



South Bayside System Authority

Providing wastewater services to residents and businesses in
Redwood City, San Carlos, Belmont, and West Bay Sanitary District

SBSA BULLETIN

Spring 2012

SBSA Commission

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Manager's Corner

By Daniel Child, SBSA Manager

SBSA: Way Ahead of This Report Card



The estimated investment to improve deteriorating wastewater infrastructure just in the Bay Area is \$80 million per year over the next several years while the annual statewide capital expenditure for sewer systems, pump stations and wastewater treatment plants is estimated to be \$4.0 billion per year for the next 10 years for a total of \$40.5 billion.

That is one finding featured in the 2012 California Infrastructure Report Card, prepared by American Society of Civil Engineers (ASCE) in California. The report gives wastewater a C+ grade, the same as the last Report Card in 2006.

This Report Card rates eight infrastructure categories and recommends public policy options and funding needed to rehabilitate and revitalize our infrastructure and to continue California's economic growth and overall quality of life that the state's residents enjoy.

California's overall GPA has improved slightly from a "C-" in 2006 to a "C" in 2012. In 2006, the Report Card forecasted \$370 billion over 10 years in unfunded investment needs which could bring up the grades to a "B". In 2012, the 10-year total unfunded infrastructure investment required has increased to \$650 billion.

In the wastewater section, ASCE says that the biggest challenge is securing the political will to support increased wastewater rates to fund needed infrastructure improvements and to identify new funding sources elsewhere.

Where I am going with this: To humbly point out that the SBSA Commission was way ahead of the curve and took responsibility and political will to embark SBSA on a \$390 million Capital Improvement Program (CIP) to address our deteriorating facilities and infrastructure. And the city councils in Redwood City, San Carlos, and Belmont, and the directors in the West Bay Sanitary District – our

owners – also demonstrated leadership by putting financial programs in place to support the CIP.

It was in May 2006 that the Commission instructed their staff and professional engineering and

financial consultants to develop a CIP with necessary components to modernize the facility that was constructed in 1980. Two years later – May 2008 – the Commission authorized the 131-project, \$390 million CIP. Like similar plants across the nation, SBSA must replace or rehabilitate aging infrastructure and make sure the treatment facilities continue to comply with regulatory requirements and provide quality wastewater and recycled water services.

This May marks our fourth year, and much progress has been made. But at the same time, several crucial and expensive projects are on the immediate horizon.

One is what we call the 48-inch Force Main Reliability Improvement Project located within the cities of San Carlos and Redwood City. The primary objective of this \$45.5 million project is to construct a new 48-inch high density polyethylene (HDPE) sewer force main, replacing a pipe that has a history of moving and leaking from the joints due to the ground conditions in the area. This project is one of many that will either replace or significantly upgrade the entire nine mile long SBSA force main.

The new force main will operate like the existing force main, i.e., it will convey sewage from the Menlo Park Pump Station and the Redwood City Pump Station to the San Carlos Pump Station as part of the overall sewage conveyance system which runs from Menlo Park to the SBSA treatment plant in Redwood Shores. The installation of a new HDPE pipe will allow movement in the pipe to occur without leaking and will take over the conveyance functions of the problematic force main. By replacing the force main, SBSA will improve pipeline reliability, reduce service disruption and reduce maintenance costs associated with pipe leaks.

You will be hearing significantly more about this portion of the force main in the weeks ahead as we proceed with engineering and planning designs that we are sharing with the cities and soon the public.

If you would like to read the California Infrastructure Report, it is available as a PDF online at http://www.ascecareportcard.org/citizen_guides/Citizen%27s%20guide%202012_Revised.pdf

Commission Approves Major Step in \$59 Million Pump Stations Projects

A major step in the \$59 million pump station replacement and rehabilitation projects has been authorized by the SBSA Commission. Key points:

- Brown and Caldwell Engineering was selected by SBSA staff and approved by the Commission to provide pre-design and preliminary design services, working with eight subconsultants.
- Replacement of the entire SBSA conveyance system, including the influent force main and pump stations, is a critical and high priority component of the Capital Improvement Program (CIP).
- The Conveyance System Master Plan (CSMP), which was completed last June, included a programing task to prioritize and plan the implementation of the conveyance system projects. The pump station projects were scheduled among the first projects for implementation due to reliability concerns.
- The four pump stations, serving each of the SBSA member agencies, were evaluated as part of the CSMP. Each of them is over 40 years old.
- Technical studies to be performed include geotechnical evaluations, hydraulics modeling, a contaminated materials survey for the pump stations to be demolished, a hazardous materials survey in the locations of the new pump stations, a corrosion control study, and surveying work.
- Once these studies are complete, design criteria will be developed, and preliminary drawings will be prepared.
- The CSMP estimated a total capital cost of \$59 million for the pump station replacement and rehabilitation projects, including construction, engineering, and administration costs.
- The Pump Station Predesign project is scheduled to be complete by May 2013. The estimated not-to-exceed fee for work outlined in a task order is \$2,316,000; of this amount, \$446,250 will be work by the subconsultants. This task order amount represents approximately 3.9% of the estimated construction cost of \$46 million.

Commission Approves 2012-2013 Budgets

The fiscal year 2012-2013 operating and capital expenditures budgets have been approved by the SBSA Commission. There is no need to increase SBSA flow and loading rates this fiscal year for those budgets.

Key points:

- The 2012/2013 revenue plan is \$21,202,511 of which the operating and capital expenditures budget is \$20,024,299; a capital reserve is \$1 million, and an operating revenue reserve of \$178,223.
- The SBSA Commission adopts an operating budget to reflect the anticipated cost of operation and maintenance of the SBSA facilities in the coming year. The long term Capital Improvement Program (CIP) budget, developed in recent years, addresses the funds needed to make up years of underfunded capital replacement (depreciation) and deferred maintenance needs. Funding of the CIP program is funded through other means and approved under separate Commission action.
- Revenue is generated primarily through user fees collected by the member entities for the wastewater treatment service provided. Additional revenue is generated through the acceptance of restaurant grease from Bay Area grease haulers.
- The most significant operating costs to SBSA include salaries and related employment costs, power, biosolids disposal, maintenance supplies and services and chemicals.
- The Memorandum of Understanding (MOU) with the Operating Engineers Local 39 allows for a small wage increase for SBSA employees, matching the past year's increase in the Consumer Price Index with an upper limit of three percent (3%).
- Power, chemicals and biosolids costs are the other large costs associated with the operation of the wastewater treatment facilities. The unit cost of these expenses, based on information provided by vendors, is expected to rise in the coming fiscal year.
- The budget includes capital expenditures outside of the CIP consisting of eight projects at a cost of \$582,100. This represents a decrease of \$225,100 for non-CIP capital costs in the coming year versus the prior year and is just over \$1.5 million less than the amount budgeted for this purpose two years ago.
- The Commission set a goal of saving one million dollars per year in a Capital Reserve Fund to lessen the need to borrow funds in the future for large capital projects such as those identified in the CIP. The budget identifies \$1,000,000 for the Capital Reserve Fund to continue to build this reserve and establish a "pay-as-you-go" fund for future projects after completion of the CIP.

Jentech Provides Various Services

Jentech Services, which has provided electrical and instrumentation calibration and system maintenance services to SBSA's satisfaction since 1983, has been approved to provide services for 2012.

Work will be performed on an as needed basis based as assigned using SBSA's Electronic Maintenance Management System (INFOR). Compensation is identified as an amount not-to-exceed \$150,000 for the year .

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Cogeneration & Gas Conditioning Upgrade Moves Forward

SBSA's Cogeneration and Gas Conditioning

Upgrade project is moving forward after the Commission recently approved a task order with CDM Smith Inc. for final engineering design and bid period services.

Key points:

- SBSA's existing cogeneration engine is made by Waukesha and rated at an electrical output of 650 kW. The original engine was installed in 1982 and has been overhauled/refurbished many times. Additional air pollution control devices were added in the past due to more stringent air quality regulations and currently, the engine's output is limited to 500 kW to comply with SBSA's air permit.

- The engine has reached the end of its useful life and is unable to remain in compliance with upcoming air quality requirements. Because of the engine's age, it requires significant maintenance and is currently not able to produce up to its permit limit of 500kW. Also because of the engine's inability to utilize all of the biogas available, SBSA cannot maximize use of this valuable resource and instead, flares significant amounts of biogas in the waste gas burners.

- SBSA's 10-Year CIP program includes a project to upgrade the cogeneration system to maximize the beneficial use of SBSA's biogas resources.

- A preliminary design report identified the following major components to continue into final design:

1. Install two new 500 kW cogeneration engines to maximize current and anticipated future increases in biogas production.
2. Provide heat recovery from the jacket water, lube oil, and exhaust.
3. Connect the heat recovery from the engines

SBSA's existing cogeneration engine uses biogas from SBSA's digesters as a fuel and produces electricity and heat. The electricity is used to run SBSA process equipment and directly offsets electricity that would otherwise be purchased from PG&E – approximately 25% of the treatment plant energy needs are met through the existing cogeneration process. The heat is used to heat the digesters; thereby directly offsetting the need to purchase natural gas from PG&E.

to the existing heat recovery system.

4. Construct a new dedicated engine building southeast of Digester No. 3.

5. Decommission and remove SBSA's existing 30-year old cogeneration engine and support systems.

6. Install a gas conditioning system with capacity to handle projected future gas volumes.

7. Route conditioned gas to the existing cogeneration engine by connecting to the existing gas piping and route new piping to the new cogeneration engine location.

8. The new gas conditioning system will be located at the site of SBSA's existing gas conditioning system, between Digesters #2 and #3.

- CDM Smith's tasks will be performed on a time and expense basis, with a not-to-exceed budget of \$990,589.

Commission Authorizes Digester #2 Rehabilitation Project

Rehabilitation of Digester #2 is moving forward after the Commission approved a construction and other related contracts in early March. Key points:

- SBSA processes all of the solids separated from the wastewater and resulting from the liquid treatment process in anaerobic digesters. There are three digesters; two of which have been in use over the past several years. Digester #1 has been out of service, Digester #2 was used as a primary digester, and Digester #3 was used as a secondary digester. The majority of treatment occurs in the primary

digester and the secondary digester is both for further treatment, as well as storage.

- Digester #3 was in need of major

rehabilitation work due to significant structural and equipment wear and had reached the end of its service life. In 2010/2011 Digester #3 was emptied, cleaned and rehabilitated while Digester #1, concurrently, was placed back into service. The end result of the Digester #3 rehabilitation and upgrade project is a fully operational primary digester that has been in service since the summer of 2011.

- Digester #2 was taken out of service in June 2011 due to the inability to achieve satisfactory mixing of its contents with the existing, 30-year old mix pump. Digester #2 is in need of major rehabilitation work very similar in nature to the work that was completed for Digester #3. The reasons are the same - equipment and portions of the structure have reached the end of their service life. Having Digesters #1 and #3 back in operation allows for rehabilitation of Digester #2.

- The designated maximum construction time for the entire project is 250 calendar days. Approved to work on the project are:



Update on Automation Projects

Four essential automation projects funded by SBSA's 10-year, \$390 million Capital Improvement Program (CIP) are moving forward. The Commission awarded a \$335,831 contract with KBL Associates for fabrication of control panels.

Key points:

- The Final Effluent Pumping, Dechlorination, Dual Media Filter Feed Pumping, and Chlorination systems are each critical processes for compliance with the National Pollutant Discharge Elimination System (NPDES) discharge permit.

- These processes were automated in 2000 in a combined manner and the existing control systems are at or near the end of their useful life. Much of the existing control strategies, electrical support system and mechanical equipment remain operable and do not need to be replaced. For instance, pumps, motors, AFD's, and piping do not need to be replaced or upgraded as they remain in good condition and useable.

- Therefore, the projects are confined to replacement and upgrade of specific control systems (specifically, panels and power supplies).

- These projects were originally planned to begin in 2013 to address end-of-life concerns over the control system equipment. The projects have been accelerated at the request of SBSA's maintenance staff due to increased staff effort and significant cost to maintain the equipment.

√ **Construction:** C. Overaa & Company

√ **Engineering Services:** Kennedy/Jenks

√ **Project Management Services:** Whitley Burchett Associates

Firm Chosen for State Revolving Fund Loan Implementation Assistance

Whitley Burchett & Associates, successful in helping SBSA obtain \$43 million in Clean Water State Revolving Fund (CWSRF) loans and grants, has been retained to perform work related to implementing the funded projects.

Key points:

- CWSRF provides loans and grants to publicly-owned wastewater treatment facilities, among others. The program typically has \$200-\$300 million available annually. Loans through the program have a 20-year term and an interest rate equal to one-half of the most recent State General Obligation Bond Rate; typically results in loan interest rates of 2.5 to 3 percent.
- In 2009, SBSA contracted with Whitley Burchett & Associates (WBA) to provide professional consulting services for CWSRF loan application Assistance. Under the existing contract, WBA completed and submitted two CWSRF applications. The first application, for the Plant Control/ Administration Building (\$7,416,000), was recently approved. The second application, Wastewater Treatment Plant Improvements Phase 1 (\$36,329,000), consisting of the electrical Infrastructure Improvements, activated sludge automation, and digester/thickener automation projects, is in the final stages of review and a Facilities Plan Approval letter (FPA) is expected shortly. The total estimated funding amount is \$43,745,000.
- There is follow-on work required for both the received and pending funds as well as additional applications for upcoming work. The final agreements for funding contain contractual requirements with which SBSA must comply during and after construction. Also, preparation of disbursement requests and monthly reports must be submitted to the SWRCB. SBSA is also interested in pursuing CWSRF for the pumps stations and headworks projects and, possibly, portions of the force main.
- WBA has provided effective services to SBSA in preparing applications and working closely with SWRCB staff to obtain funding for SBSA's capital improvement projects. Funds from the CWSRF continue to be over-subscribed and highly competitive and, therefore, it is beneficial for SBSA to be represented by a firm and individual who is familiar with SWRCB staff and the overall program requirements.
- Compensation will not exceed \$202,000.

The Covello Group Okayed for Construction Management Services

The Covello Group has been authorized to continue construction management services through June 2013 by the SBSA Commission.

Key points:

- Many projects within SBSA's Capital Improvement Program (CIP) continue to move into the construction phase of work. Currently, eight projects are in construction, with three more ready to move into construction within the next month and, potentially, 13 more ready within the next year.
- In addition, the 13 projects that could move into construction over the next year are in the late design phases of work that require preconstruction services (constructability and "bid-ability" review). These services ensure the project plans are prepared to provide the highest possible quality for construction and bidding and, during construction, to ensure that the general contractor abides by the project requirements.
- SBSA Engineering Department staff will fill the role of construction manager on some of the small jobs; however, staff lacks the long-term expertise and time to manage construction of the majority of projects.
- The Covello Group staff is onsite and oversees multiple construction projects concurrently. Because there will be up to 24 projects in construction at once during the coming 16 months, another "global" task order to cover management of all the projects will again benefit SBSA. The amount of the contract was set at \$5,089,000.

Wastewater Industry Expert Tabbed for SBSA Consulting Services

The SBSA Commission has authorized a training and consulting services agreement with Chuck Fenton, an acknowledged national expert in several areas of wastewater. He is a certified instructor who has taught numerous water and wastewater courses throughout his 27 years in the industry.

Key points:

- Fenton will provide consulting and review services on numerous active Capital Improvement Program (CIP) projects such as the power reliability, activated sludge, and other process upgrade projects.
- He will provide project management services for the automation project.
- In addition to efforts tied to the CIP, he will work closely with the Operations and Maintenance Department in the evaluation of consultant recommendations for CIP projects and proposed operational process changes and organize and direct training to optimize available resources.
- He brings a level of experience and expertise to the SBSA Engineering and O&M Departments that will improve the overall quality and cost control of the CIP projects and strengthen the technical review and training capabilities of the O&M Department.