



Commonwealth of Massachusetts
Office of the State Auditor
Suzanne M. Bump

Making government work better

Official Audit Report – Issued February 13, 2017

Massachusetts Water Resources Authority— Clinton Wastewater Treatment Plant Contract

For the period July 1, 2014 through June 30, 2016





Commonwealth of Massachusetts
Office of the State Auditor
Suzanne M. Bump

Making government work better

February 13, 2017

Mr. Matthew A. Beaton, Chair
Massachusetts Water Resources Authority
100 First Avenue, Building 39
Boston, MA 02129

Dear Mr. Beaton:

I am pleased to provide this performance audit of the Massachusetts Water Resources Authority's Clinton Wastewater Treatment Plant contract. This report details the audit objectives, scope, and methodology for the audit period, July 1, 2014 through June 30, 2016. My audit staff discussed the contents of this report with management of the organization.

I would also like to express my appreciation to the Massachusetts Water Resources Authority for the cooperation and assistance provided to my staff during the audit.

Sincerely,

A handwritten signature in blue ink, appearing to read "SMB", written in a cursive style.

Suzanne M. Bump
Auditor of the Commonwealth

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
OVERVIEW OF AUDITED ENTITY	2
AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY	3

LIST OF ABBREVIATIONS

CWTP	Clinton Wastewater Treatment Plant
DEP	Department of Environmental Protection
LIMS	laboratory information management system
MWRA	Massachusetts Water Resources Authority
NPDES	National Pollutant Discharge Elimination System

EXECUTIVE SUMMARY

The Massachusetts Water Resources Authority (MWRA) was established by Chapter 372 of the Acts of 1984 to assume the duties and responsibilities of the Metropolitan District Commission's Water and Sewer Division. These responsibilities include, among other things, providing water and sewer services to 61 communities and approximately 2.5 million people in the Commonwealth.

In accordance with Section 12 of Chapter 11 of the Massachusetts General Laws, the Office of the State Auditor has conducted a performance audit of MWRA's administration of its contract for the rehabilitation of the Clinton Wastewater Treatment Plant for the period July 1, 2014 through June 30, 2016. The purpose of this audit was to determine whether MWRA's administration of this contract was consistent with applicable laws, regulations, contractual terms and conditions, and other guidance.

The audit revealed no significant instances of noncompliance that must be reported under generally accepted government auditing standards.

OVERVIEW OF AUDITED ENTITY

The Massachusetts Water Resources Authority (MWRA) is a public independent authority established by Chapter 372 of the Acts of 1984. On September 5, 1985, the federal district court in Massachusetts ruled that the discharge of wastewater into Boston Harbor violated the 1972 Federal Clean Water Act. The court ordered MWRA to develop and implement a program to treat the wastewater as required by that law.

The Clinton Wastewater Treatment Plant (CWTP), which MWRA acquired in 1987, provides advanced sewage treatment to the town of Clinton and the Lancaster Sewer District. To comply with the 1972 Federal Clean Water Act and the Massachusetts Clean Water Act, in 1992 MWRA completed the construction of new primary, secondary, and advance treatment facilities at CWTP. These new facilities were designed to meet all current and projected National Pollutant Discharge Elimination System (NPDES) standards.

In March 2014, MWRA awarded a \$4.3 million contract to the RH White Construction Company for CWTP's digester cleaning and rehabilitation project that included upgrades to anaerobic digesters and primary clarifiers, as well as the addition of new influent gates,¹ which allowed CWTP to more effectively remove contaminants from its wastewater. Wastewater discharge from CWTP is regulated by an NPDES permit.² Compliance with the standards established by this permit requires extensive monitoring by CWTP.

-
1. These are types of equipment used in the treatment process of removing suspended solids and floating materials, such as fats, oils, and greases, from wastewater.
 2. The NPDES permit program was created in 1972 by the federal Clean Water Act to, among other things, regulate the amount of pollutants a facility can discharge into water under certain conditions.

AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY

In accordance with Section 12 of Chapter 11 of the Massachusetts General Laws, the Office of the State Auditor has conducted a performance audit of the Massachusetts Water Resources Authority's (MWRA's) administration of its Clinton Wastewater Treatment Plant (CWTP) rehabilitation contract for the period July 1, 2014 through June 30, 2016.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Below is a list of our audit objectives, indicating each question we intended our audit to answer and the conclusion we reached regarding each objective.

Objective	Conclusion
1. Were all elements of the contract provisions for the Clinton Digester Cleaning and Rehabilitation project completed within the 730 days specified by the contract?	Yes
2. Were all elements of the contract provisions for the Clinton Digester Cleaning and Rehabilitation project completed within the \$4,347,571 budget; if not, were project costs and change orders for the final contract necessary and reasonable?	Yes
3. Is CWTP's wastewater discharge into the Nashua River compliant with the federal Clean Water Act and the Massachusetts Clean Water Act as outlined in the plant's National Pollutant Discharge Elimination System (NPDES) permit?	Yes

To achieve our objectives, we gained an understanding of the internal controls we deemed significant to our audit objectives and evaluated the design and effectiveness of those controls, which were related to the following activities:

- construction process
- contractor payments
- change orders
- wastewater discharge

To accomplish our audit objectives, we identified and reviewed applicable laws, regulations, and contractual terms and conditions that were pertinent to our audit objectives. We also performed the procedures described below.

- We reviewed the contract between MWRA and the RH White Construction Company to gain an understanding of the contract requirements.
- We interviewed the MWRA construction representative on the contract to gain an understanding of the construction process from inception to completion.
- We visually inspected the work completed under the contract to verify that all elements of the contract requirements were satisfied.
- To verify that the construction was completed within the 730 days specified in the contract, we obtained the Notice to Proceed and the Certificate of Substantial Completion for the contract and calculated the number of days it took to complete the project.
- To test contract payments, we obtained and reviewed all 21 of the contractor's applications for payment and compared them to records of MWRA's electronic fund transfers to the contractor. We also compared these records of transfers to MWRA's bank statements for agreement, and we obtained and reviewed MWRA's general ledger to ensure that all transactions were recorded properly. We then calculated the total amount of the payments to ensure that it did not exceed the approved contract budget (including change orders).
- We reviewed all 10 contract change orders that MWRA executed on the contract to determine whether they were reasonable in terms of the original contract scope and bid amount.
- We reviewed MWRA's NPDES permit for CWTP, select process control sampling procedures, and the validation and reporting procedures for data from MWRA's laboratory information management system (LIMS).
- We interviewed CWTP's director of Laboratory Services and its laboratory manager to gain an understanding of the process for reviewing and approving the laboratory test results in the LIMS.
- We interviewed CWTP's chemist and manager to gain an understanding of the process for collecting effluent samples and recording the test results in the LIMS.
- For our test of effluent discharge from CWTP, we judgmentally selected a nonstatistical sample of 5 monthly operation reports submitted to the Massachusetts Department of Environmental Protection (DEP) from a population of 24 for the audit period. These reports cannot be projected to the population. We compared the test results to the NPDES permit discharge limits to determine whether the effluent discharge from CWTP was within the permit limitations.

MWRA uses the Lawson financial reporting system to record its financial transactions. We determined the reliability of the payment data for the audited contract by obtaining original source documentation, such as contractor payment applications, electronic fund transfers, and bank statements. We compared these

documents to the general ledger for accuracy. We determined that the data were sufficiently reliable for the purposes of our audit.

MWRA uses LIMS software to maintain test results for the 10 effluent discharge characteristics that are reported monthly to DEP. We assessed the reliability of the data by (1) performing testing of required data elements, (2) reviewing existing information about the data and the system that produced them, and (3) interviewing agency officials who were knowledgeable about the data. In addition, we traced a nonstatistical random sample of data to source documents. We determined that the data were sufficiently reliable for the purposes of our audit.