



South Bayside System Authority

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

SBSA BULLETIN

Winter 2012

SBSA Commission

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Manager's Corner

By Daniel Child, SBSA Manager

Meeting Unique Challenges & Complexities



This issue contains two updates on how SBSA is working to upgrade its conveyance system in conformance with recommendations from the Conveyance System Master Plan (CSMP).

One article singles out the 48-inch Reliability Improvement Project portion of the conveyance system, which involves replacement of nearly 2.5 miles of the 48-inch pipe. The project is very complex and expensive due to the complications of getting such a large pipe through extremely sensitive areas.

This new section of force main will involve these unique challenges and complexities:

■ **A Variety of Jurisdictions and Land Ownership** - The force main route crosses property within the borders of the federal government, San Mateo County, City of San Carlos and the City of Redwood City. Additionally, the Bay Conservation and Development Commission, the US Army Corps of Engineers, US Fish and Wildlife Service, the State Fish and Game and the SF Regional Water Quality Control Board all have jurisdiction somewhere along the proposed alignment and in some cases, there are multiple jurisdictions in the same area. Significant sections of land along the route are privately owned and as a result private easements will need to be secured.

■ **Unusually Challenging and Variable Soil Conditions** - Much of the route is located in areas of Young Bay Mud, which is considered one of the world's most difficult soils to construct utilities.

■ **Three Watercourse Crossings; Two Sloughs and One Creek** - Economics and environmental considerations will likely dictate micro-tunnel crossings under the two sloughs surrounding

Bair Island to the north and south and Redwood Creek.

■ **Environmentally Sensitive Baylands** - Protected plant and animal species exist along much of

the proposed route, necessitating environmental reviews and permits.

■ **Urban Congestion** - A high degree of urban congestion exists along the proposed route including: office buildings, an airport, extensive underground utilities, and high voltage power lines.

■ **Mandatory Continuous Functionality** - The existing force main must remain fully functional during construction of the new force main until the complete switchover to the new force main.

SBSA and its consultants have been working hard to meet all of these challenges. We will keep you posted as we continue to make progress.

Seven Projects Approved Related to Conveyance System

The SBSA Commission at its December meeting approved initiation of seven new projects identified in the 10-year Capital Improvement Program (CIP), all related to the conveyance system.

The conveyance system is comprised of pump stations, force main, flow equalization, and headworks facility. As noted in the Manager's Column in SBSA's last newsletter, the Commission in October accepted the Conveyance System Master Plan (CSMP) and directed staff to begin implementation of the identified projects.

SBSA's conveyance system is in critical need of rehabilitation. The force main is an old bell-and-spigot concrete pipe that is susceptible to moving as the soil surrounding it shifts and has been experiencing leaks and subsequent repairs for years. The pump stations are past their useful life, requiring significant investment of maintenance labor and materials to try and insure their ability to pump the untreated wastewater until new facilities can be constructed.

A systematic approach and schedule under which the projects will be implemented has been prepared. The overall plan will allow the series of elements that make up the conveyance system program to be integrated and completed in a sensible and effective way.

Thus far, work on the 48-inch diameter section of the force main has begun and the majority of that section of pipe is moving into the final design stages of work. Staff recently interviewed and selected an engineering firm to finalize an alignment for the 54-inch diameter section of force main and a scope of work and budget will be presented to the Commission at the February 2012 meeting to begin the critical phase of the project.

Negotiations with West Bay Sanitary District have just begun to establish SBSA's ability to use the Flow Equalization Facility (FEF) for many years. And staff has just interviewed and selected an engineering firm to undertake preliminary design for the new pump stations; a scope and budget for this work will also be presented to the Commission at the February 2012 meeting.

Because all the elements of the conveyance system are interrelated, it is necessary to have all the projects initiated so that staff can adequately address and manage the needs of the overall program and properly allocate costs to each element of the conveyance system program.

The projects will be staged and scheduled to enable the work to be done in a coherent and systematic manner but there may be elements in one project that need to be reviewed to allow another project to continue to move forward. This is why the SBSA staff requested the Commission to approve initiation of all the conveyance system projects.

The projects are:

- Flow Equalization Facility Improvements
- Redwood City Pump Station Improvements
- San Carlos Pump Station Improvements
- Belmont Pump Station Improvements
- Pump Station General Management and Support

THE CONVEYANCE SYSTEM IS IN CRITICAL NEED OF REHABILITATION

- Pump Station Predesign and CEQA
- WWTP Headworks and Screening Facility

Update on 48-Inch Force Main Project Involving Bair Island

The SBSA Commission has approved engineering design services with Kennedy/Jenks Consultants for the final design of the section of 48-inch force main that stretches from Bair Island to the Redwood City Pump Station on Maple Street.

The overall force main is comprised of reinforced concrete pipe segments beginning with the 33-inch section between the Menlo Park and Redwood City pump stations, a 48-inch diameter pipe extending from the Redwood City Pump Station to the San Carlos Pump Station and a 54-inch diameter pipe extending to the SBSA Treatment Plant. Flow from Belmont is pumped from the Belmont Pump Station and discharged via a 28-inch pipe to the 54-inch pipe just downstream of San Carlos Pump Station.

Several factors went into “fast-tracking” repair of the 48-inch pipe that lies within Inner Bair Island, which the U.S. Fish and Wildlife Service is currently converting to a tidal marsh wildlife refuge. Once the conversion is complete, construction on Inner Bair Island will be nearly impossible to perform.

This section of pipe represents upwards of 74% of the historical leaks from the SBSA conveyance system. The pipe is leaking because it is a single “o” ring bell and spigot jointed concrete pipe which can separate at the joints when the ground surrounding it moves.

The ground surrounding the pipe moves significantly because it was installed almost entirely in Young Bay Mud, which is characterized by extremely soft bay mud conditions, almost like pudding. These conditions always pose challenges for design and construction of major utilities and, given a pipe that can separate at its joints, leaks can and do readily occur. Staff has noted an increase in the leaks from this section of pipe over the past two years. Replacing this section of pipe as soon as practical is in the best interest of SBSA.

In January 2010, the Commission approved a task order for Kennedy-Jenks to prepare a preliminary design (30% design level) for the entire 48-inch section. Some of the component projects are now nearing the 30% preliminary design phase and the US Fish and Wildlife Service and private developers have settled on their own construction schedules that significantly impact SBSA’s force main construction. Therefore, SBSA is highly motivated to ensure that the 48-inch force main repair and replacement is completed before any of these outside schedules impair the ability for SBSA to construct.

New Laboratory Information Management System Approved

An agreement with Accelerated Technology Laboratories, Inc., for a laboratory information management system (LIMS) has been approved by the SBSA Commission.

LIMS will improve accuracy, speed, overall efficiency and effectiveness through automation features. It also will reduce errors in reporting monthly National Pollutant Discharge Elimination System (NPDES) data into the state’s new web-based system through automation rather than manually selecting and extracting data from several sources.

Time-saving features include enhanced data management and storage, data analysis, data reporting, and bar coding. Additional features include the electronic transfer of results from laboratory instruments to eliminate transcription errors and the electronic transfer of results to the Treatment Plant and Source Control Group.

SBSA performs approximately 15,000 tests annually. The results from these tests are used for process control of the treatment plant, monitoring waste streams from industrial users, producing regulatory reports for NPDES compliance, and other miscellaneous projects.

Staff in the Lab is eager to convert to the new system which they reviewed during the selection process. Currently, the SBSA Lab utilizes obsolete and incompatible information management tools to manage the high volume of technical data and analytical activities relating to these tests. Although they are comfortable with the old “paper” system, the new ATL system will help in every aspect of their work including documentation, validation, and providing a method for easily locating the results for every single sample.

Installation is expected to be completed within a 4-month period.

Bay Area Biosolids to Energy JEPA Amendment

The disposal of biosolids from the wastewater treatment process has been and will continue to be a major cost and challenge for municipalities. Biosolids are the stabilized solids removed from the wastewater as part of the treatment process.

Historically, the disposal of biosolids has been to landfills, through land application to agricultural fields or to compost. All of these disposal options have challenges that are making them more difficult to perform and other options have to be developed.

The Bay Area Biosolids to Energy Coalition (BAB2E) was formed by a relatively small group of Bay Area wastewater treatment entities in 2006 to begin an evaluation of potential alternative disposal options for the biosolids generated in the Bay Area. In May of 2009, a Joint Exercise of Powers Agreement (JEPA) was amended to create a window of time during which other Bay Area wastewater treatment entities could join the coalition. SBSA joined at that time and the total number of coalition members reached 16. The SBSA Commission recently approved its authorization to again extend the membership of the JEPA.

The coalition has made progress towards its goal through the issuance of a "Request for Qualifications" for firms to present alternative technology that may meet the coalition's goal of creating an energy source from biosolids. There are three alternatives under consideration for potential long term contracts. One of these has received a grant from the State of California Energy Commission to run a pilot plant to prove their technology. The other two have functioning facilities that show they are viable alternatives. As time passes, other technologies are emerging and may be evaluated as well.

In the past few months there has been a desire to recruit still more entities in the Bay Area to join the coalition and some entities have expressed interest in joining. An amendment to the JEPA provides the path through which more Bay Area wastewater treatment entities (whether they be cities, districts or JPA does not matter) may join the coalition.

From the standpoint of credibility with both potential vendors/suppliers and with potential government funding agencies, the more wastewater treatment facilities included in the coalition, the more interest in the project is developed and the potential for funding of the project through grants and low interest loan programs grows.

There is no immediate cost impact to SBSA in the approval of the amendment to the JEPA allowing others to join the coalition. Their membership costs will be added to what is already funded and will expand the available funds to continue the process. In the long run, SBSA, assuming it determines to continue to participate in the coalition, will have reduced costs, as the costs of the coalition will be spread between more entities.



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New Employees

- **Jim LeChuga** – Mechanic Assistant
- **Jeff Hubbard** – Plant Mechanic II