

**2015 Water Quality Report**  
**August 1, 2014 to July 31, 2015**

**Village of Wellington/Acme Improvement District**



## **TABLE OF CONTENTS**

<b>Executive Summary 2015</b>	<b>2</b>
<b>Section 1 - Introduction</b>	<b>4</b>
<b>Section 2- Water Quality Sampling Program - Phosphorus</b>	<b>4</b>
<i>Exhibit A – Sampling Site Location Map</i>	
<i>Exhibit B – 2015 Discharge to Regional System Data</i>	
<i>Exhibit C – Discharge to Regional System Data Charts</i>	
<i>Exhibit D – Sampling Site Data Tables</i>	
<b>Section 3 - Best Management Practices and Infrastructure Improvements</b>	<b>6</b>
<b>Best Management Practices</b>	
<i>Fertilizer Control</i>	
<i>Mechanical Weed Removal</i>	
<i>Livestock Waste Storage &amp; Disposal</i>	
<i>Continued Research &amp; Experimentation</i>	
<b>Infrastructure Improvements</b>	

## Executive Summary

This annual report serves to comply with the annual reporting requirements of the South Florida Water Management District (SFWMD) Permit No. 50-00548-S (Application No. 070330-35, Condition No. 13) and provides an annual update for water quality and Best Management Practices under the purview of the Village of Wellington (Wellington) and the Acme Improvement District (AID).

Since the last report, Wellington/AID continues to make strides to improve surface water quality discharged to the Regional Surface Water System (C-51 Canal) by maintaining Total Phosphorous levels below the target level of 50 micrograms per liter or parts per billion (ppb). A summary of the water quality sampling results for the past nine (9) years, including this past year, are presented in the table below. All sampling and analyses conducted for the 2015 reporting period are in compliance with the requirements of the permit and approved sampling and testing standards and procedures.

### **Total Phosphorous Data – 2007 to 2015**

	REPORTING PERIOD								
	2015 (ppb)	2014 (ppb)	2013 (ppb)	2012 (ppb)	2011 (ppb)	2010 (ppb)	2009 (ppb)	2008 (ppb)	2007 (ppb)
Phosphorous - Median	39	41	42	29.0	34.2	48.9	45	40	38
Phosphorous – Geometric Mean	41.5	42.3	42	28.6	29.6	45.1	45.2	28	38.5

*Note: Testing results listed are composite results for all five (5) discharge locations for the 2014 reporting period - August 1, 2014 to July 31, 2015.*

As shown in the table, Total Phosphorous levels for the 2015 reporting period remain below the 50 ppb target level and demonstrate a downward trend in phosphorous levels from the previous two years.

Key activities over the past year contributing to total phosphorous levels less than 50 ppb include:

- Continued implementation and enforcement of Best Management Practices
- Continued system-wide canal maintenance and reshaping
- Continued implementation and enforcement of Stormwater Permit Criteria Requirements for Land Development
- Continued sediment removal from canals and canal sumps
- Continued maturation of vegetation of the Wellington Environmental Preserve (Section 24)

Low Total Phosphorous levels and the improvement of surface water quality remain a top priority for Wellington/AID. Key activities planned over the next reporting period (2015) include:

- Continued implementation and enforcement of Best Management Practices
- Continued system-wide canal maintenance and reshaping
- Continued implementation and enforcement of Stormwater Permit Criteria Requirements for Land Development
- Continued sediment removal from canals and canal sumps
- Continued maturation of vegetation of the Wellington Environmental Preserve (Section 24)
- Monitoring and identification of sources contributing to increase of total phosphorous levels

## **Section 1 - Introduction**

Pursuant to the SFWMD Permit, Wellington/AID continues to take significant strides to reduce Total Phosphorous levels and improve the quality of surface water discharged to the regional surface water system. This annual report provides the results for the storm water quality testing over the past year, as well as, the actions taken by Wellington/AID to maintain and improve surface water quality.

## **Section 2 – Surface Water Sampling Program - Phosphorous**

Wellington collected and tested approximately 806 surface water samples for Total Phosphorous from 31 sampling sites between August 1, 2014 and July 31, 2015. As prescribed, Wellington collected samples after each storm event and/or bi-weekly at the locations shown on the map provided herein as Exhibit A. The sample locations include the five (5) locations where the Wellington/AID system discharges to the Regional Water System (C-51 Canal). All samples were collected and tested in accordance with accepted standards and protocols. Wellington personnel collected all samples. Total Phosphorous testing was conducted by Pace Environmental, Inc. of Ormond Beach, Florida – a private, independent laboratory.

A summary of the aggregate water quality sampling results for the five (5) regional discharge locations for the 2015 reporting period is provided in the table below, in addition to the results for the previous seven (7) years.

### **Total Phosphorous Data – 2007 to 2015**

REPORTING PERIOD									
	2015 (ppb)	2014 (ppb)	2013 (ppb)	2012 (ppb)	2011 (ppb)	2010 (ppb)	2009 (ppb)	2008 (ppb)	2007 (ppb)
Phosphorous - Median	39	41	42	29.0	34.2	48.9	45	40	38
Phosphorous – Geometric Mean	41.5	42.3	42	28.6	29.6	45.1	45.2	28	38.5

*Note: Testing results listed are composite results for all five (5) discharge locations for the 2014 reporting period - August 1, 2014 to July 31, 2015.*

As shown in the table, the aggregate Total Phosphorous levels for the 2015 reporting period remain below the 50 ppb target level and demonstrate a downward trend in phosphorous levels from the previous two years.

The annual testing results for each of the five (5) locations are provided in Exhibit B. Exhibit C provides charts for the same data.

The data table provided in Exhibit D summarizes the raw data results for all sampling locations that are part of Wellington's Surface Water Quality Sampling Program.

All spreadsheets provided are color coded. White cells contain Total Phosphorous levels between 0-10 ppb. Green cells contain Phosphorus results between 0-50ppb. Blue cells contain results between 51-150 ppb. Red cells contain results over 150 ppb.

This report does not analyze the impacts of rainfall on the data. The base data does include some reporting of rainfall, but it is limited to the rainfall events occurring in the period 24 hours previous to the actual sampling.

When reviewing the raw data results, there are some data points that are extremely high or extremely low as compared to the majority of the data points. These anomalies may be accounted for by a variety of factors and are normal given the nature of the sampling and testing regimen. The exact cause is unknown. These anomalies, however, can abnormally skew the simple average or mean. In an effort to attenuate the effects of the high/low data points, aggregate results are reported herein as the median and geometric mean.

Use of median values to represent annual data sets is consistent with previous reporting. Previous summary reports used median values to best represent aggregate Total Phosphorous levels. Previous summary reports also reported results using the geometric mean. This report also reports results using the geometric mean.

## **Section 3- Best Management Practices and Infrastructure Improvements**

### **Best Management Practices**

Wellington has adopted and implemented a variety of Best Management Practices (BMP's) geared toward reducing Total Phosphorous – either by source control or by operational and maintenance techniques. Wellington most recently adopted an updated Best Management Practices Ordinance in March, 2013 (Ord. No. 2012-12). Key practices and revisions are described below. The enhancements codified in the ordinance are designed to further reduce phosphorous levels in the surface water system.

### **Fertilizer Control**

As part of the updated BMP Ordinance, Wellington adopted updated standards enhancing Best Management Practices for fertilizer storage and application.

Key provisions of Ordinance No. 2012-12 Sec. 30-154 Best Management Practices are:

1. Fertilizers containing an excess of two percent phosphate/phosphorus per guaranteed analysis label shall not be applied to turf grass, pastures, paddocks, or used in nurseries unless justified by a soil test.
2. Fertilizers in excess of two percent phosphate/phosphorus shall not be applied within ten feet of the edge of water or within ten feet of a drainage facility. This provision was changed. The old ordinance only required five feet separation.
3. Liquid fertilizers in excess of two percent phosphate/phosphorus shall not be applied through an irrigation system within ten feet of the edge of water or drainage facility.
4. Fertilizers must be applied in accordance with the published application rates and frequencies. No additional application of fertilizers is permissible unless soil tests determine a deficiency. This is a new provision.

5. Fertilizers and grass clippings shall be removed from impervious surfaces and prevented from entering the surface water system. This is a new provision.
6. Commercial fertilizer applicators must possess required certifications and licenses and must register with Wellington. This is a new provision.

Licensed Village Code Compliance Officers are responsible for making inspections of fertilizer storage areas to ensure compliance with the provisions of this section of the Code of Ordinances. Wellington also has developed a Public Education Campaign (example brochures attached) to educate residents on the proper types, storage, use and application of fertilizers. The Village will continue to enforce the provisions of the Ordinance and address “hot spots” throughout the system in hopes of identifying the sources and developing targeted strategies to reduce site specific TP levels.

#### Mechanical Weed Removal

Wellington continues to remove vegetation from its waterways and lakes using mechanical removal equipment. Using some basic assumptions about the content of phosphorus contained in each ton of weed mass, it has been determined that 5,940 pounds of phosphorus has been removed and properly disposed of between 2007 and 2015 (approximately 660 pounds per year) using mechanical harvesting techniques.

#### Livestock Waste Storage and Disposal

The Village Code of Ordinances Section 30-153 provides standards for the storage and disposal of livestock waste. Wellington updated this section of the code (Ord. No. 2012-12) on March 26, 2013.

Key provisions include:

- 1) Each livestock facility must have an approved waste storage area.
- 2) The storage areas are required to have an impermeable floor with sidewalls on three sides.



- 3) The size of the storage area is also proportioned to the number of livestock served by the storage area.
- 4) If roll-off or dumpster containers are approved they must be placed on a concrete or asphalt pad with a lip around it to contain seepage.
- 5) All waste storage areas must be covered.
- 6) Waste storage areas must be located at least five (5) feet away from any roof overhang, fifty (50) feet from any public drainage conveyance or drainage inlet, at least one hundred (100) feet from any water body and at least one hundred (100) feet from a potable water supply well.
- 7) All livestock must be hauled to an approved site and haulers must be registered. Haulers must submit hauling reports.

In addition, this section of the code contains standards for the maintenance of the storage area, spreading/composting and for the hauling of livestock waste.

Wellington continues to enforce the provisions of this section of the code.

#### Continued Research and Experimentation

Wellington/AID continues to research and test alternative methods to reduce nutrient levels in the storm water system. To date, no cost effective approach has been identified. Wellington also continues to discuss source reduction technologies with a variety of interested parties.

Wellington also will evaluate data from 2015 and monitor and attempt to identify sources contributing to the recent upward trend in total phosphorous.

#### **Infrastructure Improvements**

No significant infrastructure projects were completed during this reporting period. Five additional phosphorus sumps are planned for 2016.