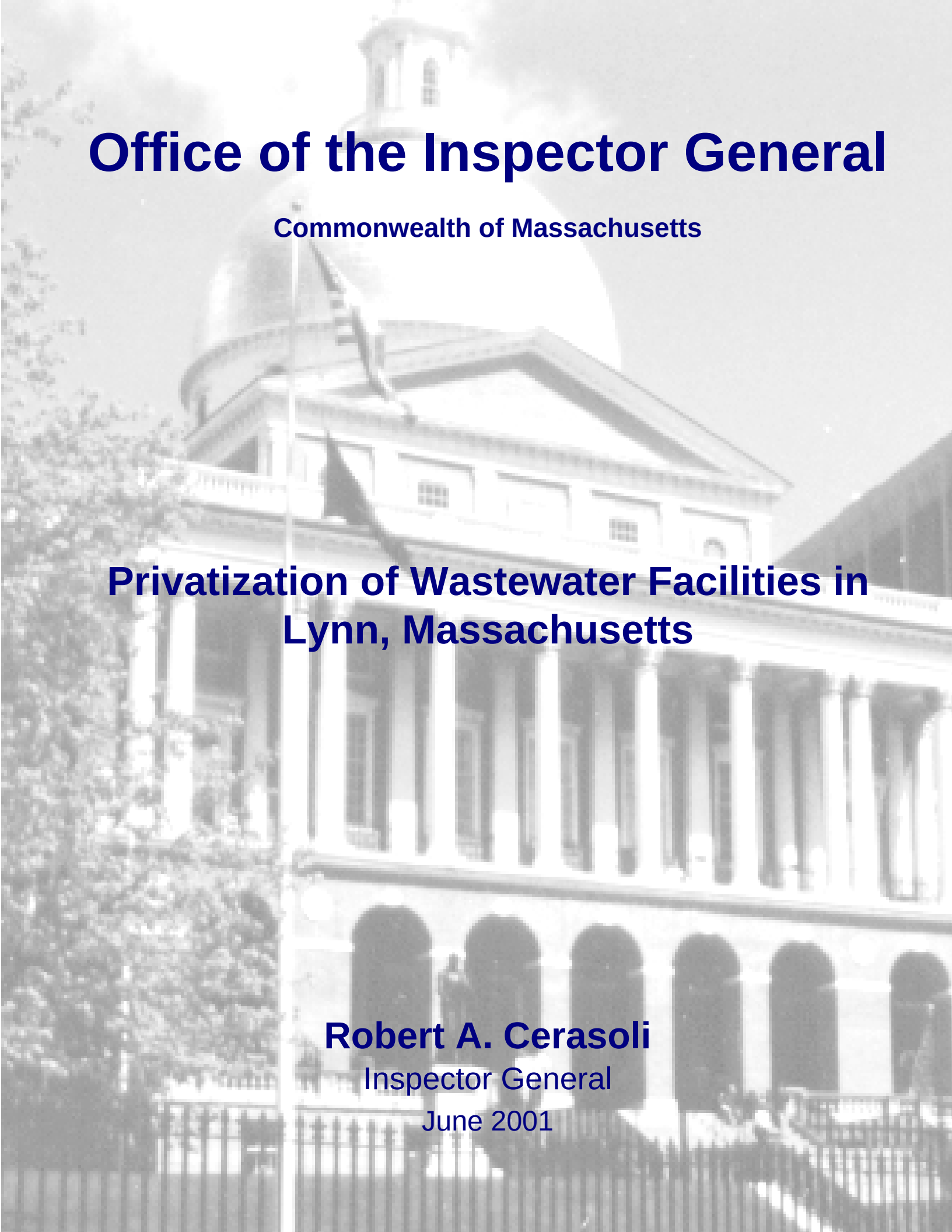

Office of the Inspector General

Commonwealth of Massachusetts

Privatization of Wastewater Facilities in Lynn, Massachusetts

Robert A. Cerasoli
Inspector General

June 2001

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The Commonwealth of Massachusetts
Office of the Inspector General

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Her Excellency the Governor

The Honorable President of the Senate

The Honorable Speaker of the House of Representatives

The Honorable Chairman of the Senate Ways and Means Committee

The Honorable Chairman of the House Ways and Means Committee

The Honorable Chairman of the Senate Post Audit and Oversight Committee

The Honorable Chairman of the House Post Audit and Oversight Committee

The Directors of the Legislative Post Audit and Oversight Bureaus

The Secretary of Administration and Finance

Members of the General Court

Omnibus ad quos praesentes literae pervenerint, salutem.

I am today releasing a report concerning the privatization of wastewater facilities by the Lynn Water and Sewer Commission. Beginning in 1997, the Commission undertook procurements for two complex, design-build-operate (DBO) contracts, one for a combined sewer overflow (CSO) project and the other for a 20-year wastewater treatment plant contract. In order to use this procurement approach, the Commission obtained special legislative authorization to waive the state's public construction bidding laws. Neither procurement generated meaningful competition and both contracts were won by U.S. Filter, the firm that has operated the Commission's wastewater treatment plant since 1985. The findings in this report show that both contracts are likely to result in unnecessarily high costs for ratepayers.

I am particularly troubled by the extraordinarily high cost for sewer construction work under the design-build contract for the CSO project. My Office's cost estimate shows that U.S. Filter's $47 million price is $22 million higher than – nearly double – the cost of comparable work performed under the Commission's competitively bid sewer construction contracts. Moreover, under the U.S. Filter contract, the Commission will bear the risks of sewer overflows and flooding resulting from undersized sewers. I am also troubled by claims made by public officials that U.S. Filter's sewer separation price is a good deal because it is lower than the cost for a totally different technical approach involving a tunnel/pumpback facility. This absurd cost comparison has been used as a smokescreen to divert attention from the unreasonably high price for U.S. Filter's proposed work.

The Commission paid more than $3 million to privatization consultants to assist with these procurements; unfortunately, this expensive investment in expertise has not protected the ratepayers from a bad deal. The Commission's experience demonstrates that generating competition for public contracts is essential to protecting the public interest. Other communities considering long-term DBO contracting for their wastewater facilities should be aware that the high cost to private firms of developing proposals for these risky and complex contracts may deter competition and result in higher costs than competitively bid construction contracts and straightforward operation and maintenance contracts.

Sincerely,

Robert A. Cerasoli
Inspector General

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Executive Summary

Background

The Lynn Water and Sewer Commission (Commission) provides water and wastewater collection, treatment, and disposal services for residents and businesses in the city of Lynn, Massachusetts and several surrounding communities. Pursuant to a consent decree negotiated with the United States Environmental Protection Agency (EPA), the Commission constructed a 25.8 million gallon per day primary wastewater treatment plant in 1985 and secondary wastewater treatment facilities in 1990. The wastewater treatment plant has been operated by U.S. Filter under a series of contracts since the plant came on line in 1985.

Lynn's wastewater collection system was constructed between 1884 and 1928. Prior to 1990, the collection system had many combined sewers that carried both sanitary flows and stormwater. The combined sewer system lacked the capacity needed to handle the combined flows and would overflow during periods of heavy rain, discharging untreated wastewater into river or ocean waters. The inadequate capacity of the combined sewer system also produced flooding of streets and basements in Lynn.

In 1987, the Commission negotiated an amended consent decree with the EPA requiring the Commission to develop a plan to address the combined sewer overflows (CSOs). The engineering firm of Camp Dresser & McKee Inc. (CDM) developed a CSO control plan that included separating combined sewers in some areas of Lynn and constructing a tunnel/pumpback facility to store excess water during periods of heavy rain. CDM's 1998 cost estimate for the tunnel/pumpback facility was $62 million.

Beginning in 1991, the Commission began a sewer separation program as required by the consent decree. Between 1991 and 2000, the Commission awarded eight construction contracts for sewer separation work in various Lynn neighborhoods. These contracts were awarded on the basis of bids solicited under the state's public construction bidding law.

Planning for Long-Term DBO Contracting

In 1997, CDM conducted an efficiency study for the Commission to identify potential management or operating changes that would produce cost savings. In the 1997 efficiency study, CDM noted that the operation and maintenance contract required U.S. Filter to employ a minimum of 49 employees at the wastewater treatment plant. CDM recommended the award of a contract to design and build improvements to and operate the wastewater treatment plant for a 20-year term. CDM determined that a 20-year design-build-operate (DBO) contract could produce cost savings if the contractor were allowed to reduce the number of employees. The CDM study recommended against the DBO contract approach for the design and construction of CSO abatement facilities, but the Commission did not follow this recommendation.

In 1997, the Commission entered into privatization services contracts with CDM and with the New York law firm of Hawkins, Delafield & Wood (HDW) to assist with the procurement of long-term DBO contracts for the wastewater treatment plant and for CSO abatement work, referred to as the East Lynn CSO Project. In 1998, the Commission shifted the privatization services work from CDM to Malcolm Pirnie, another engineering firm, through a no-bid amendment to a small engineering services contract. The Commission's expenditures for these two privatization consultants would mount to more than $3 million over the following three years.

The Commission obtained special legislative authorization in 1998 to exempt the DBO contracts from the state's public construction bidding law. In February 1999, the Commission issued requests for proposals (RFPs) for both contracts; proposers could respond to one or both RFPs.

The East Lynn CSO Project

The Commission chose an open-ended design approach for the East Lynn CSO Project. The RFP invited proposers to develop a design based on any technology that would accomplish the project objectives of reducing or eliminating CSOs and flooding problems. This approach was intended to promote competition among firms to develop

the most cost-effective design. The Commission expected to place responsibility on the contractor for meeting the project objectives.

However, the Commission's expectations for the East Lynn CSO Project procurement approach proved to be unrealistic. The open-ended design competition required proposers to invest substantial resources to investigate the causes of the CSO problem and to develop design solutions; thus, the high cost of proposal preparation discouraged rather than promoted competition. The Commission received only two proposals: one from U.S. Filter and one from another design-build team. U.S. Filter had been acquired by Vivendi, a $45 billion corporation, prior to the proposal due date; the design firm responsible for preparing the second proposal was also owned and controlled by Vivendi. Thus, it does not appear that the Commission generated genuine competition for the project.

Neither of the two proposals included the tunnel/pumpback facility that CDM had recommended in 1990. Instead, both proposals were for sewer separation projects. U.S. Filter proposed to install a new, small-diameter, sanitary-only sewer but refused to accept responsibility for the risk of sewer overflows, sewage backup, and flooding that could result from this approach. The second proposal contained a completely different scope of work, calling for the construction of a new, large-diameter stormwater sewer. Because the scopes of work involved in each approach were so different, the proposal prices were not comparable.

After 15 months of proposal evaluation and contract negotiation, the Commission awarded a $48 million sewer separation contract to U.S. Filter. However, the contract did not produce the benefits that the Commission had hoped to achieve through the DBO process. The U.S. Filter approach poses risks of sewer overflows and flooding resulting from inadequate sewer capacity. Under the one-sided contract negotiated with U.S. Filter, the Commission bears the risk for ensuring that the sewer system design has adequate capacity to prevent these problems. The contract also makes the Commission responsible for other construction work that will be required to meet the project objectives. The findings in this report show that this work is likely to bring the

Commission's cost for the project to more than $86 million. Even more troubling, the Office's cost estimate for the sewer separation work proposed by U.S. Filter shows that the $47 million design-build price is $22 million higher than the cost of comparable work procured by the Commission under the state's public construction bidding law for other sewer separation projects.

The Commission's Chairman and the Mayor of Lynn have publicly claimed that the U.S. Filter contract stands to produce $400 million in cost savings when compared with a 1990 plan for a totally different technical approach involving a tunnel/pumpback facility. This cost-savings claim was not supported by the engineering cost estimates prepared by the Commission's own consultants. But more importantly, the comparison of the cost of the U.S. Filter contract with the cost of the tunnel/pumpback plan is a red herring. U.S. Filter's $47 million design-build price is nearly double the cost for similar construction work procured through competitive bidding, making the East Lynn CSO Project a bad deal for ratepayers.

The 20-Year DBO Wastewater Treatment Plant Contract

The Commission's 25.8 million gallon per day wastewater treatment plant has been operated by U.S. Filter since the plant came on line in 1985. The Commission awarded a five-year contract to U.S. Filter through a competitive process in 1991 and subsequently amended that contract to allow U.S. Filter to pass through increased operating costs. The Commission again solicited proposals for a new five-year contract in 1996 and received competitive proposals from U.S. Filter and another firm. The price proposed by U.S. Filter in 1996 would have resulted in approximately $500,000 in cost savings per year in comparison with the 1991 contract. However, the Commission did not award a new contract in 1996 but instead continued to rely on U.S. Filter to operate the plant for another four years under month-to-month extensions of its 1991 contract pending the procurement of a 20-year DBO contract.

The RFP for a 20-year DBO contract issued by the Commission in February 1999 generated only two proposals. As was the case with the East Lynn CSO Project, the two proposals were submitted by U.S. Filter and by another firm; both firms were owned

and controlled by Vivendi. Thus, the RFP process did not generate meaningful competition.

The Commission relied on Malcolm Pirnie to perform an analysis comparing the costs of the two proposals and to determine whether a 20-year DBO contract resulting from one of the proposals would result in lower costs than a traditional, five-year operating and maintenance contract. Malcolm Pirnie's flawed analysis overstated the Commission's actual operating cost in projecting that the 20-year DBO contract would cost $28.6 million less over the 20-year term than the Commission's then-current five-year contract. When the Office corrected the costs to reflect the Commission's actual data, the projected savings were reduced from $28.6 million to $7.7 million. Moreover, cost adjustment factors in the 20-year DBO contract will increase the Commission's costs, further eroding any potential cost savings.

The Office used Malcolm Pirnie's mathematical model to compare the cost of U.S. Filter's 1996 competitive proposal with the 20-year DBO contract. This comparison shows that the competitive price for a five-year contract, extrapolated to 20 years, would produce lower costs than the 20-year DBO contract with U.S. Filter. U.S. Filter may realize operating cost savings resulting from its CSO work and its planned staff reductions, but the findings in this report show that the savings will translate to increased profits for U.S. Filter rather than lower rates for the ratepayers. Moreover, the Commission will have little leverage in future cost-adjustment negotiations with U.S. Filter under the complex, 20-year DBO contract, which effectively insulates U.S. Filter from the threat of future competition.

The Commission's Privatization Consultant Contracts

The findings in this report also show that the Commission failed to exercise control over its expenditures for privatization consultants, which mounted to more than $3 million over three years. The Commission initially awarded a competitively priced $56,168 general engineering services contract to Malcolm Pirnie. The Commission later amended that contract to allow Malcolm Pirnie to increase its hourly rates by as much as 73 percent and to bill more than $1.6 million in privatization consultant services.

The Commission also awarded a sole-source contract for privatization legal services to the New York firm of Hawkins, Delafield & Wood (HDW) that grew to more than $1.5 million over the first three years. This open-ended contract did not require HDW to itemize or document the $92,564 in travel and meal expenses billed to and reimbursed by the Commission. After the Office requested documentation, HDW acknowledged that $3,295 of those expenses had been erroneously billed to the Commission and that HDW had no documentation to support another $4,695 in travel and meal expenses.

The RFPs for both of the DBO contracts required the winning firm to reimburse the Commission for the cost of the privatization consultants. This imprudent method of financing its consultant costs created pressure for the Commission to award the contracts to recover the $3 million it had spent, regardless of whether the contracts offered good deals for ratepayers.

I. Introduction

Background

The Lynn Water and Sewer Commission (Commission) provides water and wastewater collection, treatment, and disposal services to virtually all residents and businesses in the city of Lynn, Massachusetts, as well as to some retail users in the towns of Lynnfield and Swampscott and the city of Peabody. The Commission also provides wastewater treatment and disposal services to the Towns of Saugus, Nahant, and Swampscott.

The Commission was created in 1982 by a special act that transferred responsibility for the operation, maintenance, and capital needs of the water and wastewater systems from the City of Lynn to the Commission. A political subdivision of Lynn, the Commission is governed by a five-member board. Two members are appointed by the Mayor of Lynn, subject to approval by the Lynn City Council, and two are appointed by the City Council. The fifth appointee must be a member of the City Council and is elected by the City Council. The Commission establishes water and sewer rates annually to generate the revenue required to support its operating and capital costs.

In 1976, the United States Environmental Protection Agency (EPA) commenced litigation against the City of Lynn for violating the federal Clean Water Act by discharging untreated wastewater into surrounding waters. The City entered into a consent decree with the EPA that committed the City to undertake certain projects to bring the wastewater system into compliance with environmental law. The Commission assumed the City's responsibilities under the consent decree, and subsequently constructed a primary and a secondary wastewater treatment plant. In 1987, the consent decree was modified to require the Commission to develop a plan to address combined sewer overflows (CSOs) that continued to discharge untreated wastewater into surrounding waters.

The Combined Sewer Overflow Problem

The construction of Lynn's wastewater collection system occurred primarily between 1884 and 1928. Before 1990, the collection system had many combined sewers that carried both sanitary flows (wastewater from residences and businesses) and stormwater (water collected from streets, rooftops, and other areas during storms). This combined sewer system lacked the capacity to handle the combined flows during periods of heavy rain. As a result, the combined sewers would overflow at certain outfall locations, discharging untreated wastewater into river or ocean waters, in violation of the Clean Water Act. In addition to the CSO problem, the inadequate capacity of the combined sewer system produced flooding of streets and basements in some areas of Lynn.

The 1990 CSO Facilities Plan

The consent decree, as amended in 1987, called for the Commission to build improvements to Lynn's collection system to reduce the CSOs. The Commission contracted with the engineering design firm of Camp Dresser & McKee, Inc. (CDM) to develop a capital plan. In March 1990, CDM completed a CSO Facilities Plan, which was later incorporated into the consent decree with a schedule for carrying out CSO improvements in phases over a period of approximately 15 years.

Based on the cost estimates included in its 1990 CSO Facilities Plan, CDM developed a financial analysis showing that a water and sewer rate increase of between 15 percent and 50 percent would be required to cover the cost of the CSO-related improvements. The actual amount of the rate increase would depend on the availability of federal and state grants and loans for the capital improvements.

Sewer separation projects SS-1 through SS-8. The first phases of work under the 1990 CSO Facilities Plan involved separating combined sewers in various neighborhoods in Lynn. In 1991, the Commission began separating sewers under a phased plan according to a schedule established in the consent decree. During the period from 1991 through 2000, the Commission awarded eight separate construction contracts for sewer separation work, designated SS-1 through SS-8. Each contract

required the construction of a new stormwater collection system in the designated area, consisting primarily of pipes measuring 30 inches in diameter or larger and including such large structures as 4' X 6' box culverts. The new, larger stormwater collection system constructed in these areas has a greater capacity than the old, combined sewers, which were rehabilitated and converted for use as sanitary-only sewers. In addition to alleviating CSOs, these sewer separation projects have helped alleviate flooding of streets and basements.

The cost for the eight sewer separation projects undertaken by the Commission totaled more than $30 million as of January 2001. These projects were planned and carried out using a traditional public works model of design-bid-build project delivery.

The tunnel/pumpback plan. In addition to recommending sewer separation projects in certain neighborhoods, the 1990 CSO Facilities Plan prepared by CDM called for the construction of an 9.8 million gallon underground storage tunnel and tank to store water during heavy rainstorms that would otherwise be discharged through CSOs. After a rainstorm, stored water would be pumped from the storage tunnel to the wastewater treatment plant for treatment and discharge. The tunnel/pumpback plan was designed as an alternative to separating combined sewers in a portion of the city of Lynn, referred to in this report as the East Lynn CSO Project area.

CDM initially estimated the cost for the entire 1990 CSO Facilities Plan at $131.7 million, of which $68 million represented the cost of the tunnel/pumpback facilities. The 1990 CSO Facilities Plan included the following cost estimates:

Table 1.[1]

1990 CSO Facilities Plan

Sewer Separation and Improvements	$63,730,000
Tunnel/Pumpback Facilities	68,000,000
Total	**$131,730,000**

(Source: LWSC CSO Facilities Plan, Final Phase 2 Report, Clinton Bogert Associates and Camp Dresser & McKee.)

In addition to the capital costs shown above, the 1990 CSO Facilities Plan included an estimated annual operation and maintenance cost of approximately $1.25 million for the CSO improvements.

In 1995, the Commission initiated a CSO monitoring program to determine the volume and frequency of CSOs. Based on this additional data and other changes, the Commission asked CDM to prepare a revised CSO plan. The 1998 Revised Recommended Plan for CSO Control prepared by CDM contained a cost estimate of approximately $62 million for the revised tunnel/pumpback facilities.

The Wastewater Treatment Plant Contract

As required by the EPA consent decree, the Commission completed a primary wastewater treatment plant in 1985 at a cost of $65 million and secondary wastewater treatment facilities in 1990 for $53.8 million. Most of the cost for constructing these facilities was funded by federal grants. The Commission's wastewater treatment plant, which has a design capacity of 25.8 million gallons per day (MGD), has been operated under contract by the same contract operator, U.S. Filter,[2] since the plant came on line in 1985.

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[1] Prices in 1990 dollars.

[2] The wastewater treatment plant was operated by Wheelabrator EOS, Inc. until 1997. In 1997, United States Filter Corporation acquired Wheelabrator EOS, Inc. and changed its corporate name to U.S. Filter Operating Services, Inc. In 1999, U.S. Filter Corporation was acquired by a French corporation, Vivendi. U.S. Filter Operating Services, Inc. continues to do business as U.S. Filter.

In 1991, after U.S. Filter had operated the plant for six years, the Commission conducted a competitive process for a new operation and maintenance contract. The process generated two competing proposals and resulted in the award of a new, five-year contract to U.S. Filter. Shortly before the 1991 contract expired in 1996, the Commission began a process to competitively procure a new, five-year operation and maintenance contract. In October 1996, the Commission advertised for and received two competing proposals for that contract. The Commission did not, however, award a new contract. Instead, the procurement was put on hold, pending the outcome of a plan to seek proposals for a 20-year DBO contract.[3]

From late 1996 to early 2001, the Commission continued to rely on U. S. Filter to operate the wastewater treatment plant by extending its original 1991 contract on a month-to-month basis. For the fiscal year ending in June 2000, U.S. Filter was paid approximately $4.3 million to operate and maintain the plant.

Preparing for Long-Term, DBO Contracting

The Commission's concern over the potentially large rate increases that would likely be required to support its CSO abatement program provided an impetus to explore alternative management options that could reduce its capital and operating costs.

An alternative management option that was aggressively promoted by contract operating firms, including U.S. Filter, during the 1990's involved the award of a single contract to one firm to design and build improvements to and operate municipal water or wastewater facilities for a 20-year term. This alternative management option is referred to as long-term, design-build-operate (DBO) contracting. In Massachusetts, municipalities must obtain special legislative authorization to waive public construction bidding laws in order to use the DBO contracting method.

[3] The Commission voted to reject the competitor's proposal and award the new contract to U.S. Filter. The competitor protested the decision to reject its proposal. The Office conducted a review of the procurement process and determined that the competing proposal should not have been rejected. Based on this determination, the Office advised the Commission to readvertise and conduct a new selection process for the contract.

In theory, long-term DBO contracting can produce efficiency gains by giving the contract operating firm control over the design of capital improvements, allowing the firm to identify the optimal trade-off between capital investment and operational costs. In reality, long-term DBO contracts are extremely complex because they apportion the risks posed by the changes in environmental laws, technology, economic conditions, and other factors that will impact the cost of operating and maintaining a water or wastewater system over a period of 20 years. Long-term DBO contracts generally place most of the risk for cost increases resulting from uncontrollable circumstances – including changes in law, population, and economic conditions – on the municipal owner and the ratepayers.

Despite the high risks of the long-term DBO approach, several municipalities have entered into these contracts in recent years. Some of these municipalities have utilized long-term DBO contracts as a vehicle for borrowing money "off the books." The borrowing is accomplished by requiring the contract operator to make a cash payment to the municipality upon execution of the contract. The up-front cash payment can be structured as an asset purchase, lease payment or concession fee. The contract operator recovers the amount of the purchase, lease, or concession price plus interest over the 20-year term of the contract.

The 1997 Efficiency Study

In 1996, the Commission retained CDM to prepare an efficiency study of its water and wastewater systems. The purpose of the study was to assess the potential for achieving cost savings through changes in operational or management practices. CDM evaluated the likely financial impact of selling or leasing facilities to a contract operator and of entering into a long-term DBO contract, with or without an up-front concession payment to the Commission. The results of the CDM study were presented to the Commission on May 19, 1997. CDM's June 1997 draft of the efficiency study contained the following conclusions:

- A sale or long-term lease of the wastewater treatment plant to a private operator would increase rather than decrease costs to ratepayers.

- Requiring an up-front concession payment from a contract operator would increase rather than decrease costs.

- A long-term DBO contract for the wastewater treatment plant could result in cost savings *if* the contractor were given flexibility to reduce the staffing level to improve efficiency.

The CDM efficiency study determined that the Commission could save money by implementing changes in sludge processing that would allow the staffing level at the wastewater treatment plant to be reduced. The study also pointed out that under the then-current operation and maintenance contract, the contractor was required to maintain a minimum staff level of 49 employees at the wastewater treatment plant and, therefore, had little incentive to improve plant efficiency. The study warned that a similar minimum staffing requirement incorporated into a long-term DBO contract would nullify the potential for achieving cost savings.

In sum, the CDM study determined that the most promising avenue for reducing costs was implementation of operational changes that would allow wastewater plant staffing to be reduced. This recommendation could have been implemented without embarking on a risky and complicated long-term DBO contract. However, minutes of Commission meetings suggest that the Commissioners were reluctant to pursue a course of action that might be opposed by the labor union representing the plant employees.

While the CDM efficiency study indicated that cost savings could be achieved using the long-term DBO approach for the wastewater treatment plant, the study recommended against a DBO approach for the CSO abatement facilities. However, the Commission did not follow this recommendation. The Commission voted at a June 9, 1997 meeting to procure privatization consulting services to assist with developing long-term DBO contracts for the wastewater treatment plant and for CSO abatement facilities.

The Commission selected CDM for a $324,000 privatization consulting services contract in July 1997.

In July 1997, the Commission issued a Request for Proposals (RFP) to retain an engineering consultant to support its efforts to secure a long-term 20-year contract to

operate, maintain and improve the wastewater and water treatment facilities and combined sewer overflow facilities. According to the RFP, the engineering firm selected for this privatization consulting services contract would be required to perform all of the following services in connection with the procurement of a 20-year DBO contract for the wastewater treatment plant and combined sewer overflow facilities:

- develop and implement a strategy to obtain legislative authorization to use alternative procurement methods for design-build-operate contracting;
- prepare technical and financial information to be included in an RFP;
- develop and implement criteria to evaluate technical proposals;
- assist in the proposal evaluation and contract negotiation process;
- develop and implement a mathematical model to evaluate the cost of the proposals;
- provide engineer of record services as needed for regulatory approvals and project financing; and
- provide technical support for contract administration.

Engineering firms were asked to submit a total cost proposal to establish a budget for the contract and an average hourly rate to be used for billing for the work performed.

The Commission received proposals from four firms offering privatization consulting services. After evaluating the proposals, the Commission awarded a contract to CDM for privatization consulting services on July 31, 1997.[4] The contract was based on CDM's proposed hourly rate of $108 for an estimated 3,000 hours of work, with a maximum price of $324,000. During the period from August 1997 through March 1999, CDM billed the Commission a total of $313,495 for privatization consulting services.

[4] According to the minutes of the July 28, 1997 Commission meeting, Commission staff who served as the evaluation committee chose a proposal submitted by Malcolm Pirnie, Inc. as the most highly rated. Malcolm Pirnie's proposal also offered the lowest price for the work. The Chief Procurement Officer (CPO) recommended a contract award to Malcolm Pirnie. However, the Commission members voted to reject the CPO's recommendation and instead awarded the contract to CDM.

The Commission retained the law firm of Hawkins, Delafield & Wood for privatization legal services in August 1997.

The Commission voted at the June 9, 1997 meeting to issue an RFP for the competitive selection of a firm to provide privatization legal services. However, Commission meeting minutes show that on August 11, 1997, the Commission voted to award a contract, without seeking proposals from other law firms, to the New York law firm of Hawkins, Delafield & Wood (HDW). According to a statement of qualifications submitted by HDW to the Commission, the firm had developed a specialized practice area representing municipalities in the structuring and negotiation of long-term DBO contracts for such facilities such as municipal solid waste incinerators and wastewater treatment plants.

With its primary office located in New York City, HDW actively markets its services to public sector clients throughout the country at national conferences and meetings. A former Chairman of the Commission told the Office in an interview that he had attended conferences at which an HDW attorney had spoken persuasively about the potential of long-term DBO contracting to achieve more efficient operations and lower costs to ratepayers. The former Chairman said that he recommended the award of the contract to HDW, based on the favorable impression the HDW attorney had made at the conference.

After a key employee left CDM to join Malcolm Pirnie, the Commission selected Malcolm Pirnie for a $56,184 general engineering services contract in February 1998.

In December 1997, the CDM Vice President who had played the lead role in managing contracts with the Commission over an eight-year period left CDM to accept a position at Malcolm Pirnie, Inc. In February 1998, the Commission issued an RFP for a general engineering services contract that encompassed a wide range of services, including conducting reviews of the Commission's annual budgets, capital improvement programs, and user rates. The general engineering services RFP also indicated that the selected proposer would assist the Commission with 20-year operation and

maintenance contracts, even though CDM was already under contract for this work.[5] The RFP established a maximum total contract price of $60,000.

The Commission received four proposals for the general engineering services contract. On April 13, 1998, the Commissioners voted to award the one-year general engineering services contract to Malcolm Pirnie with a maximum dollar limit of $56,168.[6] The contract stipulated that Malcolm Pirnie would be required to provide a cost estimate and scope of services and to obtain the Commission's approval for any project, task, assignment or study expected to cost more than $10,000.

The Commission shifted the privatization consulting work from CDM to Malcolm Pirnie by amending the general engineering services contract in November 1998.

According to meeting minutes for September 14, 1998, the Commission's Chief Engineer reported that he had received a scope of work and hourly rates from Malcolm Pirnie to perform services in connection with the procurement of the 20-year DBO contract. Although the Commission had entered into a $324,000 contract with CDM in July 1997 to perform those same services, the Chief Engineer recommended amending Malcolm Pirnie's $56,168 general engineering services contract to add approximately $100,000 for services needed to support the procurement of the 20-year DBO wastewater treatment plant and CSO abatement facilities contracts.

At a November 9, 1998 meeting, the Commissioners voted to amend Malcolm Pirnie's contract, authorizing Malcolm Pirnie to provide privatization consulting services to be billed on an as-needed, when-needed basis. The Commission's expenditures under this no-bid contract amendment would spiral to more than $1.6 million over three years, as discussed in Finding 17.

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[5] Minutes of the Commission meeting on January 12, 1998 indicate that the Mayor advocated for including work on the RFP for the CSO contract in the scope of work for the general engineering services contract.

[6] The Commission rejected two of the four proposals for failure to meet minimum criteria. The remaining two proposals – from CDM and Malcolm Pirnie – were both rated "highly advantageous" and ranked equally. Although CDM's proposed price of $51,694 was lower than Malcolm Pirnie's $56,168 price, the proposal evaluation committee recommended a contract award to Malcolm Pirnie.

The Mayor of Lynn took charge of the Commission to facilitate the process of procuring long-term DBO contracts for the wastewater treatment plant and CSO abatement facilities.

Under the enabling legislation that established the Commission, the Mayor of Lynn appoints two of the five Commissioners, subject to the approval of the Lynn City Council. The Commission meeting minutes for December 16, 1997 indicate that the Mayor of Lynn appointed himself to the Commission, replacing the former Chairman. At that meeting, the Mayor explained that he was joining the Commission on a temporary basis in order to facilitate the 20-year DBO contracting process. The minutes of the December 16, 1997 meeting also show that the Commissioners voted to elect the Mayor as the new Chairman.

When the Mayor joined the Commission, he was an active participant in the Urban Water Council, a group that was formed in 1995 by members of the United States Conference of Mayors. The purpose of the Urban Water Council is to provide a forum for local governments to share information on and respond to federal policies relating to water and wastewater systems, and to assist local governments in exploring alternative models of privatization such as long-term DBO contracting. Urban Water Council conferences are sponsored by private companies, primarily engineering and law firms and major contract operating firms. Lynn's privatization consultants, HDW and Malcolm Pirnie, have sponsored Urban Water Council conferences, as has U.S. Filter. Companies sponsoring a conference participate in developing the agenda, which focuses on privatization. The conferences provide opportunities for representatives of the companies to speak and to network with municipal officials.

Through his participation in the Urban Water Council, the Mayor became a proponent of long-term, DBO contracting. At a January 24, 1998 Commission meeting, the Mayor clearly stated that his objective was to procure long-term, DBO contracts for both the wastewater treatment plant and the CSO abatement facilities. According to a transcript of that meeting:

> We are looking at the cost savings and benefits through a 20-year contract as opposed to a five-year contract, which presents a company involved

> with the capacity for long-term planning. They don't have to worry about getting profits back and maximizing over five years because they have 20 years. . . .

At the same meeting, the Mayor explained the basis for his belief that an open-ended competition that allowed proposers to offer different design approaches for wastewater treatment plant improvements and for the CSO abatement plan could generate cost savings for ratepayers:

> I have had firms present to me, privately, that they have new technologies which haven't even been used in this country, or are being used in a test capacity in this country, that would save tremendous amounts of money. Now that may or may not be true. . . . and they're trade secrets, 'cause no one else is using them. . . . So the only way you find that out is to put out an open – not even an open design, but just say, "Here are the standards the EPA says must be met. Tell us how to get there in the cheapest form. . . ."

Under the Mayor's leadership, the Commission and its consultants continued to develop an RFP for a 20-year DBO contract for the wastewater treatment plant and a second RFP seeking DBO proposals for the East Lynn CSO Project. When the two RFPs were issued in February 1999, the Mayor announced that he was relinquishing his position on the Commission to avoid any appearance of a conflict of interest stemming from his contacts with firms submitting proposals. At a February 8, 1999 Commission meeting, the Mayor explained his decision to resign. According to the transcript of that meeting, the Mayor stated:

> I chaired the Urban Water Council for the U.S. Conference of Mayors. I will be in contact with many of these companies during the course of my normal activities with the Conference, and very clearly, our documents state there can be no contact from the companies with anyone but our Chief Procurement Officer, so I will be stepping off.

In stepping off the Commission, the Mayor named the President of the City Council as his replacement.

II. The East Lynn CSO Project: Findings

By 1999, the first eight sewer separation projects, SS-1 through SS-8, were already either underway or completed, using a traditional design-bid-build approach. The remaining area designated for CSO improvements was the East Lynn Project area. The 1990 CSO Facilities Plan had recommended the construction of a tunnel/pumpback facility as an alternative to separating sewers in the East Lynn CSO Project area.

In an interview with the Office, the CDM employee who had served as the primary CDM staff person under privatization consulting services contract with the Commission said that he advised the Commission against using a DBO approach for the East Lynn CSO Project. According to that CDM employee, the actual cost for constructing the tunnel/pumpback system was too difficult to estimate because it hinged on unknown underground conditions. Because the cost of the work could not be estimated accurately, CDM advised the Commission not to seek a lump-sum, DBO proposal price for the work. Providing a lump-sum price would pose a high risk that would require the contractor to either inflate the lump-sum price or make the price conditional on the actual amount of work required, essentially rendering the lump-sum price meaningless.

Finding 1. The RFP for the East Lynn CSO Project did not promote meaningful competition.

Minutes of Commission meetings indicate that the Mayor favored an approach to the East Lynn CSO project that differed from CDM's recommended plan. In a meeting on January 24, 1998, the Mayor indicated that the Commission might be able to identify a lower cost approach to CSO abatement in the East Lynn area than the CDM tunnel/pumpback plan. The Mayor advocated using an open-ended DBO approach that would allow proposers to choose the tunnel/pumpback plan or some other alternative that would accomplish the same objectives. The Mayor envisioned that proposers would have enough confidence in their own cost estimates to propose a lump-sum, design-build price for the alternative they chose. According to the transcript of the January 24, 1998 meeting, the Mayor stated:

> I think something that we ought to look at . . . is . . . an open design competition for our CSO to see what technologies or whatever may be out there. In other words, let's put the engineering firms and the private sector in competition to give us the best deal.

The Mayor's proposed approach did not take into account the information a proposer would require in order to develop a reliable lump-sum design-build price. Without accurate information about the condition of the existing sewer system or field data about flows, it would not be possible to determine the extent of the needed construction work.

The RFP for the wastewater treatment plant contract was issued on February 2, 1999, and the RFP for the CSO project was issued on February 12, 1999. Proposals for both contracts were due on May 17, 2000. Proposers had the option to respond to one or both RFPs.

Finding 1a. The RFP for the CSO project did not contain adequate information to allow proposers to accurately assess the nature and extent of the work necessary to alleviate CSOs and flooding.

The objectives of the East Lynn CSO Project were to reduce or eliminate CSOs and to alleviate flooding. Developing a plan to achieve these objectives required information on the sources and amounts of excess water entering the existing sewer system. That excess water comes from various sources including:

Infiltration. Infiltration is a term used to describe the groundwater entering the sewer system through gaps, cracks, and leaks in the piping. For an aging sewer system such as Lynn's, infiltration is a major contributor to excessive flows.

Inflow. Inflow refers to stormwater flows entering the sewer system through drainpipe connections. Generally speaking, inflow can be divided into two categories, public inflow and private inflow, based on the type of drainpipe connection. Public inflow is stormwater that collects in publicly owned areas. Private inflow is stormwater that collects on rooftops and in basements and enters the system through downspouts and basement sump pumps connected directly to the sewer.

Collectively, these sources of water are referred to as infiltration/inflow, or I/I. In order to determine how much capacity a sewer system must have to avoid sewer overflows and/or street flooding, it is essential to gauge the magnitude of the I/I. It is also essential to identify the sources of the I/I in order to determine whether it is more cost-effective to reduce I/I or to construct a sewer system with greater capacity to handle the flow.

In addition to I/I, the existing Commission sewer system contained an unknown number of illicit sewer connections. These illicit connections discharged sanitary flows into the sewer system from sources that were not legally connected. In part because much of the system was so old, the Commission did not have complete information about the locations of these illicit connections. In order to ensure that the separated sewer system complied with environmental laws, these illicit connections would have to be located and either disconnected or connected to a sanitary-only sewer.

To develop a CSO abatement plan, the following field investigation tasks were required:

- Inspection of the existing sewer system to accurately determine which sewers carry sanitary-only, stormwater, or combined flow as well as the diameters and the condition of existing pipes;
- Flow monitoring to determine how much capacity was needed to prevent sewer overflows and/or street flooding during heavy rainstorms; and
- Inspections to locate roof and downspout connections, sump pump connections, and illicit sanitary connections.

However, the Commission did not conduct this field investigation work prior to issuing its RFP for the East Lynn CSO Project. Instead, the RFP called for the selected proposer to conduct the field investigations as part of the design-build contract.

Despite its failure to provide proposers with the information needed to determine the nature and extent of the work needed to alleviate CSO-related problems, the Commission asked proposers to submit a lump-sum, design-build price for the East Lynn CSO Project. The lack of crucial information made the prospect of submitting a lump-sum design-build price a high-risk proposition, requiring proposers to either inflate

their prices to allow for worst-case scenarios or to include contract terms that would allow price increases.

The RFP for the CSO project allowed each proposer to select its own technical approach for abating overflows and flooding.

The Mayor's view – that an open-ended RFP would produce the most cost-effective solution to the Commission's CSO problems – was reflected in the final draft of the RFP. The RFP for the East Lynn CSO Project invited proposers to offer one or more of the following three different approaches:

> **Tunnel/pumpback CSO proposal.** This option was based on the 1990 tunnel/pumpback design concept developed by CDM and revised in 1998. Proposers would design and build tunnel/pumpback facilities to store water during rainstorms. After a rainstorm, the stored water would be pumped back to the wastewater treatment plant, treated, and discharged.
>
> **Total sewer separation proposal.** This option involved separating combined sewers into separate stormwater and sanitary systems to eliminate CSOs and reduce street flooding. Proposers choosing this option were required to accomplish total separation of the combined sewers by constructing a new stormwater system. The existing combined sewers could be rehabilitated for use as sanitary sewers.
>
> **Alternate CSO proposal.** This option essentially invited proposers to develop a technical approach different from either of the first two. This open-ended option was included to encourage proposers to offer new or alternative technology.

Of these three different approaches for CSO abatement, only the first – the tunnel/pumpback approach – involved an operational component. A proposal adopting this approach could include a price for operating the tunnel/pumpback facilities for 20 years. The other two proposal options simply sought design-build proposals for CSO improvements.

Finding 1b. Although the stated rationale for the DBO approach was to obtain a performance guarantee, the RFP did not specify any performance guarantee.

The stated rationale for allowing proposers to offer alternative technical approaches was that the proposers would bear the risk for meeting the project objectives, which were to reduce CSOs to comply with the Clean Water Act and to alleviate street flooding. In promoting this open-ended design approach, the Mayor said that each proposer would be required to guarantee that its technical approach, including the performance of any innovative or new technology, would meet the standards set by environmental regulators. In a January 24, 1998 Commission meeting, the Mayor described the guarantee he expected from proposers:

> [T]hey're saying, "We have this technology. We're going to charge you a million dollars for it. The EPA standards will be met and we guarantee that if ours doesn't work, then we'll go forward with the existing approved plan," . . . . I have been told by firms that they will be willing to do that. The only way you find out is put it out there. . .

However, the Commission's CSO abatement RFP did not require proposers to guarantee that their technical approaches would meet EPA standards for reducing CSOs or alleviate flooding. The RFP contained only a few contract terms that were deemed mandatory; for the most part, proposers could offer, and the Commission could negotiate, different contract terms. The only mandatory contract language related to a performance guarantee was as follows:

> The Company shall perform the CSO Contract Services in accordance with certain guarantees of performance (if applicable to the technology proposed), applicable law, and industry standards.

This vague requirement was essentially an invitation for proposers to determine the extent and nature of the performance guarantees they would provide.

Finding 1c. The two CSO proposals received by the Commission were submitted by companies owned and controlled by the same corporate entity: Vivendi.

Under the DBO procurement process established by Chapter 219 of the Acts of 1998, the Commission's special legislation, each proposer submitted a technical proposal and a price proposal, each in a separate, sealed envelope. The Evaluation Committee was required to evaluate and rate the technical or non-price proposals first, before opening the price proposals. Each technical proposal would be assigned a composite rating, using the following rating categories: highly advantageous, advantageous, not advantageous, and unacceptable. After assigning a rating to each technical proposal, the Evaluation Committee would open and review the price proposals. The Evaluation Committee would consider both the technical ratings and the price to determine the most advantageous proposal. After a proposal was selected, the Commission would enter into contract negotiations with the top-ranked proposer. If these negotiations failed to produce an agreement that was acceptable to the Commission, the Commission could commence contract negotiations with the proposer offering the second most advantageous proposal.

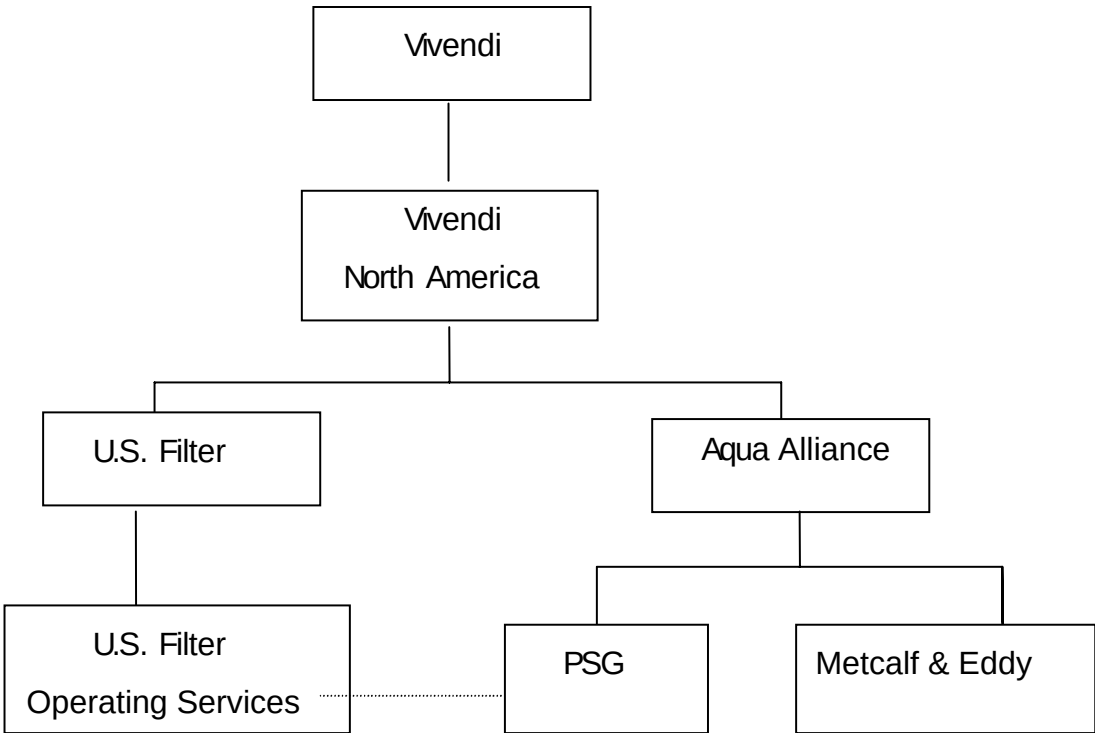
The Commission received two proposals by the May 17, 1999 deadline. One proposal was submitted by a team consisting of the construction firm of Modern Continental Construction Co., Inc. and the engineering firm of Metcalf & Eddy (M&E). The other proposal was submitted by U.S. Filter, the contract operating firm that has operated the Commission's wastewater treatment plant since 1985. U.S. Filter's proposal indicated that it would subcontract with the design firm of Maguire Group, Inc. and the construction firm of P. Gioioso, Inc. (Gioioso) for design and construction work.

When the proposals were submitted in May 1999, U.S. Filter had recently been acquired by a large, multi-national corporation, Vivendi. M&E, the design firm that had teamed with Modern Continental, was a wholly owned subsidiary of Aqua Alliance, Inc., another company owned and controlled by Vivendi. Figure 1 below depicts the

relationships among these corporate entities, as shown in an organizational chart submitted to the Commission by M&E:

Figure 1.

Vivendi Organizational Chart



(Source: Metcalf & Eddy October 21, 1999 letter to the Commission.)

A report dated November 3, 1999 from the Commission Executive Director to the Commissioners indicated that the Commission was concerned about the corporate affiliation between the two proposers:

> At the Evaluation Committee's request, Modern [Continental] was requested to provide a written statement as to the present and future relationship between the apparent competing interests of Metcalf & Eddy. The response to that request is included as Attachment B.

The response referred to as "Attachment B" included a letter dated October 21, 1999, from M&E, confirming that M&E was at the time a subsidiary of Aqua Alliance. The letter assured the Commission that if the Modern Continental proposal was selected,

M&E would carry out its obligations to the Commission and to Modern Continental on the East Lynn CSO Project. Despite the corporate affiliation between the two ostensibly competing proposers, the Commission proceeded with the evaluation of the two proposals.

Finding 2. U.S. Filter's proposal posed a high level of risk to the Commission.

Modern Continental proposed to undertake the total sewer separation approach identified in the RFP, to be accomplished by constructing a new stormwater system and rehabilitating the existing combined sewer to serve as the sanitary-only sewer. The Commission had used this approach for all eight of the sewer separation projects undertaken since 1991.

U. S. Filter's proposed approach was dramatically different from Modern Continental's, but not because it involved innovative technology or methods that could be considered trade secrets. U.S. Filter simply proposed to construct a new sanitary-only sewer and rehabilitate the existing combined sewer to serve as the stormwater system. This approach to sewer separation – essentially the opposite of Modern Continental's approach – could be accomplished at a lower cost because it involves installing smaller diameter sewer pipes and performing less work. A representative from Maguire, U. S. Filter's design subcontractor, explained the advantages of the U.S. Filter proposal to the Commission proposal evaluation committee during an August 23, 1999, question-and-answer session:

> We also believe that the total sewer separation approach with new sanitary sewers is the most cost effective sewer separation approach. Construction of new small diameter sanitary pipes instead of large diameter storm drains. We'll also minimize the need for relocation or replacement of the existing combined sewer pipes. . . . [T]he use of existing combined sewers as storm drains results in significant cost savings.

Finding 2a. The Commission's privatization consultants expressed strong reservations about the risks posed by the U.S. Filter technical proposal.

Malcolm Pirnie had two major concerns about the U.S. Filter proposal. The first was that the proposed sanitary-only sewers were undersized and would therefore lead to sewage backups in basements and sanitary manholes. Malcolm Pirnie's second concern related to the allocation of risk in the U.S. Filter proposal, which conditioned the design-build price on U.S. Filter's assumptions about the existing sewer system. Malcolm Pirnie believed that U.S. Filter's assumptions were inaccurate.

The transcript of the August 23, 1999 question-and-answer session shows that Malcolm Pirnie raised these concerns during the evaluation process. The Malcolm Pirnie manager responsible for the Commission contract stated:

> [M]y observation is that the approach that US Filter is suggesting that the Commission take is shifting significant risk to the Commission, something that we've tried to avoid. And, in fact, that shift of risk translates in uncontrollable dollars. . . . I agree with your approach that building sanitary sewers can eliminate CSO discharges. But I also feel that your proposal will result in undersized sanitary sewers. . . . We're going to get overflows that are going to happen out of sanitary manholes. We're going to get basements that are backed up. . . .

HDW, the Commission's legal consultant, also warned the Commission that U.S. Filter's proposal would shift excessive risk to the Commission. In a June 10, 1999 memorandum to the Commission Evaluation Committee, HDW warned that the U.S. Filter proposal modified the RFP contract terms relating to risk. The HDW memorandum pointed out that U.S. Filter had based its proposed design-build price on certain assumptions and that:

> . . .if subsequently the actual conditions are different than the assumed conditions, U.S. Filter will be able to increase its Guaranteed Fixed Construction Price. Such other assumed conditions include size of existing sewer lines, the location and size of current "sanitary only" and combined sewer lines and drains, the amount of sanitary sewage flow, and the area tributary to the storm water system. This proposed modification will allow U.S. Filter to increase its Guaranteed Fixed

> Construction price if it included incorrect assumptions in its proposal. **This modification shifts the risk of the Company design and construction of the Total Sewer Separation Project for a guaranteed fixed price to the Commission. This modification is not acceptable.** [Emphasis added.]

The Commission's Evaluation Committee determined that U.S. Filter's technical approach to CSO abatement was not advantageous to the Commission.

In accordance with the DBO procedures established by the Commission's procurement legislation for the project, a three-member Evaluation Committee completed an evaluation of the two technical proposals before opening the proposal prices. The RFP contained three categories of criteria for rating technical proposals: corporate experience, technical approach, and business plan. The Evaluation Committee rated the U.S. Filter proposal "advantageous" with respect to corporate experience and business plan, but rated U.S. Filter's technical approach "not advantageous." In contrast, the Evaluation Committee rated Modern Continental's technical approach "highly advantageous". Like U.S. Filter, Modern Continental earned "advantageous" ratings for both corporate experience and business plan.

The overall, composite rating assigned to the U.S. Filter technical proposal on all criteria fell between "advantageous" and "not advantageous," whereas the Modern Continental technical proposal earned a composite rating of between "advantageous" and "highly advantageous." The Commission Evaluation Committee determined that the Modern Continental proposal was "more technically feasible, achievable and reliable and poses less risk on the Commission than U.S. Filter's Technical Proposal."

The Evaluation Committee noted in its report that U.S. Filter's proposal did not include sufficient design detail to allow the Commission to assess the feasibility of its preliminary design. In addition, the U.S. Filter proposal required the Commission to reduce I/I and to separate all unidentified combined sewers outside the East Lynn project boundaries. The Evaluation Committee Report described the risks posed by U.S. Filter's technical approach as follows:

USF approach relies on excessive I/I reduction and separation of any unidentified combined sewers by the Commission. Failure of the Commission to comply with the aggressive goals will result in discharge of sanitary flow and environmental impacts at the CSOs.

Finding 3. The two price proposals for the East Lynn CSO Project were not comparable.

Because the Commission sought proposals before completing field investigations, most of the design work would have to be completed after the contract was awarded. Despite the lack of design information, the RFP sought a lump-sum price for design and construction work needed to separate the combined sewers. Table 2 below compares the lump-sum, design-build prices proposed by U.S. Filter and Modern Continental for the sewer separation portion of the work:

Table 2.

Comparison of Design-Build Proposal Prices for Sewer Separation

Modern Continental Proposal		**U.S. Filter Proposal**	
Preliminary design work, field investigations, and sewer inspections	$ 5,950,000	Preliminary design work, field investigations, and sewer inspections	$ 7,716,080
Lump sum price for sewer separation – new storm sewer system	66,865,000	Lump sum price for sewer separation – new sanitary-only sewer	38,835,298
Performance bonds and other direct & indirect costs	8,725,000	Performance bonds and other direct & indirect costs	1,085,000
Acceptance testing	528,000	Acceptance testing	441,765
Total	**$82,068,000**	**Total**	**$48,078,143**

(Source: U.S. Filter and Modern Continental Price Proposal Form 1B.)

As Table 2 shows, U.S. Filter's proposal had a lower price for sewer separation work. However, because the two proposals called for completely different scopes of work – a new sanitary-only system versus a new stormwater system – the lump-sum sewer separation prices offered by the two proposers could not be meaningfully compared.

From a construction standpoint, the two proposals were for two different projects. Cost estimates and bids for this type of public works construction are calculated based on estimated lengths and diameters of pipe to be installed as well as other materials and work required for the specific project, such as the number of catch basins and sewer connections and the amount of paving required. U.S. Filter's price was lower than Modern Continental's price because U.S. Filter was proposing a less costly scope of work. The Commission's Executive Director assessed the differences in the scopes of construction work called for under the two proposals in a report to the Commissioners dated November 3, 1999. The Executive Director's assessment is summarized in Table 3 below.

Table 3.

Commission Summary of Proposal Differences

Modern Continental Proposal	U. S. Filter Proposal
Modern's approach will require the construction of approximately 31 miles of new storm drain mains, ranging from an 18" system in Lynnfield Street to a 4' X 10' culvert proposed for installation in Market Street.	U.S. Filter's approach will require the construction of approximately 18 miles of new sanitary sewers and 7 miles of new storm drains.

(Source: Report by the Commission Executive Director, November 3, 1999.)

The Commission expected to finance much of the cost for the East Lynn CSO Project from a subsidized loan program administered by the Commonwealth and referred to as the State Revolving Fund (SRF). The SRF consists of a limited pool of funds generated through bonds issued by the Commonwealth and supplemented with federal and state grant funds. The purpose of the SRF is to provide local governments with access to

low-cost loans for needed projects to bring wastewater systems into compliance with environmental laws.

The Massachusetts Department of Environmental Protection (DEP) is responsible for determining which projects qualify for SRF loans and for ensuring that funds are used for eligible expenses. To carry out this responsibility, the DEP requires design submissions that provide adequate detail to evaluate the proposed project before funding is approved. Because the Commission used an open-ended RFP process, the two proposals contained only preliminary design information. Detailed design work would be performed by the selected proposer after the contract was awarded.

Finding 4. U.S. Filter failed to include all of the required sewer separation work in its initial proposal and attempted to increase its design-build price by more than $8 million to include the required work.

After reviewing the U.S. Filter proposal, the Commission determined that it did not include all of the construction work necessary to separate the combined sewer flows in the designated area. In a letter dated August 25, 1999, the Commission submitted the following question to U.S. Filter:

> It appears from our review of 1988 City of Lynn Sewer Map, that a number of catch basins in CSO areas are not shown as being disconnected and redirected from the system. Please clarify that the USF Proposal includes all catch basins to be disconnected or redirected from the sanitary sewer to reach the performance goals stated in the RFP.

In response to the question posed by the Commission on August 25, 1999, U.S. Filter recalculated the cost of its proposed sewer separation work. In a letter to the Commission dated September 3, 1999, U.S. Filter attempted to increase its proposed design-build price by more than $8 million:

> In order for USFilter to provide the Commission with a Guaranteed Fixed Construction Price for the entire service areas tributary to CSO 004, 005, and 006, USFilter will need to revise [the pricing form]. The revised form indicates a net increase of $8,348,000 for additional sewer and drain construction, engineering, construction management and on-site representation.

This proposed revision would increase U.S. Filter's design-build sewer separation price from approximately $48 million to more than $56 million.

In a September 29, 1999 meeting with U.S. Filter, a Commission official expressed surprise that U.S. Filter was seeking a price increase to perform work it had overlooked in preparing its proposal:

> But it was our opinion that all risk associated with missing a catch basin was in your original construction costs. . . . We anticipated you responding that you would take care of the catch basins you missed, so on and so forth. We were somewhat dismayed that it came with a price also.

Minutes of that meeting show that Commission officials raised questions as to whether the Commission's special legislation permitted U.S. Filter to increase its proposal price. No agreement on the proposed increase was reached at that meeting.

Discussions relating to U.S. Filter's proposed price increase continued following the September 29, 1999 meeting. In a letter to the Commission dated October 6, 1999, U.S. Filter indicated its intent to increase its lump-sum, design-build price for sewer separation by $8.4 million. The Commission determined that the special legislation applicable to the project did not permit the negotiation of a price increase during the proposal evaluation process. According to a report dated November 3, 1999 to the Commissioners, the Commission Executive Director indicated that discussions with U.S. Filter about the proposed price increase would be deferred until after a proposal had been selected; if U.S. Filter's proposal were selected, the parties could negotiate the proposed price increase during contract negotiations. The Commission Executive Director's November 3, 1999 report acknowledged that U.S. Filter would not perform all of the sewer separation work called for in the RFP for the $48 million price it had initially proposed. The report described the disagreement between the Commission and U.S. Filter over the scope of work as follows:

> U.S. Filter assumed that the specific sewer and drain plans upon which they based the design of their CSO project were a complete and accurate depiction of the L.W.S.C.'s existing [system]. They did not take other available plans into consideration when they compiled their list of streets served by a combined sewer system. During the review of the proposals

> the Committee identified several streets currently served by a combined sewer and storm drain system that were overlooked by U.S. Filter. **As a result there will be additional utility work and costs required to achieve total separation with the U.S. Filter proposal.** [Emphasis added.]

In December 1999, the Commission tentatively selected the U.S. Filter proposal, pending the outcome of negotiations.

In a report to the Commissioners dated November 3, 1999, the Commission Executive Director summarized the risks and benefits of the two proposed approaches. The Executive Director's analysis is summarized in Table 4.

Table 4.

Commission Summary of Risks and Benefits of CSO Proposals

Modern Continental	U. S. Filter
The benefits of Modern's approach include: 1. A technology consistent with that applied by the L.W.S.C. and other communities in addressing the reduction/elimination of CSO's. 2. The construction of new drains will insure that there are no illicit sanitary connections to the drains in the project area. 3. The full diversion of storm water runoff to a separate drain system should create sufficient excess capacity within the retained sewer system such that sewer rehabilitation costs are minimized.	The benefits of U.S. Filter's approach include: 1. Anticipated lower cost of materials and construction. 2. A reduction in the flow of sewerage to the wastewater treatment plant, resulting in reduced treatment costs. 3. Due to the use of smaller pipe, less disruption during construction. 4. Less conflicts with existing utilities.
The weaknesses in Modern's approach include: 1. Anticipated high construction costs. 2. A high incidence of needed utility relocations.	Weaknesses in U.S. Filter's approach include: 1. The difficulty in identifying and risk of overlooking any existing sanitary connections to the combined sewer system (proposed drain-only system). . . . 2. L.W.S.C.'s obligation and cost to reduce infiltration to the sanitary system outside the project area. 3. The lack of precedent in applying the U.S. Filter approach as the primary technology for a CSO abatement plan. 4. The cost of the L.W.S.C. separating systems within the intended project area that have not been addressed by U.S. Filter.

(Source: Commission Executive Director's draft report on the CSO procurement process, November 3, 1999.)

The Evaluation Committee submitted a memorandum dated December 8, 1999 to the Commission's Chief Procurement Officer that apparently represented the final results of

the proposal evaluation process. In this memorandum, the Evaluation Committee concluded:

> Based on representations made by U.S. Filter in its Proposal and subsequent written responses to clarification and follow-up questions, there is reason to believe that the U.S. Filter approach may be more advantageous than the Modern Continental approach.

The December 8, 1999 memorandum reflects the Evaluation Committee's discomfort with the level of risk presented by the U.S. Filter proposal:

> The greatest concern with U.S. Filter's Proposal lies in the uncertainty of the total project cost to eliminate CSOs under their Proposal. Although the Guaranteed Fixed Construction Cost provided by U.S. Filter is less than the Guaranteed Fixed Construction Cost provided by Modern Continental, U.S. Filter's cost assumptions and sewer rehabilitation and inflow reduction requirements could result in higher total project costs. This is a concern to the Evaluation Committee. If it is determined during negotiations with U.S. Filter that the cost to modify the Company's risk posture and implement the required sewer rehabilitation and inflow reduction measures will increase the Guaranteed Fixed Construction cost to a level that approaches or exceeds the Guaranteed Fixed Construction Cost proposed by Modern Continental, the CPO may decide to begin negotiations with Modern Continental.

The Commission's decision to tentatively "select" the U.S. Filter proposal, pending the outcome of contract negotiations, apparently reflects the Commission's belief that its special legislation did not permit negotiations during the proposal evaluation process. The Commission apparently designated U.S. Filter as the selected proposer in order to enter into negotiations over the terms of the U.S. Filter proposal and its proposed price increase. In January 2000, the Commission entered into negotiations with U.S. Filter. These negotiations would drag on for eight months before a final agreement was reached in September 2000.

Finding 5. The Commission's contract for the East Lynn CSO Project does not guarantee that U.S. Filter will eliminate sewer overflows or flooding.

The Commission undertook this project using a design-build approach based on the theory that each proposer would guarantee that its proposed improvements would meet the Commission's objectives: elimination or reduction of CSOs and flooding. However,

as discussed in Finding 4, the design-build price proposed by U.S. Filter was carefully conditioned on a set of assumptions about the existing sewer system that had not been verified. The U.S. Filter proposal required the Commission to bear the risk for much of the work that might be necessary to achieve the project objectives. The U.S. Filter proposal required the Commission to:

- carry out sewer rehabilitation needed to reduce the amount of infiltration into the existing, sanitary-only sewers in areas tributary to the East Lynn CSO Project area;
- remove private inflow connections (roof drains & sump pumps) into the newly separated sanitary sewer;
- identify, locate, and remove all illicit sanitary connections to storm drains in areas tributary to the East Lynn CSO Project area.

Although the total cost to the Commission for this work was unknown, the Evaluation Committee believed that it could increase the cost of U.S. Filter's approach to a level that would exceed the cost of the Modern Continental proposal.

Over the lengthy period of contract negotiations, U.S. Filter agreed to assume some of the risk that its proposal had placed on the Commission. Most significantly, U.S. Filter agreed to increase the size of its small-diameter sanitary sewer pipe to accommodate greater flows and to assume the risk for infiltration from existing sewers. U.S. Filter did not, however, accept responsibility for removing illicit sanitary connections to sewers tributary to the new stormwater system or the risk posed by private inflow. The Commission estimated the cost of removing the private inflow sources at $16.8 million, as will be discussed in Finding 10.

The final contract language agreed to by the parties bears no resemblance to the kind of "performance guarantee" described by the Mayor in Commission meetings at the outset. Far from requiring U.S. Filter to guarantee that its proposed scope of work will meet EPA standards for reducing CSOs and alleviating flooding problems, the Commission's contract carefully limits U.S. Filter's responsibility for its own design work. For example, the following provision relating to the stormwater system gives U.S. Filter

virtually no responsibility for ensuring that its design is adequate to achieve the project objectives:

> The acceptance by the Commission of the design for new storm drains required to substantially reduce or eliminate local street flooding and those constructed as part of the separate sanitary sewer work shall constitute acceptance of the new storm drains provided that the facilities are constructed in substantial conformance with the accepted design and the flow capacity is equal to or greater than that shown in the accepted design.

This provision essentially states that U.S. Filter is responsible for carrying out the work according to the design but that the Commission bears the risk for ensuring that the sewer system design will accomplish the project objectives.

A similar provision limits U.S. Filter's responsibility for the performance of the new sanitary-only sewers:

> Acceptance by the Commission of the design for the new sanitary sewers shall constitute acceptance of the design capacity of the proposed new sanitary sewers.

This contract term relieves U.S. Filter from responsibility in the event that the new, small-diameter sanitary-only sewers lack capacity to handle the flows, causing sewage to back up into sanitary manholes and basements, so long as U.S. Filter has complied with the design requirements. Under this term, the Commission, not U.S. Filter, guarantees that the design capacity is adequate to achieve the project objectives.

Finding 6. The contract warranty terms and liability limitations absolve U.S. Filter from more responsibility than would a typical, conventional construction contract.

The warranty provisions of the final contract establish the standard of workmanship to which U.S. Filter can be held. Essentially, U.S. Filter warrants only that it will perform in a workman like manner and use non defective materials:

> The Company hereby warrants that: (a) all Design/Build Work conforms in all respects to the Contract Standards; (b) that the CSO Abatement

> System and Infrastructure Rehabilitation Project shall be free from any latent or patent defects; and (c) that all materials and equipment furnished under terms of the Design/Build Contract shall be of good quality and free from faults and defects in conformance with the Contract Standards.

The warranty language cited above does not constitute a performance guarantee. Instead, it merely establishes the standard typically included in conventional, design-bid-build construction contracts. Other provisions in the contract further limit U.S. Filter's responsibility for its work. For example, U.S. Filter is responsible for fixing its own defective sewer rehabilitation work *only* if the Commission discovers the defect within one year following the completion of that phase of the project. Similarly, U.S. Filter will fix its own defective sewer separation work *only* if it is discovered within five years of the completion of that phase of the project. Given that the contract calls for the work to be performed over a nine-year period, the contract language limiting the warranty period within each of the ten project phases relieves U.S. Filter of substantial risk and responsibility.

The RFP for this contract had contained the following provision, which was deemed a mandatory, non-negotiable contract term:

> If the Company fails to perform the CSO Contract Services in accordance with such guarantees, laws, and standards, the Company shall pay any fines and penalties as well as liquidated damages, to the extent such damages are not excused for uncontrollable circumstances or Commission fault.

Notwithstanding this ostensibly mandatory RFP term, the contract negotiated between the Commission and U.S. Filter limits U.S. Filter's liability to the amount of its performance bond:

> Notwithstanding anything else in this Design/Build Contract, the aggregate liability of the Company with respect to (i) defect or deficiencies in the CSO Abatement System or the Infrastructure Rehabilitation Project Design/Build Work (including any liability with respect unfulfilled warranty obligations relating thereto and liability related to liquidated or other damages or indemnification obligations arising from failure to achieve on a timely basis Construction Phase Substantial Completion, Construction Phase Final Completion or Outfall Acceptance of any portion of the CSO

> Abatement System or the Infrastructure Rehabilitation Project Design/Build Work which is included in any particular Construction Phase, including , but not limited to, fines and penalties related thereto) shall be limited in amount to the amount of the Construction Phase performance Bond which guarantees performance of such Design/Build Work.

In addition to restricting express warranties, the U.S. Filter contract included a broad disclaimer of implied warranties:

> There are no warranties which extend beyond those expressed in this Design/Build Contract. The Company disclaims, and the Commission waives, any implied warranties or warranties imposed by law, including warranties of merchantability, fitness for a particular purpose, custom and usage, as to any of the Design/Build Work.

Finally, a broad waiver provision protects U.S. Filter from incidental, consequential or punitive damages, even if the Commission can prove that the damages resulted from material, false representations made by the company:

> In no event shall either party be liable to the other or obligated in any manner to pay to the other any special, incidental, consequential, punitive or similar damages based upon claims arising out of or in connection with the performance or non-performance of its obligations under this Design/Build Contract, or the material falseness or inaccuracy of any representation made in this Design/Build Contract, whether such claims are based upon contract, tort, negligence, warranty or other legal theory.

Thus, far from providing the Commission a broad guarantee for U.S. Filter's approach, the contract limits U.S. Filter's liability for defective work and for false representations.

Finding 7. An analysis prepared by Malcolm Pirnie to show that the U.S. Filter design-build price for the CSO project was lower than competitively bid construction prices was based on an invalid and misleading cost comparison.

As discussed earlier in this report, the Commission awarded contracts for eight sewer separation projects undertaken from 1991 through 2001, referred to as SS-1 through SS-8. For these projects, the Commission completed field investigations, prepared plans and specifications, and solicited bids from construction contractors. This method

of contract procurement produced an average of seven competitive bids for each of the eight contracts.

As contract negotiations proceeded with U.S. Filter for the East Lynn CSO Project, Malcolm Pirnie prepared an analysis for the Commission dated August 31, 2000, entitled "Cost Comparisons of the East Lynn CSO Abatement Projects." Malcolm Pirnie's comparison showed that projects SS-1 through SS-6 had a higher average cost per linear foot of pipe than the U.S. Filter proposal, as illustrated in Table 5.

Table 5.

Malcolm Pirnie's Comparison of CSO Project Costs

Project	Total Project Costs	Pipe Length (linear feet)	Cost Per Linear Foot
SS-1 through SS-6 (modified)	$16,040,946	31,296	$513
U.S. Filter proposal	$48,078,143	126,156	$381

(Source: "Cost Comparisons of the East Lynn CSO Abatement Projects" by Malcolm Pirnie, August 31, 2000.)

In its analysis, Malcolm Pirnie compared the $381 per linear foot cost for the U.S. Filter proposal with the $513 per linear foot cost of projects SS-1 through SS-6 and concluded that the design-build approach used for the East Lynn CSO Project had produced cost savings.

This analysis compared the cost of the U.S. Filter proposal with the cost of similar work carried out under the first six conventional sewer separation contracts, SS-1 through SS-6, based on the cost per linear foot of pipe installed. However, the work was not similar. Malcolm Pirnie's cost comparison did not adjust costs for the fundamental difference between the work performed under contracts SS-1 through SS-6 and the work proposed by U.S. Filter. As noted in Finding 3, the Commission's approach to sewer separation under SS-1 through SS-6 involved installing a large diameter, stormwater system to increase the capacity to handle flows during heavy rainstorms. The new stormwater system consisted primarily of 30-inch diameter and larger drain

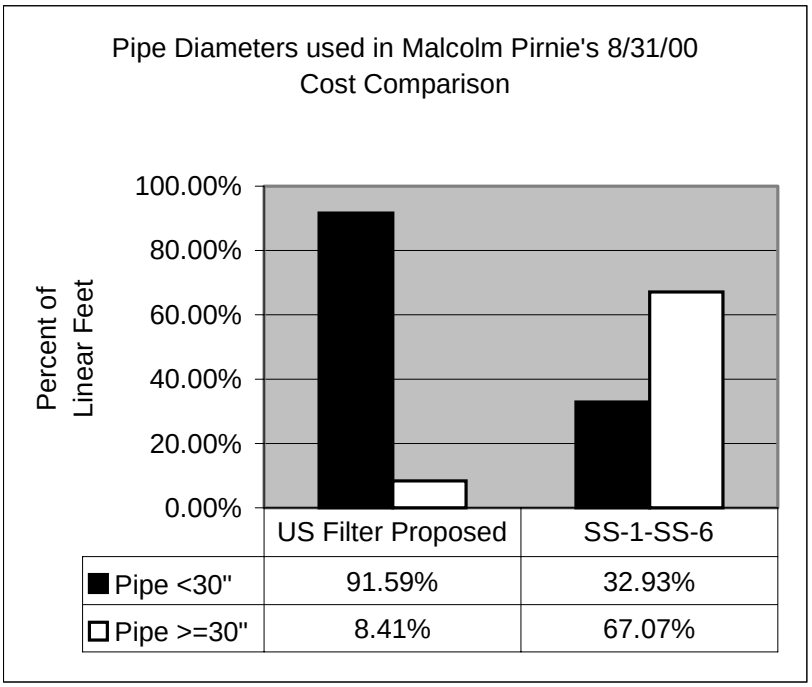
pipe, and included sections of 60-inch and 84-inch diameter pipe, as well as seven-foot by eight-foot box culverts. U.S. Filter proposed the riskier but less expensive approach of constructing a small diameter, sanitary-only sewer system for the East Lynn CSO Project. More than 90 percent of U.S. Filter's proposed piping was smaller than 30-inch diameter pipe, and more than half consisted of 10-inch or smaller plastic pipe. The largest piping in the U.S. Filter proposal was 42-inch diameter pipe.

Despite the fundamental difference in the type of construction work, Malcolm Pirnie compared the cost of construction for SS-1 through SS-6 with the East Lynn CSO Project based on the average cost per linear foot of pipe, without regard to diameter. For example, Malcolm Pirnie compared 2,600 linear feet of 84-inch diameter reinforced concrete pipe installed at 12- to 24-foot depths in SS-1 through SS-6, with 2,600 linear feet of 8-inch diameter plastic pipe in the U.S. Filter proposal.

Figure 2 below illustrates the difference between the type of construction work involved in SS-1 through SS-6 and the work proposed by U.S. Filter for the East Lynn CSO Project. In Figure 2, pipe footage used under each of the two approaches is categorized as either large (30-inch or larger diameter) or small (smaller than 30-inch diameter).

Figure 2.

Difference in Type of Construction Work Compared by Malcolm Pirnie



(Source: OIG analysis.)

Given the fundamentally different type of construction work involved, Malcolm Pirnie's conclusion, based on this comparison, that the U.S. Filter's proposed price is lower than the cost of work performed on other projects has no validity. In fact, an apples-to-apples comparison of the work U.S. Filter proposed with the cost of comparable work on projects SS-1 through SS-6 shows that the design-build price is far more costly, as discussed in Finding 10.

Finding 8. The Office's cost estimate indicates that U.S. Filter's $47 million design-build price is approximately $22 million higher than the cost of similar work performed under competitively bid contracts.

U.S. Filter's $48 million price proposal for design-build sewer separation work did not contain an itemized cost breakdown, making it more difficult to accurately compare the cost of the East Lynn CSO Project with other sewer construction projects. The U.S.

Filter proposal broke the $48 million price into the following three major categories as shown in Table 6.

Table 6.

Major Categories of U.S. Filter's Proposed Design-Build Work

Project development costs (including field investigations)	$ 7,716,080
Total sewer separation	38,835,298
Acceptance testing, performance bonds, and other costs	1,526,765
Total	**$48,078,143**

(Source: U.S. Filter CSO price proposal, Form 1B.)

In October 1999, U.S. Filter increased its proposed $38,835,298 price for total sewer separation by $8.4 million, bringing the total to $47,235,298.

Although the construction costs were not itemized in U.S. Filter's proposal, it is possible to develop an estimate, as Malcolm Pirnie did in its August 31, 2000 cost comparison, of the total amount of piping U.S. Filter has proposed to install. It is also possible to develop an approximation of the amount of other construction work included in the design-build price, including manholes, service connections, and paving. Using the average price obtained by the Commission for similar work under projects SS-1 through SS-6, adjusted using the CCI to 2000 prices, the Office developed a cost estimate of approximately $19 million for the construction work proposed by U.S. Filter, as shown in Table 7 below:

Table 7.

OIG's Cost Estimate of Construction Work Proposed by U.S. Filter

Item	Quantity	Unit	Unit Cost	Total
8-inch Pipe	42,581	Linear Foot	$38.20	**$** 1,626,594.20
10-inch Pipe	17,185	Linear Foot	39.00	670,215.00
12-inch Pipe	29,210	Linear Foot	39.49	1,153502.90
15-inch Pipe	13,590	Linear Foot	47.48	645,253.20
18-inch Pipe	5,960	Linear Foot	47.48	282,980.80
24-inch Pipe	7,025	Linear Foot	90.44	635,341.00
30-inch Pipe	6,275	Linear Foot	96.21	603,717.75
36-inch Pipe	2,700	Linear Foot	136.60	368,820.00
42-inch Pipe	1,630	Linear Foot	155.57	253,579.10
Pipe Sub-total				**$ 6,240,003.95**
Manholes	625		2,000.00	1,250,000.00
Catch Basins	200		2,000.00	400,000.00
Service Connections	3,100		750.00	2,325,000.00
Pave Initial Trench	85,000	Square Yard	17.00	1,275,000.00
Final Pavement	725,000	Square Yard	4.00	3,000,000.00
Gravel Base Coarse	775,000	Cubic Yard	.01	7,750.00
Dewatering		Lump Sum	775,000.00	775,000.00
Other/Contingency (20%)		Lump Sum	3,068,550.79	3,068,550.79
Mobilization (5%)		Lump Sum	767,137.70	767,137.70
Non-pipe Sub-total				**$12,938,438.49**
Total				**$19,178,442.44**

(Source: OIG analysis of SS-1 – SS-6 contract prices adjusted by the CCI to June 2000 prices; the October 2000 "Preliminary Design Report Lower 006-1 Area" the March 2001 "DRAFT Preliminary Design Report Service Area 006," prepared by the U.S. Filter design consultant, and Malcolm Pirnie documents related to "Cost Comparisons of the East Lynn CSO Abatement Projects." Note 1: The unit prices for 10" pipe and 15" pipe are estimated. Note 2: All quantities are estimates.)

In addition to the approximately $19 million in construction work, U.S. Filter will provide design services for sewer separation. Design services for a standard public works project such as this should cost no more than 30 percent of the construction cost, or about $5.7 million, bringing the estimated design and construction cost to just under $25 million. U.S. Filter initially proposed a design-build sewer separation price, not including

costs for field investigations and other work, of $38.8 million. U.S. Filter subsequently increased its design-build price by $8.4 million, bringing the total to approximately $47 million. The Office's preliminary cost estimate suggests that U.S. Filter's design-build price is approximately $22 million higher than the cost of similar work the Commission procured through competitive bidding.

Finding 9. Claims made by the Chairman of the Commission and the Mayor that the U.S. Filter contract would save the Commission more than $400 million were not supported by the cost estimates and analyses prepared by the Commission's consultants.

The Commission held a public hearing on September 11, 2000 to provide an opportunity for public comment on the proposed CSO contract. Records show that representatives from HDW, Malcolm Pirnie, and U.S. Filter were all present at the hearing. A transcript of the hearing shows that the Commission Chairman described the proposed contract with U.S. Filter in general terms, and alluded to the $48 million design-build price of the U.S. Filter proposal as the cost of the project. In the Chairman's words:

> That $48 million dollar cost is the cost of constructing this project.

The Chairman then compared the $48 million project cost with the cost for building the tunnel/pumpback plan CDM had recommended in 1990, claiming that the tunnel/pumpback plan would have cost $450 million:

> The numbers we're looking at are in the vicinity of $450 million dollars for the full price of the tunnel pump back system that we presently have in our consent decree.

After the Chairman described the proposed contract, the Mayor spoke, urging the Commissioners to vote for the contract. The Mayor repeated the Chairman's assertion that the cost for the tunnel/pumpback plan recommended by CDM would cost the Commission $400 million more than the proposed U.S. Filter contract:

> I'm the Mayor of the city, and I want to make this simple for you. Anybody who votes against this ought to be run out of town on a rake. . . . If we don't adopt this approach, if we go back to what we had scheduled under

> the prior Commission, it would be a $450 million cost. Now, this is $48 million to become fully compliant with the Clean Water Act. . . . And if there's anybody here that's prepared to tell the citizens of this city spend $400 million dollars that we don't have to spend, make those people pay that bill when it shouldn't be, get off this Commission because you're wrong.

In a letter dated October 12, 2000, the Office requested all cost estimates and analyses comparing the cost of the U.S. Filter contract for the East Lynn CSO Project with the cost of any alternative approach to CSO abatement. In response to this request, the Commission provided the 1990 CSO Facilities Plan and the 1998 Revised Recommended Plan for CSO Control prepared by CDM. The Commission also provided the report prepared by Malcolm Pirnie dated August 31, 2000, entitled "Cost Comparisons of the East Lynn CSO Abatement Projects."

As discussed earlier in this report, CDM's 1990 CSO Facilities Plan contained a $68 million cost estimate for the tunnel/pumpback facilities, which was revised in CDM's 1998 plan to $62 million. The Office adjusted CDM's 1998 estimate, using the Construction Cost Index (CCI) published by *Engineering News Record,* to calculate an estimated construction cost of $65 million for the tunnel/pumpback facilities in 2000 dollars. In addition to the construction cost estimate, CDM's 1990 CSO Facilities Plan included an annual operation and maintenance cost estimate of $1.25 million for the tunnel/pumpback facilities. Based on that estimate, the Office calculated a present value cost to the Commission for operation and maintenance of tunnel/pumpback facilities over 20 years of $25 million.[7] CDM's cost estimates therefore show that the combined construction and 20-year operation and maintenance cost for the tunnel/pumpback facilities would total $90 million in 2000 dollars.

Malcolm Pirnie's August 31, 2000 report, discussed in Finding 7, compared the U.S. Filter proposal with construction work performed on other sewer separation projects, but did not refer to the tunnel/pumpback facilities.

[7] The Office developed this present value cost using a mathematical model and a set of assumptions used by Malcolm Pirnie to calculate the present value cost for operating and maintaining the wastewater treatment plant for 20 years.

Neither the CDM cost estimates, the Malcolm Pirnie cost comparison, nor any other document provided to the Office by the Commission support the $450 million cost for the tunnel/pumpback facilities cited by the Commission Chairman and the Mayor.

Immediately following the public hearing, the Commissioners convened a Commission meeting for the purpose of voting on the proposed U.S. Filter contract. The transcript of that meeting shows that two of the Commissioners questioned the assertion that the cost for the tunnel/pumpback facilities had been estimated at more than $400 million. One of the Commissioners directed a question about this assertion to the Malcolm Pirnie representative present at the meeting. Although Malcolm Pirnie had been retained to provide expert advice to the Commission, the Malcolm Pirnie representative offered no opinion as to the validity of the Mayor's cost-savings claim.[8] On September 11, 2000, the Commission approved a contract with U.S. Filter for the East Lynn CSO Project by a vote of four to one.

CDM disputed the $400 million cost-savings claim relating to the CSO contract.

A statement relating to the East Lynn CSO Project found its way into an article published in the December 2000 issue of *Public Works Financing*, (*PWF*) which reported that the East Lynn CSO Project replaced a tunnel storage system estimated to cost $400 million:

> Valued at $48 million, the nine-year repiping plan is believed to be the nation's first CSO design-build project. Lynn had been unable to fund the estimated $400-million cost of a tunnel storage system proposed 11 years ago by Camp, Dresser & McKee, Inc.

In a letter to the *PWF* editor dated January 18, 2001, CDM disputed the statement that the tunnel storage system had been estimated at $400 million. In that letter, CDM concluded that the $400 million figure related to a cost estimate CDM had prepared as part of a 1992 affordability study to determine the total cost of all capital improvements,

[8] The Malcolm Pirnie representative had been employed as the CDM manager in charge of the Commission's account for eight years and should have been familiar with the CDM cost estimates.

operation, and maintenance of the Commission's water and wastewater systems for a 20-year period. CDM wrote:

> The CSO design-build project presently being implemented by the city is largely a sewer separation project that will take the place of the entire storage tunnel, treatment and pumpback facility that was included in the EPA approved long term control plan back in 1990. The 400 million figure referenced in the article is not the cost of the storage tunnel project but represents the cumulative costs of water and wastewater system operation and maintenance, CSO control plan projects, significant improvements to the wastewater and water treatment plants, significant replacement of the wastewater collection and water distribution systems, debt service on all capital improvements . . . over approximately twenty years.

PWF published CDM's letter in its January 2001 issue.

Finding 10. The actual cost to the Commission for the East Lynn CSO Project will be far higher than U.S. Filter's $48 million design-build price.

In its August 31, 2000 cost analysis Malcolm Pirnie used U.S. Filter's $48,078,143 design-build proposal price to represent the cost to the Commission for the East Lynn CSO Project. A $48 million figure was also used by the Commission Chairman and the Mayor at the September 11, 2000 public hearing to represent the total project cost. However, the actual cost to the Commission for design, construction, and contract administration for the East Lynn CSO Project will be far higher than $48 million, for the following reasons:

Finding 10a. U.S. Filter's $48 million design-build price did not include all required sewer separation work and has already increased to compensate for this omission.

As discussed in Finding 4, the U.S. Filter proposal failed to include separation of some of the combined sewers within the East Lynn CSO Project area. Under the Consent Decree, these sewers must be separated. During the proposal evaluation process, U.S. Filter proposed an $8.4 million increase in its $48 million design-build price to cover the cost of this work. The parties did not agree on a lump-sum amount for the additional

work prior to executing the contract; instead, they left the issue open for future negotiation as a change order.

The final contract clearly states that U.S. Filter is not responsible for separating the combined sewers overlooked in its proposal. The contract states:

> The Company will separate the combined sewers identified on Figure A1-1 (partial separation) . . . The cost to complete sewer separation . . . is not included in this Design/Build Contract.

A preliminary design report dated October 16, 2000, submitted to the DEP on behalf of the Commission by U.S. Filter's design consultant indicates that sewers not included in the U.S. Filter proposal will be performed under the contract as change order work:

> The Design/Build contract between the Lynn Water and Sewer Commission and US Filter is based on conceptual-level plans developed prior to completion of the field work investigation. . . . The field investigation work identified a number of sewers that were thought to be sanitary-only as being combined sewers. The recommended plan, therefore, proposes additional new sanitary sewers to separate the system than is provided in the Design/Build contract. A total of approximately 6,000 LF of new sewers has been added.

A letter dated March 12, 2001 to the Commission from U.S. Filter's design consultant indicated that U.S. Filter had added $1.8 million to its design-build price for the first phase of the project for "additional pipe." Because the parties did not agree to a lump-sum price for the additional sewer separation work before signing the contract, it is impossible to determine exactly how much this work will cost. However, U.S. Filter has already increased its price for the first phase of construction, which constitutes less than 15 percent of the entire East Lynn CSO Project, by $1.8 million.[9]

[9] Preliminary design information indicates that the first phase will involve installation of approximately 16,000 out of an estimated total of 126,000 linear feet of pipe.

Finding 10b. U.S. Filter's $48 million design-build price does not include the estimated $16.8 million cost of redirecting private inflow.

Correspondence between the Commission and U.S. Filter between January and August 2000 indicates that they were engaged in intense negotiations relating to the level of risk U.S. Filter would accept for its CSO proposal. Some of those discussions focused on the issue of reducing private inflow in the East Lynn CSO Project area, where an estimated 7,000 residences may contribute private inflow to the existing combined sewer.[10] Under U.S. Filter's sewer separation approach, this water will flow into the new sanitary-only sewer, potentially causing sewer overflows and/or flooding.

Under the contract with U.S. Filter, the Commission is responsible for the cost of redirecting private inflow. The Commission has developed an internal cost estimate of approximately $2,400 per residence for this work, bringing the total estimated cost to $16.8 million.

Finding 10c. U.S. Filter's $48 million design-build price does not include sewer rehabilitation.

The $48 million design-build price included in the U.S. Filter proposal pertains only to sewer separation work. Another essential component of this project is sewer rehabilitation work to repair gaps and leaks in existing sewers. The Commission recognized that sewer rehabilitation would be a necessary component of the project, but that it was impossible to accurately determine the amount of work based on the limited information available when the RFP was issued. For this reason, the RFP included estimated quantities of sewer rehabilitation work and required proposers to submit unit prices for the work. The U.S. Filter proposal contained a total price of approximately $35 million and the Modern Continental proposal a $32.5 million price for sewer rehabilitation, in addition to the design-build price for sewer separation, based on the estimated quantities contained in the RFP.

[10] Private inflow refers to water from roof drains and basement sump pumps on privately owned property.

The actual cost to the Commission for sewer rehabilitation will not be known with certainty until a later stage of the project. U.S. Filter has indicated that it estimates the amount of work required at about $9.9 million. However, if the amount of work required turns out to be as extensive as the Commission estimate, the cost of the U.S. Filter contract will increase by $35 million.

Finding 10d. U.S. Filter's $48 million design-build price does not include the cost of support consultants.

In addition to the direct cost of the U.S. Filter contract, the Commission will incur additional costs for project oversight. This project oversight is currently provided by Malcolm Pirnie under a sole-source contract for support consultant services.

On behalf of the Commission, U.S. Filter's design consultant has submitted the first request to DEP for funding through the State Revolving Fund (SRF). The SRF provides subsidized, low-cost loans to municipalities for water pollution abatement projects. The SRF funding request for the first phase, which comprises less than 15 percent of the entire of the East Lynn CSO Project, included $435,000 for "support consultants." This project oversight cost will increase the $48 million design-build price by an unknown amount. Based on the first SRF funding request, the Office estimates that support consultant costs will add another $2.9 million to the project cost.

Based on the four subfindings above, it is apparent that the U.S. Filter approach will cost the Commission far more than the $48 million design-build price for sewer separation. In addition to the $8.4 million change order sought by U.S. Filter, the Commission will incur additional costs for private inflow reduction, sewer rehabilitation, and support consultants. Other construction work not included in the design-build price, including utility relocation and rock excavation, will further increase the cost.

It is possible to estimate the impact of three of the cost components described above. Using the optimistic U.S. Filter estimate for sewer rehabilitation and leaving out the unknown additional costs that will result from utility relocation and rock excavation, a

very conservative estimate pegs the cost for implementing the U.S. Filter proposal at approximately $86 million, as shown in Table 8.

Table 8.

OIG's Estimated Cost to the Commission for East Lynn CSO Project

Design-Build Price for Sewer Separation	$48,078,733
U.S. Filter Proposed Price Increase	8,400,000
Commission Estimate for inflow reduction	16,800,000
U.S. Filter Estimate for Sewer Rehabilitation	9,900,000
Support Consultants	2,900,000
Total (not including utility relocation or rock excavation)[11]	**$86,078,733**

(Source: OIG analysis.)

The Office's $86 million cost estimate assumes that the Commission will perform no water main replacement work under the U.S. Filter contract. The unit prices submitted by U.S. Filter for water main replacement work appear to be exorbitant, as discussed in Finding 11.

U.S. Filter's design-build price and unit prices for sewer rehabilitation will be escalated annually over the nine-year contract.

The contract negotiated between the Commission and U.S. Filter calls for the East Lynn CSO Project to be performed in ten phases at the rate of approximately one phase per year. Design work for the first phase was submitted to DEP in March 2001 and construction is expected to begin in June 2001. The remaining nine phases will be spread out over a nine-year period, according to a schedule that calls for the last phase to be completed at the end of 2009.

[11] Utility relocation and rock excavation will be billed on a unit price basis and will further increase the $86 million total.

Under the contract, the base price for the design-build work and the unit rate prices are based on construction costs as of May 1, 2000. U.S. Filter's base prices for each phase of the work will be escalated annually, beginning on June 1, 2001, using the CCI.

Finding 11. U.S. Filter's unit prices for water main replacement were much higher than competitive bid prices for similar work.

While the two lump-sum design-build prices for sewer separation are not comparable, the proposals from U.S. Filter and from Modern Continental contain unit prices for defined work on some elements of the project, such as water main replacement. The Commission included an estimated quantity of water main replacement work in the RFP and solicited unit prices. For this work, the proposal prices are based on the same scope of work, but U.S. Filter's price of approximately $6.5 million is substantially higher than Modern Continental's $3.6 million price.

The Office also compared the U.S. Filter unit prices with competitive bid prices the Commission received for water main replacement work under SS-1 through SS-6, adjusted by the CCI to 2000 dollars. U.S. Filter unit prices for this work were far higher than prices the Commission received through competitive bidding.

The difference in some of the unit prices is startling. For example, U.S. Filter's $163 price per linear foot of 8-inch water pipe is almost three times more than the $56 bid on other projects. Based on the Commission's estimated quantities, the total U.S. Filter price for this one item is $1.7 million compared with a $600,000 competitive price, as shown in Table 9 below:

Table 9.

OIG Comparison of Competitive Bid Unit Prices versus U.S. Filter's Prices for Water Main Replacement

Item	Estimated Linear Feet	SS-1 – SS-6 Unit Price	Total SS-1 – SS-6 Price	U.S. Filter Unit Price	Total U.S. Filter Price
8-inch ductile iron cement lined water pipe	10,765	$56.09	$603,808.85	$163.62	$1,761,369.30 (190% more than the SS-1 – SS-6 price)
12-inch ductile iron cement lined water pipe	4,000	$56.19	224,760.00	$196.35	$785,400.00 (249% more than the SS-1 – SS-6 price)

(Source: OIG analysis of SS-1 – SS-6 contract prices adjusted by CCI to June 2000 prices plus 5% mobilization cost and U.S. Filter's Price Proposal Form 6, April 1999.)

Finding 12. The Commission's application for SRF funding for the first phase of the East Lynn CSO Project contains a construction price that is almost three times the cost of similar work under competitively bid contracts.

In connection with the Commission's request for SRF project funding, U.S. Filter's design subconsultant submitted detailed design information for the first phase of the project, for which construction was scheduled to begin in June 2001. This design detail contains lengths and sizes of new pipe to be installed, as well as other specific information, such as the number of catch basins. Using this design information, the Office developed a cost estimate for the first phase work, using the average bid price received by the Commission for comparable work on projects SS-1 through SS-6, adjusted by the CCI to 2001 prices. The Office's itemized cost estimate for the first phase, which comprises less than 15 percent of the entire East Lynn CSO Project, is presented in Table 10.

Table 10.

OIG's Cost Estimate for Construction of Phase 1 of the East Lynn CSO Project

Item	Quantity	Unit	Unit Price	Total Price	U.S. Filter Price
8-inch Pipe	12,355	Linear Foot	$38.20	$471,961.00	
10-inch Pipe	271	Linear Foot	39.00	10,569.00	
12-inch Pipe	1,174	Linear Foot	39.49	46,361.26	
15-inch Pipe	671	Linear Foot	47.48	31,859.08	
18-inch Pipe	710	Linear Foot	47.48	33,710.80	
24-inch Pipe	340	Linear Foot	90.44	30,749.60	
30-inch Pipe	590	Linear Foot	96.21	56,763.90	
36-inch Pipe	250	Linear Foot	136.60	34,150.00	
Pipe Sub-total	**16,361**			**$716,124.64**	
Manholes	80		$2,000.00	$160,000.00	
Catch Basins	25		2,000.00	50,000.00	
Service Connections	300		750.00	225,000.00	
Pave Initial Trench	10,907	Square Yard	17.00	185,419 .00	
Final Pavement	90,894	Square Yard	4.00	363,576 .00	
Gravel Base Coarse	100,000	Cubic Yard	.01	1,000.00	
Dewatering		Lump Sum	100,000.00	100,000.00	
Other/Contingency (20%)		Lump Sum	360,223.93	360,223.93	
Mobilization (5%)		Lump Sum	90,055.98	90,055.98	
Non-pipe Sub-total				**$1,535,274.91**	
Total				**$2,251,399.55**	**$6,571,849.00**

(Source: OIG analysis of SS-1 – SS-6 contract prices adjusted by the CCI to June 2000 prices; and the October 2000 "Preliminary Design Report Lower 006-1 Area," the March 2001 "DRAFT Preliminary Design Report Service Area 006," and the "Status Update Regarding Addressing LWSC January 16, 2001 Review comments on Draft Preliminary Design for Service Area 006; December 29, 2000" prepared by the U.S. Filter design consultant. Note 1: The unit prices for 10" pipe and 15" pipe are estimated. Note 2: All quantities are estimates.)

The cost estimate shown in Table 10 indicates that the construction work proposed for the first phase should cost approximately $2,251,399.55. However, the SRF funding application prepared by U.S. Filter's design consultant included a construction price of $6,571,849 for construction work on Phase 1. This cost comparison indicates that the

U.S. Filter construction price for Phase 1 of the project is approximately $4.3 million higher than competitively bid prices for similar work.

III. The 20-year, DBO Wastewater Treatment Plant Contract: Findings

As discussed in the first section of this report, the Commission's wastewater treatment plant has been operated by U.S. Filter since the plant came on line in 1985. The Commission conducted a competitive procurement process in 1991 that resulted in the award of a five-year contract to U.S. Filter. Over the following three years, the U.S. Filter contract was amended several times, increasing U.S. Filter's operating fee. Under these contract amendments, U.S. Filter was reimbursed for additional personnel, fuel oil, natural gas, and electricity and also received an overhead and profit markup based on a percentage of costs incurred. This cost-plus-percentage-of-cost reimbursement method gave U.S. Filter an incentive to waste rather than conserve oil, gas, and electricity.

U.S. Filter's five-year contract expired in 1996. In November 1996 the Commission solicited competitive proposals to award a new contract and received two proposals, one from U.S. Filter and the other from a competitor. However, the Commission did not award a new five-year contract. Instead, the Commission renewed U.S. Filter's 1991 contract on a month-to-month basis for a period of more than four years, pending the anticipated procurement of a 20-year DBO contract. By 1999, the Commission's operation and maintenance fee under the 1991 contract with U.S. Filter had been modified substantially through amendments that increased U.S. Filter's compensation.

The special legislation obtained by the Commission, Chapter 219 of the Acts of 1998, contemplated the procurement of a 20-year DBO contract for the Commission's wastewater treatment plant as well as a DBO contract for the East Lynn CSO Project. The Commission issued RFPs for both contracts pursuant to the procurement procedures contained in that special legislation. The RFP for the wastewater treatment plant contract was issued on February 2, 1999 and the East Lynn CSO Project RFP was issued on February 12, 1999. Proposers could respond to one or both RFPs.

Finding 13. The two proposals for the DBO wastewater treatment plant contract were submitted by companies controlled by the same corporate entity: Vivendi.

In May 1999, the Commission received a proposal from U.S. Filter and a proposal from Aqua Alliance, Inc. for the 20-year DBO contract. As discussed in Finding 1, Aqua Alliance was a subsidiary of Vivendi, a $45 billion corporation. In March 1999, U.S. Filter was also acquired by Vivendi. Thus, when the two proposals were submitted in May 1999, both proposers were owned and controlled by Vivendi.

On September 9, 1999, the Commission completed its evaluation process and selected the Aqua Alliance proposal. However, the management of Aqua Alliance was integrated into that of U.S. Filter in September 1999, hence the 20-year DBO contract was negotiated between the Commission and U.S. Filter, even though the U.S. Filter proposal had not been selected.

A U.S. Filter representative told the Office that U.S. Filter was not surprised that other firms did not compete for the contract. According to the U.S. Filter representative, the cost for preparing a proposal for a 20-year DBO contract can add up to $300,000 to $500,000. The U.S. Filter representative expressed the opinion that a competing firm would not likely invest this amount in proposal preparation in light of the pre-existing contractual relationship between the Commission and U.S. Filter.

Finding 14. Malcolm Pirnie prepared a flawed analysis purporting to show that the 20-year, DBO contract would cost less than a competitively procured five-year contract for the wastewater treatment plant contract.

The Commission's rationale for choosing the 20-year DBO approach was the theory that it would result in more efficient operational practices than a traditional five-year contract and, therefore, would produce cost savings to the Commission. To determine whether the proposed 20-year contract offered the hoped-for cost savings, Malcolm Pirnie prepared an analysis dated August 1999 that compared projected costs under the Commission's 1991 five-year contract with projected costs under the proposed 20-year DBO contract. Malcolm Pirnie's analysis concluded that the 20-year DBO contract

would produce cost savings over 20 years with a present value of up to $28.6 million when compared with the Commission's 1991 five-year contract.

Finding 14a. Malcolm Pirnie's analysis overstated the Commission's costs to show that the Commission's 1991 contract with U.S. Filter was more costly than the proposed 20-year contract.

Using data provided by the Commission and its consultants, the Office applied Malcolm Pirnie's mathematical model to compare projected costs under the proposed 20-year contract with the Commission's costs under the 1991 contract. This analysis revealed that Malcolm Pirnie used overstated costs in calculating the projected cost over a 20-year period of the 1991 contract. Correcting these overstated costs to reflect the Commission's cost data reduced the projected savings associated with the proposed 20-year contract from $28.6 million to $7.7 million under Malcolm Pirnie's model.

The Commission's data show that Malcolm Pirnie overstated three cost elements under the 1991 contract:

- the contract operations cost,
- repair and replacement costs, and
- sludge disposal costs after implementation of planned capital improvements.

Each of these three cost elements is discussed below.

Contract operation fee. The most significant inaccuracy in the Malcolm Pirnie analysis related to the contract operation fee under the Commission's 1991 contract with U.S. Filter. Malcolm Pirnie used a figure of $5,397,229 to represent the contract operation fee for fiscal year 2000, noting that this figure was derived by averaging and escalating contract operations costs for 1997 and 1998. However, Malcolm Pirnie's cost analysis overstated the Commission's actual contract operation fee of $4,367,529 for fiscal year 2000 by approximately $1 million. Correcting Malcolm Pirnie's model to reflect the Commission's actual contract operation fee reduced the projected savings under the 20-year DBO contract by approximately $11.4 million.

Repair and replacement costs. Malcolm Pirnie's analysis also overstated the projected 20-year cost of the 1991 contract by counting repair and replacement costs twice. Malcolm Pirnie assumed that the Commission would incur costs of up to $539,723 per year for repair and replacement under the 1991 contract, but failed to take into account an annual allowance of $550,000[12] for repair and maintenance included in the contract operations fee under that contract. By adding a separate line item for repair and maintenance, Malcolm Pirnie double-counted these costs.

The Office reviewed the Commission's expenditures over the past five years for plant repair and maintenance and found that the contract allowance has generally been adequate to cover these costs and that the Commission has budgeted and spent little for additional repair and maintenance costs.[13] Applying Malcolm Pirnie's mathematical model, the Office replaced Malcolm Pirnie's estimate with a figure of $50,000 for repair and replacement costs above and beyond the allowance included in the 1991 operating contract. This adjustment reduced the projected cost savings under the 20-year DBO contract by an additional $7.4 million.

Sludge and ash disposal costs. Malcolm Pirnie's analysis also overstated the likely cost to the Commission for residual sludge and ash disposal costs under the 1991 contract after the Commission implemented improvements to its sludge handling facilities. In the model presented to the Commission in August 1999, Malcolm Pirnie used a $700,000 figure for the projected annual cost of long-term sludge disposal under the 1991 contract. When the Office requested an itemized breakdown of those estimated costs, Malcolm Pirnie revised its projection from $700,000 to $244,000. However, Malcolm Pirnie's revised projection assumed that the Commission would bear

[12] The original 1991 contract provided a base repair and maintenance allowance of $550,000 per year that was escalated by several factors in each succeeding year according to a formula. In 1999, U.S. Filter reduced this portion of the operating fee by approximately $130,000 per year to reflect lower costs resulting from the shutdown of the sludge handling facilities. When sludge processing operations resumed, the repair and maintenance allowance would revert to the original contract amount.

[13] The proposed 20-year contract included an annual allowance of $481,390 for plant maintenance, repair and replacement, providing further evidence that the $550,000 allowance in the five-year contract represented a realistic figure.

the costs for sludge disposal during periods of equipment downtime and would dispose of ash off-site under the 1991 contract. Both of these assumptions were incorrect.

The Commission has an on-site landfill for back-up sludge disposal and for ash disposal. The 1991 contract required U.S. Filter to operate and maintain the landfill and to pay the cost for back-up sludge disposal during periods of equipment downtime. Under the 20-year DBO contract, U.S. Filter plans to expand the landfill if additional capacity is needed. The same low-cost disposal option was available to the Commission under the 1991 contract.[14] Based on the availability of the landfill and the relevant contract terms, the Office determined that a realistic estimate of the annual cost for back-up sludge and ash disposal under the 1991 contract after the Commission implemented capital improvements would be $72,000. The Office therefore reduced Malcolm Pirnie's figure of $244,000 to $72,000. Applying Malcolm Pirnie's mathematical model, this adjustment reduced the cost differential between the 1991 contract and the 20-year DBO contract by an additional $2.1 million.

Appendix 4 contains a spreadsheet showing Malcolm Pirnie's calculation of the Commission's annual costs under the 1991 contract and another spreadsheet showing the Office's calculation using corrected costs. Appendix 5 shows 20-year net present values calculated using Malcolm Pirnie's mathematical model, based on Malcolm Pirnie's estimated costs versus the Office's corrected costs.

Appendix 5 shows that correcting the three cost elements described above to reflect more realistic estimates reduced Malcolm Pirnie's projected $28.6 million savings by more than 70 percent to $7.7 million. Moreover, Malcolm Pirnie failed to consider cost-adjustment factors in the 20-year DBO contract that could substantially increase costs over 20 years, as discussed in Finding 14b below.

[14] The risk that the landfill expansion plan will not be approved by government regulators would be borne by ratepayers under both the five-year contract and the proposed 20-year contract.

Finding 14b. The 20-year DBO contract contains cost adjustment provisions that could increase the cost to the Commission ratepayers.

In comparing the Commission's five-year contract with the 20-year DBO contract, Malcolm Pirnie overlooked adjustment factors in the 20-year DBO contract that may result in cost increases. The five-year contract did not allow U.S. Filter to increase its contract operations fees based on loadings (measures of the quality of wastewater entering the facility) or flows (measures of the volume of water entering the facility). By contrast, U.S. Filter can increase its contract operations fee under the 20-year DBO contract if either loadings or flows exceed baseline parameters.

The Office analyzed Commission data related to loadings for 1999 and applied the cost adjustment formula contained in the 20-year DBO contract to calculate the cost impact of this adjustment factor. The Office found that the loadings adjustment factor would have increased the annual contract operations fee under the 20-year DBO contract by approximately $89,000 in 1999. If input into the wastewater stream increases over the course of the 20-year contract, loadings may increase, and the cost impact on the Commission will be more substantial.

The Office also analyzed the Commission's operating data on flows and found that the wastewater plant receives "excessive influent" – flows in excess of contract baseline parameters – on a regular basis. For example, during 1999, flows exceeded baseline parameters for six out of the 12 months. This flow volume would permit the contractor to seek an immediate increase in its contract operations fee based on the following open-ended language in the 20-year DBO contract:

> To the extent the occurrence of an Upset or Excessive Influent constitutes an Uncontrollable Circumstance hereunder, the Service Fee shall be increased by an amount equal to the reasonable costs incurred by the Company in responding to the effect of the Uncontrollable Circumstance on the Managed Assets and in the treatment and disposal of resulting System Effluent and System Residuals.

The impact of these cost adjustment provisions could increase the cost of the 20-year DBO contract.

In addition, the complexity of the 20-year DBO contract will require the Commission to exercise more rigorous oversight over the activities of and costs incurred by U.S. Filter. This additional contract oversight should be included as an added cost to the 20-year DBO contract.

Finding 14c. A contract based on U.S. Filter's 1996 proposal would have resulted in lower costs to ratepayers than U.S. Filter's 20-year DBO contract.

As discussed earlier, the five-year contact awarded to U.S. Filter in 1991 expired in 1996. In the fall of 1996 the Commission solicited competitive proposals for the award of a new five-year operation and maintenance contract for the wastewater treatment plant. The RFP generated a new proposal from U.S. Filter as well as a competing proposal from another firm. However, the Commission did not award a new contract; instead, the Commission continued to renew its 1991 contract with U.S. Filter on a month-to-month basis for the next four years, pending the outcome of the procurement of a 20-year DBO contract.

As discussed earlier in this report, the 1991 contract was amended several times to increase U.S. Filter's compensation for additional costs. These cost-plus-percentage-of-cost contract amendments may have eroded the effects of market competition on the 1991 contract price, resulting in unnecessarily high costs to ratepayers. The Office therefore compared projected costs under the 1996 U.S. Filter proposal with costs under the amended 1991 contract. After adjusting all costs to reflect 2000 dollars, the Office found that U.S. Filter's 1996 competitive proposal, which contained an annual operation and maintenance fee of $4,123,926 in 2000 dollars, would have produced annual operating cost savings of approximately $546,000 in comparison with the operating costs incurred under the amended 1991 contract. The Commission's projected annual operating costs under the 1991 amended contract and U.S. Filter's 1996 proposal are shown in Appendix 6.

The Office also compared projected operating costs under U.S. Filter's 1996 proposal with projected costs under the 20-year DBO contract. Using the mathematical model

developed by Malcolm Pirnie, the Office calculated a 20-year present value cost of approximately $88.2 million under U.S. Filter's 1996 proposal. The present value cost of the 20-year DBO contract, as projected by Malcolm Pirnie, was approximately $88.8 million. These 20-year present value calculations are presented in Appendix 7. This analysis shows that a contract based on U.S. Filter's 1996 proposal would have resulted in lower overall costs to ratepayers than the 20-year DBO contract.

Finding 15. Although the 20-year DBO contract may produce cost savings for U.S. Filter from reduced flows to the plant, ratepayers will not benefit from those savings.

While the 20-year DBO contract contains provisions to increase the cost to the Commission if flows exceed baseline parameters, there is no provision to reduce the cost to the Commission if flows decrease due to future changes in circumstances. The Commission has predicted that flows to the plant will be reduced by the sewer separation work called for under the East Lynn CSO Project. In a November 3, 1999 report to the Commissioners, the Commission Executive Director cited the expected reduction in flows to the wastewater plant as one of the benefits of the U.S. Filter proposal for the East Lynn CSO Project contract:

> The benefits of U.S. Filter's approach include . . . a reduction in the flow of sewerage to the wastewater treatment plant, resulting in reduced treatment costs.

Indeed, it seems likely that reduced flows to the plant will reduce operation and maintenance costs. However, the 20-year DBO contract locks in the U.S. Filter price so that the decreased costs will produce an increased profit for U.S. Filter rather than lowering costs for the Commission's ratepayers.

Finding 16. Although the 20-year DBO contract will likely produce cost savings for U.S. Filter resulting from staff reductions, ratepayers will not benefit from those savings.

The contract in effect prior to the 20-year DBO contract required U.S. Filter to maintain a staffing level of 45 employees at the wastewater facility.[15] The 20-year DBO contract permits U.S. Filter to reduce the number of plant employees through attrition, provided that state regulators approve the revised staffing plan. U.S. Filter has indicated that it plans to reduce the existing staffing level by 20 percent, thereby achieving greater efficiency:

> As we implement our efficiency programs coupled with increased instrumentation and automation, we expect the need for on-site staff to decrease. . . . [T]hese staff reductions will be achieved only through normal retirement or voluntary attrition over the life of the contract.[16]

A breakdown of operating costs for the wastewater treatment plant shows that personnel costs comprise approximately one-half of the annual contract operations fee. Given that personnel costs represent the largest cost component, it is reasonable to assume that this proposed 20 percent reduction in staffing will substantially reduce costs. Yet the Commission will pay U.S. Filter slightly *more* for contract operations under the 20-year DBO contract than the price U.S. Filter proposed in 1996 for a five-year contract. This indicates that any cost savings achieved through future staff reductions will produce increased profits for U.S. Filter rather than lowering rates for Commission ratepayers.

[15] A contract amendment executed in 1992 increased the staffing level to 49 employees to perform all functions including sludge processing and landfill operation.

[16] Source: Aqua Alliance, "Responses to Questions from the LWSC Evaluation Committee," June 16, 1999.

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IV. The Commission's Privatization Consultant Contracts: Findings

Finding 17. The Commission failed to exercise control over its expenditures for privatization consultants, which mounted to more than $3 million over three years.

As discussed in the Background section of this report, the Commission used a competitive RFP process to select CDM for a $300,000 privatization consultant services contract in July 1997. The Commission later awarded a $56,168 contract for general engineering services to Malcolm Pirnie and subsequently shifted the privatization consultant work to Malcolm Pirnie by amending the general engineering services contract.

Finding 17a. Malcolm Pirnie's $56,168 general engineering services contract evolved into a lucrative, sole-source privatization consulting services contract worth more than $1.6 million.

At a Commission meeting on November 9, 1998, the Executive Director presented the Commissioners with a proposal to amend Malcolm Pirnie's $56,168 general engineering services contract to compensate Malcolm Pirnie on an hourly rate basis for assistance with the procurement of the 20-year DBO contracts for the wastewater treatment plant and CSO projects. Although the Commission had awarded a contract to CDM for privatization consulting services in July 1997, a representative of Malcolm Pirnie reported that Malcolm Pirnie was involved in finalizing the RFP for a 20-year contract for the wastewater treatment plant, according to the November 9, 1998 meeting minutes. The minutes show that two of the five Commissioners present questioned the wisdom of approving the proposed open-ended change order, which they referred to as "a blank check" because it contained no estimated project cost and no maximum dollar limit. These two Commissioners pressed the Malcolm Pirnie representative to provide an estimate for the total cost of Malcolm Pirnie's privatization consulting services. The Malcolm Pirnie representative indicated that he could not estimate the amount of work that would be needed to meet the requirements of the regulatory agencies. Despite their concerns, the Commissioners voted three to one to amend the contract,

authorizing Malcolm Pirnie to provide privatization consulting services to be billed on an as-needed, when-needed basis.

On November 17, 1998, the Commission executed Amendment 1 to Malcolm Pirnie's general engineering services contract, calling for Malcolm Pirnie to assist the Commission in finalizing the RFP for a 20-year DBO contract for the wastewater treatment plant and CSO facilities. Malcolm Pirnie's scope of work included revising the RFP prepared by CDM and assisting with proposal evaluation and contract negotiation. Although this scope of work was treated as an amendment to Malcolm Pirnie's general engineering services contract, it effectively created a new, sole-source contract for privatization consulting services that superceded the contract awarded to CDM in July 1997.[17] This open-ended contract amendment did not contain an estimated project cost, a schedule, or a maximum dollar amount.

Commission records show that over an 18-month period from October 1998 through March 2000, Malcolm Pirnie billed the Commission $950,732 for privatization consulting services under Amendment No. 1. Minutes of Commission meetings indicate that at least two of the five Commissioners were unaware of these expenditures. At an April 4, 2000 meeting, the Executive Director informed the Commissioners that Malcolm Pirnie's contract had expired and recommended that the Commission extend the contract to permit Malcolm Pirnie to complete tasks that were currently underway, including privatization consulting services. In the ensuing discussion, one Commissioner asked and was informed that the total dollar amount of the original contract with Malcolm Pirnie was $56,000. The Commissioner then asked how much Malcolm Pirnie had been paid under the contract, and the Executive Director estimated the total amount at approximately $500,000.[18] The two Commissioners who had earlier raised concerns about approving a "blank check" expressed surprise that such a large amount had been expended without their knowledge. According to a transcript of the meeting, the

[17] Billings to the Commission show that CDM continued to play a minor role in providing privatization consulting services through February 1999 but that Malcolm Pirnie essentially took over this work in November 1998.

[18] Billing records show that in fact the Commission had paid Malcolm Pirnie $906,725 for privatization consultant services as of April 4, 2000.

Commissioners voted unanimously to table the motion to extend Malcolm Pirnie's contract until they were provided with additional information. However, a hand-written entry in the Commission's files indicates that the Commissioners voted on April 4, 2000 to "continue open-ended contract" with Malcolm Pirnie.

Over the following two years, the Commission made at least two half-hearted attempts to procure a new general engineering services contract through a competitive process. Both of these attempts were abandoned, and Commission staff continued to pay Malcolm Pirnie for privatization consulting services as well as other engineering services under Amendment 1 to the one-year general engineering services contract awarded in July 1997.[19] The seemingly uncontrolled cost of this questionable arrangement continued to mount. By March 28, 2001, the Commission had paid Malcolm Pirnie $1,528,649 for privatization consulting services under a noncompetitive contract amendment.

[19] On April 14, 2000, the Commission issued a new RFP for a one-year general engineering services contract. The RFP contained the same broad scope of work as the contract awarded to Malcolm Pirnie two years earlier, including conducting reviews of annual budgets, capital improvement programs, and user rates, and assisting the Commission with 20-year O & M contracts. The estimated maximum contract amount was $60,000. The Commission received two proposals, one from CDM and another from the design firm of Tutela Engineering Associates, Inc., but no proposal from Malcolm Pirnie. On May 15, 2000, the Commission cancelled the procurement and returned both proposals unopened. On May 19, 2000, the Commission again issued an RFP for a one-year general engineering services contract. This RFP contained an even broader scope of work, including the preparation of an engineering and financial report for bonding, in addition to all of the other tasks outlined in the RFP issued the previous month, and an estimated maximum amount of $90,000. This time, the Commission received four proposals, including one from Malcolm Pirnie. The proposal evaluation committee rated all four proposals for technical merit, and ranked the CDM and the Malcolm Pirnie proposals equally, as the most advantageous. While the two proposals were deemed equal with respect to non-price criteria, the CDM proposal carried a significantly lower price than the Malcolm Pirnie proposal.

The outcome of this RFP process was not presented at a Commission meeting, and the Commissioners did not vote to award a contract or to reject the proposals. Although the Commission did not award a new general engineering services contract, the Commission staff continued to pay invoices from Malcolm Pirnie for privatization consulting services under Amendment No. 1 to the expired July 1997 one-year, $56,168 contract.

Finding 17b. The hourly rates Malcolm Pirnie charged for privatization consulting services were substantially higher than the rates Malcolm Pirnie had proposed for the competitively procured general engineering services contract.

Amendment 1 to Malcolm Pirnie's contract contained a new schedule of hourly rates for privatization consulting services. The hourly rates under this sole-source agreement were substantially higher than the rates Malcolm Pirnie had proposed for the competitively procured general engineering services contract. Malcolm Pirnie had proposed rates of $101 and $150 per hour for the top two work classifications under the general engineering services contract; the rates for these classifications under Amendment 1 increased to $175 and $195 per hour, representing price increases of 73 percent and 30 percent, respectively.[20]

Finding 17c. The Commission's open-ended agreement with Hawkins, Delafield & Wood cost ratepayers more than $1.5 million over the first three years.

The HDW retainer agreement contained a general scope of services, including advice, consultation, and assistance with drafting RFPs and reviewing proposals; representation in the negotiation and execution of contracts and participation in meetings and discussions. For these services, the contract called for the Commission to pay HDW at the rate of $215 per hour of attorney time. The contract contained no schedule, no budget, no estimated total cost, and no maximum dollar amount.

HDW billed the Commission at an average rate of more than $40,000 per month for privatization assistance over the first three years of this agreement, and the cost to the ratepayers as of October 2000 had mounted to more than $1.5 million.

[20] Billing records for March 2001 show that Malcolm Pirnie charged $216 per hour for one of its consultants; the Office found no records indicating that the Commission agreed to this rate increase.

Finding 17d. After the Office requested documentation, Hawkins, Delafield & Wood acknowledged that $3,295 in travel expenses reimbursed by the Commission had been billed in error.

The HDW contract required the Commission to reimburse HDW for a variety of expenses, but did not require HDW to document its expenses. The contract stated:

> The Commission further agrees to reimburse the Firm, in accordance with the procedures set forth in this Section, for telephone, fax, mail, messengers, federal express deliveries, document reproduction, travel lodging and meals, client-requested clerical overtime, and similar out-of-pocket expenses charged by the Firm as a standard practice to its clients generally.
>
> The individual time and disbursement records customarily maintained by the Firm for billing evaluation and review purposes shall be made available to the Commission in support of bills rendered by the Firm.

Of $1.55 million in fees and expenses billed to the Commission between August 1997 and October 2000, HDW was reimbursed for $92,564 in travel and meal expenses. HDW's monthly billings did not itemize the expenditures. HDW did not provide, and the Commission did not request, documentation to substantiate these expenses.

The Office asked HDW to provide documentation, including expense reports, descriptions of the nature of each expenditure, and invoices or receipts, to support non-airline expense items in excess of $200 reimbursed by the Commission. These expense items related to $31,700 in reimbursements.

The Office initially requested documentation from HDW in November 2000 relating to $9,018 in travel and meal expenses reimbursed by the Commission in calendar year 2000. HDW responded with a letter stating that $1,300 out of the $9,018 in expenses had been "inadvertently" charged to the Commission. The letter also stated that HDW had discovered these erroneous charges during a fourth quarter review of the Commission's invoices "independent from this response." Billing records show that HDW credited these charges back to the Commission on December 20, 2000, six weeks after the Office requested supporting documentation.

In March 2001, the Office sent a second request to HDW, this time seeking documentation relating to $22,799 in travel and meal expenses reimbursed by the Commission between August 1997 and October 2000. HDW responded by providing documentation for some expenditures. However, HDW determined that of the $22,799 in expenses, $1,996 were charged to the Commission in error. HDW also stated that these erroneous charges had been credited back to the Commission. However, these credits had not appeared on HDW's billings to the Commission as of December 20, 2000, the date of the most recent HDW billing provided to the Office.[21]

In total, HDW determined that $3,295 of the travel and meal expenses for which the Office requested documentation had been erroneously charged to the Commission. The billing records show that these charges were not credited back to the Commission until December 2000, after the Office sought documentation, even though some of these erroneous charges related to expenses incurred in 1997.

Charges erroneously billed to and reimbursed by the Commission include:

- $321.41 car rental on October 8, 1997
- $264.54 meal on May 6, 1999
- $202.00 unspecified expense on June 7, 1999
- $390.00 for hotel expenses on July 26, 1999
- $359.00 for unspecified travel expenses on February 3, 2000
- $286.72 for unspecified travel expenses on August 1, 2000
- $195.15 for unspecified travel expenses on May 2, 2000
- $234.15 for unspecified travel expenses on August 2, 2000

[21] In a letter to the Commission on March 19, 2001, the Office requested all billings received from HDW relating to work performed or expenses incurred after October 1, 2000. In a letter to the Office dated April 11, 2001, the Commission indicated that it had received no HDW billings since December 20, 2000. In that letter, the Commission indicated that its response would be supplemented when additional billings were received. As of June 20, 2001, the Commission had provided no additional HDW billings, although HDW had continued to provide privatization services. This suggests that HDW discontinued its billings to the Commission after the Office began to review the billings in November 2000.

- 224.53 for unspecified travel expenses on September 6, 2000

Finding 17e. The Commission reimbursed Hawkins, Delafield & Wood for $4,697 in undocumented travel and meal expenses that cannot be verified.

In addition to the $3,295 in erroneous charges identified by HDW following the Office's two information requests, HDW acknowledged that it was unable to locate receipts or other documentation to back up a total of $4,697 in charges for expenses billed to the Commission between August 1997 and October 2000.

HDW stated that the documentation was lost "due to likely misfiling or misplacing of supporting receipts by back office staff." In each case in which backup documentation had been lost, the costs had been incurred in connection with Commission-related business "to the best of our recollection," the law firm stated. Examples include:

- $1,186.23 for unspecified expenses from January 24 - 26, 1998
- $350.60 for unspecified expenses on March 2, 1998
- $394.90 for unspecified expenses on March 9, 1998
- $343.07 for unspecified expenses on May 6, 1998
- $198.65 for unspecified expenses on November 19, 1998
- $504.49 for unspecified meals and transportation in March 1999
- $1,347 for unspecified travel expenses in August and September 1999

In addition to the expenses for which HDW could provide no documentation, the Office observed numerous instances in which the documentation HDW provided lacked basic information. For example, HDW provided several meal receipts with the tops torn off so that the name of the restaurant could not be determined.

In a letter to the Office, HDW stated that the names of restaurants and identities of individuals present would have to be based on the "best recollection" of the attorney who submitted the reimbursement request, since no records existed.

Finding 18. Costs incurred for privatization consultants produced pressure on the Commission to enter into the DBO contracts regardless of whether they represented good deals for the ratepayers.

The Mayor of Lynn assumed control of the Commission in December 1997 in order to undertake an innovative approach to procurement with the hope of achieving substantial cost savings under the two contracts. The Mayor had been convinced of the potential benefits from this innovative procurement approach, but also recognized that it did not guarantee a more favorable deal than the traditional approach. On balance, the Mayor saw relatively little risk in the experiment. The Mayor explained his reasoning in a meeting of the Commission on January 24, 1998:

> . . .I'd like to try it knowing that the worst case we end up in is, we might lose a few months doing this and we can go back to the traditional mode, . . . What's the worst we lose? Two or three months.

But the Mayor failed to realistically gauge the investment in both time and consultant fees that the complex procurement processes would require. The RFP process and contract negotiations for the East Lynn CSO Project took more than three years and the procurement of the 20-year DBO wastewater treatment contract took three and one-half years. The Commission's costs for privatization consultants over this period mounted to more than $3 million.

The Commission's RFPs for the CSO and the 20-year DBO contracts provided mechanisms for financing the cost of the privatization consultants for these procurements. The RFP for the East Lynn CSO Project called for the selected proposer to reimburse the Commission for these costs:

> The Selected Proposer will be required to reimburse the Commission for costs associated with conducting this procurement process, including costs for legal, financial, and technical costs. The Company will be required to make the required payment to the Commission on the Commencement Date.

The RFP for the 20-year wastewater treatment plant contract initially indicated that the contractor selected would be required to reimburse the Commission an amount not to exceed $1 million for procurement-related costs. The RFP was subsequently amended

through an addendum that eliminated the $1 million cost ceiling and obligated the Commission to repay the contractor over the 20-year contract term at an interest rate of five percent.

Having chosen this method for financing its consultant costs, the Commission could not readily scrap the proposals and start over with a traditional planning and procurement process. By the time the contracts were negotiated, the Commission had spent $3 million on privatization consultants and was under pressure to go forward with the contracts in order to get these costs reimbursed by U.S. Filter.

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V. Conclusions

The Commission's procurement of a complex, DBO contract for the East Lynn CSO Project generated no real competition. The resulting contract burdens ratepayers with unnecessarily high construction costs while failing to guarantee that the project will prevent sewer overflows and flooding problems.

Although the East Lynn CSO Project has been touted as an innovative DBO project requiring special procurement legislation and the services of sophisticated privatization consultants, the contract calls for U.S. Filter to perform an ordinary, public works construction project. There is nothing innovative about U.S. Filter's proposal to build a new, small-diameter, sanitary-only sewer. U.S. Filter's construction subcontractor will install sewer pipes and perform standard construction tasks that lend themselves to competitive bidding. The construction work under the U.S. Filter contract will be performed by the same contractor who has performed most of the work under the Commission's previous sewer separation contracts, but the cost to the Commission will be substantially higher.

Contrary to the optimistic expectations of the Mayor of Lynn, the contract with U.S. Filter contains neither an enforceable performance guarantee nor a guaranteed fixed price for the sewer separation work. Under the final negotiated contract, the Commission, not U.S. Filter, will be responsible for ensuring that the design for the new stormwater and sanitary-only sewers provide adequate capacity to prevent sewer overflows and flooding problems. U.S. Filter has already increased its proposed $48 million design-build price by $8.4 million to cover the cost of work overlooked in its proposal. This price increase, along with the cost for construction work required but not included in U.S. Filter's design-build price, will likely increase the Commission's project costs to more than $86 million.

The high cost of construction for the East Lynn CSO Project is not surprising given the absence of competition for the DBO contract. The only two proposals came from companies owned and controlled by the same corporation. Moreover, because the two proposals called for completely different scopes of construction work, comparing the costs and risks of the proposals was a complicated and problematic task.

Representations made by the Commission's consultant, Malcolm Pirnie, and Lynn officials regarding cost savings allegedly produced by the DBO approach are inaccurate and misleading. Malcolm Pirnie's analysis, "Cost Comparisons of the East Lynn CSO Abatement Projects," reached the conclusion that U.S. Filter's design-build price was lower than conventional bid prices. However, this analysis was based on an invalid cost comparison of different types of construction work. By contrast, the Office's cost estimates show that U.S. Filter's $47 million design-build price was approximately $22 million higher than prices for similar sewer separation work produced by competitive bidding.

The Chairman of the Commission and the Mayor of Lynn have publicly claimed that the U.S. Filter contract stands to produce $400 million in cost savings when compared with a 1990 plan to construct a tunnel/pumpback facility for CSO abatement. This cost savings claim was not supported by the engineering cost estimates for tunnel/pumpback facilities prepared by the Commission's own consultants. Actual cost estimates prepared by CDM for the construction, operation, and maintenance of the tunnel/pumpback facilities, adjusted to 2000 dollars, yield a 20-year, net present value cost of $90 million for the CSO approach CDM recommended in 1990. Based on this comparison, it is not clear whether the U.S. Filter approach, which will likely cost more than $86 million, is more cost-effective than the tunnel/pumpback plan. But more importantly, the Mayor's notion that the U.S. Filter contract for sewer separation is a good deal because it costs less than the tunnel/pumpback plan is a red herring. Comparing U.S. Filter's design-bid price with the cost of similar, competitively bid construction work shows that the East Lynn CSO Project is a bad deal for the ratepayers.

The Commission's procurement of a 20-year DBO contract for the wastewater treatment plant generated no real competition and resulted in higher operation and maintenance costs that the Commission would likely have paid under a succession of five-year contracts.

As was the case for the East Lynn CSO Project, the only two proposals the Commission received for the 20-year wastewater treatment plant contract were submitted by

companies owned and controlled by Vivendi. The high cost of developing a proposal for such a complex contract as well as U.S. Filter's longstanding contractual relationship with the Commission may have deterred potential competitors. The findings in this report show that the net result of this long and costly procurement process was a contract that will likely result in higher costs to ratepayers than would a competitively procured five-year contract.

Although Malcolm Pirnie performed an analysis that purported to show that the 20-year DBO contract would result in cost savings of up to $24.8 million in comparison to the five-year contract in effect in 1999, the Office found that $17 million of these alleged savings – 70 percent – disappeared when Malcolm Pirnie's overstated cost assumptions were corrected to reflect the Commission's actual data. In addition, the Office found that Malcolm Pirnie's analysis failed to take into account cost adjustment factors that could lead to increased costs under the 20-year DBO contract. Finally, the Office found that a competitive proposal U.S. Filter submitted to the Commission in 1996 offered lower projected costs than the 20-year DBO contract.

The Commission's strategy of allowing proposers to compete for both the CSO contract and the 20-year DBO wastewater treatment plant contract failed to produce a competitive price for either contract. U.S. Filter may realize operating cost savings resulting from its CSO work, which is expected to reduce flows to the wastewater treatment plant. However the findings in this report show that the savings will likely translate to increased profits for U.S. Filter rather than lower rates for the Commission ratepayers.

The Commission began this venture in innovative contracting in 1996 by hiring CDM to prepare an efficiency study to identify potential savings in capital and operating costs. In the 1997 efficiency study, CDM advised the Commission that the most promising avenue for reducing costs was the implementation of operational changes that would allow the staffing level at the wastewater treatment plant to be reduced. U.S. Filter has indicated that it plans to increase the efficiency of plant operations and reduce the

staffing level by 20 percent. However, the anticipated savings from these efficiency gains are not reflected in the contract price and will not benefit the ratepayers.

The Commission will have little leverage in negotiations with U.S. Filter over price adjustments under the 20-year DBO contract.

The Commission's 1996 RFP process for a new five-year operation and maintenance contract generated a competitive proposal from U.S. Filter that would have reduced the Commission's annual costs by more than $500,000. This cost differential indicates that the 1991 contract price had become inflated as a result of negotiated amendments that increased U.S. Filter's compensation. It also demonstrates the power of competition to provide incentives for efficiency and to ensure that ratepayers benefit from cost savings.

As the findings in this report show, the 20-year DBO contract awarded by the Commission does not appear to offer the ratepayers any savings when compared with the 1996 proposed price for a five-year contract. The 20-year contract contains complex price adjustment provisions to allow U.S. Filter to pass through its increased costs over this long contract term. When U.S. Filter seeks cost increases in future years, the Commission will have less information than U.S. Filter to determine whether the cost increases are necessary or justified and will therefore be at a disadvantage in the negotiations. Moreover, because the 20-year contract term effectively insulates U.S. Filter from the threat of potential competition, U.S. Filter will have little incentive to bargain. Without the potential to periodically test the market by seeking competitive prices, the Commission will have little leverage in its future dealings with U.S. Filter.

VI. Appendices:

Note: Signatures on certain scanned documents have been deleted for the Internet version of the report.

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MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS & CONSULTANTS

August 31, 2000

Mr. Stephen L. Smith
Executive Director
Lynn Water & Sewer Commission
400 Parkland Avenue
Lynn, MA 01905-1138

Re: Cost Comparisons of the East Lynn CSO Abatement Projects

Dear Mr. Smith:

Malcolm Pirnie has completed the cost comparisons of the East Lynn CSO Abatement Projects; USFilter's CSO Abatement Proposal, Modern Continental's CSO Abatement Proposal, and the constructed Sewer Separation Projects SS-1 through SS-6.

Malcolm Pirnie was requested by the LWSC to perform a comparison between the two (2) separation proposals, and a comparison of the two (2) proposals with the recently completed projects in East Lynn (SS-1 through SS-6). Concern has been raised that the CSO design/build separation proposal costs will be more expensive than the traditional design, bid, and build procedure used for SS-1 through SS-6.

COMPARISON OF USFILTER AND MODERN CONTINENTAL PROPOSALS

A comprehensive comparison of USFilter and Modern Continental Proposals was performed by the Evaluation Committee in December 1999 to determine the most advantageous proposal for separating the City's combined sewer system in East Lynn. This evaluation report will be finalized once negotiations are completed with USFilter. The report will provide an evaluation, ranking, and comparison of the work proposed, and the cost proposals.

In addition, LWSC prepared a summary of the proposals, dated November 3, 1999. The summary describes the East Lynn CSO abatement measures project history, request for proposals (RFP), summary of proposal participants, proposal overviews, price proposals, and other project related issues.

Through this process the Evaluation Committee determined that USFilter's East Lynn

MALCOLM PIRNIE, INC. 500 EDGEWATER DRIVE SUITE 566 WAKEFIELD, MA 01880 781-224-4488 fax 781-224-3033

CSO Abatement System Proposal is the most advantageous to the City.

COMPARISON OF THE TWO PROPOSALS TO SS-1 THROUGH SS-6

Malcolm Pirnie performed an in-depth comparison of the USFilter (the company currently being negotiated with) proposal versus the recently completed East Lynn sewer separation projects, SS-1 through SS-6. In addition, general overview and comparison of the Modern Continental proposal to the SS-1 through SS-6 projects is included at the end of this section.

The actual design, professional engineering (PE), resident engineering (RE), and construction costs for SS-1 through SS-6 were obtained from LWSC. The design, professional engineering, and resident engineering costs were adjusted to remove non-CSO sewer separation costs; Sewer Rehabilitation Contract 1 and Tide Gate Contract TG-1B. In addition, the design, PE, RE, and construction costs were adjusted to remove work performed under SS-1 through SS-6 that is not included in the USFilter guaranteed proposal. These items include water work, sewer work, bridges, sidewalks, contaminated materials, and special utility crossings. The modified construction cost for SS-1 through SS-6, constructed between the years of 1993 to 1998, were adjusted to present day dollar value by the ENR Index. By adjusting these costs, we were able to perform a more viable comparison between the proposed and constructed projects.

The USFilter project costs include the planning, engineering & design, permitting, guaranteed construction, and other related sewer separation costs. In addition, the project costs include cleaning and television inspection of all existing combined and sanitary sewers; GIS system that encompasses the entire city; and a sewer cleaning equipment package. Optional items such as water main rehabilitation, sewer rehabilitation and sewer television inspection & cleaning were not included in the comparison.

We compared the cost per linear foot of pipe and the cost per acre of separated areas. The USFilter proposal is approximately twenty-six percent (26%) less per linear foot of pipe installed, and forty-one percent (41%) less per acre separated than the costs incurred in SS-1 through SS-6. A detailed table is enclosed at the end of this report, and the following table summarizes our findings.

Project	Total Modified Project Costs	Pipe Length (lin. ft.)	$/lin. ft.	Acreage	$/acre
SS-1 through SS-6	$16,040,946	31,296	$513	264	$60,874
USFilter Proposal	$48,078,143	126,156	$381	1,330	$36,149

The Modern Continental proposal is approximately one percent higher per linear foot and acre, to SS-1 through SS-6. For the Modern Continental comparison we used a project cost of 81.5 million dollars, pipe length of 31 miles, and assumed the acreage to be comparable to USFilter's proposal.

FACTORS INVOLVING COST COMPARISON

Several factors need to be considered when comparing the USFilter proposal to the sewer separation projects, SS-1 through SS-6. Most of USFilter's sewer separation will be accomplished by the installation of new sewers versus new drainpipes installed previously. The size of the sewer pipelines is smaller and will be installed at shallower depths.

The majority of USFilter's sewer separation is to be installed in a heavily congested residential and commercial areas of the City. The logistics of keeping roads and businesses open will be extremely difficult and cause the cost of constructing this project to be higher than the cost of constructing sewer separation contracts SS-1 through SS-6. The additional construction cost for dealing with these issues is included in USFilter's price proposal. This fact further substantiates the conclusion that USFilter's design/build separation cost will result in a substantial cost saving to the rate payers of the City of Lynn over the traditional design, bid and build procedure used for SS-1 through SS-6.

USFilter design, build, and acceptance testing puts the liability of successfully completing the project on USFilter versus the Commission.

CONCLUSION

As anticipated at the beginning of this project, design and build appears to be the most advantageous combined sewer overflow abatement approach for the Commission in response to the mandated Consent Decree requirements.

If required, we can supply you with a copy of supporting documentation of this cost comparison. If you have any questions or comments, please contact me at (781)224-4488.

Very truly yours,

MALCOLM PIRNIE, INC.

William A. Di Tullio, Jr., P.E.
Senior Associate

Enclosure

3486002

LWSC - East Lynn Construction Cost Comparison
MODIFIED

Project	Original Design Cost	Original Constr. Cost	Original RE/PE Costs	Modified Design Cost [1]	Modified Constr. Cost [2]	Modified RE/PE Cost [1]	Total Modified Project Cost [3]	Pipe Length (lin. ft.)	[6]
SS-1 [4]	$200,000	$726,323	$82,560	$132,000	$476,830	$54,489.60	$663,320	2,222	$299
SS-2/SS-3 [5]	$200,000	$3,989,097	$842,111	$191,400	$3,327,656	$555,793	$4,074,849	5,264	$774
SS-4/SS-5/SS-6	$387,604	$15,154,306	$1,302,303	$255,910	$10,128,038	$918,919.98	$11,302,777	23,810	$475
Summation of Contracts SS-1 through SS-6							$16,040,946	31,296	$513
USFilter Proposed CSO Abatement							$48,078,143	126,156	$381

Notes:
(1) 66% of Original Design or RE/PE $. The Average of 'other work' in Contracts SS-1 through SS-6 was 34%.
(2) Modified Construction $ = Original $ - Other Work $ - Mobilization Costs and Pavement $ associated with Other Work.
(3) Total Modified Project $ = Mod. Design $ + Mod. Constr. $ + Mod. RE/PE $
(4) Adjusted to exclude Rehabilitation Contract No. 1.
(5) Adjusted to exclude TG-1.
(6) Total Modified Project Cost / acreage
(7) The unknown rock and boulder excavation quantity for USFilter proposal is not included. Quantity should be minimal due to shallow installation depths.
(8) Project SS-1 through SS-6 Modified Constr. Cost adjusted to present day cost by the use of the ENR Index.

Sewer separation acreage performed under Contracts SS-1 through SS-6 = 263.51

Cost per acre [6] for SS-1 through SS-6 = $60,874

Sewer separation acreage proposed under USFilter's CSO Abatement = 1,330

Cost per acre [6] for USFilter = $36,149

Appendix 2.

City of Lynn

Combined Sewer Overflow Program

A Standards Based Approach

Executive Summary

Contact:

Pat McManus, Co-chair, Urban Water Council
Mayor, City of Lynn
Lynn, MA 01901
(781) 599-1444

SUMMARY

The Lynn Water & Sewer Authority (LWSA) recently completed a Design/Build (DB) Competition for a Combined Sewer Overflow (CSO) Project. As a result of the efforts, a new technological approach resulting from the competition, the LWSA reduced traditional design costs and construction from $450,000,000 to $48,000,000 – a savings of $402,000,000.

The savings developed by using a Standards Based Approach – the RFP took the same standards the EPA would hold the City of Lynn to and put them in the RFP. In simple terms, the Lynn RFP stated "here is the standard we must meet – tell us the best and most economical way to get there." The operators, contractors, consultants, engineers, and financiers then team together to present bottom-line, lowest cost proposals. The RFP asked specifically for comparisons of traditional design and cost strategies and innovative technological approaches. The proposers were then required to guarantee their approach and cost.

The result was a project that saved over $400,000,000 and came in at less than 11% of original cost.

I. CONSENT DECREE

The City of Lynn (COL) and Lynn Water and Sewer Authority (LWSA) entered into a Federal/Consent Decree in 1990 to initiate Phase I of a CSO Project.

The decree required the COL to reduce sewerage overflows into Lynn Harbor to 4 overflows per year. The overflows result from a combined sewerage and storm water system that would co-mingle raw sewerage and storm runoff water during heavy rains and snow thaws.

The original proposal required a 1 1/2-mile10-ft. in diameter tunnel through bedrock, and a 5 million-gallon storage tank. The overflows would then be stored during peakflows and run through the LWSA wastewater treatment plant during reduced flows. The total cost of the tunnel/and storage tank was $275,000,000 +/-. Included in cost estimates are design, construction, debt service, and maintenance costs.

II. EVALUATION AND PROCESS

In November, 1995 a LWSA Commissioner announced a 53% increase in water rates for that year. The Mayor and City Council President agreed that was unacceptable. The COL began evaluating the existing plan and agreed a change was necessary.

The COL began speaking with numerous interested parties – operators, contractors, consultants, engineers, organized labor, environmental groups, and the USCM Urban Water Council. After evaluations, it was determined that - at a minimum – the tunnel could be expanded sufficiently to store online all the 5 million gallons in the storage tank, and subsequently avoid building the tank.

Discussions were held with the EPA about the new plan, and the EPA noted that if costs could be reduced, given that Lynn was phasing in the Clean Water Act requirements due to a lack of affordability, the savings should go to meeting a higher standard. (The Clean Water Act requires 0 overflows. The EPA noted it did not have the authority to override congressional intent).

After discussions, it was agreed that Lynn would meet a higher standard – 2 ½ overflows a year – and keep the balance of the savings.

As discussions were continued regarding the CSO Project, it became apparent that storage might not be the best process to address Lynn's CSO problem. The EPA and Mass. Department of Environmental Protection (DEP) agreed to allow a new concept – a design, build, operate (DBO) proposal based on the SBA. The EPA and DEP requested that traditional processes, as well as innovative processes be evaluated.

The Lynn RFP noted that Lynn must meet the 2 ½ overflows per year standard, and asked for proposals based on "storage, or separation, or any other technical approach" to meet the 2 ½ overflows. The RFP required a performance and financial guarantee of a proposal.

Procurement Laws in Massachusetts did not allow a DBO format, so a Special Act of the Legislature was passed to allow Lynn to proceed with a DBO, as well as a 20 year operation and maintenance contract on the wastewater treatment plant.

The two proposals were independent of each other, were issued separately, and were evaluated separately. Either of both could be responded to.

The Wastewater Treatment Plant had a private operator since its inception. The operator had a 5-year contract. The DBO on the plant allowed a 20 year operation contract, and a Standards Based Approach on all capital improvements. The logic was to allow operators and contractors to propose the best capital improvement plan, and then determine what manning levels would be required. Employees of the wastewater treatment plant were given a 20-year job guarantee.

The COL conducted additional studies to determine the cost of full compliance with the Clean Water Act (0 overflows). It was determined that full separation of the CSO was necessary to become fully compliant with the Clean Water Act, at a cost of $175,000,000. It was determined that the total cost under the Federal Consent Decree to become fully compliant with federal Law was $450,000,000.

III. WINNING PROPOSAL

The winning proposal was an innovative approach that will cost the COL $48,000,000 (10.7% of original cost). The new proposal recommended taking the existing storm water runoff system and the existing sewer system and using them as a single system for storm water. This would expand the storm water system capacity and reduce floods in the city. A new sewerage collection system would then be built. Because the sewerage pipes are smaller than the storm water pipes, the cost was greatly reduced.

The evaluation process of proposals was difficult, requiring a street by street analysis of the system to ensure that capacity would be sufficient. The winning proposer - U.S. Filter – was required to guarantee the project and the cost by agreeing to insure the project significantly beyond the cost of the project, and to insure it would work.

The winning proposal reduces Lynn's overflows to 0 – full compliance with the Clean Water Act.

(Additionally, the wastewater treatment plant proposal - estimated originally as costing $200,000,000 – came in at $110,000,000 (55%). The $90,000,000 savings came from retooling the plant with new equipment under the SBA. The winning proposer – Aqua Alliance – guaranteed their work and cost.

IV. CONCLUSION

The dramatic cost savings the City of Lynn received was the result of a Standards Based Approach competition. The proposers were required to compete against each other in design, construction and price. The proposers were required to guarantee standards would be met, and their price would be met.

The EPA and DEP were partners with Lynn in this project – they worked with the City and potential proposers during the process to assist in finding the best solution.

The result - a cost reduction from $450,000,000 to $48,000,000 (10.7%) resulted in a $402,000,000 savings for the City of Lynn. The City will be fully compliant with the Clean Water Act at the completion of the project in 2009. Additionally, the COL will have repiped 80% of the city's water and wastewater collections systems.

The Standards Based Approach, coupled with a Design Build competition served the City of Lynn and Lynn's environment well.

For additional information or copies of the RFP, contact:

Patrick McManus
Mayor, City of Lynn
Lynn, MA 01901

(781)599-1444

CDM Camp Dresser & McKee Inc.

consulting
engineering
construction
operations

One Cambridge Place
50 Hampshire Street
Cambridge, Massachusetts 02139
Tel: 617 452-6000 Fax: 617 452-8000

Appendix 3.

January 18, 2001

Bill Reinhardt, Editor
Public Works Financing
154 Harrison Avenue
Westfield, NJ 07090

Subject: Letter to Editor in Response to North American Project Brief
"Lynn, MA CSO Design-Build"
December 2000 Issue

tor:

In the December 2000 issue of *PWFinancing* it was reported that Lynn's $48 million CSO design-build project is being conducted as an alternative to "the estimated $400 million cost of a tunnel storage system proposed 11 years ago by Camp Dresser & McKee Inc." (North American Project Briefs, Lynn MA, CSO Design-Build). We would like to point out that the CSO design-build project Lynn is undertaking is in lieu of implementing an approximately $62 million CSO storage tunnel, treatment and pumpback facility.

In 1990, the USEPA, Region 1, approved a $135 million (1990 dollars) CSO long term control plan for Lynn. At that time the plan called for a CSO storage tunnel, treatment and pumpback facility with a planning cost estimate of $56 million (1990 dollars). Camp Dresser & McKee (CDM) was the city's engineering consultant for the CSO facilities plan and implementation of the first two phases of the plan up through 1998. In July 1998, at the request of the city, CDM revised its planning cost estimate (engineering and construction) for the above mentioned project to approximately $62 million (1998 dollars).

The CSO design-build project presently being implemented by the city is largely a sewer separation project that will take the place of the entire storage tunnel, treatment and pumpback facility that was included in the EPA approved long term control plan back in 1990. The $400 million figure referenced in the article is not the cost of the storage tunnel project but represents the cumulative costs of water and wastewater system operation and maintenance, CSO control plan projects, significant improvements to the wastewater and water treatment plants, significant replacement of the wastewater collection and water distribution systems, debt service on all capital improvements, and operation and maintenance of the water and wastewater systems over approximately twenty years. This figure was developed by CDM (Affordability of the Recommended CSO Program, CDM, 1992) for the city to use in its CSO affordability negotiations they had with USEPA Region 1 in 1992.

CDM appreciates the opportunity to clarify this matter.

Very truly yours,

CAMP DRESSER & McKEE INC.

Paul E. Demit
Principal

Appendix 4.

Annual Costs of Contract Operations Under 1991 Contract: Malcolm Pirnie Estimates

All costs are in 2000 dollars

Malcolm Pirnie's estimated Lynn WWTP costs under 1991 contract

Item	Operations	Interim (1)
Telephone	3,283	3,283
Treatment Chemicals	49,056	49,056
Laboratory Services	7,248	7,248
Permit Monitoring	39,711	39,711
Contract Operations	5,397,229	5,397,229
Sludge disposal	244,500	2,223,848
Repair & Replacement (2)	539,723	539,723
Lotepro	26,625	26,625
ENSR	17,216	0
Total Cost	$6,324,591	$8,286,723

(1) Annual costs prior to implementation of sludge handling improvements

(2) 10% estimate; 5% estimate= $269,861

Corrected estimated Lynn WWTP costs under 1991 contract

Item	Operations	Interim (1)
Telephone	3,283	3,283
Treatment Chemicals	49,056	49,056
Laboratory Services	7,248	7,248
Permit Monitoring	39,711	39,711
Contract Operations (2)	**4,670,122**	**4,670,122**
Incinerator and dewatering equipment repair and maintenance adjustment (3)		**(132,000)**
Incinerator/landfill credit, electricity, and polymer costs adjustments (3)		**(170,593)**
Sludge disposal cost (4)	**72,000**	**2,392,551**
Repair & replacement (5)	**50,000**	**50,000**
Lotepro	26,625	26,625
ENSR	17,216	0
Total Cost	**$4,935,261**	**$6,936,003**

Note: Bold numbers indicate OIG changes to Malcolm Pirnie estimates.

(1) Annual costs prior to implementation of sludge handling improvements

(2) LWSC actual expenses (7/99--6/00). 11/2/00 letter from LWSC.

(3) Credit by U.S. Filter for not operating the sludge dewatering equipment, incinerator, and landfill. 1/4/99 letter from U.S. Filter.

(4) $72,000 is backup sludge disposal only; ash disposed at landfill.
$2,392,551 is based on LWSC actual expenses from 7/99-6/00. 11/2/00 Letter from LWSC.

(5) Based on LWSC historical data. Most repair and replacement items are included in current contract.

Appendix 5.

20-year Present Value Costs: 1991 Contract versus 20-year DBO Contract

All costs are in 2000 dollars

OIG corrected costs under 1991 WWTP contract

Year	1	2	3	4	5	20	PV (6.5% rate)
O&M (yrs 1-3) (1)	**6,936,003**	**7,213,443**	**7,501,981**				
O&M (yrs 4-20)	**4,935,261**	**5,132,671**	**5,337,978**	**5,551,497**	**5,773,557**	**10,397,851**	**80,158,500**
Insurance	56,128	58,373	60,708	63,136	65,662	118,253	849,028
Capital Improvement Cost	1,404,981	1,404,981	1,404,981	1,404,981	1,404,981	1,404,981	15,480,793
20-year present value cost							$96,488,321

Note: Bold numbers indicate changes to Malcolm Pirnie's estimates.

(1) O&M Interim Operations (See Appendix 4)

Costs under U.S. Filter's 20-year DBO contract

Year	1	2	3	4	5	20	PV (6.5% rate)
O&M	5,698,798	5,869,762	6,045,855				
	4,224,837	4,351,582	4,482,130	4,616,593	4,755,091	7,408,277	62,854,661
Pass through costs (yrs 1-3)	942,982	971,271	1,000,410				
Pass through costs (yrs 4-20)	967,161	996,176	1,026,061	1,056,843	1,088,548	1,695,923	13,403,368
	1,138,991	1,138,991	1,138,991	1,138,991	1,138,991	1,138,991	12,549,981
20-year present value cost							$88,808,010

Difference $7,680,310

PV Discount Factor (%/yr)	6.5%
Assumed Rate of Inflation	4.0%
Contract term	20 years
Years 6-19 hidden	

Appendix 6.

Annual Costs of Contract Operations: 1991 Contract versus 1996 Competitive Proposal

All costs are in 2000 dollars

OIG corrected annual WWTP costs under 1991 contract (1)

Item	Operations	Interim
Telephone	3,283	3,283
Treatment Chemicals	49,056	49,056
Laboratory Services	7,248	7,248
Permit Monitoring	39,711	39,711
Contract Operations	4,670,122	4,670,122
Incinerator and dewatering equipment repair and maintenance adjustment		(132,000)
Incinerator/landfill credit, electricity, and polymer costs adjustments		(170,593)
Sludge disposal cost	72,000	2,392,551
Repair & replacement	50,000	50,000
Lotepro	26,625	26,625
ENSR	17,216	0
Total Cost	$4,935,261	$6,936,003

(1) See Appendix 4

Annual WWTP costs under U.S. Filter's 1996 competitive proposal

Item	Operations	Interim
Telephone	3,283	3,283
Treatment Chemicals	49,056	49,056
Laboratory Services	7,248	7,248
Permit Monitoring	39,711	39,711
Contract Operations (1)	4,123,926	4,123,926
Incinerator and dewatering equipment repair and maintenance adjustment		(132,000)
Incinerator/landfill credit, electricity, and polymer costs adjustments		(170,593)
Sludge disposal cost	72,000	2,392,551
Repair & replacement	50,000	50,000
Lotepro	26,625	26,625
ENSR	17,216	0
Total Cost	$4,389,065	$6,389,807
Difference	$546,196	$546,196

(1) Based on U.S. Filter price proposal (proposed sludge dryer costs were disregarded).
Numbers escalated to Year 2000 using weighted CPI and PPI for Boston region.

Appendix 7.

20-year Present Value Costs: 1996 Competitive Proposal versus 20-year DBO Contract

All costs are in 2000 dollars

Costs under U.S. Filter's 1996 competitive proposal

Year	1	2	3	4	5	20	PV (6.5% rate)
O&M (yrs 1-3) (1)	**6,389,807**	**6,645,399**	**6,911,215**				
O&M (yrs 4-20)	**4,389,065**	**4,564,628**	**4,747,213**	**4,937,101**	**5,134,585**	**9,247,098**	**71,896,396**
Insurance	56,128	58,373	60,708	63,136	65,662	118,253	849,028
Capital Improvement Cost	1,404,981	1,404,981	1,404,981	1,404,981	1,404,981	1,404,981	15,480,793
20-year present value cost							$88,226,217

Note: Bold numbers indicate OIG changes to Malcolm Pirnie estimates.

(1) O&M Interim Operations. (See Appendix 6)

Costs under U.S. Filter's 20-year DBO contract

Year	1	2	3	4	5	20	PV (6.5% rate)
O&M (yrs 1-3)	5,698,798	5,869,762	6,045,855				
O&M (yrs 4-20)	4,224,837	4,351,582	4,482,130	4,616,593	4,755,091	7,408,277	62,854,661
Pass through costs (yrs 1-3)	942,982	971,271	1,000,410				
Pass through costs (yrs 4-20)	967,161	996,176	1,026,061	1,056,843	1,088,548	1,695,923	13,403,368
	1,138,991	1,138,991	1,138,991	1,138,991	1,138,991	1,138,991	12,549,981
20-year present value cost							$88,808,010

Difference ($581,793)

PV Discount Factor (%/yr)	6.5%
Assumed Rate of Inflation	4.0%
Contract term	20 years
Years 6-19 hidden	