APPENDIX E

COST ENGINEERING

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Basis of Estimate

1. Background:

The Delta Islands Feasibility Study began as a multi-purpose (FRM and ER) study. However, due to the nature of how communities were generally distributed on the islands exterior near the existing levee footprints, FRM alone was eventually screened out due to low benefit cost ratios.

Refocused on ER alone, many potential sites were screened out due to the without project assumptions and the need for expensive, new setback levee construction required for most ER alternatives. When the concept of pumping suitable material over land to shallow flooded island locations in order to develop habitat was introduced, the parametric cost estimates identified the TSP as those elements utilizing pumping. Additionally, the proximity to the San Joaquin River created the opportunity to cost share and re-direct O&M dredging outflows directly to the ER project site.

2. Approach:

a. Cost Estimates

In developing the feasibility level cost estimates of the various increments of the Delta Islands Feasibility Report, the Cost Engineering team utilized a parametric methodology incorporating MII (MCACES, 2nd generation) generated unit costs. Costs for relocations and construction throughout initial screening through TSP selection were compiled based on 1) historical costs - past levee projects in the vicinity of the Legal Delta, 2) estimating software MII and 3) Parametric Cost Estimating Tool (PCET) developed by URS and successfully used on the Sutter Basin Feasibility Pilot Study.

During the screening process, the parametric spreadsheets utilized unit costs of certain typical levee design parameters including, for example, stripping vegetation, earthwork, cutoff walls, etc. The spreadsheet is essentially a collection/database of unit cost data from public bid results and projects that URS worked on for the California Department of Water Resources and other various public agencies. The parametric spreadsheet is thus believed to produce an effective and reliable estimate. URS developed the spreadsheet following typical levee designs provided by the Sacramento District (SPK) Geotech/Civil Design sections and computed the corresponding construction cost. The estimate is based on the manual inputs and output is based solely on the input. The project delivery team (PDT) collectively compiled the input parameters, based on best available Hydraulic and representative Geotechnical data to come up with recommended repairs (or new levee design) by reach. For each individual reach and cross section, the input parameters such as the levee height, crest width, levee slopes, cutoff wall

depths, etc., were quantified and used to generate the parametric portion of the estimate. The unit prices used were reviewed by SPK Cost Estimating Section and updated to reflect present day costs. In some cases, these unit costs were updated based on cost developed in MII.

Other major cost categories including cultural resources, PED (Preconstruction Engineering & Design), and Construction Management had to be considered separately. A percentage of the construction cost was used to compute costs for the remaining cost categories.

The cost estimates for each alternative for the purposes of screening and TSP selection, is the summation of the costs from the parametric spreadsheet output and the costs of the other major cost categories.

The Screening Level Estimates were developed based on the initial measures and these were combined to reflect the alternatives developed by the PDT. The estimates were continuously updated to match the current design refinements and the latest information available at the time of the revisions. The costs do not account for life cycle costs.

The estimates follow the Civil Works Work Breakdown Structure (CWWBS) code of accounts. Feature Codes typically involved in this estimate are 01- Lands and Damages, 06-Fish and Wildlife Facilities, 18-Cultural Resource Preservation, 30-Preconstruction Engineering and Design, and 31-Construction Management. The 30 and 31 accounts involve any costs associated with USACE staffing on the project. The amounts are based on historical data adjusted downward based upon the simple nature of the features of work.

b. Cost Uncertainties

There are inherent uncertainties in the costs at the feasibility level of design since there is no detailed design, plans or specs. However, the simplicity of the TSP's features of work significantly reduced the potential uncertainty. There are additional uncertainties as the construction contractor(s) are responsible for obtaining most construction materials, accomplishing the work in a timely manner as per the project due date, using of overtime and/or multiple crews to accomplish the same, etc. There are also some cost uncertainties captured relative to risk analysis (see below).

For this project, more than 50% of the TSP's costs are directly related to the cost to pump the previously dredged material to its placement site which has a low uncertainty due to the availability of data for this area.

During the screening process, the high uncertainty in suitable material availability, the need to acquire numerous tracts of land, and the condition/winding nature of haul routes within the Delta, translated into high material costs for the hauling alternatives that were quickly screened out for the previously dredged material storage sites. Alternatively, barging material to the sites is considered highly uncertain due to barge draft requirements related to the shallow depths of the nearby channels and placement sites. However, even with the unreasonable assumption that a barge could traverse to the sites, the material unit costs were more than 50% higher versus pumping.

c. OMRR&R Costs

A brief investigation of OMRR&R costs was done by the PDT and determined to be unnecessary due to the success of the nearby and similar case study, Donlon Island which resulted in the decision not to include any OMRR&R costs. This decision incorporates the fact that there is a 2 year period of monitoring included for each site in the base cost estimate.

d. Total Project Schedule (including Construction)

Once the TSP was selected and the sequence of construction was determined, the Cost Engineering Section's master scheduler created the Total Project Schedule. The schedule has subsequently been revised twice following DQC comments. The assumption has been made that the PED portion of the project will occur in FY 16 thru FY 17 with the construction portion commencing FY 18. Construction is assumed to take 5 years, with 2 years of subsequent monitoring.

e. Cost and Schedule Risk Analysis

An initial Abbreviated Cost Risk Analysis (ACRA) was performed for the project. The risk analysis process used is intended to determine the probability of various cost outcomes and quantify the required contingency needed in the cost estimate. Risk analysis results are intended to provide project leadership with contingency information in order to support decision making and risk management as the project progresses from planning through implementation. To fully recognize its benefits, cost and schedule risk analysis should be considered as an ongoing process conducted concurrent to, and iteratively with, other important project processes such as scope and execution plan development, resource planning, procurement planning, budgeting and scheduling.

A meeting was held 19 December with the project manager and most PDT members. The meeting focused primarily on risk factor identification using brainstorming techniques, but also included some discussions based on risk factors common to many civil works projects. The meeting included risk factor assessment and quantification and did result in some revisions to the estimate. Project risks were identified and a risk register developed as a spreadsheet (using Microsoft Excel). After the meeting, the draft risk register was forwarded to the PDT for review.

The quantitative impacts of each risk element on costs and schedule were analyzed using a combination of professional judgment, empirical data and analytical techniques. Risks that were not immediately agreed upon by the PDT were discussed at length and agreed upon in the form of inputs into the probability density functions. Quantification involved multiple project team disciplines and functions. The resulting product risk model therefore reflects the risk register parameters as developed by the PDT.

In simple terms, contingency is an amount added to an estimate and/or schedule that allows for items, conditions or events for which the occurrence or impact is uncertain and that experience suggests will likely result in additional costs being incurred or additional time being required.

The amount of contingency used for a project depends, at least in part, on the project leadership's willingness to accept risk of project overruns.

f. Review

The TSP level cost estimate has been reviewed by senior estimators at the Sacramento District.

g. Screening Level Results

The tables at the conclusion of this section, Table 1, show a brief summary of the screening level results.

h. Final Array Results

The tables at the conclusion of this section, Table 2, show a brief summary of the final array cost estimates and the subsequent results from the environmental model output.

3. Key Assumptions:

a. Parametric Estimates

- Cross Sections for the various levee improvements or new levees are representative of the levee reach (during screening).
- Unit Costs utilized are fair and reasonable and utilized an MCACES unit cost foundation whenever possible.
- 400 CY of material pumped per hour within a slurry mix of 90% water.
- 50% of slurry outflow material settles into final position reducing which reduces the amount of material needed to be handled following discharge.

b. Haul Distances – Levee Fill Borrow will come from within 30 miles (one-way haul) of the various disposal areas. The lack of a detailed borrow site study of the Delta, and the prevalence of peat (unsuitable for in-water placement or levee construction) within the Delta footprint, will significantly increase haul costs. Barging material into Big Break, Frank's Tract and Little Frank's Tract for open water ER placement is not feasible due to typically loaded barge draft depths exceeding the available depth by at least four feet of MSL at all three sites. Attempting to work in high tide and reduce available working hours or operate partially loaded barges was found to lose too great a level of transport efficiency to compete with the pumping based TSP alternatives.

c. Real Estate - Real Estate Costs used for screening and final array analysis are reasonable. Real Estate estimate errors will affect the alternatives evenly and/or not affect the ranked order of alternatives. Alternatively, the lack of adequate borrow material for both in water placement and levee construction (during screening), significantly increases non-dredge material sourcing costs due to the need to acquire and transport suitable material. The pipe crossing of HWY 160

necessary to pump from Decker Island south to Big Break is considered mobilization costs as opposed to relocation costs after it was determined to be reasonably constructible. Judy (530.741.4403) at the California Department of Transportation encroachment permitting department responsible for this specific stretch of road (region 3) stated that this was an acceptable permit application because of the classification of HWY 160 where encroachment permits are under much less scrutiny than HWY 5 for example, where this would be an unacceptable permit application.

d. Parametric Cost Estimates are sufficient for screening and evaluating the final array of alternatives in order to determine the TSP.

e. Quantity Uncertainty – Previously dredged material storage site quantities are based upon the deposits made since 2000. Correspondence with the controlling agencies indicates that the dredge material storage sites for the TSP have not removed a significant quantity of this material, if any, and is thus considered to be a conservative number. These figures were considered adequate to screen alternatives to the point of determining a tentatively selected plan because they are not expected to decrease which would only have a negative impact on per acre costs. The estimated expected quantity of yearly O&M material available is based upon the most recent placement figures (2006 to present) and the assumption that on most years, our expected amount should exceed the available amount to prevent mid operation shut down.

f. Project Schedule - PED portion of the project will occur from FY 16 thru FY 17 with the construction portion commencing FY 18. Construction is assumed to take 5 years followed by 2 years of monitoring. Real estate actions will be generally conducted the year prior to use.

g. Cultural Resources – Costs will be approximately 1% of the Federal Construction Costs

h. PED Costs – the assumed 15% of Construction Costs used in recent years by the Sacramento District is fair and reasonable due to the simplistic nature of the TSP's features of work.

i. Construction Management Costs – assumed 8.5% of Construction Costs used in recent years by the Sacramento District is fair and reasonable due to the simplistic nature of the TSP's features of work.

J. Constructability (In water earthwork) – Although there are concerns about the constructability of the in water earthwork due to depth of water and shapability of the material, this concern has been captured in the cost risk analysis and determined to be low risk of increasing cost or lengthening the schedule. Alternatively, a viable alternative of replacing the in water work with additional labor hours to physically move the discharge pipe outflow location at a higher rate is a cheaper, but less precise option. The lower precision of material placement is not a prohibitive consequence and ultimately is considered an acceptable alternative method of construction.

k. Constructability (Sacrificial Hay bales) – It is assumed that the sacrificial hay bale containment wall will be able to withstand the tidal forces applied to it over the course of the construction season. A robust design was used to ensure stability during the most dynamic

situation where tidal outflow is combined with pipe discharge. Additionally, the use of 120 degree sectors for the sacrificial hay bale wall arc maintains a modest flow rate assuming evenly distributed across the arc.

4. Results:

MII Cost Estimate

The Sacramento – San Joaquin Delta is part of the largest estuary on the west coast of the United States; is home to hundreds of species of fish, birds, mammals and reptiles; and has been named an Ecosystem of National Significance through the Environmental Protection and Biodiversity Conservation (EPBC) Act in 2011. Agricultural land irrigated by Delta water contributes billions of dollars in production for the nation. Two deep water ports serve as economic engines for the Central Valley, Northern California, and the western States and are reliant on Delta waters and Federal Deep Draft Navigation Channels and levees for navigation. Delta levees protect such critical infrastructure as state and interstate highways, National rail lines, natural gas fields, gas and fuel pipelines, water conveyance, drinking water pipelines, and numerous businesses and towns.

Estimated by	DANIEL KILLIP
Designed by	DANIEL KILLIP
Prepared by	Daniel Killip
Preparation Date	3/24/2014
Effective Date of Pricing	3/24/2014
Estimated Construction Time	1,460 Days

Description	UOM	ProjectCost
PM Report		**17,554,416.62**
BB1 - O&M DIRECT PLACEMENT (CONSTRUCTION YEARS 1-5)	**CY**	**3,275,584.19**
BB2 - MCCORMACK (CONSTRUCTION YEAR 1)		*23.0409*
	CY	**2,857,604.63**
BB3 - SCOUR (CONSTRUCTION YEAR 2)		*25.3215*
	CY	**5,317,321.48**
BB4 - DECKER ISLAND (CONSTRUCTION YEAR 3)		*26.8200*
	CY	**3,339,093.48**
LFT1 - BRADFORD (CONSTRUCTION YEAR 4)		*18.0571*
	CY	**2,764,812.83**

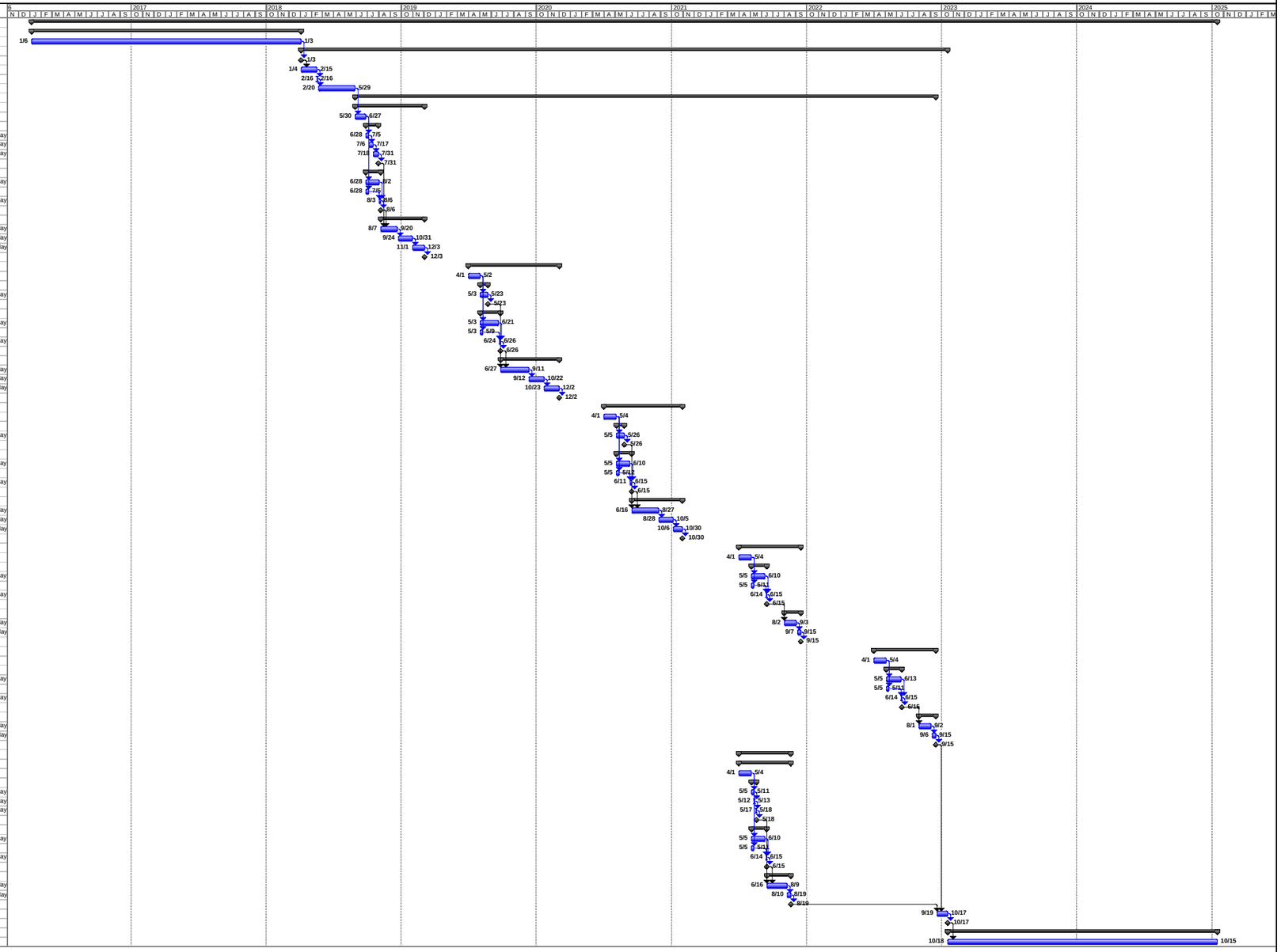
Currency in US dollars

Construction Schedule

Delta Islands and Levees - Alt 6 Construction

Schedule (Feasibility Level)

ID	Task Name	Duration	Start	Finish	Total Slack	Predecessors	Successors	Notes
1	**Delta Islands and Levees Feasibility Study - Alt 6 Construction Schedule**	**1889 days**	**Wed 1/6/16**	**Tue 10/15/24**	**0 days**			
2	**Pre-construction, Engineering, & Design (PED)**	**428 days**	**Wed 1/6/16**	**Wed 1/3/18**	**1260 days**			
3	Pre-construction, Engineering, & Design (2 Years)	428 days	Wed 1/6/16	Wed 1/3/18	1260 days		5	
4	**Construction**	**1033 days**	**Wed 1/3/18**	**Mon 10/17/22**	**428 days**			
5	Contract Award	0 days	Wed 1/3/18	Wed 1/3/18	1260 days	3	6	
6	Pre-Construction Submittals	20 days	Thu 1/4/18	Thu 2/15/18	1260 days	5	7	
7	NTP	1 day	Fri 2/16/18	Fri 2/16/18	1260 days	6	8	
8	Construction Submittals	60 days	Tue 2/20/18	Tue 5/29/18	1260 days	7	11	
9	**Big Break**	**932 days**	**Wed 5/30/18**	**Thu 9/15/22**	**448 days**			
10	**BB2 (McCormick)**	**120 days**	**Wed 5/30/18**	**Mon 12/3/18**	**1260 days**			
11	Mobilize & Set Up	20 days	Wed 5/30/18	Wed 6/27/18	1260 days	8	18,19,13	
12	**Pipeline Installation**	**23 days**	**Thu 6/28/18**	**Tue 7/31/18**	**1264 days**			
13	Install Pipe from Big Break to McCormick - Land Based (5,100')	5 days	Thu 6/28/18	Thu 7/5/18	1264 days	11	14	1050' per day
14	Install Pipe from Big Break to McCormick - Marine Based (4,900')	8 days	Fri 7/6/18	Tue 7/17/18	1264 days	13	15	650' per day
15	Anchor Pipe from Big Break to McCormick - Marine Based (4,900')	10 days	Wed 7/18/18	Tue 7/31/18	1264 days	14	16	500' per day
16	Pipe Installation Complete	0 days	Tue 7/31/18	Tue 7/31/18	1264 days	15	23	
17	**Big Break - Restoration Area Season 1**	**27 days**	**Thu 6/28/18**	**Mon 8/6/18**	**1260 days**			
18	Install Hay Bale Wall (3600')	25 days	Thu 6/28/18	Thu 8/2/18	1260 days	11	20	144'/day
19	Prep Silt Screen on Shore	5 days	Thu 6/28/18	Thu 7/5/18	1280 days	11	20	
20	Install Silt Screen (3600')	2 days	Fri 8/3/18	Mon 8/6/18	1260 days	18,19	21	2000'/day
21	Restoration Area Ready for Material	0 days	Mon 8/6/18	Mon 8/6/18	1260 days	20	23	
22	**Material Pumping**	**73 days**	**Tue 8/7/18**	**Mon 12/3/18**	**1260 days**			
23	Pump Material from McCormick to Big Break (124,000 cy)	32 days	Tue 8/7/18	Thu 9/20/18	1260 days	16,21	24	4000cy/day
24	Season 1 O&M Pumping (100,000 cy)	25 days	Mon 9/24/18	Wed 10/31/18	1260 days	23	25	4000cy/day
25	Earthwork/Shaping (112 kcy)	16 days	Thu 11/1/18	Mon 12/3/18	1260 days	24	26	50% of mat at 7000yds/day
26	Season 1 Complete	0 days	Mon 12/3/18	Mon 12/3/18	1260 days	25		
27	**BB3 (Scour)**	**156 days**	**Mon 4/1/19**	**Mon 12/2/19**	**1047 days**			
28	Mobilize & Set Up	20 days	Mon 4/1/19	Thu 5/2/19	1047 days		33,34,30	
29	**Pipeline Installation**	**14 days**	**Fri 5/3/19**	**Thu 5/23/19**	**1069 days**			
30	Install Pipe from McCormick to Scour - Land Based (13,728')	14 days	Fri 5/3/19	Thu 5/23/19	1069 days	28	31	1050' per day
31	Pipe Installation Complete	0 days	Thu 5/23/19	Thu 5/23/19	1069 days	30	38	
32	**Big Break - Restoration Area Season 2**	**36 days**	**Fri 5/3/19**	**Wed 6/26/19**	**1047 days**			
33	Install Hay Bale Wall (4650')	33 days	Fri 5/3/19	Fri 6/21/19	1047 days	28	35	144'/day
34	Prep Silt Screen on Shore	5 days	Fri 5/3/19	Thu 5/9/19	1075 days	28	35	
35	Install Silt Screen (4650')	3 days	Mon 6/24/19	Wed 6/26/19	1047 days	33,34	36	2000'/day
36	Restoration Area Ready for Material	0 days	Wed 6/26/19	Wed 6/26/19	1047 days	35	38	
37	**Material Pumping**	**100 days**	**Thu 6/27/19**	**Mon 12/2/19**	**1047 days**			
38	Pump Material from Scour to Big Break (210,000 cy)	53 days	Thu 6/27/19	Wed 9/11/19	1047 days	31,36	39	4000cy/day
39	Season 2 O&M Pumping (100,000 cy)	25 days	Thu 9/12/19	Tue 10/22/19	1047 days	38	40	4000cy/day
40	Earthwork/Shaping (155 kcy)	22 days	Wed 10/23/19	Mon 12/2/19	1047 days	39	41	50% of mat at 7000yds/day
41	Season 2 Complete	0 days	Mon 12/2/19	Mon 12/2/19	1047 days	40		
42	**BB5 (Decker)**	**141 days**	**Wed 4/1/20**	**Fri 10/30/20**	**848 days**			
43	Mobilize & Set Up	20 days	Wed 4/1/20	Mon 5/4/20	848 days		45,48,49	
44	**Pipeline Installation**	**14 days**	**Tue 5/5/20**	**Tue 5/26/20**	**861 days**			
45	Install Pipe from McCormick to Decker- Land Based (15,048')	14 days	Tue 5/5/20	Tue 5/26/20	861 days	43	46	1050' per day
46	Pipe Installation Complete	0 days	Tue 5/26/20	Tue 5/26/20	861 days	45	53	
47	**Big Break - Restoration Area Season 3**	**27 days**	**Tue 5/5/20**	**Mon 6/15/20**	**848 days**			
48	Install Hay Bale Wall (3600')	25 days	Tue 5/5/20	Wed 6/10/20	848 days	43	50	144'/day
49	Prep Silt Screen on Shore	5 days	Tue 5/5/20	Tue 5/12/20	868 days	43	50	
50	Install Silt Screen (3600')	2 days	Thu 6/11/20	Mon 6/15/20	848 days	48,49	51	2000'/day
51	Restoration Area Ready for Material	0 days	Mon 6/15/20	Mon 6/15/20	848 days	50	53	
52	**Material Pumping**	**94 days**	**Tue 6/16/20**	**Fri 10/30/20**	**848 days**			
53	Pump Material from Decker to Big Break (124,500 cy)	53 days	Tue 6/16/20	Thu 8/27/20	848 days	46,51	54	4000cy/day
54	Season 3 O&M Pumping (100,000 cy)	25 days	Fri 8/28/20	Mon 10/5/20	848 days	53	55	4000cy/day
55	Earthwork/Shaping (112 kcy)	16 days	Tue 10/6/20	Fri 10/30/20	848 days	54	56	50% of mat at 7000yds/day
56	Season 3 Complete	0 days	Fri 10/30/20	Fri 10/30/20	848 days	55		
57	**O&M Season 4**	**112 days**	**Thu 4/1/21**	**Wed 9/15/21**	**663 days**			
58	Mobilize & Set Up	20 days	Thu 4/1/21	Tue 5/4/21	696 days		60,61	
59	**Big Break - Restoration Area Season 4**	**27 days**	**Wed 5/5/21**	**Tue 6/15/21**	**696 days**			
60	Install Hay Bale Wall (3600')	25 days	Wed 5/5/21	Thu 6/10/21	696 days	58	62	144'/day
61	Prep Silt Screen on Shore	5 days	Wed 5/5/21	Tue 5/11/21	716 days	58	62	
62	Install Silt Screen (3600')	2 days	Mon 6/14/21	Tue 6/15/21	696 days	60,61	63	2000'/day
63	Restoration Area Ready for Material	0 days	Tue 6/15/21	Tue 6/15/21	696 days	62	65	
64	**Material Pumping**	**32 days**	**Mon 8/2/21**	**Wed 9/15/21**	**663 days**			
65	Season 4 O&M Pumping (100,000 cy)	25 days	Mon 8/2/21	Fri 9/3/21	663 days	63	66	4000cy/day
66	Earthwork/Shaping (50 kcy)	7 days	Tue 9/7/21	Wed 9/15/21	663 days	65	67	50% of mat at 7000yds/day
67	Season 4 Complete	0 days	Wed 9/15/21	Wed 9/15/21	663 days	66		
68	**O&M Season 5**	**111 days**	**Fri 4/1/22**	**Thu 9/15/22**	**0 days**			
69	Mobilize & Set Up	20 days	Fri 4/1/22	Wed 5/4/22	31 days		71,72	
70	**Big Break - Restoration Area Season 5**	**27 days**	**Thu 5/5/22**	**Wed 6/15/22**	**31 days**			
71	Install Hay Bale Wall (3600')	25 days	Thu 5/5/22	Mon 6/13/22	31 days	69	73	144'/day
72	Prep Silt Screen on Shore	5 days	Thu 5/5/22	Wed 5/11/22	51 days	69	73	
73	Install Silt Screen (3600')	2 days	Tue 6/14/22	Wed 6/15/22	31 days	71,72	74	2000'/day
74	Restoration Area Ready for Material	0 days	Wed 6/15/22	Wed 6/15/22	31 days	73	76	
75	**Material Pumping**	**33 days**	**Mon 8/1/22**	**Thu 9/15/22**	**0 days**			
76	Season 5 O&M Pumping (100,000 cy)	25 days	Mon 8/1/22	Fri 9/2/22	0 days	74	77	4000cy/day
77	Earthwork/Shaping (50 kcy)	8 days	Tue 9/6/22	Thu 9/15/22	0 days	76	78	50% of mat at 7000yds/day
78	Season 5 Complete	0 days	Thu 9/15/22	Thu 9/15/22	0 days	77	96	
79	**Little Franks Tract**	**94 days**	**Thu 4/1/21**	**Thu 8/19/21**	**233 days**			
80	**Little Franks Tract**	**94 days**	**Thu 4/1/21**	**Thu 8/19/21**	**233 days**			
81	Mobilize & Set Up	20 days	Thu 4/1/21	Tue 5/4/21	233 days		88,89,83	
82	**Pipeline Installation**	**9 days**	**Wed 5/5/21**	**Tue 5/18/21**	**251 days**			
83	Install Pipe from Little Franks to Bradford - Land Based (5,300')	5 days	Wed 5/5/21	Tue 5/11/21	251 days	81	84	1050' per day
84	Install Pipe from Little Franks to Bradford - Marine Based (500')	2 days	Wed 5/12/21	Thu 5/13/21	251 days	83	85	650' per day
85	Anchor Pipe from Little Franks to Bradford - Marine Based (500')	2 days	Mon 5/17/21	Tue 5/18/21	251 days	84	86	500' per day
86	Pipe Installation Complete	0 days	Tue 5/18/21	Tue 5/18/21	251 days	85	93	
87	**Little Franks - Restoration Area Season 1**	**27 days**	**Wed 5/5/21**	**Tue 6/15/21**	**233 days**			
88	Install Hay Bale Wall (3600')	25 days	Wed 5/5/21	Thu 6/10/21	233 days	81	90	144'/day
89	Prep Silt Screen on Shore	5 days	Wed 5/5/21	Tue 5/11/21	253 days	81	90	
90	Install Silt Screen (3600')	2 days	Mon 6/14/21	Tue 6/15/21	233 days	88,89	91	2000'/day
91	Restoration Area Ready for Material	0 days	Tue 6/15/21	Tue 6/15/21	233 days	90	93	
92	**Material Pumping**	**47 days**	**Wed 6/16/21**	**Thu 8/19/21**	**233 days**			
93	Pump Material from Bradford to Little Franks (153,000 cy)	39 days	Wed 6/16/21	Mon 8/9/21	233 days	86,91	94	4000cy/day
94	Earthwork/Shaping (50 kcy)	8 days	Tue 8/10/21	Thu 8/19/21	233 days	93	95	50% of mat at 7000yds/day
95	Season 3 Complete	0 days	Thu 8/19/21	Thu 8/19/21	233 days	94	96	
96	Demobilization	20 days	Mon 9/19/22	Mon 10/17/22	0 days	78,95	97	
97	Contract Complete	0 days	Mon 10/17/22	Mon 10/17/22	0 days	96	99	
98	**Post Construction**	**428 days**	**Tue 10/18/22**	**Tue 10/15/24**	**0 days**			
99	Post Construction Monitoring (2 Years)	428 days	Tue 10/18/22	Tue 10/15/24	0 days	97		



Project:
DILFS - Alt 6 Construction Schedule.mpp
Date: Thu 3/20/14

Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress | Split | External Tasks | Project Summary | Group By Summary | Deadline

Total Project Cost, Tentatively Selected Plan

PROJECT: Delta Islands Feasibility Study
LOCATION: Delta Islands, CA

DISTRICT: SPK Sacramento PREPARED: 3/19/2014
POC: CHIEF, COST ENGINEERING, Jerry Frost

This Estimate reflects the scope and schedule in report; Delta Islands Feasibility Study

Program Year (Budget EC): 2015
Effective Price Level Date: 1 OCT 14

WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	BASE COST TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	FIRST COST TOTAL ($K)	Spent Thru: 1-Oct-13 ($K)		COST ($K)	CNTG ($K)	FULL ($K)
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
06	FISH & WILDLIFE FACILITIES	$17,554	$2,993	17%	$20,547	1.7%	$17,853	$3,044	**$20,897**			$19,595	$3,341	$22,936
18	CULTURAL RESOURCE PRESERVATION	$176	$30	17%	$205	1.7%	$179	$30	**$209**			$196	$33	$229
	CONSTRUCTION ESTIMATE TOTALS:	$17,730	$3,023		**$20,753**	1.7%	$18,031	$3,074	**$21,106**			$19,791	$3,374	$23,166
01	LANDS AND DAMAGES	$2,883	$577	20%	$3,460	1.7%	$2,932	$586	**$3,519**			$3,202	$640	$3,842
30	PLANNING, ENGINEERING & DESIGN	$2,641	$450	17%	$3,091	3.9%	$2,743	$468	**$3,211**			$2,983	$509	$3,491
31	CONSTRUCTION MANAGEMENT	$1,464	$250	17%	$1,714	3.9%	$1,521	$259	**$1,780**			$1,822	$311	$2,133
	PROJECT COST TOTALS:	$24,718	$4,300	17%	**$29,018**	2.1%	$25,227	$4,388	**$29,615**			$27,798	$4,834	$32,632

FULLY FUNDED PROJECT ESTIMATE

CHIEF, COST ENGINEERING, Jerry Frost

PROJECT MANAGER, xxx

CHIEF, REAL ESTATE, xxx

CHIEF, PLANNING,xxx

CHIEF, ENGINEERING, xxx

CHIEF, OPERATIONS, xxx

CHIEF, CONSTRUCTION, xxx

CHIEF, CONTRACTING,xxx

CHIEF, PM-PB, xxxx

CHIEF, DPM, xxx

ESTIMATED FEDERAL COST: 65% **$21,211**
ESTIMATED NON-FEDERAL COST: 35% **$11,421**

ESTIMATED TOTAL PROJECT COST: $32,632

THIS TPCS REFLECTS A PROJECT COST CHANGE OF ======>

THE 902 COST LIMIT IS ================================>

O&M OUTSIDE OF TOTAL PROJECT COST: