

# REPORT

B. Biii-1

To the Honorable Mayor and City Council  
From the City Manager

July 26, 2004

## Subject

Redwood City Recycled Water Project – Disinfection, Storage and Pumping Facilities

## Recommendation

By Motion, authorize South Bayside System Authority (SBSA) to call for bids for pre-purchase of construction steel for the Redwood City Recycled Water Disinfection, Storage and Pumping Facilities to be constructed at SBSA

## Background

On June 14, 2004, the City Council reviewed the principles of the proposed Agreement for Production and Delivery of Recycled Water ("Agreement") and the Lease Agreement for Recycled Water Treatment / Storage / Pumping Facility Site ("Lease") between SBSA and the City. The Council also passed a motion (Minute Order No. 04-114), requesting that the SBSA Commission maintain their momentum on preliminary engineering design for Recycled Water Treatment, Disinfection, Storage and Pumping Facilities at SBSA, pending completion and approval of the Agreement.

In an earlier action at their meeting of July 26, 2004, the City Council considered the final recommended Agreement and Lease, which together provide all of the legal, operational and financial details of the long-term partnership arrangement between the two agencies. The Agreement and companion Lease are considered the foundation of the project implementation process.

The City Council is asked to consider the benefits of authorizing the SBSA Commission to proceed with pre-construction bid and purchase of construction steel for the Disinfection, Storage and Pumping Facilities on the SBSA site. The construction industry has been affected recently with substantial cost escalation of steel and concrete, the two major materials that the SBSA facilities will be made of. Therefore, timing is increasingly important, and the idea of accelerating the schedule to mitigate cost increases bears consideration.

Specifically, the recommendation from the project team is to proceed with call-for-bids as soon as possible for pre-purchase of the steel sheet piling (750 tons) and the steel cofferdam bracing (450 tons), required for the excavation required to construct the permanent recycled water facilities on the unstable bay muds which underlie the entire construction site. Once bids are received and evaluated, staff and consultants from Redwood City and SBSA will make a recommendation to the Commission to either proceed or to reject all bids and instead include the steel in the construction documents later. The estimated cost of the steel is \$1.3 million, and market prices have been escalating and continue to be volatile. Staff recommends that the estimate be escalated by 15%, and rounded up to \$1.5 million. There may be some salvage value to the steel at the

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end of construction, which could be credited back to the project account. The attached Technical Memorandum prepared by the project construction manager, The Covello Group, provides additional information and a recommendation to proceed with pre-purchase.

### Alternatives

1. Do not proceed with pre-purchase of steel and instead advertise construction bids in the winter of 2004/05 to include purchase and delivery of steel. Based on the market trends cited in the Technical Memorandum, steel costs could escalate from zero to 50% in the next six months. If the 4-month escalation of 10.5% is applied to the two-month time gain realized by pre-purchase, savings could be in the range of \$75,000. Additionally, the two-month gain in schedule will mitigate other construction inflation, especially concrete and other steel components.
2. In lieu of utilizing a steel sheet pile-based cofferdam as recommended, incorporate a concrete reinforced slurry wall system into the lateral support/structural concrete design. This option was also studied as an alternative, driven by potential cost savings. However, due to the SBSA soils characteristics and strength, the depth of the slurry wall below sub-grade would be approximately 40 feet. At that depth, this would result in the majority of the slurry wall not functioning as part of the final facility structure, making the slurry wall option overly expensive and not cost-effective. Instead of a cost savings, the additional cost over the steel sheet pile option was estimated to be approximately \$2 million. Structural steel internal bracing would be required in both lateral support alternatives, and although not identical in design, the cost savings with the slurry wall for the internal bracing would be nominal. Consequently, the steel sheet pile design is the best and most economical excavation support option for the recycled water facilities construction.

### Fiscal Impact

Of the \$7.1 million budgeted for the project to date by the City Council, approximately \$5 million is available as of June 30, 2004.

The Council will consider a refined financing plan and connection fees ordinance in the fall of 2004. Prior to the Council's approval of the project, and the subsequent Task Force report and recommendations, staff had estimated that annual water rate increases ranging from 6% to 9% per year for 10-13 years would be required to generate the additional revenues needed to finance the project. A portion of connection fees collected during that time (could be as much as 40% of total costs) would offset those impacts.

  
Peter Ingram  
Director, Public Works Services

  
Ed Everett  
City Manager

### Attachment

Technical Memorandum prepared by the project construction manager, The Covello Group, dated July 9, 2004.

## TECHNICAL MEMORANDUM

SOUTH BAYSIDE SYSTEM AUTHORITY  
Redwood City Recycled Water Project  
Disinfection, Storage and Pumping Facilities

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**Prepared by:**      **The Covello Group**  
Joseph Covello, P.E.  
William W. Tanner, P.E.

**Date:** July 9, 2004

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### 1.0 Overview

The purpose of this Technical Memorandum is to assess the factors supporting the decision to prepurchase the steel sheet piling, and the decision to prepurchase the steel cofferdam bracing for the Redwood City Recycled Water Storage Tank Project.

In the summer of 2003, the City Council approved a \$43.6 million plan to develop the use of recycled water. Public concerns over the use of recycled water led to the formation of a Community Task Force. The primary focus of the Task Force was how to solve the City's increasing imbalance in water supply and demand while alleviating the concerns of the public. The Task Force report, which recommended alternatives for project implementation, was accepted by the City Council on March 22, 2004, and staff was directed to provide a schedule of implementation as soon as possible. By 2010, the project is expected to reduce demand on drinking water supply by 2,002 Acre-Feet per year. The primary component of this project is the development of treatment, storage, pumping and distribution facilities for 1,687 AF/year of Recycled Water.

## **2.0 Background**

The SBSA Effluent Outfall Repair/Replacement Project requires approximately 600,000 pounds (300 tons) of new steel sheet piling. This material was recently procured by SBSA (May, 2004) in advance of the bidding process for the construction work related to this project. It will be made available to the successful bidder for the project. It is anticipated that this cofferdam will be constructed in the fall of 2004, and very little of this sheet piling will be salvaged.

The Redwood City Recycled Water Storage Tank Project requires approximately 1,500,000 pounds (750 tons) of new steel sheet piling of the same section capability as the SBSA Effluent Outfall Project, which are AZ 18 steel sections. At the present stage of design, the sheets are estimated to be 60 feet in length (70%), 75 feet in length (20%), and the balance are 25 feet in length. In addition to the above, and due to the complicated nature of the cofferdam design, an additional 900,000 pounds (450 tons) of W36, W24 and H14 bracing is required. The cost of the steel sheet piling is approximately \$800,000 and the steel bracing is \$500,000. It is anticipated that 1,200,000 (600 tons) and 800,000 (400 tons) pounds respectively, of the steel can be salvaged.

## **3.0 Reasons for the Procurement**

There are three factors that prompted the prepurchase decision for the SBSA Effluent Outfall Project.

1. Current Steel Market trends
2. Lead time for delivery
3. Design considerations

All of the above conditions also affect the City's Recycled Water Storage Project.

### **3.1 Current Steel Market Trends**

In the past six (6) months or more, steel prices in the United States have increased 15% - 50%, depending on the steel product. This has occurred due to global conditions causing a shortage of all types of steel materials. (This is also being felt with cement, plywood and lumber as well.) Steel sheet piling was quoted at \$0.42 per pound in January, and in May 2004 the Purchase Order was issued for \$0.46. SBSA experienced a 10.5% increase during this four-month period.

Consequently, a major reason for the procurement was to eliminate the impact of future cost increases to the project budget. Although, the steel market has seen a very recent leveling off, it is not expected to fully level off until the fourth quarter of 2004, at the earliest, with no guarantees that prices will not continue to climb.

In addition to increased prices, the decision to prepurchase was also prompted by a possible scarcity of this material.

An additional factor is the contingency a bidding Contractor may add for these materials at bid time due to the uncertainty in price and delivery. Finally, prepurchasing reduces the markup Contractors will add to their bids since they will not be purchasing the steel directly.

### **3.2 Lead Time for Delivery**

The supplier for the SBSA sheet piling required a four (4) month lead time. Quotations for new steel sheet piling are nominally written for approximately a 90 day delivery lead time.

SBSA desired to put the cofferdam in place during the fall/winter of 2004 in advance of the 2005 dry weather season when the actual repair/replacement will take place. If left to procurement by the successful bidder the cofferdam work would not start until 90 to 120 days after the Notice to Proceed (NTP). SBSA desired to eliminate the potential for a project delay by prepurchasing.

The same concerns exist for the Recycled Storage Tank Project. A delay in delivery translates into a delay to Project completion. There is a three month lag between delivery of the storage tank sheet piles and the sheet pile bracing, which provides some flexibility in the decision to prepurchase the steel bracing. However, the decision to prepurchase the sheet piling is more immediate. The current schedule indicates a prepurchase sheet pile delivery date of January 1, 2005, and the driving of sheet piles to commence February 1, 2005. The delivery of steel bracing would be March 1, 2005. If there is no prepurchase of the sheet piling the sheet pile delivery schedule will slip to May 1, 2005. Consequently, the Project completion will be delayed from April 1, 2006 to July 1, 2006.

### **3.3 Design Considerations**

SBSA desired to provide the bidders with a cofferdam/trestle scheme that would work rather than rely upon the Contractor for the design. In addition to shortening the construction duration (via the design/submittal/approval process), it also served to eliminate the possibility that an overaggressive bidder would not take into account all the complex variables surrounding the Effluent Outfall Repair/Replacement Project, and the requirements of the cofferdam/trestle arrangement.

These same parameters are present for the Recycled Water Storage Tank Project, which is a considerably more complex design. The structure is more complicated due to its proximity to the existing plant, and the considerable excavation depth, which necessitates longer pile sheets. Further, the deeper excavation requires extensive bracing that have longer spans. This is

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compounded by the need to have the spacing accommodate and maximize the constructability of the concrete structure.

### 4.0 Recommendations

The Recycled Water Storage Tank Project is an extremely complex design, which requires integration into the construction sequence of the entire facility. Wisely, SBSA and the City are designing the cofferdam for the bidders.

By prepurchasing, the City can reduce the construction duration by approximately three months. More importantly, the uncertainty of having the material on-site when needed can be mitigated, if not eliminated, and on-site storage is not an issue. Finally, the price escalation can be reduced by the early purchase.

This is a decision that requires timely handling so as to prepare the procurement bidding documents and coordinate the procurement with the design process. To maintain the current schedule, the actual procurement award would have to be no later than the September Commission meeting. Approximately two (2) weeks will be necessary to prepare the bidding documents after the cofferdam design is finalized at the end of July. A two (2) to three (3) week procurement bidding period is necessary.

The Covello Group, acting as the Construction Project Manager for SBSA, strongly recommends that the steel sheet piling be prepurchased for the Redwood City Recycled Water Storage Tank Project. The decision to prepurchase the steel bracing will require further analysis of the benefits and whether raw steel sections or prefabricated steel sections are purchased. There is approximately a one to two month leeway in making this decision. However, regardless of the choice of raw or prefabricated steel, it is also recommended that the option to prepurchase the steel bracing be exercised.