

Memorandum

January 23, 2017

To: Kenneth Peterson, Puglia Engineering

From: Jaclyn Gnusti, P.E., and Dr. Joshua Burnam, MPH, D.Env., Anchor QEA, LLC

Re: Puglia Shipyard Facility—2017 Maintenance Dredging Planning-Level Costs

This memorandum provides planning-level costs for a proposed 2017 maintenance dredging episode at the Puglia Shipyard facility in San Francisco, California (formerly named BAE Systems San Francisco Ship Repair). These costs are a rough order-of-magnitude projection for project planning, permitting, and dredging of all piers and dry docks to the minimum requested depths received via email on January 16, 2017. The costs are based on actual costs from the 2014 dredging event, and are escalated/pro-rated as necessary.

**Table 1
 Estimated Costs for 2017 Maintenance Dredging Program**

Task	Description	Cost	Assumptions and Inclusions
1	Hydrographic Surveying	\$21,000	One pre-dredge survey and one post-dredge survey
2	Sediment Characterization ¹	\$310,000	Testing for in-Bay, ocean, and beneficial reuse sites; costs may be reduced to \$260,000 pending agency approval of alternative analysis
3	Engineering Support	\$28,000	Design memorandum and contract support for sole source dredging with a known contractor
4	Permitting Support	\$18,000	Preparation of all permit applications, agency follow-up through permit acquisition
5	Permit Fees ¹	\$125,000	Water Board and BCDC fees (BCDC fees may not be required, reducing total by approximately \$13,000); fees are paid directly to agencies
6	Construction Management & Inspections ¹	\$56,000	Construction administration and 4 days per week on-site dredging inspection
7	Contractor-Performed Dredging ¹	\$10,897,000	Costs will be refined after sediment characterization
Total		\$11,455,000	--

Note:

1. Reduction of dredging volume will result in lower costs for these tasks.

BCDC: San Francisco Bay Conservation and Development Commission

Table 2 provides a breakdown of the estimated cost for contractor-performed dredging (Task 7). The disposal and placement site assumptions are based on previous sediment testing results, and are in compliance with the Long Term Management Strategy dredged material disposal guidelines, which generally allow no more than 20% of dredged material to be placed in-Bay from an individual project. These costs may vary pending final sediment testing results. These costs were prepared independently to the extent that eliminating dredging at one location will not impact costs at the other dredging locations.

Table 2
Budgetary Cost Breakdown for Contractor Performed Dredging

Description	Cost	Assumptions	Basis of Assumption
Mobilization/Demobilization	\$635,000	Includes initial mobilization and one remobilization (additional re-mobilizations \$305,000 each)	2014 dredging episode
Pier 3 West to -30 ft MLLW	\$3,465,000	100% Montezuma foundation	2006 testing
Pier 3 East to -30 ft MLLW	\$2,070,000	100% Montezuma foundation	No previous testing
Pier 4 East to -30 ft MLLW	\$289,000	20% in-Bay, 80% Montezuma cover	2014 testing
Dry Dock 1 to -41 ft MLLW	\$2,132,000	20% in-Bay, 80% Montezuma cover	2006 testing
Dry Dock 2 to -60 ft MLLW	\$2,306,000	20% in-Bay, 40% Montezuma cover, 40% Montezuma foundation	2014 testing
Total	\$10,897,000	--	--

Notes:
ft: feet
MLLW: mean lower low water

If Puglia were interested in dredging the sump area in Pier 4 East to -33 feet mean lower low water, as was performed historically, dredging costs would be approximately \$50,000. The additional costs for planning and permitting would be nominal.

If you have any questions, please do not hesitate to contact Jaclyn at (415) 361-5151 or jgnusti@anchorqea.com, or Josh at (415) 361-5150 or jburnam@anchorqea.com. We look forward to assisting you with this effort.

Puglia San Francisco Ship Repair
 Anticipated Dredging Schedule
 2017 Dredging Episode

Task		Estimated Duration (weeks)	Month													
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
1	Confirm Project Requirements	2		■												
2	Sediment Characterization	14		■	■	■	■	■	■							
3	Regulatory Permits/Amendments	10		■	■	■	■									
4	Preparation of Work Description	4							■	■						
5	Contractor Agreement and Negotiation	4								■	■					
6	Pre-Dredge Survey, Contractor Dredging Plan Approval & Mobilization	4									■	■				
7	Dredging	12										■	■	■	■	■