

# Supervisory Control and Data Acquisition (SCADA) External Assessment



WEST PALM BEACH

---

Internal Audit

June 27, 2019

## City of West Palm Beach Internal Auditor's Office

Beverly Mahaso, Chief Internal Auditor, Esq., CIA, CFE  
Stantec, Public Utilities' Contractor



**Internal Auditor's Office**  
P.O. Box 3366  
West Palm Beach, Florida 33402  
Tel: 561-822-1380  
Fax: 561-822-1424

June 27, 2019

Audit Committee  
City of West Palm Beach  
401 Clematis Street  
West Palm Beach, Florida

**RE: Supervisory Control and Data Acquisition (SCADA)**

Dear Audit Committee Members:

This document is a summary of Stantec Consulting Services, Inc.'s external assessment of SCADA. An audit of SCADA has been on the Internal Auditor's Office (IAO) audit plan. Since Public Utilities hired a contractor with expertise on the subject, it was no longer necessary for our Office to perform a separate audit.

Respectfully Submitted,

/s/ Beverly Mahaso  
Chief Internal Auditor

cc: Keith James, Mayor  
Jeff Green, City Administrator  
Nathan Kerr, Chief Technology Officer  
Poonam Kalkat, Public Utilities Director

## *Contents*

<b>BACKGROUND.....</b>	<b>1</b>
<b>SCOPE AND OBJECTIVES .....</b>	<b>1</b>
<b>STATEMENT OF METHODOLOGY .....</b>	<b>1</b>
<b>CONCLUSIONS AND SUMMARY OF FINDINGS.....</b>	<b>2</b>
<b>OPPORTUNITIES FOR IMPROVEMENT .....</b>	<b>3</b>
<b>1. SYSTEM RELIABILITY AND VULNERABILITY ASSESSMENT .....</b>	<b>3</b>

## **Background**

In FY18, the City contracted with Stantec Consulting Services, Inc. an engineering services company, to provide an assessment of the City's current Supervisory Control and Data Acquisition (SCADA) system's operations. The City utilizes this technology in management of its water resources. There are three SCADA systems currently in use for each of the three main components of the City's water management system:

- Water and Water Distribution;
- Wastewater Facilities; and
- Sewage Collection, Watershed, and Storm Water.

The City plans on standardizing all control system hardware over time. In addition, the City is seeking to develop a data interface between all of their relational database applications, including Hiper-Web, the Water Information Management Solution, and the Laboratory Information Management System to the SCADA system. Given these operational objectives, the City sought to conduct this assessment.

## **Scope and Objectives**

The objectives of the assessment performed by Stantec, were to assess the reliability and potential security vulnerabilities of the existing SCADA system and control network, including VPN remote access via the City/Business Network, as currently implemented for the water treatment facilities, raw water collection systems (Watershed), potable water distribution systems, wastewater collection systems, and storm water management systems. Stantec noted that the City advised that a review of the plant process instrumentation and equipment would not be required. Rather, the vulnerability assessment performed, should focus on security, system accessibility and reliability, and must ultimately offer well-defined, prioritized recommendations with budgeting cost estimates.

## **Methodology**

Field work performed by Stantec included the following:

- Visual inspections and configuration evaluations of the existing control networks and SCADA infrastructure;
- Assessment of system accessibility both physical and cyber;
- Assessment of system reliability and resiliency to fault (as it concerns the City's capacity to maintain operability of key services);
- Review of the overall approach to system controls and system responses to loss of power;
- Review of data management and revision control practices along with subsequent report generation;
- Evaluation of emergency preparedness (chemical leak handling, hazardous weather warnings, and plant physical or cybersecurity breaches); and

- Interviews of plant personnel to support the above endeavors including interviews with Operations, Maintenance, SCADA, and IT personnel.

## **Conclusions and Summary of Findings**

Findings and recommendations were issued and are currently being addressed by both Departments and in conjunction with Administration.

# **Opportunities for Improvement**

## **1. System Reliability and Vulnerability Assessment Results**

Based on the assessment, many findings and recommendations were issued to the Public Utilities Department and Information Technology Department. Details of the findings have been omitted due to the increased risk of threats that may be created.

It should be noted that a review of the Homeland Security report of 2011, revealed detailed recommendations for physical site security. Further, the Internal Auditor's report on the Water Treatment Plant (AUD18-01), also provided recommendations regarding physical security.

Management in both Public Utilities and IT are aware of the findings and are implementing corrective action. Further, we noted a recent increase in collaboration between the two departments, which provides assurances that findings and recommendations are receiving the appropriate level of attention that is needed.