

MEMORANDUM

September 21, 2017

To: Tom Flinn and Jennifer Spaletta, North San Joaquin Water Conservation District

Subject: Review of Potential Project Modifications and Associated Costs

Project: NSJWCD South System Pump Station Replacement Project

From: Elizabeth Schlegel, RCE 73999

1.0 Introduction

Following a presentation of updated overall project costs resulting from the final design details, which incorporated several measures to minimize potential environmental impacts and permitting complications, the North San Joaquin Water Conservation District (District) has expressed that a primary objective for the South System Pump Station Replacement Project is to minimize cost escalation risks. The pump station is a critical improvement required to begin implementing the District's plan to reliably deliver available water to customers served by the District's South System.

This memorandum summarizes our review of several design elements and project bidding and construction scheduling, coordinated with permitting, as strategies to control project risks and costs. The elements presented below include comments obtained from Mr. Tom Flinn during a review workshop held on September 15, 2016.

2.0 Pump Station Design Element Review

The following options and approaches have been reviewed by KSN as strategies to manage and/or mitigate cost escalation risks associated with the NSJWCD South System Pump Station Replacement Project. Associated with each item, is a recommended action.

Item No.	Proposed Change	Recommended Action	Potential Cost Impact
1	Remove wye at connection to existing fish screen and replace with straight pipe.	Remove wye; for capacity in excess of 30 cfs, future pump and fish screen installation would require field-fabrication of connection to this pipe.	Potential for net \$4,300 Savings by deferring cost of future connection
2	Reuse existing 24" culvert connecting ditch to Mokelumne River in lieu of installing new pipe.	Due to expected damage resulting from removal and unknown condition, installation of a new pipe is recommended per design plans.	None



Item No.	Proposed Change	Recommended Action	Potential Cost Impact
3	Allow for looser pump requirements in this phase, and require full replacement of pump when future high pressure system is implemented.	Do not change pump requirements; overall savings for current project is likely to be less than \$20,000, but future cost to District by replacing pump instead of modifying existing pump outweighs the current cost savings.	None
4	Remove variable frequency drive (VFD) from pump control components and provide constant speed pumping.	Do not remove VFD from design; At a minimum, a soft-start would be required limiting any potential cost savings, however at the cost of very limited pump operation flexibility.	None
5	Delay bid to January, February, or March 2017	See Section 3.0 below regarding possible schedule modifications	See Section 3.0 below
6	Remove temporary pumping additive bid item from project.	If the District is not certain that it will receive water in 2017, then this item can be removed. Also, the cost is anticipated to be very high in relation to the potential revenue from water deliveries.	Savings by removing construction period bid item with \$160,930 estimated cost from construction documents.
7	Continue using existing steel piping from existing pump station to double standpipe assembly. Potential to avoid replacing approximately 276 feet of pipeline and replacement of standpipes.	Incorporate change; contract would require confirmation of pipe condition, arrangement, and condition of possible adjoining pipes by potholing and/or other methods before connection was made. Current design approach can be included as an additive cost item in case pipe condition is found to be unsuitable for connection.	Potential for net construction cost decrease of up to approximately \$80,000 dependent on pipe condition. If existing pipe configuration and condition is not adequate, this cost avoidance may not be realized.
8	Show environmental boundary and project limits/work area on sheet C1.01; remove access road shown on county roads.	Incorporate to limit contractor to approved/permitted work areas. This will facilitate site control.	None
9	Incorporate provision that contractor is responsible to secure the work area.	Already incorporated into contract documents, see Sheet G1.03, General Note 8.	None



Item No.	Proposed Change	Recommended Action	Potential Cost Impact
10	Consider removing aggregate base road from plans; provide compacted earthen road on levee with provision to restore existing agricultural road to pre-project conditions.	Have confirmed that this is a necessary project element for construction that will be left in place as a benefit to the District, recommend reducing road section to 4 inches of aggregate base over native soil compacted to 90%.	Potential for \$7,400 Savings
11	Clarify which items the contractor will be allowed to salvage vs. which items District wishes to maintain right of refusal to salvage	Revise specification to identify which items contractor will be responsible to salvage vs. District may opt to retain. We would anticipate slightly lower bids by identifying what demolition elements the contractor may be allowed to salvage.	Savings; not readily quantifiable
12	Revise Specification Section No. 01060 to include that CEQA document has been approved	Revise specification to reflect current conditions.	None
13	Revise landowner turnout to provide flanged tee at pipeline only to allow for later installation of connection per easement agreement.	It is our understanding that the landowner will need this installation for diversion of riparian water.	None; Item cannot be deferred
14	Consolidate both demolition and pump station construction in a single contract	Combine contracts; recommended to minimize risks to the District associated with Contractor performance and scheduling conflicts	Savings; not readily quantifiable
15	Consider district-supplied, contractor-installed pumps, electrical cabinets, or other fabricated items with long lead times	Contractor to supply all items associated with construction; recommended to minimize risks associated with District-supplied items; these risks are comparable to the risks of having two contractors perform work items with potential performance and scheduling conflicts.	Savings; not readily quantifiable

Costs that are not captured within this memorandum include the cost of the District Engineer's services, and possible savings by bidding the project after draft permit conditions are available.

We recommend taking the following actions for the proposed changes:

- Removing the wye at the existing fish screen connection;
- Eliminate the temporary irrigation pumping contract item;



- Revise the pump station discharge pipe design to connect to the existing piping, with an additive cost item to extend the discharge pipe to the location of the standpipes if the pipe condition is inadequate for connection;
- Incorporate the environmental boundary and work area into the plan set;
- Reduce the road section to 4" of aggregate base over native soil compacted to 90%;
- Identify specific items that the contractor will be responsible to salvage and items the District may opt to retain;
- Revise Specification 01060 to reflect CEQA document approval; and
- Consolidate Demolition and Pump Station Construction into a single contract.

The potential quantifiable cost savings by taking the recommended actions on the proposed changes are approximately **\$ 252,600**

These potential savings are a combination of: a) potentially reducing costs by revising elements of the proposed project; b) deferring costs to a subsequent project; and c) elimination of contract elements that are not required to provide a functional pump station. The total savings are captured by taking all identified recommended actions for the proposed changes.

Although not readily quantifiable, we believe that the additional contract certainty and clarification will facilitate lower bids overall.

3.0 Schedule Review

The South System Pump Station Replacement Project was originally intended to be advertised for bidding in the summer of 2016 in case permits were acquired in time to allow some construction (e.g., culvert work, pump station structure base, and pipe connection to the existing screen) to take place within the anticipated 2016 permit work window. If the permits were acquired with sufficient time to allow work at the pump station and in the existing ditch to occur during the fall of 2016, the project could have been completed in the late spring or early summer of 2017. Due to the timing of approval of the CEQA document taking place at a later date than expected, time required to obtain permits does not allow for any construction in 2016, necessarily requiring all activities subject to work window constraints to be rescheduled to the anticipated 2017 permit work window.

The current bidding process was initiated before permits have been obtained, however the documents identify the anticipated permit conditions, based on the similar recent Tracy Lakes Pump Station project constructed by the District. If the final permit terms and conditions were substantially as anticipated, the contract would at that time have been amended with no cost to incorporate those requirements. Although mitigated to a certain degree, this approach presents potential risk to the District if the contract is awarded and final permit terms and conditions differ from what was expected. In such a case, it is possible that a contractor could claim that the contract terms have changed requiring additional compensation.

In order to mitigate the risk of potential cost escalation based on actual permit conditions differing from anticipated conditions, the project team, consisting of Jennifer Spaletta, Neal Colwell, and Diane Moore, with input from Board Member Tom Flinn, are recommending that the current bidding be cancelled and the project bid scheduled for February 2017, with the contract awarded in March 2017.



This would allow for most, if not all, permits to be obtained prior to contract award. Following the project team's discussion, KSN has developed the attached updated project schedule, Attachment 1.

The proposed project schedule allows for submittal, approval and fabrication of long-lead components such as the pump and electrical cabinets. The construction subject to National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (DFW) permit-specified work window requirements would be completed in during the summer months of 2017. Once that work was completed, the long-lead items could be delivered and installed for an anticipated startup in December 2017.

In order to reduce the risk that the project start is delayed due to nesting bird mitigation and monitoring requirements, it is recommended that the District perform nesting bird mitigation activities identified by Diane Moore, biological consultant to the District, and commence vegetation control, including mowing and tree trimming, in late winter so that environmental concerns are mitigated, and potential bidders can inspect the site conditions at the mandatory pre-bid meeting.

Enclosures:
Attachment 1. NSJWCD – South Pump Station Project Timeline

Attachment 1

NSJWCD - South Pump Station Project Timeline

Task/Activity	2016						2017												Notes
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	
Environmental & Permit Activities																			
Complete and Certify CEQA Document (County)	█	*																	* Completion and Certification of CEQA Document by San Joaquin County
Certify CEQA Document (NSJWCD)			**																** Certification of CEQA Document by NSJWCD Board at September Meeting
404 Permit (USACE)		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	Hatch indicates period of time when permit approval may still be pending
401 Permit (SWRCB)		█	█	█	█	█	█	█	█	█									
Streambed Alteration Agreement (DFW)		█	█	█	█	█	█	█	█	█									
CVFPB Encroachment Permit (CVFPB)		█	█	█	█	█	█	█	█	█									
PG&E Design; Self-Inspect Letter (PG&E)		█	█	█	█	█	█	█	█	█									
Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality (RWQCB)			█	█	█	█													
Project Bidding																			
Vegetation Removal							█	█	█										Recommend that District perform vegetation removal prior to bidding phase if possible
Nesting Bird Mitigation								█	█										Recommend that District perform nesting bird mitigation until contractor occupies site to reduce construction-phase nesting bird mitigation requirements
Project Construction																			
New South Pump Station Project																			
Submittals & Supply of Materials & Equipment									+	█	█	█	█	█	█	█	█	█	+ Award of Contract by NSJWCD Board at March Meeting Critical supply time is 28 to 34 weeks for pump, from request for submittal to arrival on site
Demolition									█	█	█	█	█	█	█	█	█	█	Contractor to complete vegetation removal if necessary
Vegetation Removal									█	█	█	█	█	█	█	█	█	█	Contractor responsible to continue nesting bird mitigation during specified timeframe
Nesting Bird Mitigation									█	█	█	█	█	█	█	█	█	█	Contractor responsible to continue nesting bird mitigation during specified timeframe
Site Work											█	█	█	█	█	█	█	█	Hatch indicates likely timeframe of NMFS/DFW permit-specified work window
Site Work within NMFS & DFW Jurisdiction											█	█	█	█	█	█	█	█	All construction within OHWM must be completed within the permit-specified work window
Installation of Fabricated Components														█	█	█	█	█	Fabricated Components include Pumps, Electrical Cabinets, and other items requiring only installation on-site
Pump Station Start-Up & Project Completion																		█	