

AUDIT REPORT

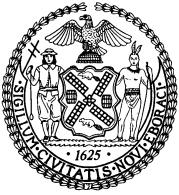


CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
BUREAU OF FINANCIAL AUDIT
WILLIAM C. THOMPSON, JR., COMPTROLLER

Audit on the Department of Environmental Protection's Progress in Constructing the Croton Water Treatment Plant

FR08-121A

September 1, 2009



THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
1 CENTRE STREET
NEW YORK, N.Y. 10007-2341

WILLIAM C. THOMPSON, JR.
COMPTROLLER

To the Citizens of the City of New York

Ladies and Gentlemen:

In accordance with the responsibilities of the Comptroller contained in Chapter 5, §93, of the New York City Charter, my office has audited the Department of Environmental Protection's progress in constructing the Croton Water Treatment Plant.

Under a 1998 federal, State, and City Consent Decree, the City is to construct and place into operation a water treatment plant for the Croton system. Accordingly, the Department of Environmental Protection is constructing the Croton Water Treatment Plant, which the Decree requires be completed by October 2011. We audit City programs such as this as a means of ensuring that agencies are accountable for public funds and use them effectively, efficiently, and as intended.

The results of our audit, which are presented in this report, have been discussed with officials of the Department of Environmental Protection, and their comments have been considered in preparing this report. Their complete written responses are attached to this report.

I trust that this report contains information that is of interest to you. If you have any questions concerning this report, please e-mail my audit bureau at audit@Comptroller.nyc.gov or telephone my office at 212-669-3747.

Very truly yours,

A handwritten signature in cursive script that reads "William C. Thompson, Jr.".

William C. Thompson, Jr.

WCT/fh

Report: FR08-121A
Filed: September 1, 2009

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*The City of New York
Office of the Comptroller
Bureau of Financial Audit*

**Audit on the Department of
Environmental Protection's Progress in
Constructing the Croton Water Treatment Plant**

FR08-121A

AUDIT REPORT IN BRIEF

We performed an audit of the Department of Environmental Protection's (Department's) effectiveness in carrying out the mandate in a 1998 Consent Decree to construct the Croton Water Treatment Plant (Plant). The purpose of the Plant is to filter drinking water from the City's Croton water system in order to comply with the federal Safe Drinking Water Act, the Surface Water Treatment Rule, and the National Primary Drinking Water Regulation.

The Consent Decree was executed after the federal government alleged in 1997 that the City had failed to safeguard the quality of Croton water, thereby violating federal drinking water regulations. The federal government and New York State executed the Consent Decree with the City in 1998 in which the City agreed to construct and place into operation a water treatment plant for the Croton water system by 2007. Supplements to the Consent Decree were issued in 2002 and 2005, which extended the completion date from 2007 to October 31, 2011. The Second Supplement contains 44 design and construction milestones that the Department must fulfill between 2003 and 2011 in order to complete the Plant on schedule. Failure to attain these milestones and complete the Plant on time will subject the City to monetary penalties. In 2003, the estimated cost to build the Plant was \$992 million. The current estimated construction cost to build the Plant is more than \$2 billion.

Audit Findings and Conclusions

While much of the work completed to date is in accordance with established timeframes, and the Department has an effective management system to carry out construction, the Department will not be able to complete overall construction of the Plant and commence operations in accordance with the terms of the Consent Decree. The Department has already missed certain milestone dates for which it was penalized \$4.7 million. Moreover, the City may be liable for more than \$10 million in additional penalties (almost \$15 million overall) because the Department will not commence Plant operations until April 2012—six months later than the required milestone date of October 31, 2011.

The Plant will not be completed by the stipulated Consent Decree timeframe—October 31, 2011—for the following reasons. A contractual problem extended the start of the Plant’s construction, and the Department lagged in completing designs and awarding construction contracts for required improvements (i.e., off-site facilities) that are near the site of the Plant and are needed to deliver treated drinking water from the Plant to the City’s water distribution system. Moreover, the delay in awarding off-site facility contracts has hindered the Department’s ability to complete required Plant testing by October 31, 2011.

The Department has a project management system to carry out the Plant’s design and construction. However, the Department did not effectively adhere to its system to carry out required work associated with the designs and procurement of the off-site facilities.

Audit Recommendations

This report makes a total of 10 recommendations. The major recommendations are that the Department should:

- Immediately complete any outstanding designs, solicit bids, award contracts, and commence work for all remaining off-site facility construction contracts.
- Incorporate construction schedules for off-site facility work in the overall Plant progress schedule.
- Effectively plan and manage the critical off-site facility work to ensure its completion within sufficient time to undertake adequate Plant testing operations.
- Ensure that it completes all required work in accordance with the timeframes prescribed in the Consent Decree.
- Consult with the New York State Department of Health and seek a waiver for any assessed and potential penalties.
- Ensure that the work of design consultants is properly supervised and tracked.

INTRODUCTION

Background

The Department of Environmental Protection (Department) is responsible for the daily delivery of approximately 1 billion gallons of drinking water to both New York City and State consumers. While most of the water comes from the City's Catskill and Delaware supply systems, ten percent is supplied by the Croton system. Croton, the City's oldest system, was placed in service in 1842 and comprises 12 collecting reservoirs from which water is conveyed by gravity flow to the City through a network of aqueducts and tunnels.

The federal Safe Drinking Water Act was promulgated in 1974 to protect public health by regulating the nation's public drinking water supply. The law (amended in 1986 and 1996) requires municipalities to undertake various measures to protect drinking water and its sources. In accordance with the Safe Drinking Water Act, the federal Environmental Protection Agency issued the Surface Water Treatment Rule in 1989. That rule required the City's water supply systems to be either filtered or protected by other means to comply with drinking water standards.¹

The City avoided filtration of water from the Catskill and Delaware systems by implementing a watershed protection program that was approved by the Environmental Protection Agency and New York State. But extensive population growth and commercial and industrial development precluded undertaking the same type of watershed protection program for the Croton system. Therefore, while the Croton system has provided high quality water for many years, it has not consistently fulfilled all Safe Drinking Water Act requirements and was taken out of service during the summer and fall months of 1992, 1993, 1994, and 1998 because of water quality problems. In addition, the Croton system was shut down for most of 2000-2001 because contaminants leaked into the New Croton Aqueduct.

In 1997, the federal government alleged that the City had failed to safeguard the quality of Croton water, thus violating the Safe Drinking Water Act, the Surface Water Treatment Rule, and the National Primary Drinking Water Regulation.² As a result, the federal government and New York State executed a Consent Decree with the City in 1998 in which the City agreed to construct and place into operation a water treatment plant for the Croton system by 2007. The Croton Water Treatment Plant (Plant) is being constructed 80 feet under a portion of Van Cortlandt Park at the Mosholu Golf Course in the Bronx and is designed to treat up to 290 million gallons of water from the City's Croton water system daily by a process known as stacked dissolved air flotation/filtration (stacked DAF), a process that clarifies water by

¹ Since passage of the Safe Drinking Water Act, federal water quality standards have become even more stringent. The Environmental Protection Agency's 1998 Enhanced Surface Water Treatment Rule increased required protection from microorganisms and lowered turbidity standards, and required that reservoirs of treated water be covered. Another regulation, the National Primary Drinking Water Regulation, provides standards for allowable contaminant levels in drinking water.

² Additionally, New York State alleged that the City's failure to treat Croton water was a violation of the State Sanitary Code.

removing suspended matter such as oil or solids. Treated water will flow from the Plant to the City's existing water distribution system.

Supplements to the Consent Decree were issued in 2002 and 2005, which extended the completion date from March 1, 2007 to October 31, 2011. The Second Supplement to the Consent Decree contains 44 design and construction milestones that the Department must fulfill between 2003 and 2011 in order to complete the Plant on schedule. Failure to attain these milestones and complete the Plant on time will subject the City to monetary penalties. In 2003, the estimated cost to build the Plant was \$992 million. The current estimated construction cost to build the Plant is more than \$2 billion.

The Department's Bureau of Engineering Design and Construction (Bureau)—which is responsible for managing the planning, design and construction of all major capital projects for the Department—is responsible for the overall administration of the Plant's design and construction. The Bureau's Office of Upstate Water Supply Treatment and Facilities Design is responsible for overseeing the Plant's design, which was carried out by a joint venture between the engineering firms Metcalf & Eddy and Hazen and Sawyer. The Bureau's Office of Facilities Construction North is responsible for overseeing construction management, which is being carried out by a joint venture between URS and Malcolm Pirnie. The Department's Contract Management Division is responsible for soliciting and awarding all design, construction, and construction management contracts.

Objectives

The overall objective of this audit was to evaluate the Department of Environmental Protection's effectiveness in carrying out the mandate in the Consent Decree to construct the Croton Water Treatment Plant, including determining:

- Whether the Department has developed a plan to carry out the construction in accordance with the Consent Decree's requirements and time frame,
- Whether the work completed to date is in accordance with the Department's plan and the established time frame, and
- Whether the Department will be able to complete construction in accordance with the established time frame.

Another audit objective was initially included: whether the Department of Environmental Protection has effectively administered the Croton Water Treatment Plant project to ensure that costs were substantiated, reasonable, and necessary. However, we deemed this objective so significant as to warrant conducting a separate audit, #FR09-110A, devoted solely to that subject.

Scope and Methodology

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. This audit was performed in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93 of the New York City Charter. Moreover, this audit was conducted by staff that included auditors who are engineers.

The scope of this audit covered calendar years 2003 to 2009.

To understand the legal requirements and the Department's internal policies and procedures for complying with them, we obtained and reviewed the Consent Decree, the First and Second Supplements to the Consent Decree, associated contracts, and other pertinent documentation such as the Department's pre-construction conference manuals, project-delivery manual, and monthly progress reports.

We interviewed officials from the Department's Bureau of Engineering Design and Construction, Engineering Audit Office, and Contract Management Division about departmental internal controls. In addition, we interviewed design consulting engineers from Hazen and Sawyer/Metcalf & Eddy and construction managers from URS/Malcolm Pirnie. We conducted walkthroughs of the methods by which contracts were procured, schedules developed, materials and equipment purchased, invoices approved, payments processed, and design and construction problems handled. We documented our understanding of these controls in written descriptions.

We reviewed contracts between the Department and contractors who are responsible for construction of the Plant and its associated facilities. (See Appendix for a list of construction contracts.) Finally, we reviewed various Department records, including payment requisitions, design documents, and other related documentation, to evaluate the Department's efforts in administering the design and construction of the Plant.

We contacted the New York State Department of Health—the agency that is a signatory to the Consent Decree under which the Department is constructing the Plant—to understand the role of that agency in enforcing Consent Decree requirements, and to ascertain the status of the milestones. To understand the procedures that will be required to commence Plant operations, we visited an existing water treatment plant in Connecticut (William Warner) designed by the Department's current design consultants, Hazen and Sawyer, that has technology (i.e., stacked DAF) similar to that to be installed at the Plant.

To determine whether the Department has developed a plan to carry out the construction in accordance with the Consent Decree's requirements and time frame, we reviewed the Bureau of Engineering Design and Construction's "Project Delivery Manual" (updated March 10, 2008) and the Department's project organization chart, interviewed Department officials, and assessed procedures for overseeing the work of consultants and contractors.

To determine whether work completed to date is in accordance with the Department's plan and the established time frame, we reviewed the Department's monthly progress reports, contract work scopes, and documentation notifying the New York State Health Department about the attainment of milestones. We visited the Plant site on May 30, 2008, September 15–19, 2008, and on October 31, 2008, to observe existing conditions and ascertain the status of completed and ongoing work. We also reviewed engineering inspection reports, information

logs, construction schedules, change orders, payment requests, and other file documentation submitted by contractors and consultants.

To determine whether the Department will be able to complete construction in accordance with the established time frame, we prepared our own independent work schedules and estimates of projected completion dates based on our analyses of existing construction progress and schedules. We ascertained the status of project work by attending design and construction progress meetings, reviewing meeting minutes, and evaluating the Department's project management procedures.

Due to the size and complexity of the project, the Department and the New York City Department of Investigation agreed to retain an investigative consultant (Thacher Associates) to ensure the continued integrity of the project. We met with officials of these organizations to ascertain their roles and procedures for investigating and monitoring allegations of potential fraud, waste and corruption relating to Plant construction.

Discussion of Audit Results

The matters covered in this report were discussed with Department officials during and at the conclusion of this audit. A preliminary draft report was sent to Department officials on March 20, 2009, and was discussed at an exit conference on April 17, 2009. On May 12, 2009, we submitted a draft report to Department officials with a request for comments. The Department provided a written response on May 27, 2009. In its response, the Department stated, "Most of the findings and observations in the draft audit report concern contracts for off-site work. These off-site contracts total \$114 million, less than five percent of the total project cost."

The Department agreed with two of the ten recommendations to plan and manage critical off-site facility work, and to seek a waiver from the New York State Health Department for any assessed and potential penalties. The Department disagreed with our recommendations to incorporate construction schedules for off-site facility work, adjust completion dates to assess additional liquidated damages, stipulate additional liquidated damages for contract no. CRO-312-OS, and prepare a written scope of work. The Department apparently disagreed with our recommendation to ensure that all required work be completed within the timeframes prescribed in the Consent Decree. The Department asserted that it already implemented our recommendations to maintain project records and properly supervise the work of design consultants.

The full text of the Department's response is included as an addendum to this report.

FINDINGS AND RECOMMENDATIONS

While much of the work completed to date is in accordance with established timeframes, and the Department has an effective management system to carry out construction, the Department will not be able to complete overall construction of the Plant and commence operations in accordance with the terms of the Consent Decree. The Department has already missed certain milestone dates for which it was penalized \$4.7 million. Moreover, the City may be liable for more than \$10 million in additional penalties (almost \$15 million overall) because the Department will not commence Plant operations until April 2012—six months later than the required milestone date of October 31, 2011.

The Plant will not be completed by the stipulated Consent Decree timeframe—October 31, 2011—for the following reasons. A contractual problem extended the start of the Plant’s construction, and the Department lagged in completing designs and awarding construction contracts for required improvements (i.e., off-site facilities) that are near the site of the Plant and are needed to deliver treated drinking water from the Plant to the City’s water distribution system. Moreover, the delay in awarding off-site facility contracts has hindered the Department’s ability to timely complete required Plant startup testing by October 31, 2011.

Department Response: “While DEP currently projects that the CWTP [Croton Water Treatment Plant] will not be operational until April 11, 2012, the only reason that the plant will likely not be completed by the date stipulated in the Consent Decree is due to the delay associated with conducting a thorough integrity review of the apparent low bidder for CRO-312G. . . . Importantly, all facilities required to deliver water from the CWTP and meet the Consent Decree requirements are scheduled to be in place when the construction contracts at the Mosholu Golf Course site are completed.”

Auditor Comment: Subsequent to our audit field work, the Department reported that the Plant’s completion date has been delayed beyond April 11, 2012. According to the Department’s Monthly Report No. 55 (Section 2.0), dated April 2009, “The current forecasted project completion date is June 19, 2012”—ten weeks later than the April 11, 2012 completion date that was previously anticipated. Given this additional delay, we urge the Department to administer the Plant’s construction schedule carefully to ensure that the City does not miss future milestone dates even further, and incur additional penalties.

Department Response: “The off-site facilities are also scheduled to be in place by April 11, 2012. However, in the event the off-site facilities contracted under the CRO-312-OS set of contracts are delayed, the plant can still be placed into service by the above date.

“Minor work at the Jerome Park Reservoir, which is part of the off-site contracts, is required to allow the plant to start up. Once in operation, the CWTP can deliver water to the majority of the City’s low service distribution system, the portion of the system currently served by the Croton system when it is online. The Shaft and Meter Chamber (SMC), which represents the bulk of the off-site construction, is required to deliver Croton water to the City’s high service distribution system, the portion of the distribution system now served almost exclusively by the City’s Catskill/Delaware systems.”

Auditor Comment: According to the Department’s Final Design Report, dated April 2006, treated water for the low service distribution system will be delivered through the shaft and meter chamber:

From the Shaft and Meter Chamber, Low service treated water will be conveyed through a new 9-foot diameter Low service tunnel to the NCA [New Croton Aqueduct] downstream of Shaft No. 21. The new tunnel from the new Shaft and Meter Chamber will convey up to 155 mgd [million gallons per day] Low service treated water to Manhattan. In addition, the new Shaft and Meter Chamber will provide an outlet to convey Low service treated water from the WTP to the Bronx.

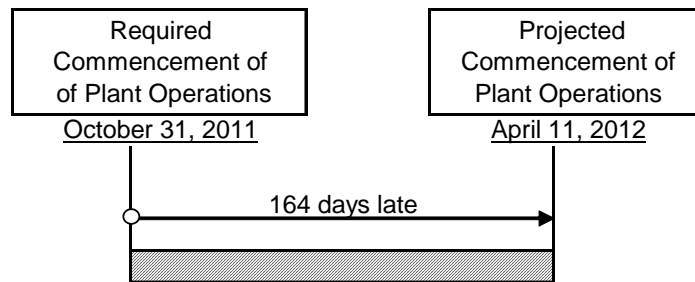
The Department has a project management system to carry out the Plant’s design and construction. However, the Department did not effectively adhere to its system to carry out required work associated with the design and procurement of the off-site facilities.

These matters are discussed in greater detail below.

Construction Will Not Be Completed Within Established Timeframe

Consent Decree milestone nos. 28 and 31, respectively, require the Department to complete Plant construction by May 1, 2011, and commence operations by October 31, 2011.³ However, according to the Department’s October 2008 progress report, milestone no. 31 will not be attained until April 11, 2012—164 days later than required. (See Figure 1 below.) As a result, the Croton water supply will continue to violate provisions of the Safe Drinking Water Act, and the Department could be assessed additional penalties totaling \$10,913,000.

Figure 1
Time Lag for Commencing Plant Operations



The Department will not complete construction within the established timeframes because of a problem with awarding a contract for the Plant’s phase-one construction work. The Department obtained two bids for phase-one general construction work on September 26, 2006.

³ The period between May 1, 2011, and October 31, 2011, is for startup and commissioning testing of the Plant.

The apparent low vendor, a joint venture between Perini Corporation, Tutor-Saliba Corporation, and O&G Industries, submitted a \$1,127 million bid. The second vendor, a joint venture between Slattery Skanska and Goetlieb, submitted a \$1,327 million bid. Department officials stated in an October 6, 2008 e-mail that “the City and the Perini Joint Venture could not agree on the set of business conditions governing the proposed contract, and the Perini Joint Venture withdrew its bid.” Consequently, the Department awarded contract no. CRO-312-G to the Slattery joint venture on May 11, 2007, for which work commenced on August 21, 2007—195 days after the date required by milestone no. 23. The award of associated contract nos. CRO-312-H, E1, E2, and P for mechanical, electrical, and plumbing work were subsequently delayed as well.

Despite the untimely contract award, we acknowledge that the Department carried out diligent efforts to award the phase-one contract. But, even if the phase-one contract had been awarded in a timely manner, the Department would still not be able to complete construction within the established timeframes because of delays in completing designs and commencing construction of Plant associated off-site improvements. We attribute those delays to deficiencies in the Department’s management of the project.

Department Response: “The set of 90% design documents for the off-site contracts was delivered to the Department in October 2006. Had the notice to proceed for the CWTP contracts been issued by February 8, 2007, the contracts for off-site work could have and would have been awarded earlier.”

Auditor Comment: The Department’s response established that off-site facility design documents were 90 percent complete in October 2006. Our review of Department records established that off-site facility design documents that were 100 percent complete and suitable for procuring construction contracts were not available until February 2008—489 days later. Consequently, the inordinate length of time to complete the off-site facility designs, and solicit, award, and commence construction precluded the Department from completing construction within the timeframes stipulated in the Consent Decree.

Delays in Designing and Procuring Off-Site Facility Improvements

Consent Decree Section 23 (“Mosholu Off-Site Facilities”) lists certain facilities “which must be constructed, upgraded or improved prior to the date the WTP is required to commence operations hereunder if constructed at such Site, in order for treated water to be delivered from the WTP to the City’s distribution system as of such date.” Despite this stipulation, the Department did not ensure that all designs were completed in a timely manner, construction contracts procured, and work completed for three off-site facility contracts (nos. CRO-312-OS, CRO-312-FM and CRO-312-HP) in accordance with the timeframes established in the Consent Decree. As a result, Plant construction will not be completed by May 1, 2011, as required by Consent Decree milestone no. 28.

Consent Decree milestone no. 20 required the Department to complete the final design of the off-site facilities by April 30, 2006. Milestone no. 23 required that off-site work commence

by February 8, 2007. Design drawings for the off-site facilities were submitted by the required milestone date. However, drawings that were suitable for procuring construction contracts were not available until February 1, 2008—643 days later. Consequently, the Department did not solicit or obtain bids for the most critical off-site facility contract (no. CRO-312-OS) until May 21, 2008, award the contract until October 1, 2008, and commence construction until February 2, 2009—726 days later than the required milestone.⁴ (See Figure 2 on page 11.) For contract no. CRO-312-FM, the final design was not completed until December 2008, and construction is not expected to commence until August 3, 2009. The final design for contract no. CRO-312-HP has not yet been completed.⁵

Department Response: “This section of the report incorrectly asserts that Consent Order milestones 20 and 23 were not met due to delays in completing the off-site contracts.

“Milestone 20 required that, by April 30, 2006, the Department was to ‘complete and submit to the United States, the State and NYSDOH the final design for the WTP and the Mosholu Off-Site Facilities.’ In accordance with a previous agreement with the regulatory agencies, the submission was to be made to NYSDOH only. The submission was made on April 27, 2006. . . . This submission was acceptable to NYSDOH. DEP has received absolutely no indication that these submissions were not in compliance with the terms of the Decree and, as such, neither EPA nor NYSDOH has made a penalty demand with respect to this 2006 milestone.

“While there were penalties assessed in relation to milestone 23, these penalties were solely due to the delay in issuing the notice to proceed for the WTP contracts. This milestone required that the Department ‘issue notice to proceed for the first phase of construction of the WTP and the Mosholu Off-Site Facilities and commence construction’ by February 8, 2007. The CRO-312G contract included work around Jerome Park Reservoir (JPR) that constituted the first phase of the off-site work. When the NTP for CRO-312G was issued on August 21, 2007, the assessment of penalties for failure to meet milestone 23 ceased. Had NYSDOH not found the issuance of this NTP met the milestone, the assessment of penalties would have continued until the NTPs for the 312-OS contracts were issued. In addition, at no time did either EPA or NYSDOH indicate their view that DEP had failed to meet the substantive terms of the milestone.”

Auditor Comment: In its response, the Department did not object to or challenge our assertion that design drawings that were suitable for procuring construction contracts for off-site facilities were not available until February 1, 2008—643 days after the required milestone date. Consequently, off-site facility work is not expected to be completed until

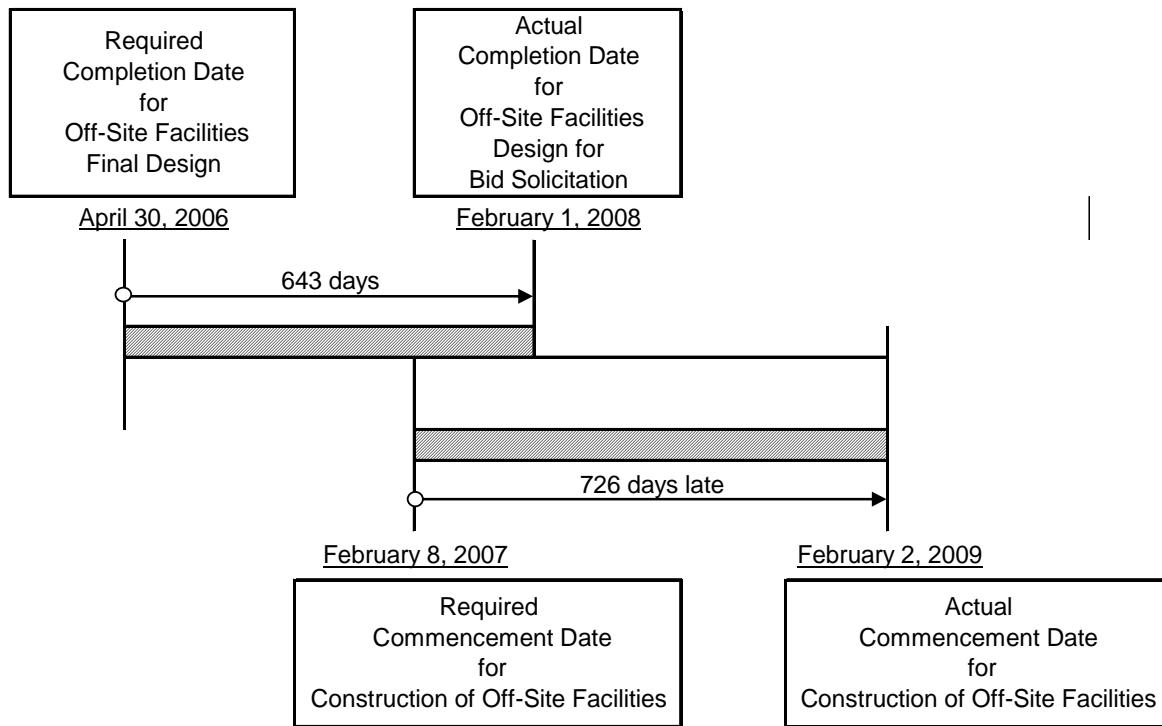
⁴ The \$96.84 million contract (No. 20090016095 to a joint venture between John Picone and Schiavone) was registered by the Comptroller’s Office on November 25, 2008.

⁵ Contract no. CRO-312-FM is to construct a “force main” pipe to deliver residual waste products from the Plant to the Hunts Point Water Pollution Control Plant. According to the Department, this work should be completed by March 6, 2011, 402 days before the Plant will commence operations. Contract no. CRO-312-HP is to carry out associated improvements at the Hunts Point Water Pollution Control Plant. Although there is no scheduled date for commencing these improvements, we note that the Plant can become operational before the improvements are completed.

February 10, 2012—286 days after the May 1, 2011 completion date stipulated in Consent Decree milestone no. 28.

Furthermore, the Department did not object to or challenge our assertion that the preponderance of required off-site work elements specified in Consent Decree Section 23 were included in Contract No. CRO-312-OS—a contract for which construction did not commence until February 2, 2009—726 days after the Department commenced work under contract no. CRO-312G.

Figure 2
Time Lag for Completing Off-Site Facility Design and
Commencing Construction for Contract No. CRO-312-OS



At the exit conference, Department officials contended that required off-site facility work commenced on time. Documentation submitted by the Department to substantiate this position indicated that Contract Nos. CRO-312G and CRO-313 contained certain off-site work elements (i.e., gate house no. 5—remove interconnection to current distribution system; and shaft 21—install plug south of shaft). We agree that these elements of off-site facility work were contained in Contract Nos. CRO-312G and CRO-313.⁶ However, the preponderance of required off-site

⁶ Construction work for contract no. CRO-312G commenced on August 21, 2007—195 days later than required by milestone no. 23 (see discussion on page 9). Construction work for contract no. CRO-313 commenced on August 23, 2006—7 days earlier than required by milestone no. 22.

work elements as noted in Consent Decree Section 23 were included in Contract No. CRO-312-OS⁷—a contract for which construction did not commence until 726 days later than required.

Department Response: “As is stated above, the Department completed the requirements of milestone 23 on August 21, 2007 with the issuance of the NTP for CRO-312G. Milestone 23 did not require the commencement of the work under CRO-312-OS. In fact, the draft report appears to acknowledge that the delay in meeting milestone 23 was due to the problem with awarding CRO-312G to the lowest bidder when it states in the last paragraph on page 12 that ‘the Department was unable to attain timely completion of the milestone no. 23, and interim milestones C and D requirements pertaining to the actual Plant because of an intractable problem with awarding a contract for the Plant’s phase-one construction.’”

Auditor Comment: Consent Decree Section 23 contains a list of required off-site facility improvements that the Department incorporated in contract nos. CRO-312-G and CRO-312-OS-G. While the Department fulfilled the requirement of milestone no. 23 (albeit in an untimely manner because of a problem with awarding the contract), the off-site facility improvements in contract no. CRO-312-OS did not commence until February 2, 2009—726 days after the February 8, 2007 date stipulated in milestone no. 23.

Recommendation

1. The Department should immediately complete any outstanding designs, solicit bids, award contracts, and commence work for all remaining off-site facility construction contracts.

Department Response: “This recommendation is largely moot as all outstanding designs, and solicitation of bids required for the project have been completed and are in construction except for the CRO-312-FM contract which is in the award process. The CRO-312-HP contracts are not required to operate the CWTP.”

Auditor Comment: Although many off-site facility contracts have now been awarded, this was not the case during the period we conducted our audit field work. Moreover, while the Department has awarded contract no. CRO-312-FM, it has not yet commenced work. Furthermore, the Department has not yet awarded contract no. CRO-312-HP. While we note in the report that the Plant can become operational before the improvements in contract no. CRO-312-HP are completed, those improvements will ensure that the Hunts Point Water Pollution Control Plant can handle the additional

⁷ The facilities included in Contract Nos. CRO-312-OS, CRO-312-FM and CRO-312-HP as specified in the Consent Decree are: “Gate House No. 1 (remove and replace sluice gates); Gate House No. 2 (close 48-in diameter gate valve that supplies water directly to the distribution system and disable the operators); Gate House No. 3 (close the two 48-inch diameter gate valves to the distribution system and disable the operators); Gate House No. 6 (plug the connection to the bypass piping and the two inlet pipes); new Harris Park Annex shaft chamber containing high level treated water conduit; valve chambers A and C (construction and modifications); and any other off-site facilities identified in the course of final design or construction that will be necessary for the delivery of treated water from the WTP to the City’s distribution system that meets the requirements of this Second Supplement.”

sludge residuals that are a byproduct of the Plant's operation. Accordingly, the Department should immediately complete and commence all work for any remaining off-site facility contracts.

Problems with Plant Testing

The Department's design engineering consultant (Hazen and Sawyer/Metcalf & Eddy) asserted in its April 2006 "Final Design Report," §4.4 ("Offsite Facilities"), that the "required work will be scheduled as needed to allow the testing and start up of the WTP in *May of 2011 and operation by October 2011.*" (Emphasis added.) Despite this assurance of compliance with Consent Decree milestones by the consultant, the Department's ability to complete all startup and commissioning testing operations may be hindered by the delay in completing design work and commencing off-site improvements.

Department Response: "This statement is incorrect: No work associated with the off-site contracts need be completed in order to allow testing of the CWTP."

"The draft report incorrectly asserts that delays in the off-site contracts have jeopardized the ability to perform required testing and startup of the CWTP. All equipment in the CWTP can be tested prior to startup without any of the off-site facilities having been completed. Following construction and testing, CWTP startup only requires the completion of relatively minor work included in the off-site contract. The required off-site work will be completed prior to startup of the CWTP. In addition, while the Shaft Meter Chamber is not required to start up the plant, it is scheduled to be completed by February 10, 2012. Even if construction of the SMC were to slip, it would not prevent startup of the WTP. While the SMC is required to operate the WTP at full capacity when finished water from the CWTP must be distributed to the high service, it is not required in order to operate the plant at 290 mgd (full capacity) during the commissioning test. There is no requirement in the Consent Order to operate the WTP at full capacity or to use the high service."

Auditor Comment: The Department's Detailed Specification 01821-16 Section 1.15B.1 sets forth the requirements for undertaking commissioning testing, which occurs after startup testing and is a necessary precursor for commencing Plant operations. "The Contractor shall for a period of 15 cumulative days maintain and operate the Croton Water Treatment Plant in its entirety at flows varying from 90 mgd to 290 mgd." (Emphasis added.) Additionally, Section 1.15C states, "The Contractor shall for a period of 15 uninterrupted, consecutive days maintain and operate the Croton Water Treatment Plant in its entirety at flows varying from 90 mgd to 290 mgd." (Emphasis added.)

Thus, while our report affirms that startup testing can be carried out before certain off-site facility work is completed, our review ascertained that the shaft meter chamber must be completed before all required commissioning testing occurs. Accordingly, we contended in the draft report that the Department's ability to complete all startup and commissioning testing operations may be hindered (not jeopardized) by the delay in completing design work and commencing off-site improvements.

Given that the Department has fallen further behind schedule according to the April 2009 Monthly Report No. 55 and is now expected to commence Plant Operations by June 19, 2012—rather than April 11, 2012—we are now even more concerned about the Department’s ability to complete the shaft and meter chamber by February 10, 2012, and to undertake required commissioning testing.

Our review indicates that the Department will be able to complete construction of the Plant by October 11, 2011, thereby providing a six-month testing period so the Plant can become operational by April 11, 2012.⁸ While this timeframe should be sufficient for startup testing most of the Plant’s equipment, commissioning testing cannot occur until critical off-site facility work (involving the construction of a “shaft meter chamber” that contains water service mains and water distribution manifolds) is completed.⁹ According to the Department’s work schedule, critical work will not be completed until February 10, 2012—nine weeks before the Plant must become operational.

We are concerned about certain risks in the Department’s plan and timetable. First, nine weeks leave very little leeway to complete required commissioning testing before the Plant is to become operational. Had the Department commenced the off-site improvement work on time, we estimate that the critical work could have been completed by February 15, 2010—almost two years earlier than the Department currently anticipates—thereby providing more than enough time for startup and commissioning testing to occur.

Furthermore, the Department’s testing plan is contingent upon completing the critical work within the allotted time of 1,103 days. However, unforeseen problems and unanticipated delays routinely beset large construction projects such as the Plant. For example, work at the Plant has already been adversely affected by a concrete supplier strike, an injunction on blasting, and a Building Department tower crane shutdown. Moreover, since the Department’s construction schedule for the Plant does not yet incorporate any key dates and activities for off-site improvements, including the critical work, there is no appropriate method for tracking off-site work progress. Accordingly, the Department must ensure that the work is carefully scheduled, supervised, and completed in order to carry out Plant testing promptly.

Recommendations

The Department should:

2. Incorporate construction schedules for off-site facility work in the overall Plant progress schedule.

⁸ This review was based on information available by the date of our field visit on October 31, 2008. Since that time the Department has forecast a project completion date of June 19, 2012.

⁹ According to the Department’s specification no. 01821, §3.06, commissioning testing requires that, “The contractor shall maintain and operate the full Croton Water Treatment Capacity at flows varying from 90 mgd to 290 mgd. The flow rate will be determined by the City and will vary throughout the day, and will include one or more scheduled full plant shutdown and restart.”

Department Response: “Disagree, the off-site general contract requires the contractor to prepare and maintain a schedule for the duration of the project. There is little to no interaction between the off-site and CWTP projects. As such, incorporating construction schedules would only complicate the scheduling effort. In addition, there is no contractual mechanism to require this joint scheduling. A change order to at least one of the general contracts, probably both and perhaps the other contractors, would be required, and this would likely increase contract costs. That said, all milestones associated with the project will be tracked and maintained by the CM.”

Auditor Comment: Under the terms of Consent Decree Section 23, the Department must complete off-site facility work so that treated water can be delivered from the Plant to the City’s distribution system. Accordingly, the Department must ensure that off-site facility work is properly scheduled so that progress can be tracked. However, the Department’s construction schedule for the Plant does not yet incorporate any key dates and activities for tracking off-site improvements.

We are troubled about the Department’s assertion, “There is little to no interaction between the off-site and CWTP projects.” Interaction and coordination by the Department of the various contracts are important elements in effectively carrying out the Consent Decree mandate to complete construction of the Plant within established timeframes. Thus, the Department’s Monthly Report No. 54 dated March 2009 notes the adverse effect of limited interaction: “Delays in the CRO-313 contractor completing rock excavation at the small footprint of the Shaft and Meter Chamber may delay installation of CRO-312-OS [i.e., off-site contract] noise wall.” While the Department recognizes the importance of tracking all project milestones, doing so effectively requires that schedules for off-site facility work be incorporated in the overall Plant progress schedule.

3. Effectively plan and manage the critical off-site facility work to ensure its completion within sufficient time to carry out Plant testing and commencement operations. In that regard, the Department should consider undertaking measures to expedite completion of the work.

Department Response: “Agree. However, as previously stated in this response, none of the major off-site facilities is required to allow testing at the WTP. The off-site work required to start the plant will be completed before the required date.”

Auditor Comment: As discussed, our review ascertained that the completion of all required commissioning testing is dependent on constructing the off-site facility known as the shaft and meter chamber.

Missed Milestone Dates

The Department will not attain 10 of the 11 remaining milestone dates as shown in Table I below. The failure to attain these future milestone dates may result in the Department being assessed additional penalties totaling \$10,913,000.¹⁰

The New York State Health Department has already assessed the Department penalties totaling \$4,785,000. The Consent Decree lists 31 milestone dates for design and construction activities that the Department must achieve between 2003 and 2011 in order to complete the Plant on a timely basis. In addition, a January 1, 2007 Amended Attachment E to the Consent Decree's Second Supplement contains 13 additional "interim" milestones. Of the 44 total milestones and interim milestones, the Department was required to fulfill 33 by the close of our field work on October 15, 2008. However, according to the New York State Department of Health, the Department did not achieve three milestones and two interim milestones by that date.¹¹

Table I
Projections for Attaining Future Milestone Dates

Milestone No.	Work Item	Required Milestone Date	DEP Projected Date	No. Days Late (DEP) **	Auditors Projected Date	No. Days Late (Audit)	Potential Penalty Amounts
I	Place 40% of structural concrete	31-Oct-08	23-Dec-08	54	23-Dec-08	54	\$162,000
J	Place 65% of structural concrete	30-Apr-09	1-Sep-09	125	1-Sep-09	125	\$375,000
K	Complete Tunnel Excavation to Raw and Treated water connections	30-Sep-09	9-Mar-09	-205	11-Mar-09	-203	\$0
L	Place 95% of structural concrete	15-Apr-10	20-Aug-10	128	20-Aug-10	128	\$384,000
M	Complete installation of flocculators	31-Oct-10	2-Jan-11	64	2-Jan-11	64	\$192,000
26	Complete and submit permits	1-Nov-10	None	N/A	3-Jan-11	64	\$140,000
27	Secure permits and approvals	1-May-11	None	N/A	3-Jul-11	64	\$140,000
28 *	Complete construction of all facilities and start up for testing of systems	1-May-11	11-Oct-11	164	11-Oct-11	164	\$3,755,000
29	Submit documentation that Plant was completed	30-Sep-11	None	N/A	11-Mar-12	164	\$1,005,000
30	Obtain NYSDOH completed work approval	31-Oct-11	None	N/A	11-Apr-12	164	\$1,005,000
31	Commence Operation	31-Oct-11	11-Apr-12	164	11-Apr-12	164	\$3,755,000

Total Potential Penalties = **\$10,913,000**

* The Department estimates that it will complete construction of the Plant itself by October 11, 2011. As previously noted, the Department estimates that critical off-site facility work will be completed by February 10, 2012, and the remainder of off-site work by January 23, 2013.

** The Department did not project the dates it will attain milestone nos. 26, 27, 29 and 30. Therefore, we projected their attainment dates by using information from the Consent Decree about their required duration times.

¹⁰ We calculated the amount of the potential penalties by multiplying the number of days that each milestone will be attained late with the daily penalty amounts stipulated in Consent Decree Section 12.

¹¹ The New York State Department of Health did not assess penalties for missing two of the five milestone dates (nos. 12 and 14). Milestone no. 12 required that the Department: "By August 12, 2004, enter into, and the City Council ratify by vote, the Memorandum of Understanding required pursuant to ch.175, L.2003." Milestone no. 14 required the Department: "By September 10, 2004 issue a notice to proceed for traffic improvements construction and site preparation for the WTP." These milestones were attained on September 28, 2004.

The missed milestones and interim milestones for which the Department was assessed penalties were to be attained by February 8, 2007: milestone no. 23 (“issue Notice to Proceed for the first phase of construction of the WTP and the Mosholu Off-Site Facilities and commence construction”), interim milestone C (“issue Notice to Proceed for WTP Electrical Contract”), and interim milestone D (“issue Notice to Proceed for WTP HVAC Contract”). According to the Department, all three milestones were actually attained on August 21, 2007—195 days later than required. (However, as discussed on page ten, the Department did not instruct its contractor to commence work for the off-site facilities until February 2, 2009.)

As previously stated, the Department was unable to attain timely completion of the milestone no. 23 and interim milestones C and D requirements pertaining to the actual Plant because of an intractable problem with awarding a contract for the Plant’s phase-one construction. Therefore, we believe that the Department should petition the appropriate regulatory agencies, including the New York State Department of Health, to waive any past or future penalties arising from this situation.

Recommendations

The Department should:

4. Ensure that it completes all required work in accordance with the timeframes prescribed in the Consent Decree.

Department Response: “It is impractical and cost prohibitive to implement this recommendation; DEP is taking all reasonable steps to ensure the work is completed as quickly as practical.”

Auditor Comment: Since completing our audit field work in October 2008, the Department has lagged further beyond schedule and reports that it will not complete milestone no. 31 (Commence Operation of the Plant) until June 19, 2012—69 days later than the previously reported completion date of April 11, 2012, and 233 days later than the original October 31, 2011 date stipulated in the Consent Decree. Accordingly, we are concerned about the efficacy of the “reasonable steps” that the Department did not identify but contends it is undertaking to ensure that work is completed within the prescribed timeframes.

The Department maintains “Variance Reports” that highlight the number of work items (e.g., requests for information, shop drawings, subcontractors and suppliers, change orders) that have not been approved or resolved by the Department and its design consultant within certain time periods. According to the variance reports contained in the Department’s Monthly Report No. 55 dated April 2009, the approval of: 131 of 221 (59%) subcontractors exceeded 30 days, 498 of 1,687 (30%) suppliers exceeded 30 days, and 87 change orders exceeded stipulated target times. Furthermore, 696 of 1,329 (52%) requests for information and 131 of 331 (40%) requests for clarification were not resolved within 14 days. Additionally, the processing of 3,172 of 6,402 (50%) shop drawings exceeded 14 days. The timely approval and resolution of these work items is a necessary component of effective project management and for ensuring that work is

completed as scheduled. Therefore, we encourage the Department to take measures for expediting the processing and approval of required information and documentation.

5. Consult with the New York State Department of Health and seek a waiver for any assessed and potential penalties. In addition, the Department should seek approval for revising future milestone dates to reflect current construction progress.

Department Response: “Agree, the topic of waiver of penalties has been discussed with EPA and NYSDOH and DEP continues to pursue such relief.”

Problems with Assessing Liquidated Damages

In addition to ordinary liquidated damages, contract schedule “A” permits the Department to impose more stringent damages if contractors do not complete work by the dates stipulated in milestone nos. 28 and 31. However, the untimely award of contract nos. CRO-312-G, H, E1, E2, and P may thwart the Department’s collection of additional liquidated damages from some of the contractors. Although the untimely contract awards compelled the Department to instruct contractors to commence work six months later than anticipated, the Department did not similarly revise the completion dates that, if exceeded, would trigger the imposition of additional liquidated damages.

The daily amount of the additional liquidated damages is \$32,500—far greater than the \$3,000 in ordinary liquidated damages. For contract no. CRO-312-G, the Department did adjust the dates for which additional liquidated damages would apply. However, the Department has not done so for contract nos. CRO-312-H, E1, E2, and P. Consequently, if these contractors do not complete work within the specified contract durations, the maximum daily liquidated damages that could be imposed would be only \$3,000—rather than the higher monetary sanctions totaling \$32,500.

Furthermore, we note that off-site facility contract no. CRO-312-OS contains provisions for \$10,000 in ordinary liquidated damages—still less than the \$32,500 for the more stringent liquidated damages. As discussed on page ten of this report, the timely completion of the contract’s shaft meter chamber work is essential so the Plant can become operational by April 11, 2012. Therefore, the ability to impose additional liquidated damages that are equivalent to any monetary penalties the Department may suffer is an important means of ensuring that the contractor will complete the work on time.

Recommendations

The Department should:

6. Adjust completion dates for contract nos. CRO-312-H, E1, E2, and P so that additional liquidated damages can be assessed if work is not completed on time.

Department Response: “Disagree, this is cost prohibitive.”

Auditor Comment: The authority to assess additional liquidated damages should a contractor delay the Plant's completion and cause the Department to miss Consent Decree milestones is a means to compensate the City for any associated penalties it may be assessed. We note that since completing our audit field work, the Plant's scheduled commencement date has lagged an additional 69 days, from April 11, 2012, to June 19, 2012. Therefore, the Department should consult its legal counsel to ascertain whether our recommendation to adjust contract completion dates may be carried out cost effectively.

7. Stipulate additional liquidated damages for contract no. CRO-312-OS.

Department Response: "Disagree, this will only serve to increase cost of the contract. As previously stated, the work required in this contract to enable the CWTP to start up is relatively minor and will be completed as required. The major work, the SMC, is not required for plant startup."

Auditor Comment: As stated, the imposition of liquidated damages is an important tool to compensate the City for any monetary penalties it may incur if a contractor does not complete work within established timeframes. Furthermore, our review of Department documentation indicated that undertaking all required commissioning testing is dependent on the completion of the SMC (shaft and meter chamber).

Problems with the Department's Plan

While there is no overall written plan for carrying out the design and construction of the Plant, the Department has carried out construction in accordance with the Consent Decree's requirements and timeframe by carrying out the following elements of an effective management system:¹²

- employment of a full-time project manager to oversee project work,
- informing senior management about project status,
- conduct routine inspections of work performed,
- review invoices, canceled checks, and other related documentation submitted by contractors,
- review and approval of documents such as submittals, requests for information, and material approvals submitted by contractors and engineering consultants.

However, as previously reported, design work for the off-site facilities was not completed, and construction contracts were not procured against dates prescribed in the Consent Decree. Also, there was no written scope of work to describe all required activities.

Furthermore, we identified a significant project management weakness: the inadequate and incomplete record-keeping by the Department's Office of Upstate Water Supply Treatment

¹² The Bureau of Engineering Design and Construction has a "Project Delivery Manual" that contains the effective elements of a management system. Department officials informed us that the manual was put into practice after design and construction of the Plant commenced.

and Facilities Design (Office), the unit responsible for overseeing the Plant’s design and administering contracts with the Department’s consulting engineers. Obtaining audit records and information from the Office was time consuming and sometimes futile. For example, the Office lacked adequate documentation indicating compliance with Consent Decree milestones. Other information had to be requested from the Department’s consultants.

Department Response: “The records maintained at the Department’s Lefrak offices are limited to those needed to effectively manage the on-going construction. There is no business need to maintain all documentation related to this enormous project on site and indeed there is no room to do so. The documents requested by the auditors were often several years old and thus were no longer kept on site. All documentation requested by the auditors was provided as quickly as possible, either from the construction office or when necessary from the archive records maintained on the Department’s behalf by the consulting engineer.”

Auditor Comment: Key documentation relating to compliance with Consent Decree milestones was not readily available at the Department’s Lefrak offices. Furthermore, critical technical information about startup and commissioning testing and the scope of work for the off-site facilities were not readily available from the Department. While we recognize the necessity for warehousing certain project files in archives, some project cost estimates were not available at all.

Excessive reliance on design consultants for maintaining important supporting documentation indicates a lack of supervisory control by the Department. The Department’s “Project Delivery Manual” states, “Missing milestones may result in fines and impacts the City’s reputation with the public and regulatory agencies.” Accordingly—given that the successful and timely completion of the Plant is of high importance to the City—the Department should impose more stringent controls over the administration of its contract with design consultants.

Recommendations

The Department should:

8. Prepare a written scope of work that describes all required activities and procure construction contracts against dates prescribed in the Consent Decree.

Department Response: “Disagree, as all construction contracts required for the CWTP and off-site facilities are in place (with the exception of CRO-312-FM which is in the award process), there will be no opportunity to implement this recommendation.”

Auditor Comment: Preparation of a written scope of work is particularly important given the disparate information we obtained from the Department and its design consultant about the specific elements that comprise off-site facility work.

9. Maintain complete and accurate project records in Department files.

Department Response: “Already implemented—accurate and complete records are already maintained in Department files or archives maintained by the consulting engineer.

Auditor Comment: During the course of the audit, there was no evidence to substantiate the Department’s assertion that it has already implemented our recommendation to maintain complete and accurate project records.

10. Ensure that the work of design consultants is properly supervised and tracked.

Department Response: “Already implemented—this is standard practice for the Department on all projects.

Auditor Comment: During the course of the audit, there was no evidence to substantiate the Department’s assertion that it has already implemented our recommendation to properly supervise and track the work of design consultants.

<u>Croton Water Treatment Plant Construction Contracts</u>		
Contract Number	Description	Contract Amount (million)
CRO-311	Site preparation including excavation and traffic improvements	\$127
CRO-312-G	General construction work including structures and equipment	\$1,327
CRO-312-E1	Low voltage electrical work	\$134
CRO-312-E2	High voltage electrical work	\$37
CRO-312- H	Mechanical work	\$105
CRO-312- P	Plumbing work	\$58
CRO-313	Construction of water tunnels and associated work	\$212
CRO-312-OS-G	General off-site construction work to deliver treated drinking water from the Plant to the City's water distribution system	\$97
CRO-312OS-E	Electrical work at off-site facilities	\$16
CRO-312OS-H	Mechanical work at off-site facilities	\$1
CRO-312OS-P	Plumbing work at off-site facilities	\$1
CRO-312-FM	Construction of force main to deliver residuals from the Plant to Hunts Point Sewage Treatment Plant.	\$19
CRO-312-HP	Modification of Hunts Point Sewage Treatment Plant to receive Plant residuals	*
* Contract has not yet been awarded		

Croton Water Treatment Plant
Construction Contracts

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May 27, 2009

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NYC Office of the Comptroller
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New York, NY 10007-2341

Re: Response to Draft Report on Audit FR08-121A
"Audit of the Department of Environmental Protection's Progress
in Constructing the Croton Water Treatment Plant"

Dear Mr. Graham,

Thank you for providing the opportunity to comment on this draft report. Having reviewed the report, we have some general observations as well as responses to specific information contained in the draft report.

The Croton Water Treatment Plant (CWTP) is one of the largest and most complex construction projects ever undertaken by the City of New York; the cost of the construction contracts totals \$2.1 billion. Most of the findings and observations in the draft audit report concern contracts for off-site work. These off-site contracts total \$114 million, less than five percent of the total project cost.

The following are specific responses to observations and findings contained within the report:

- o "The Plant will not be completed by the stipulated Consent Decree timeframe..." (p. 7, ¶2)

While DEP currently projects that the CWTP will not be operational until April 11, 2012, the only reason that the plant will likely not be completed by the date stipulated in the Consent Decree is due to the delay associated with conducting a thorough integrity review of the apparent low bidder for CRO-312G. This review, conducted in close coordination with the New York City Department of Investigation, revealed serious concerns about whether the apparent low bidder could be deemed responsible under the Procurement Policy Board Rules. As a result of this required review, the Department awarded the contract to the second low bidder. There can be no question, given the legal mandate of the PPB rules, taken together with the unprecedented scope and cost of the CRO-312G contract, that exercising due care in awarding the contract was the correct course of action. But for the delay due to this critical review, the contract is on schedule. Importantly, all facilities required to deliver



water from the CWTP and meet the Consent Decree requirements are scheduled to be in place when the construction contracts at the Mosholu Golf Course Site are completed.

The Department's discussions with the construction contractors for the CWTP did identify certain measures to reduce construction time. However, given the complexity of the project, these measures (e.g., extended hours) are unlikely to result in significant time savings, but rather further ensure the Department remains on its current schedule. Review of other methods to accelerate the project were deemed impractical or cost-prohibitive.

- "...the Department lagged in completing designs and awarding construction contracts for required improvements (i.e., off-site facilities) that are near the site of the Plant and are needed to deliver treated drinking water from the Plant to the City's water distribution system." (p. 7, ¶2)

The off-site facilities are also scheduled to be in place by April 11, 2012. However, in the event the off-site facilities contracted under the CRO-312-OS set of contracts are delayed, the plant can still be placed into service by the above date.

Minor work at Jerome Park Reservoir, which is part of the off-site contracts, is required to allow the plant to start up. Once in operation, the CWTP can deliver water to the majority of the City's low service distribution system, the portion of the system currently served by the Croton system when it is online. The Shaft and Meter Chamber (SMC), which represents the bulk of the off-site construction, is required to deliver Croton water to the City's high service distribution system, the portion of the distribution system now served almost exclusively by the City's Catskill/Delaware systems.

- "...delay in awarding off-site facility contracts has jeopardized the Department's ability to timely complete required Plant testing by October 31, 2011." (p. 7, ¶2)

This statement is incorrect: No work associated with the off-site contracts need be completed in order to allow testing of the CWTP.

- "But, even if the phase-one contract had been awarded timely, the Department would still not be able to complete construction within the established timeframes because of delays in completing designs and commencing construction of Plant associated off-site improvements. We attribute those delays to deficiencies in the Department's management of the project." (p. 8, ¶2)

The set of 90% design documents for the off-site contracts was delivered to the Department in October 2006. Had the notice to proceed for the CWTP contracts been issued by February 8, 2007, the contracts for off-site work could have and would have been awarded earlier.

- "Delays in Design and Procuring Off-Site Facility Improvements." (pp. 8-9)

This section of the report incorrectly asserts that Consent Order milestones 20 and 23 were not met due to delays in completing the off-site contracts.

Milestone 20 required that, by April 30, 2006, the Department was to "complete and submit to the United States, the State and NYSDOH the final design for the WTP and the Mosholu Off-Site Facilities." In accordance with a previous agreement with the regulatory agencies, the submission was to be made to NYSDOH only. The submission was made on April 27, 2006 (see attached letter) and included the following:

- CRO-312G (Structures and Equipment),
- CRO-312E (Electrical),
- CRO-312H (Heating, Ventilating and Air Conditioning),
- CRO-312P (Plumbing)
- Drawings for Off-site Facilities at Jerome Park Reservoir
- Drawings for Force Main/Connection to Hunts Point Water Pollution Control Plant.

This submission was acceptable to NYSDOH. DEP has received absolutely no indication that these submissions were not in compliance with the terms of the Decree and, as such, neither EPA nor NYSDOH has made a penalty demand with respect to this 2006 milestone.

While there were penalties assessed in relation to milestone 23, these penalties were solely due to the delay in issuing the notice to proceed for the WTP contracts. This milestone required that the Department "issue notice to proceed for the first phase of construction of the WTP and the Mosholu Off-Site Facilities and commence construction" by February 8, 2007. The CRO-312G contract included work around Jerome Park Reservoir (JPR) that constituted the first phase of the off-site work. When the NTP for CRO-312G was issued on August 21, 2007, the assessment of penalties for failure to meet milestone 23 ceased. Had NYSDOH not found the issuance of this NTP met the milestone, the assessment of penalties would have continued until the NTPs for the 312-OS contracts were issued. In addition, at no time did either EPA or NYSDOH indicate their view that DEP had failed to meet the substantive terms of this milestone.

- "However, the preponderance of required off-site work elements as noted in Consent Order Section 23 were included in Contract No. CRO-312-OS – a contract for which construction did not commence until 726 days later than required." (bottom of p. 9 thru top of p. 10)

As is stated above, the Department completed the requirements of milestone 23 on August 21, 2007 with the issuance of the NTP for CRO-312G. Milestone 23 did not require the commencement of the work under CRO-312-OS. In fact, the draft report appears to acknowledge that the delay in meeting milestone 23 was due to the problem with awarding CRO-312G to the lowest bidder when it states in the last paragraph on page 12 that "the Department was unable to attain timely completion of the milestone no. 23, and interim milestones C and D requirements pertaining to the actual Plant because of an intractable problem with awarding a contract for the Plant's phase-one construction."

- "...the Department's ability to complete all startup and commissioning testing operations may be hindered by the delay in timely completing design work and commencing off-site improvements." (p. 10, first paragraph under "Problems with Plant Testing")

The draft report incorrectly asserts that delays in the off-site contracts have jeopardized the ability to perform required testing and startup of the CWTP. All equipment in the CWTP can be tested prior to startup without any of the off-site facilities having been completed. Following construction and testing, CWTP startup only requires the completion of relatively minor work included in the off-site contract. The required off-site work will be completed prior to startup of the CWTP. In addition, while the Shaft Meter Chamber is not required to start up the plant, it is scheduled to be completed by February 10, 2012. Even if construction of the SMC were to slip, it would not prevent startup of the WTP. While the SMC is required to operate the WTP at full capacity when finished water from the CWTP must be distributed to the high service, it is not required in order to operate the plant at 290 mgd (full capacity) during the commissioning test. There is no requirement in the Consent Order to operate the WTP at full capacity or to use the high service.

- Section Entitled "Missed Milestone Dates" (pp.11-12)

Here again the draft report asserts that the issuance of NTPs for the CRO-312-OS contracts was required to meet the requirements of milestone 23. As discussed earlier, this is incorrect. Indeed, in the last paragraph on page 12, the report states that failure to meet milestone 23 was due to an "intractable problem with awarding a contract for the Plant's phase-one construction."

- "Obtaining audit records and information from the Office was time consuming and sometimes futile." (p. 14, ¶3)

The records maintained at the Department's Lefrak offices are limited to those needed to effectively manage the on-going construction. There is no business need to maintain all documentation related to this enormous project on site and indeed there is no room to do so. The documents requested by the auditors were often several years old and thus were no longer kept on site. All documentation requested by the auditors was provided as quickly as possible, either from the construction office or when necessary from the archive records maintained on the Department's behalf by the consulting engineer.

- Note on appendix I – Footnote indicates contracts CRO 312 OS, E, and P have not been awarded as of May 12, 2009. This is incorrect. These contracts have been awarded at the following amounts:
 - CRO 312 OS E - \$15,762,500 Award – 11/5/2008
 - CRO 312 OS H - \$822,000 Award – 11/18/2008

- CRO 312 OS P - \$872,000 Award – 3/3/2009
- CRO 315G and 315 E are not part of the Croton WTP project.

Response to Recommendations:

Recommendation 1 – “The Department should immediately complete any outstanding designs, solicit bids, award contracts, and commence work for all remaining off-site facility construction contracts.”

- DEP Response – This recommendation is largely moot as all outstanding designs, and solicitation of bids required for the project have been completed and are in construction except for the CRO-312-FM contract which is in the award process. The CRO-312-HP contracts are not required to operate the CWTP.

Recommendation 2 – “Incorporate construction schedules for off-site facility work in the overall Plant progress schedule.”

- DEP Response – Disagree, the off-site general contract requires the contractor to prepare and maintain a schedule for the duration of the project. There is little to no interaction between the off-site and CWTP projects. As such, incorporating construction schedules for off-site facility work in the overall WTP progress schedule would only complicate the scheduling effort. In addition, there is no contractual mechanism to require this joint scheduling. A change order to at least one of the general contracts, probably both and perhaps the other contractors, would be required, and this would likely increase contract costs. That said, all milestones associated with the project will be tracked and maintained by the CM.

Recommendation 3 – “Effectively plan and manage the critical off-site facility work to ensure its completion within sufficient time to carryout Plant testing and commencement operations. In that regard, the Department should consider undertaking measures to expedite completion of the work.”

- DEP Response – Agree. However, as previously stated in this response, none of the major off-site facilities is required to allow testing at the WTP. The off-site work required to start the plant will be completed before the required date.

Recommendation 4 – “Ensure that it completes all required work in accordance with the timeframes prescribed in the Consent Decree.”

- DEP Response – It is impractical and cost prohibitive to implement this recommendation; DEP is taking all reasonable steps to ensure the work is completed as quickly as practical.

Recommendation 5 – “Consult with the New York State Department of Health and seek a waiver for any assessed and potential penalties. In addition, the Department should seek approval for revising future milestone dates to reflect current construction progress.”

- DEP Response – Agree, the topic of waiver of penalties has been discussed with EPA and NYSDOH and DEP continues to pursue such relief.

Recommendation 6 – “Adjust completion dates for contract nos. CRO-312-H, E1, E2, P so that additional liquidated damages can be assessed if work is not completed on time.”

- DEP Response – Disagree, this is cost prohibitive.

Recommendation 7 – “Stipulate additional liquidated damages for contract no. CRO-312-OS”

- DEP Response – Disagree, this will only serve to increase the cost of the contract. As previously stated, the work required in this contract to enable the CWTP to start up is relatively minor and will be completed as required. The major work, the SMC, is not required for plant startup.

Recommendation 8 – “Prepare a written scope of work that describes all required activities and procure construction contracts against dates prescribed in the Consent Decree.”

- DEP Response – Disagree, as all construction contracts required for the CWTP and off-site facilities are in place (with the exception of CRO-312- FM which is in the award process), there will be no opportunity to implement this recommendation.

Recommendation 9 – “Maintain complete and accurate project records in Department files.”

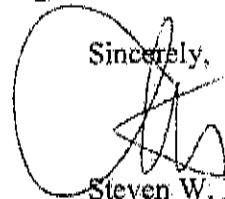
- DEP Response – Already implemented - accurate and complete records are already maintained in Department files or archives maintained by the consulting engineer.

Recommendation 10 – “Ensure that the work of design consultants is properly supervised and tracked.”

- DEP Response – Already implemented - this is standard practice for the Department on all projects.

In closing, I would like to thank you and your staff for the time and effort taken to assess this Department’s management of this critical project. When completed, the Croton Water Treatment Plant will help the Department continue to ensure that New Yorkers are provided with the best tasting and safest drinking water in the world.

Sincerely,



Steven W. Lawitts
Acting Commissioner



April 27, 2006

**DEPARTMENT OF
ENVIRONMENTAL
PROTECTION**

98-05 Horace Harding Expressway
Corona, New York 11368

**Emily Lloyd
Commissioner**

**Alfonso R. Lopez, P.E.
Deputy Commissioner**

**Bureau of Engineering
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Mr. Michael J. Montysko, P.E.
Chief, Design Section
Bureau of Public Water Supply Protection
New York State Department of Health
547 River Street, Room 400
Troy, NY 12180-2216

Re: Croton Filtration Plant
Final Design Submission – WTP at Mosholu Site

Dear Mr. Montysko:

Enclosed on behalf of the New York City Department of Environmental Protection please find the completed Application for Approval of Plans for Public Water Supply Improvement for the Croton Water Treatment Plant at the Mosholu Golf Course Site. This submission is being made as required by the Croton Water Treatment Plant Second Supplement to the Consent Decree, paragraph VI.C.20 regarding Long Term Measures Milestones for the Mosholu Golf Course Site.

The Water Treatment Plant (WTP) design documents, consisting of Contracts CRO-312G (Structures and Equipment), CRO-312E (Electrical), CRO-312H (Heating, Ventilating and Air Conditioning), and CRO-312P (Plumbing) comprise the necessary elements to construct the WTP at the Mosholu Site.

Also included are drawings of other project elements (Offsite Facilities at Jerome Park Reservoir, and Force Main/Connection to Hunts Point Water Pollution Control Plant) that will be part of subsequent construction contracts.

The completed package includes:

1. A completed NYSDOH Form 348, Application for Approval of Plans for Public Water Supply Improvement.
2. Three copies of Contract Documents for NYCDEP Contracts CRO-312G, E, H and P, WM-11 Croton Water Treatment Plant at the Mosholu Golf Course Site, plans and specifications, dated April 2006.

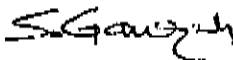


Mr. Michael J. Montysko, P.E.
Croton Filtration Plant
Final Design Submission
WTP at Mosholu Site

3. Croton Water Treatment Plant, Mosholu Site, Final Design Report, dated April 2006.

Please return the approved plans to the Engineer, Alan S. Natter, P.E., Hazen and Sawyer, P.C.,
498 Seventh Avenue, 11th Floor, New York, NY 10018, attention Edward S. Barboe, P.E.

Very truly yours,


for Paul D. Smith, P.E.
Chief, Watershed Facilities Design

PDS/ESB:ps

Enclosures

cc (without Enclosures):

US Attorney General's Office:

US Department of Justice:

USEPA:

NYS Attorney General's Office:

NYSDOH:

NYC Law Department:

NYCDEP, BEDC:

NYCDEP, Legal Department

Hazen and Sawyer:

Metcalf & Eddy:

cc (with Enclosures):

NYCDOH:

Deborah Zwany

Elizabeth Yu

Nicole Kraft, Douglas McKenna

Gordon Johnson

John Dunn, Kamal Gupta, Roger Sokol

Susan Amron

Arne Fareth, Swapan Gangopadhyay, Alfonso Lopez,

Francis Lo, James Mueller

Robin Levine

Edward Barboe, James Fagan, Alexander Kimball,

Alan Natter

John Kinneen, Robert Jarnis, James Schaefer, Harry Wackett

James Luke