and future City projects will work together to protect natural resources. The overall goal of all City infrastructure improvements is to achieve the maximum public health and environmental protection possible. Orange City projects are designed with the goal of protecting Blue Spring and regional water resources. Orange City projects will help to achieve the SJRWMD's Minimum Flows and Levels (MFLs) for Blue Spring and the Florida Department of Environmental Protection (FDEP) Best Management Action Plan (BMAP) water quality requirements. Project Blue Spring is an adaptive plan that will change as conditions change, such as new environmental regulations or impacts from climate change.



All governments in Volusia County are facing pressing water issues including, but not limited to, those relating to water supply and water quality. Volusia governments are working together to address water issues with a united front through the Water Resources Compact (see Tab A). Orange City is supportive of the proposed Volusia Water Resources Compact and will continue to work with other governments of Volusia County to address the outstanding water resource issues in the region.

The City is also taking direction from the regulatory agencies and water resource professional organizations in developing the latest international movement in water management to include water quality and water quantity in planning projects. A recent example is the 2016 Florida Water Resources Conference which had the theme of integrated water resources. The Department of Community Affairs produced a guidebook in February of 2008 for communities wanting to help protect springs (see Tab B).

Important Drivers for Water Resource Integration are:

- Ensuring public health
- Protecting Blue Spring water quality and MFLs
- Providing flood protection
- Complying with regulations related to stormwater, wastewater, drinking water, MFLs, and Total Daily Maximum Loads (TMDLs)
- Ensuring cost efficiency
- Addressing climate change impacts

More cost share funding will be available by having an integrated water resource program. By integrating projects, more funding sources can be tapped to fund a project, including land acquisition. The Governor's office funding objectives for springs are \$50 million per year over a 10 year period. The funding objectives for water supply projects are \$50 million per year over a 10 year period. The City will maximize opportunities for all grants, cost-share funding, and low interest state subsidized loans. The current State Revolving Fund (SRF) and FDEP projects are listed in Tab C. In Tab D are the SJRWMD projects funded for the area. Other cooperative agencies offering funding are the Florida Department of Transportation (FDOT) and the Federal Emergency Management Agency (FEMA).

The City considers all facets of environmental protection including water management, funding and rates, resiliency in extreme weather conditions, energy conservation, responding to climate change, and sustainability in developing new projects. Orange City projects are designed to protect Blue Spring, have regional benefits, while meeting Consumptive Use Permit (CUP) and BMAP requirements.

Water resource integration also means understanding all water related disciplines so that we can apply technologies from other areas such as wastewater, water, or stormwater. Integration also allows us to solve a problem more cost effectively, identify and utilize new technologies to solve resource management challenges, and seek funding to help pay for projects. It means finding ways to get multiple uses of an infrastructure project including public recreation and wildlife habitat.



Orange City's water resource integrated projects will also help support local economic development. Projects such as converting septic systems to centralized sewers along major corridors will promote redevelopment as well as potentially reduce groundwater pollution. Diversification of water sources, enhanced water recharge and storage will provide a more cost-effective and sustainable water supply for the future. The City will continue to be a key player in protecting water resources and will keep track of all projects in the region, especially alternative water supply projects, relevant to Orange City's interest in resource protection. The City will monitor the impact of climate change and rising sea levels on flooding and water quality. The comprehensive program will involve Orange City citizens, environmental organizations, and other governments in the process of developing new projects. The City's program will also coordinate with state and national government representatives. Presentations and meetings related to the City's efforts will be held at City Council meetings and conferences to seek important community input which will make the program more successful and accepted. Shown below are examples of some relevant environmental and civic organizations who can contribute to the discussion.



FLORIDA LEAGUE OF CITIES, INC.

Section One — Water Quality

Overview of water quality planning Best Management Action Plan (BMAP), stormwater treatment, septic tanks and wetlands

TMDLs and BMAPs

As the City of Orange City is located within the Blue Spring springshed, water quality is of the utmost concern. Total Maximum Daily Loads (TMDLs) were established for Blue Spring in July 2014. The water quality target for the spring flow is 0.35 milligram per liter (mg/l) *nitrate* as a monthly average. To achieve this goal, a reduction of at least 45% in nitrate contributions will need to occur in the basin. Work is currently underway on the Best Management Action Plan (BMAP) to determine the projects that will accomplish this (see Tab E) with the finalization scheduled in 2017.

What are TDMLs and BMAPs?

In layman's terms, a Total Maximum Daily Load (TDML) tells you how much of a particular pollutant a stream can handle before being impaired by legal standards. It is an analysis that reports the maximum amount of pollutant which a water body can receive without water quality standards being violated or the use of the water body for activities like swimming, fish consumption, aquatic life support, and public water supply being inhibited.

A Best Management Action Plan (BMAP) is the "blueprint" or set of strategies for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a TMDL. BMAP strategies can include permitting limits on wastewater facilities, urban and agricultural best management practices, conservation programs, financial assistance and revenue generating activities, or other strategies designed to reduce pollutants established by the TDML.

The City incorporates water quality treatment in all of its projects to reduce pollutant discharge in the springshed. One example is the Mill Lake Water Quality Improvement Project, which includes pre-treatment ponds for settling solids, *alum* to help remove nutrients by binding with smaller particles and aeration through a fountain to help add oxygen. Through these efforts, the ecology of the pond and surrounding wetlands are improved to remove more nutrients and provide wildlife habitat. Phase 3 of the Mill Lake Project will also have educational materials to help the public better understand the importance of spring protection as well as additional ponds for treatment and recharge.



Mill Lake Park and Stormwater Treatment Center

Florida 2015 Springs Legislation and Volusia County Sewer to Septic Conversion Plan

In the 2015 Florida legislative session, bills were passed to provide additional laws for the protection of springs. Changes were made to F.S. Chapter 373 to incorporate this new legislation (see Tab F). Some of the more notable changes are:

- Local governments have the primary responsibility for providing domestic wastewater collection and treatment services and stormwater management.
- Coordination between governments is necessary to maintain water quantity and water quality of the outstanding Florida springs.
- New onsite sewage treatment and disposal systems on lots of less than 1 acre are prohibited if the addition of the specific systems conflict with an on-site treatment and disposal system remediation plan incorporated into a basin management action plan pursuant to Statute 373.807 (3).

The City is currently working with Volusia County on a Septic System to Sewer Master Plan. Septic systems are generally found to be a significant contribution of nitrogen pollution in springs. Removing septic systems should help to reduce nitrate levels in the springs. Also, with the new springs legislation, new onsite sewer and disposal systems (septic tanks) on lots less than 1 acre will mostly be prohibited. Therefore, sewer collection systems will need to be in place for most new development and redevelopment in the City such as the Community Redevelopment Area (CRA) (see Tab G). The City is currently looking to expand its sewer system, where it is cost-effective to do so, in areas where septic systems are both existing and proposed.

Orange City's Stormwater CIP Master Plan

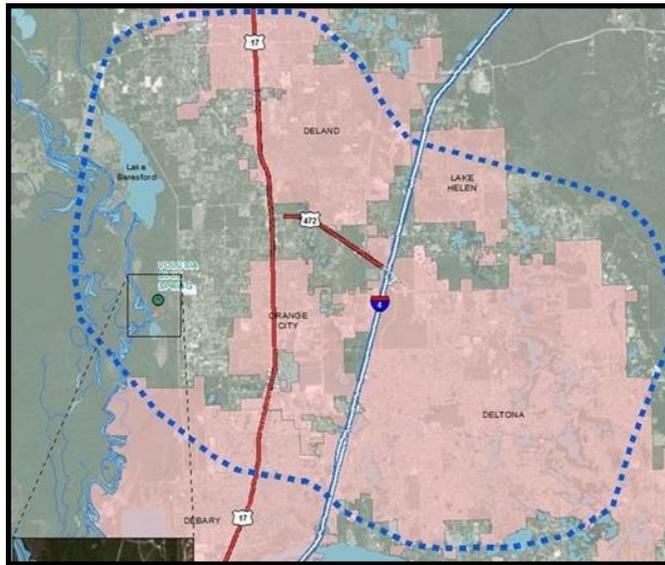
Maps showing the City's stormwater projects scheduled for implementation can be found in Tab H. This list of projects shows that there is excess floodwater that could be "repurposed" for either reuse or recharge projects. In each of these projects, the staff will look for ways to increase reuse, recharge, and pre-treatment of stormwater to help with water quality and quantity. One of the treatment technologies being considered is bio absorbent medias.



Section Two - Water Quantity

Overview of the Blue Spring springshed, groundwater recharge, Consumptive Use Permitting, the St. Johns River Water Management District's (SJRWMD) Blue Spring Minimum Flow and Levels (MFLs), and flooding

Blue Spring lies just outside Orange City, in Volusia County. It is located in Blue Spring State Park, which covers 2,600 acres. The springshed covers an area of approximately 100 square miles (see graphic below) and encompasses portions of five cities in Volusia County, including Orange City. This first-magnitude spring is the largest spring on the St. Johns River, with discharges averaging of 102 million gallons of water each day (from the FDEP Florida Springs Website).



A comprehensive water resource plan, which includes stormwater treatment and recharge, will directly benefit Blue Spring. The City's comprehensive water resource plan will maximize environmental protection through long-term partnerships and collaboration with other local governments.

Project Blue Spring will identify all sources of stormwater that can be used for recharge to offset groundwater withdrawals and help maintain spring flows. It will also employ effective stormwater management with coordinated and strategic projects to efficiently capture and treat stormwater-based pollutants.

Recharge is an important component of the City's program especially since Orange City is located in a high recharge area (see Tab H - CIP/Recharge Area Map). The City will look at using recharge to help replenish the aquifer that supports Blue Spring. A study is underway to evaluate recharge characteristics of the hydrogeology within the City. Significant measures will be taken to ensure that all water used to recharge the aquifer has been pretreated to remove contaminants. Enhancing stormwater recharge in conjunction with reuse may also be used to help reduce flooding in flood prone areas.

Another large driver for the City's Blue Spring Project is the SJRWMD Minimum Flows and Levels Prevention/Recovery Strategy for Volusia County (see Tab I). The SJRWMD has set MFLs for each spring or water body in Volusia County and determined some strategies (projects) to either prevent impacts to flows or recover flows as needed. For Blue Spring, there are projects that list Orange City as a participant. The City's Project Blue Spring will continue to address maintaining flows needed to sustain the ecology of Blue Spring. The City is currently renewing its CUP with the SJRWMD. During this process, the City will review all aspects of water use including water conservation, maximizing the use of reclaimed water, alternative water supplies, enhanced aquifer recharge, stormwater harvesting, and other measures needed to comply with SJRWMD permitting rules. The City of Orange City has already adopted a Water Conservation Ordinance (see Tab J).

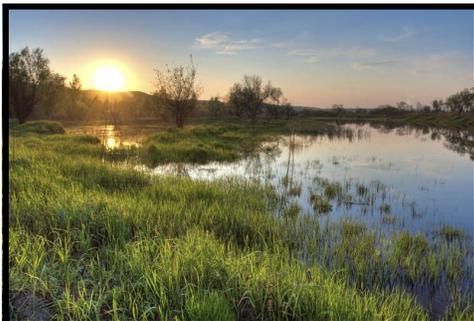
Another important project implemented by the City is the Water System Improvements. With a grant from the State of Florida, the City will both “loop” (interconnect the water system) and replace leaking pipes. This critical public health protection will conserve a considerable amount of water while dramatically improving drinking water quality. Through this type of forward thinking project, the City continues to demonstrate its leadership in being a good steward of resources.

Section Three - Spreading the Word and Working Together *Media coverage and cooperative efforts*

The City’s efforts in resource protection have been recognized by SJRWMD and FDEP. Both agencies have awarded the City significant funding to help further their progress. Some of the projects and funding are shown in Tabs C, D. The SJRWMD website also promotes projects which are helping to preserve Blue Spring. *The St. Johns River Water Management District (SJRWMD) Springs Protection Initiative website.* <http://floridaswater.com/springs/initiative.html>



In addition, the City has been an active member in the Florida Department of Environmental Protection BMAP process as well as a participant in the West Volusia Water Suppliers (WVWS) group projects. City officials attended the Volusia County Water Summit at Stetson University on April 30, 2016. At the Summit, issues affecting water resources in Volusia County were discussed as well as a variety of options and paths to address those issues. The Compact was signed between the cities within Volusia County in an effort to work together while providing one voice in creating water action plans. The Summit was sponsored by Stetson University’s Institute for Water and Environmental Resilience. Orange City will work diligently to reach out to civic and environmental groups to ensure all concerns have been addressed.



Conclusions

Orange City will work cooperatively with other governments and organizations to continue to use all facets of a fully integrated water resource program; such as:

- Continuing to implement comprehensive Blue Spring springshed protection efforts
- Implementing water conservation measures, such as education, system interconnects and replacing leaking pipes
- Implementing water quality remediation projects where possible
- Developing alternative water supply through flood mitigation
- Planning for climate change impacts such as increase flooding and water quality changes
- Maximizing the use of reclaimed water and other alternative water supplies to replace potable water use
- Maximizing regional partnerships
- Optimizing stormwater reuse, treatment and recharge
- Optimizing conservation of water and land
- Promoting septic system to sewer conversions
- Exploring septic remediation projects
- Implementing TMDL BMAP projects
- Implementing MFL recovery and prevention projects
- Promoting public education
- Encouraging Florida-friendly landscaping
- Consideration of new ordinances related specifically to a comprehensive Spring springshed protection plan
- Maximizing the use of infrastructure projects for multiple uses such as for parks, wildlife habits, recharge, etc.

Index of reference materials

Tab and document

- A. Volusia Governments Compact - Regional Collaboration in Climate Resilience – Florida League of Cities/Stetson University Institute for Water and Environment Resilience
- B. Department of Community Affairs – Protecting Florida’s Springs - An Implementation Guidebook-February 2008
<https://www.dep.state.fl.us/springs/reports/files/springsimplementguide.pdf>
- C. City of Orange City State Revolving Fund Quality/Quantity Projects presentation
- D. List of SJRWMD Blue Spring projects to date
- E. FDEP BMAP program materials - <http://www.dep.state.fl.us/water/watersheds/bmap.htm>
- F. 2015 Springs Legislation - excerpts from Florida Statutes 373 and 403
- G. Orange City Community Redevelopment Area
- H. Orange City Stormwater Management Master Plan - Stormwater Capital Improvement Program in relation to recharge areas
- I. SJRWMD Blue Spring Minimum Flow and Levels Prevention/Recovery Strategy Plan and Springs website- <http://www.sjrwmd.com/springs/initiative.html>
- J. Orange City Water Conservation Ordinance 2008 – 315

