OFFICE OF THE CONTROLLER

CITY OF PHILADELPHIA PENNSYLVANIA

ANALYSIS OF THE WATER DEPARTMENT BIOSOLIDS RECYCLING CENTER PRIVATIZATION PROPOSALS

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Analysis of the
Philadelphia Water Department
Biosolids Recycling Center
Privatization Proposals

Background

The Philadelphia Water Department (PWD) operates and maintains one centralized dewatering and composting facility, called the Biosolids Recycling Center (BRC), for the entire City of Philadelphia. This facility, located in the southwest region of the city and operated by PWD, processes liquid sludge that is either pumped to or shipped by barge from three water pollution control plants located within the city. Biosolids are treated sewage sludge solids that have been stabilized to destroy pathogens and meet rigorous standards allowing for safe reuse of this material as a soil amendment.

BRC processes approximately 200,000 tons of liquid sludge annually. Of this, approximately 30% (60,000 dry tons) is processed into Class A biosolids through composting in open aerated static piles, and is utilized locally in gardens, horticultural applications, and recreational sites. The remaining 140,000 tons, Class B biosolids, receives no further processing beyond dewatering. The Class B biosolids are used as fertilizer on agricultural lands and in strip mine reclamation projects in Pennsylvania and other states in addition to being disposed of at landfills.

In May 2004, based in part on the PWD's research into alternative technologies and disposal methods, as well as on the Health Department's Air Management Services ongoing concerns about BRC's nuisance odors, the City of Philadelphia issued a Request for Proposals (RFP) to privatize the management of its biosolids treatment services. The City indicated that the primary objectives for this project are:

- to upgrade the processing facilities at the BRC site;
- to improve odor management and site aesthetics;
- to develop the capacity to process 100% of the liquid sludge from the City water pollution control plants into Class A "exceptional quality" biosolids as defined by the U.S. Environmental Protection Agency; and,
- to manage the beneficial reuse of the product generated.

Delivery of liquid sludge to BRC and any treatment of such sludge prior to delivery will remain the responsibility of PWD.

Two entities were pre-qualified by the City to respond to the RFP; however, only one proposal was received from the team of Philadelphia Biosolids Services, LLC (PBS). PBS is a joint venture of Synagro, the largest biosolids management firm in the United States; McKissack and McKissack, a minority/woman-owned engineering firm and a 20% equity member; and Len Parker Associates, a minority contracting firm and a 10%

equity member. The PBS team also includes Andritz Ruther, a leader in heat-drying technology, the design firm or CH2MHill, and the Whiting-Turner construction firm.

From the standpoint of project costs, the City is seeking to accomplish the privatization objectives at an annual cost (including both capital and operations and maintenance costs) equal to or less than current costs for BRC and related biosolids management activities. For FY2007, the Water Department has a budget of $25.7 million to operate and maintain BRC and dispose of the biosolids (see Exhibit I). BRC's budget includes 110 staff positions of which approximately 96 positions are currently filled.

Controller's Office Review

The Office of the City Controller was asked to review Philadelphia Biosolids Services, LLC's privatization proposal and alternative solutions for the management of the City's biosolids treatment plant that were put forth by AFSCME District Council 33 (DC33), the union representing the employees who would be affected by the privatization proposal. In order to accumulate sufficient data, our office met with PWD staff members, PBS representatives, and individuals representing AFSCME District Council 33. All sides provided detailed information, which allowed the Controller's Office to make specific analyses and recommendations in regards to this matter.

Our preliminary review disclosed two potential areas that raised questions -- environmental issues and financial issues.

Environmental

Our concerns had to do with the safety and quality of life of the surrounding communities. The primary issue with the current facility is the odor that is generated by the composting process. This process uses less than half of the biosolids that need to be processed on an annual basis. The PBS proposal eliminates such an odor.

An alternative proposal from DC 33 would eliminate the composting within the next year. If the composting eradication is successful, it will put an end to the odors as well. It must also be noted that the City has been attempting to purge the composting for years, with little success. However, the DC33 alternative did not satisfy the City's objective of creating Class A product from 100% of the City's liquid sludge. The process presented in conjunction with PBS privatization proposal also removes the odor completely and creates Class A biosolids.

As part of our review, our office visited two Synagro sites that maintain comparable processes and neither had odors. One site was in Ocean County, NJ and the other was in Pinallas County, FL. Both sites were located within close proximity to residential areas. In addition, we requested and received an air quality analysis from a reputable expert in the field of air quality. The analysis didn't show any potential problems generated from the high stack, used in the new process. In fact, the firm's analysis illustrated that odor footprints (maximum odor emissions) of approximately 4000 feet in any direction for the

future biosolids drying facility was approximately 1/3 smaller than the odor footprints of the existing composting operation which is approximately 6000 feet in all directions. Also, the odor emissions from the proposed facility will have no noticeable impact on any residential areas.

A third Synagro site in the Bronx, NY was also visited. Although, this plant generates a large amount of odor, the technology and process use at this facility was not comparable to the process that is being proposed for the City of Philadelphia for several reasons. First, the facility did not use the same Andritz process that is being proposed in Philadelphia. Secondly, the site was not originally designed by Synagro. Finally, the Bronx site was constructed in 1992, ancient history when using the technology of today. Therefore, it was not included in the final analysis.

Financial

PWD prepared various cost-benefit analyses showing the present value of savings over the life of the contract (twenty years). Each version, which is summarized in Table I, added additional costs to the computation and increased the potential savings. We selected the version that was comparable between the two proposals (see Scenario C in Table I). This version had a Net Present Value savings of $93,386,747.

Table I

PWD Cost-Benefit Analyses
Present Value of Saving Over Life of Contract

SCENARIO	NET PRESENT VALUE	CUMULATIVE SAVINGS
SCENARIO A Current BRC Program (FY07 Budget) vs PBS Contract	$89,135,406	$162,241,065
SCENARIO B Current BRC Program (FY07 Budget) vs PBS Contract With Double Vehicle Fuel And Natural Gas in 2010	$41,996,288	$73,120,108
SCENARIO C 100% Landfilling in FY2010 vs PBS Contract	$93,386,747	$177,871,496
SCENARIO D 100% Landfilling in FY2010 vs PBS Contract with Double Vehicle Fuel and Natural Gas in 2010	$62,992,791	$122,576,832

As with any projections, certain assumptions are made. The assumptions for inflation, bond rates, and various other items were reviewed and determined to be reasonable. However, certain additional costs, such as long distance premium and landfill costs, used to increase the projected savings were found to be unreasonable, at best (see Table II).

Table II Bio-Solid Report Financial Assumptions		
	Per Water Department	**Per Controller's Office**
Inflation	3%%	3%
Discount Rate	4.75%	4.75%
Interest Rate on Bonds	4.75%	4.75%
Annual Wet Tons Processed	200,000	200,000
Renewal & Replacement	$2 million/yr.	$.5 million/yr.
Long Distance Premium	$13/ton	$8/ton
Landfill Costs	$62/ton	$70/ton

Table III below is a comparison of the Philadelphia Water Department estimated costs over five years, the Controller's Office calculation of the five years of costs and Philadelphia Biosolids Services projections.

Table III 5-Year Cost of Plant Operation as Calculated by PWD, the Controller's Office and PBS			
Year	**Per PWD**	**Per Controller**	**Per PBS**
2007	25,725,050	23,753,050	19,903,573
2008	21,009,155	18,762,995	20,500,682
2009	21,639,430	19,516,885	21,115,702
2010	29,104,394	25,903,172	24,331,362
2011	29,977,527	26,695,269	24,895,601
5-Year Total	127,455,556	114,831,371	110,746,920

PWD believes the projected costs to be $127.4 million. However, the Controller's Office believes that based upon its computation the estimated costs will be $114.8 million. The difference is attributed to the inflated costs PWD has assigned to various cost categories. Based on these estimates, the projected 5-year cost savings will range from $4.1 million to $16.4 million.

Renewal and Replacement

PWD used an assumption of $2,472,000 for an estimated capital cost to be incurred each year. With the inflationary rate at 3%, the total capital outlay is projected at $80,223,529.

Our review of the capital budget for the prior five years and the subsequent six years showed no major expenditures specifically stated for the biosolids plant. While we recognize the reason for the lack of funds in the subsequent six years, we feel the lack of budgetary significance in the prior five clearly demonstrates the excessiveness in the projection.

The principal piece of equipment used at the current site is a centrifuge; which costs approximately $1 million per unit. With 10 currently in operation at the plant, and a life expectancy of 15 years, we feel a conservative amount of $500,000 per year is needed. This is even more conservative when you consider that four of the units were replaced within the last six years. Furthermore, it is our understanding that all of the centrifuges are not in operation at the same time.

Premium for long distance landfills

PWD determined that there should be an annual premium charge of $2,600,000 for transporting to out of state landfills. With the inflationary rate of 3%, the total additional outlay projects to $69,862,974. This assumes the city will landfill 100% of the biosolids generated. Using 200,000 tons per year, the premium charge equates to a surcharge of $13 per ton.

Our discussions with out of state landfill operators indicated the PWD projection was inflated. The range of landfill costs given to us was between $60 and $70 per ton. Distance did not make a material difference as certain costs such as tipping fees decrease while transportation costs increases.

Our current landfill rate is approximately $62 per ton. Using a conservative approach of taking the highest point in our range ($70), we determined that the premium is inflated by $1 million, an overstatement of 62.5%.

Alternative Process

The Controller's research revealed that a growing number of utilities in the United States are choosing to produce Class A biosolids from their municipal wastewater sludge as a way of reducing their regulatory risk and improving the public image of their sewage treatment programs. The primary challenge for them is deciding on the best method of converting their existing Class B biosolids digestion system into a Class A program.

Our office spoke to numerous plant managers from cities on the east coast and the west coast of the United States to obtain information regarding their biosolids treatment program. Each manager openly discussed their current process and, in some cases, they discussed the alternative process that their City was currently evaluating. In other instances, the manager willingly spoke about future changes that their municipality was considering.

Considering that the projections, approximately $65 million in gross profit for the contractor and in excess of $143 million in utilities cost to be assumed by the City, alternative processes should be visited or revisited to consider the City's options before entering into a 20 year commitment. Of the various alternative processes for creating Class A biosolids, we found that thermophilic anaerobic digestion was the most popular choice.

Thermophilic Anaerobic Digestion Process

Anaerobic digestion (AD) is the harnessed and contained, naturally occurring process of anaerobic decomposition. An anaerobic digester is an industrial system that harnesses there natural process to treat waste, produce biogas that can be used to power electricity generators, provide heat and produce soil improving materials. Increasing environmental pressures on waste disposal has increased the use of AD as a process for reducing waste volumes and generating useful byproducts.

Thermophilic anaerobic digestion is a temperature staged anaerobic digestion process that produces dewatered sludge. Utilities have converted their anaerobic digestion operation from mesophilic temperatures to temperatures in the thermophilic range (50° to 60° C) over the past five to 10 years for a variety of reasons, including increased overall process capacity and improved pathogen destruction. There are currently four plants in the country that produce Class A biosolids using thermophilic anaerobic digestion, with another five either due to come online soon or slated for future upgrades.

Conclusion

Adjusting the net present value to reflect the overestimations, the new present value is $42,965,391, a decrease of $50,421,356. An adjustment of this size clearly demonstrates an apparent effort on the part of PWD to inflate the cost savings from the PBS proposal to make the privatization more appealing.

While the Controller' office has some concerns about potential loss of jobs, it also has a responsibility to the ratepayers that this proposal or any proposal be what is best the current and future citizens of Philadelphia. Therefore, we recommend that Mayor and City Council carefully consider all of the relevant financial and non-financial factors in making decisions on this matter.

Exhibit I

Water Department FY2007
Benchmark Costs

Payroll Costs	$5,450,000
Fringes Benefits	$2,343,500
Purchase of Services	$10,856,800
Supplies	$2,637,000
Equipment	$100,000
Vehicle Purchase	$824,000
Vehicle Fuel & Maintenance	$439,750
Annual Capital Renewal & Replacement	$2,060,000
Design & Construction Management for Capital	$412,000
Parts Storeroom	$600,000
Total	**$25,723,050**