

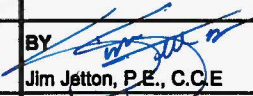


FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - 20 cfs Bypass Pipeline Civil	PROJECT: Central Valley Project - California		
	WOID: A029F	ESTIMATE LEVEL: Appraisal	
	REGION: MP	UNIT PRICE LEVEL: Oct-12	
	FILE: H:\D8170\Common\Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 1\SJRRP Friant Fish Hatchery Alt 1 02-05-2013.xlsx\Sheet7		

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Site & 24" Bypass Pipe Trench Items:					
	1A	Unwatering (5 gpm pump, 4 month duration, 50% run-time for precipitation)	8140	1	ls	\$13,000.00	\$13,000.00
	1B	Stripping (1' deep, lawn & gravel parking lot)	8140	440	cy	\$7.50	\$3,300.00
	1C	Common Pipe Excavation (10' deep, 2:1 in soils)	8140	1,000	cy	\$8.00	\$8,000.00
	1D	Pipe Bedding (4" thick, select fill material)	8140	7.8	cy	\$84.00	\$655.20
	1E	Compacted Backfill to 0.7 OD	8140	44	cy	\$100.00	\$4,400.00
	1F	Compacting backfill (to 90% relative density)	8140	44	cy	\$20.00	\$880.00
	1G	Uncompacted backfill above pipe to O.G.	8140	790	cy	\$8.80	\$6,952.00
	1H	Replacing gravel surfacing (1' thick)	8140	135	cy	\$76.00	\$10,260.00
	1I	Replace lawn & topsoil, 1 foot deep	8140	570	sy	\$4.50	\$2,565.00
	1J	Reinforced concrete thrust block (7' x 7' x 7', 4,000 psi min.)	8140	12	cy	\$700.00	\$8,400.00
	1K	Reinforcement for thrust block (150 lbs/cy)	8140	1,800	lbs	\$2.00	\$3,600.00
	1L	Cementitious material (.282 tons/cy, 6 sack mix)	8140	3.4	tons	\$210.00	\$714.00
	2	Flow-meter and PRV Valve Vault Items:					
		*Note that there is (1) 8' x 10' flow meter vault & (1) 16' x 8' PRV vault. PRV vaults contains (2) PRV's to reduce head to match existing pipe.					
	2A	Structure excavation (2:1 in soils, 10' deep)	8140	225	cy	\$14.00	\$3,150.00
	2B	Reinforced Concrete (4,500 psi min.)	8140	40	cy	\$1,100.00	\$44,000.00
	2C	Reinforcement (150 lbs/cy)	8140	6,000	lbs	\$2.00	\$12,000.00
	2D	Cementitious Materials (6 sack, 0.282 tons/cy)	8140	11.3	tons	\$210.00	\$2,373.00
	2E	Structural Backfill	8140	150	cy	\$15.00	\$2,250.00
	2F	Compacting structural backfill (90% Rel. Dens.)	8140	150	cy	\$15.00	\$2,250.00
	2G	Alum. grating (2" I-bar, 19-2 spacing, 5.1#/sf)	8140	670	lbs	\$12.00	\$8,040.00
	2H	Steel access ladder (10 ft tall, embed into vault wall @ comer, includes a removable "Ladder-Up" safety rail system through grating)	8140	2	ea	\$3,700.00	\$7,400.00
	2I	Steel bollards (8' tall, embed 4', fill with concrete)	8140	8	ea	\$1,500.00	\$12,000.00
SUBTOTAL THIS SHEET							\$156,189.20

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY Jim Jetton, P.E., C.C.E.	CHECKED Tom Hanke
DATE PREPARED 11/29/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke 2/5/13


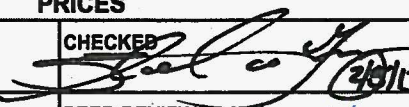
FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - 20 cfs Bypass Pipeline	PROJECT: Central Valley Project - California
	WOID: A029F ESTIMATE LEVEL: Appraisal REGION: MP UNIT PRICE LEVEL: Oct-12
	FILE: H:\D8170\Common\JJetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 1\SJRRP Friant Fish Hatchery Alt 1 02-05-2013.xlsx\Sheet7

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	3	OCID Powerhouse Bypass Pipe Items:					
	3A	24" mortar lined, epoxy coated welded steel pipe 0.375" thick, 103 lbs/ft, 137 linear ft	8140	14,000	lbs	\$3.80	\$53,200.00
	3B	30x30x24 Steel Tee, Epoxy coated, HC=150 psi	8140	1	ea	\$18,000.00	\$18,000.00
	3C	45x45x24 Steel Tee, Epoxy coated, HC=150 psi	8140	1	ea	\$27,000.00	\$27,000.00
	3D	24" Gate Isolation Valve AWWA C504 Class 150	8140	2	ea	\$23,000.00	\$46,000.00
	3E	24" AWWA Flanges, Class 150	8140	2	ea	\$5,200.00	\$10,400.00
	4	Temporary Pump (for Bypass tie-in) Items:					
		Temporary 35 cfs pump to deliver water to Friant Fish Hatchery during (2) Tee installations. The temporary pump will be trailer mounted, placed along the San Joaquin River on California DFG property, with intakes placed directly in the river. Temporary piping will be run to the aeration towers as the delivery location. Temporary pump will be required for 7 days (allows for 3 days per Tee installation, sequentially placed, and 1 extra day for emergency/schedule slip). Please see quote obtained from 'Rain for Rent' during design period for specific details, and note the new 7-day duration. Include backup generator and standby pump in cost.	8140	1	ls	\$105,000.00	\$105,000.00
	5	SJR Outlet Pipe Demolition Items:					
	5A	Dewater, demo & remove existing 24" welded steel pipeline, 251 linear feet, 0.25" wall	8140	17,000	lbs	\$1.30	\$22,100.00
	5B	Remove existing 24x24x24 off-angle Tee, keep the existing 24" pipe to the abandoned mixing vault intact for connection included in this work	8140	1	ls	\$1,900.00	\$1,900.00
	5C	Remove existing 24x30 reducer at mixing valves	8140	1	ls	\$1,900.00	\$1,900.00
	5D	Demolish & remove existing concrete saddle blocks (5 blocks, 12' tall)	8140	7.8	cy	\$410.00	\$3,198.00
SUBTOTAL THIS SHEET							\$288,698.00

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY  Jim Jetton, P.E., C.C.E.	CHECKED  Tom Hanke
DATE PREPARED 11/29/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke  2/5/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - 20 cfs Bypass Pipeline	PROJECT: Central Valley Project - California						
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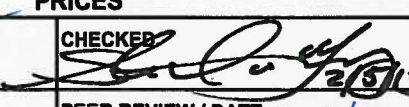
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	6	SJR Outlet to OCID Powerhouse Pipe Items:					
	6A	30" mortar lined, epoxy coated welded steel pipe 0.375" thick, 127 lbs/ft, 235 linear ft	8140	30,000	lbs	\$3.80	\$114,000.00
	6B	30x30x24 steel fitting, Tee w/ 45 degree angle, Epoxy coated, HC=150 psi	8140	1	ea	\$18,000.00	\$18,000.00
	6C	New concrete saddle blocks to support steel pipe from SJR outlet to daylight into hill slope. Blocks are 12' tall, 1' deep, 3.5' wide, 20' O.C.	8140	11	cy	\$2,300.00	\$25,300.00
	6D	Reinforcement	8140	1,650	lbs	\$2.00	\$3,300.00
	6E	Cementitious Materials (6 sack, 0.282 tons/cy)	8140	3.1	tons	\$210.00	\$651.00
	7	30" Main Pipe Trench Items:					
	7A	Unwatering (5 gpm pump, 4 month duration, 50% run-time for precipitation)	8140	1	ls	\$13,000.00	\$13,000.00
	7B	Stripping (1' deep, native veg. & gravel)	8140	360	cy	\$7.50	\$2,700.00
	7C	Common Pipe Excavation (10' deep, 2:1 in soils)	8140	860	cy	\$8.00	\$6,880.00
	7D	Pipe Bedding (4" thick, select fill material)	8140	8.3	cy	\$84.00	\$697.20
	7E	Compacted Backfill to 0.7 OD	8140	60	cy	\$100.00	\$6,000.00
	7F	Compacting backfill (to 90% relative density)	8140	60	cy	\$20.00	\$1,200.00
	7G	Uncompacted backfill above pipe to O.G.	8140	770	cy	\$8.80	\$6,776.00
	7H	Replacing gravel surfacing (1' thick)	8140	455	sy	\$24.00	\$10,920.00
	7I	Replace native topsoil from stripping, 1 foot deep	8140	660	sy	\$2.00	\$1,320.00
	7J	(2) Reinforced concrete thrust block (7' x 7' x 7', 4,000 psi min.)	8140	24	cy	\$700.00	\$16,800.00
	7K	Reinforcement for thrust block (150 lbs/cy)	8140	3,600	lbs	\$2.00	\$7,200.00
	7L	Cementitious material (.282 tons/cy, 6 sack mix)	8140	3.4	tons	\$210.00	\$714.00
		SUBTOTAL THIS SHEET					\$235,458.20

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY  Jim Jetton, P.E., C.C.E.	CHECKED  2/5/13
DATE PREPARED 11/29/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke 2/5/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - 20 cfs Bypass Pipeline	PROJECT: Central Valley Project - California
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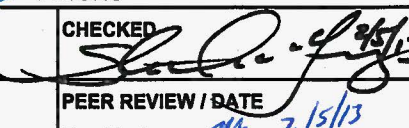
Hydraulic Equipment

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	9	Installing Outlet Pipes	8420				
	9A	Install the two reducers: Each reducer section: 110" ID X 96" ID					
		Estimated wt. per reducer section = 8600 lbs.					
		Total wt. for 2 reducer sections = 17200 lbs.		17,200	lbs.	\$12.50	\$215,000.00
		Procedure (for each reducer, there are 2 reducers):					
		For each location, install new 110" X 96" flanged reducer. Reinstall the existing 96" Hollow-Jet Valve (86,000 lbs.) with existing gantry crane.					
		Total number of fasteners installed = 120 - 2" Dia. Bolts and nuts.					
	10	Install straight steel pipe:					
	10A	18" Sch. 10, 15 ft. @ 48 lbs/ft.		720	lbs.	\$6.00	\$4,320.00
	10B	24" ID X 1/4" wall, 8 ft. @ 64 lbs/ft		512	lbs	\$6.00	\$3,072.00
	10C	30" ID X 1/4" wall, 40 ft. @ 80 lbs/ft		3200	lbs	\$5.00	\$16,000.00
SUBTOTAL THIS SHEET							\$238,392.00

QUANTITIES		PRICES	
BY Rick Frisz	CHECKED Nathan Nakamoto	BY  Jim Jetton, P.E., C.C.E.	CHECKED  Tom Hanke
DATE PREPARED 12/11/12	PEER REVIEW / DATE Rick Frisz	DATE PREPARED 02/05/13	PEER REVIEW / DATE NA 2/5/13


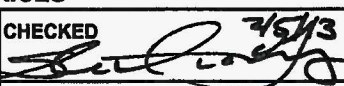

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REGION: MP	UNIT PRICE LEVEL: Oct-12				

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	11	Valves	8420				
	11A	2 - 24" Dia. Class 150 AWWA butterfly valves manually operated, 1085 lbs. ea.		2,170	lbs.	\$10.50	\$22,785.00
	11B	2 - 24" Dia. Class 150 Pressure reducing valves Flanged ends: 2900 Lbs. ea.		5,800	lbs.	\$6.90	\$40,020.00
SUBTOTAL THIS SHEET							\$62,805.00

QUANTITIES		PRICES	
BY Rick Frisz	CHECKED Nathan Nakamoto	BY  Jim Jetton, P.E., C.C.E.	CHECKED 
DATE PREPARED 12/11/12	PEER REVIEW / DATE Rick Frisz	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke <i>TH</i> 2/5/13

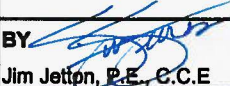
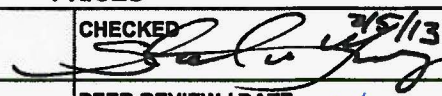
FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - Flowmeter	PROJECT: Central Valley Project - California
	WOID: A029F ESTIMATE LEVEL: Appraisal REGION: MP UNIT PRICE LEVEL: Oct-12
Civil	FILE: H:\D8170(Common\J.Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 1\SJRRP Friant Fish Hatchery Alt 1 02-05-2013.xlsx)Sheet7

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	12	F&I Magnetic flowmeter system in the 20 cfs, 24" dia. pipelines, electromagnetic flowmeters with flanged, cylindrical flow-tube, Tefzel liner, grounding rings, and remote transmitter (flowrate & totalizer) (equal to Model FM656 TigermagEP as manufactured by Sparling Instruments)	86-68410	1	L.S.	\$29,000.00	\$29,000.00
		- 24" Dia. flowmeter, approx. 860 lbs.					
SUBTOTAL THIS SHEET							\$29,000.00

QUANTITIES		PRICES	
BY R. Stephen	CHECKED S. Reed	BY  Jim Jetton, P.E., C.C.E.	CHECKED  2/5/13
DATE PREPARED 12/07/12	PEER REVIEW / DATE Daivd Hulse	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke  2/5/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - 20 cfs Bypass Pipeline <p style="text-align: center;">Summary Sheet</p>	PROJECT: Central Valley Project - California <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;">WOID:</td> <td style="width:20%;">A029F</td> <td style="width:30%;">ESTIMATE LEVEL:</td> <td style="width:20%;">Appraisal</td> </tr> <tr> <td>REGION:</td> <td>MP</td> <td>UNIT PRICE LEVEL:</td> <td>Oct-12</td> </tr> </table> FILE: H:\D8170\Common\JJetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 1\SJRRP Friant Fish Hatchery Alt 1 02-05-2013.xlsx\Sheet7	WOID:	A029F	ESTIMATE LEVEL:	Appraisal	REGION:	MP	UNIT PRICE LEVEL:	Oct-12
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REGION:	MP	UNIT PRICE LEVEL:	Oct-12						

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Subtotal					
		Sheet 1		8140			\$156,189.20
		Sheet 2		8140			\$288,698.00
		Sheet 3		8140			\$235,458.20
		Sheet 4		8420			\$25,010.00
		Sheet 5		8420			\$238,392.00
		Sheet 6		8420			\$62,805.00
		Sheet 7		8140			\$29,000.00
		Subtotal for 72 Wells					\$1,035,552.40
		Mobilization	5%	+/-			\$52,000.00
		Subtotal with Mobilization					\$1,087,552.40
		Contract Cost Allowances (Sum of):	20%	+/-			\$212,447.60
		Design Contingencies, 15 % (+/-)					
		APS, 5 % (+/-). Type of procurement: Request for Proposal (Assumed)					
		CONTRACT COST					\$1,300,000.00
		Construction Contingencies	25%	+/-			\$350,000.00
		FIELD COST (Unit Price Level Oct 2012)					\$1,650,000.00
		Escalation to Notice to Proceed (NTP), from Unit Price Level (Oct 2012) to NTP (Oct 2015)					
			at	3.0%	per year for	3.00	years
		FIELD COST (with Escalation to NTP, Price Level Oct 2015)					\$1,800,000.00
		Non-Contract Costs				To be determined by the appropriate responsible office	
		CONSTRUCTION COST				To be determined by the appropriate responsible office	
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY 8140 & 8420	CHECKED See Previous	BY  Jim Jetton, P.E., C.C.E.	CHECKED  2/5/13
DATE PREPARED See Previous	PEER REVIEW / DATE See Previous	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke 2/5/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - 20 cfs Groundwater Wells		PROJECT: Central Valley Project - California	
WOID: A029F		ESTIMATE LEVEL: Appraisal	
REGION: MP		UNIT PRICE LEVEL: Oct-12	
FILE:		H:\D8170\Common\Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template	



Civil

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Site Items:					
	1A	Pipe Trench Unwatering (4-50 gpm pumps, 6 month duration, as-needed (20% run-time)	8140	1	ls	\$15,000.00	\$15,000.00
	1B	Storage Tank Exc. Unwatering (2-50 gpm pumps, 6 month duration, as-needed (20% run-time)	8140	1	is	\$10,000.00	\$10,000.00
	1C	Stripping (6" deep, open field soils)	8140	500,000	cy	\$1.50	\$750,000.00
	1D	Dust abatement (1/8" spray, 3x/day, road work per day = 1162', 261 days duration)	8140	850	Mgal	\$90.00	\$76,500.00
		Dewatering not anticipated due to height of the groundwater table determined using well logs in the area.					
	2	Access Roadway Items: Roads consist of (72) well access gravel roads; consisting of 3" gravel over 6" aggregate base course. Roads for initial well drilling/setup and permanent O&M needs. Total length of roadway (12' wide) = 151,400 ft					
	2A	3" Gravel roadway surfacing	8140	17,000	cy	\$56.00	\$952,000.00
	2B	6" Aggregate Base course	8140	34,000	cy	\$51.00	\$1,734,000.00
	3	Temporary Drill Pads:					
	3A	Provide temporary staging area for well drilling, testing, and setup. Each site is 50' x 75', with (72) total well sites to be installed.	8140	30,000	sy	\$1.85	\$55,500.00
	4	Permanent Well Sites:					
		Permanent well sites are 20' x 20' with security fencing (std. 8' chain-link w/ 2' barbed-wire)	8140	3,200	sy	No Costs. See 4A.	
	4A	Fencing	8140	5,800	lin ft	\$52.00	\$301,600.00
SUBTOTAL THIS SHEET							\$3,894,600.00

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY <i>[Signature]</i> Jim Jeffon, P.E., D.C.E.	CHECKED <i>[Signature]</i> 2/5/15
DATE PREPARED 12/07/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke <i>[Signature]</i> 2/6/15

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - 20 cfs Groundwater Wells		PROJECT: Central Valley Project - California	
		WOID: A029F	ESTIMATE LEVEL: Appraisal
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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	5	Well Drilling Items:					
	5A	Major work for well drilling is shown on separate cost estimate worksheet. Line item shown is to cost out haul-off of drill cuttings. Assume a 15 mile one-way haul distance to disposal site.	8140	670	cy	\$23.00	\$15,410.00
	6	Pipe Earthwork Items:					
	6A	Common Pipe Excavation (Varies 6' to 8' deep, 2:1 slope in soils)	8140	1,550,000	cy	\$4.70	\$7,285,000.00
	6B	Pipe Bedding (4" thick, select fill material)	8140	21,000	cy	\$70.00	\$1,470,000.00
	6C	Compacted Embedment (6" over crown for pipe dia. ≤ 12"; 0.7 OD for > 12" diameters) Reuse Excavated Material	8140	160,000	cy	\$9.40	\$1,504,000.00
	6D	Compacting Embedment (to 90% relative density)	8140	160,000	cy	\$6.90	\$1,104,000.00
	6E	Uncompacted Backfill (includes volume of stripped fill, replace in top 6")	8140	1,600,000	cy	\$4.50	\$7,200,000.00
	7	Pipe Items:					
		All well pipes and manifold are HDPE PE 3408, DR 17.0 IPS rated for 100 psi (AWWA M55). Pipes run from wells to well-strings to manifold to booster pumping plant. Delivery pipe runs from booster pumping plant to delivery located at CDFG hatchery (1.25 miles).					
SUBTOTAL THIS SHEET							\$18,578,410.00

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY  Jim Jetton, P.E., C.C.E.	CHECKED  Tom Hanke
DATE PREPARED 12/07/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke 2/6/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - 20 cfs Groundwater Wells		PROJECT: Central Valley Project - California	
		WOID: A029F	ESTIMATE LEVEL: Appraisal
		REGION: MP	UNIT PRICE LEVEL: Oct-12
Civil		FILE: H:\D8170\Common\J.Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template	


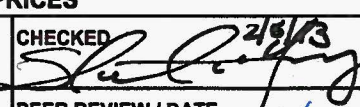
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Pipe Items (continued):					
	7A	(72) 25' long well to well-string pipes, 6" dia., DR 17, 3.34 lbs/ft, 1875 ft total	8140	6,300	lbs	\$3.60	\$22,680.00
	7B	Telescoping well-string pipes, 6" dia., DR 17, 3.34 lbs/ft, 10,000 ft total	8140	33,000	lbs	\$3.60	\$118,800.00
	7C	Telescoping well-string pipes, 8" dia., DR 17, 5.65 lbs/ft, 40,000 ft total	8140	230,000	lbs	\$3.00	\$690,000.00
	7D	Telescoping well-string pipes, 10" dia., DR 17, 8.78 lbs/ft, 250,000 ft total	8140	2,200,000	lbs	\$2.50	\$5,500,000.00
	7E	Telescoping well-string pipes, 12" dia., DR 17, 12.36 lbs/ft, 90,000 ft total	8140	1,100,000	lbs	\$2.40	\$2,640,000.00
	7F	Telescoping well-string pipes, 14" dia., DR 17, 14.91 lbs/ft, 40,000 ft total	8140	600,000	lbs	\$2.30	\$1,380,000.00
	7G	Telescoping well-string pipes, 16" dia., DR 17, 19.46 lbs/ft, 40,000 ft total	8140	780,000	lbs	\$2.25	\$1,755,000.00
		Manifold pipes connect from end of well-string to adjacent well string and to the booster pumping plant at end of last well-string.					
	7H	Manifold pipe, 16" dia., DR 17, 19.46 lbs/ft, length is 2,000 ft total	8140	39,000	lbs	\$2.20	\$85,800.00
	7I	Manifold pipe, 24" dia., DR 17, 43.81 lbs/ft, length is 2,000 ft total	8140	88,000	lbs	\$2.15	\$189,200.00
	7J	Manifold pipe, 30" dia., DR 17, 68.45 lbs/ft, length is 2,000 ft total	8140	140,000	lbs	\$2.00	\$280,000.00
	7K	Manifold pipe, 30" dia., DR 17, 68.45 lbs/ft, length is 2,000 ft total	8140	140,000	lbs	\$2.00	\$280,000.00
		Delivery pipe is 30" diameter HDPE PE 3408, DR 26 (64 psi) that runs from the booster pumping plant to the CDFG Hatchery delivery point. The length of the delivery pipe is 1.25 miles.					
	7L	Delivery pipe, 30" dia., DR 26, 45.78 lbs/ft, length is 6,600 ft total	8140	305,000	lbs	\$2.10	\$640,500.00
		SUBTOTAL THIS SHEET					\$13,581,980.00

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY <i>[Signature]</i> Jim Jetton, P.E., Q.C.E.	CHECKED <i>[Signature]</i> 2/6/13
DATE PREPARED 12/07/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke <i>[Signature]</i> 2/6/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - 20 cfs Groundwater Wells	PROJECT: Central Valley Project - California
	WOID: A029F ESTIMATE LEVEL: Appraisal REGION: MP UNIT PRICE LEVEL: Oct-12
	FILE: H:\D8170\Common\Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRFP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Sheet 4

Civil

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	8	Underground concrete storage tank; Underground concrete storage tank is located at booster pumping plant to provide storage and provide suction head for the pumps. Tank is reinforced concrete, depth = 24', length/width = 154'. Roof, slab, and walls are 2' thick. Tank has 2' x 2' columns @ 15' O.C. Inside. Tank stores about 6 hours of water @ 20 cfs flow, and has a 3.23 Million gallon capacity.					
	8A	Reinforced concrete (4,500 psi)	8140	4,800	cy	\$800.00	\$3,840,000.00
	8B	Reinforcement (150 lbs/cy)	8140	720,000	lbs	\$1.50	\$1,080,000.00
	8C	Cementitious Materials (0.282 tons/cy)	8140	1,350	tons	\$200.00	\$270,000.00
	8D	9" Waterstop (in slab and walls)	8140	3,850	lin ft	\$32.00	\$123,200.00
	9	Underground Tank Earthwork;					
	9A	Structural excavation (25' deep, 2:1 slopes in soil, allows for 5' horizontal over-excavation for forming and working area)	8140	43,000	cy	\$10.00	\$430,000.00
	9B	Structural backfill (25' deep about tank) Reuse Excavated Material	8140	21,000	cy	\$10.00	\$210,000.00
	9C	Compacting structural backfill (to 90% rel. dens.)	8140	21,000	cy	\$10.00	\$210,000.00
	9D	Access hatches (3' x 3' Aluminum, Bilco-style, locking, mounted to top of tank)	8140	2	ea	\$2,500.00	\$5,000.00
	9E	Access ladder (24' tall steel ladder with cage for fall protection, mounted into concrete walls)	8140	2	ea	\$5,900.00	\$11,800.00
	9F	Security fencing (8' chain link w/ 2' barbed wire, extends 20' outside top of tank perimeter)	8140	780	lin ft	\$52.00	\$40,560.00
	9G	Access gate (double-swing gate, each gate = 12' wide, chain link & barbed wire w/ wheel at base of gate and locking hasp)	8140	1	ea	\$4,500.00	\$4,500.00
	9H	Bollards (10' O.C. around top of tank to prevent vehicle loading on roof of tank, 8' tall, 4' buried)	8140	62	ea	\$1,350.00	\$83,700.00
SUBTOTAL THIS SHEET							\$6,308,760.00

QUANTITIES		PRICES	
BY Jeremy Lorberau	CHECKED W. Chris Duke, P.E.	BY  Jim Jetton, P.E., C.C.E.	CHECKED  Tom Hanke
DATE PREPARED 12/07/12	PEER REVIEW / DATE W. Chris Duke, P.E.	DATE PREPARED 02/05/13	PEER REVIEW / DATE 2/6/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - 20 cfs Groundwater Wells	PROJECT: Central Valley Project - California
	WOID: A029F ESTIMATE LEVEL: Appraisal
	REGION: MP UNIT PRICE LEVEL: Oct-12
	FILE: H:\D8170\Common\Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template

Electrical - SCADA

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Site Items:	86-68450				
10		Furnish and Install:					
10A		CPU (Desktop computer, monitor, keyboard, mouse)		1	ea	\$6,000.00	\$6,000.00
10B		Radio Tower ~20-30 feet		1	ea	\$14,500.00	\$14,500.00
10C		Application Software Programming (Assume ~20 days)		1	ea	\$41,000.00	\$41,000.00
10D		Radio - Access Point & Antenna (Unlicensed 900 MHz)		1	ea	\$5,500.00	\$5,500.00
11		3" Diameter Pipe Items (well to manifold):	86-68450				
		Furnish and Install:					
11A		Radio - Remote I/O & Antenna		75	ea	\$3,100.00	\$232,500.00
11B		Antenna Pole (Assume 10-20 ft wooden pole)		75	ea	\$1,300.00	\$97,500.00
		Misc. Items		20	%	Included in Items Above	
SUBTOTAL THIS SHEET							\$397,000.00

QUANTITIES		PRICES	
BY Jason Schmidt	CHECKED Paul Tinetti	BY Jim Jetton, P.E., C.C.E.	CHECKED Shelley [Signature]
DATE PREPARED 12/14/12	PEER REVIEW / DATE V. Hoan 12/14/12	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke 2/6/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - 20 cfs GW Booster Pumping Units	PROJECT: Central Valley Project - California
	WOID: A029F ESTIMATE LEVEL: Appraisal
	REGION: MP UNIT PRICE LEVEL: Oct-12
	FILE: H:\DB170\Common\Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		FURNISH AND INSTALL:					
	12	2 - Sulzer Pump model SJM-20MS, 1-stage, 880 rpm, vertical mixed-flow pump, Rated 20.6 cfs (9,246 gpm) @ 35 feet TDH, oil-lube line shaft, 19' long - 20" diam. column pipe assembly & 20" diam. above-deck discharge head (6,000 lbs each , 12,000 lbs total) - cast-iron bowls w/ stainless steel impellers and bowl liners - stainless steel shafts (bottom, line, top) - fabricated steel above-deck discharge head - pump vibration limits at Hydraulic Institute Standards - non-witnessed certified pump shop test - pump shop testing with job motor	86-68420	2	ea	\$195,000.00	\$390,000.00
	13	2 - 125 hp, 900 rpm, TEFC, 50-deg. C, vertical induction motor, normal thrust, solid-shaft, L447VP frame, "Premium Efficiency", 3 ph/60 hz/460 volt (2,300 lbs each, 4,600 lbs total)	86-68430	2	ea	\$23,000.00	\$46,000.00
SUBTOTAL THIS SHEET							\$436,000.00

QUANTITIES		PRICES	
BY R. Zelenka	CHECKED Toby Turnage 1/8/13	BY Jim Jetton, P.E., C.C.E.	CHECKED Tom Hanke 2/6/13
DATE PREPARED 1/3/13	PEER REVIEW / DATE Toby Turnage	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke 2/6/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 2 - Pumping Plant	PROJECT: Central Valley Project - California
WOID: A029F ESTIMATE LEVEL: Appraisal	
REGION: MP UNIT PRICE LEVEL: Oct-12	
FILE: H:\D8170\Common\Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template	

Hydraulic Equipment Group

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<u>Steel Manifold</u>	8420				
		FURNISH-AND-INSTALL THE FOLLOWING:					
	14	Steel Pipe					
	14A	2" Standard (=Sch. 40), L = 8 ft, Wt. = 5.5 lbs/ft		44	lbs.	\$16.50	\$728.00
	14B	20" O.D., Sch. 10, L = 45 ft, Wt. = 53 lbs/ft		2,385	lbs.	\$5.00	\$11,925.00
	14C	24" O.D. Sch. 10, L = 20 ft, Wt. = 64 lbs/ft		1,280	lbs.	\$5.00	\$6,400.00
	15	AWWA Class 150, Motor-Operated Butterfly Valves					
	15A	2 - 20" Dia. Valve, 1085 lbs with motor		2,170	lbs.	\$15.00	\$32,550.00
	16	ANSI Class 150, Tilting Disc Check Valves					
	16A	2 - 20" Dia. Valve, 1685 lbs		3,370	lbs.	\$14.00	\$47,180.00
	17	300 psi, Combination air valves (APCO bulletin 623 model 145C)					
	17A	2 - 2" Dia. Valve, 75 lbs		150	lbs.	\$16.00	\$2,400.00
	18	300 psi, Throttling air valves (APCO bulletin 586 model 144DAT)					
	18A	2 - 2" Dia. Valve, 50 lbs		100	lbs.	\$32.00	\$3,200.00
	19	Ball valves, threaded, full port, bronze, 600 psi cold-water					
	19A	4 - 2" Dia. Valves, 6.7 lbs		27	lbs.	\$200.00	\$5,400.00
		SUBTOTAL THIS SHEET					\$109,781.00

QUANTITIES		PRICES	
BY Ken Smith	CHECKED <i>Lucas Adams</i>	BY <i>Jim Jetton</i> Jim Jetton, P.E., C.C.E.	CHECKED <i>Tom Hanke</i> 2/5/13
DATE PREPARED 01/08/13	PEER REVIEW / DATE <i>Lucas Adams 1/8/13</i>	DATE PREPARED 02/05/13	PEER REVIEW / DATE <i>Tom Hanke 2/6/13</i>

FEATURE: FRIANT FISH HATCHERY WATER SUPPLY ALTERNATIVE 2: DEEP WELLS IN GRANITE Appraisal Estimate Assumed top of Aquifer Unit 500 feet bgs 1 Well		PROJECT: Central Valley Project - California	
WOID: A029F		ESTIMATE LEVEL: Appraisal	
REGION: MP		UNIT PRICE LEVEL: Oct-12	
FILE:		H:\D81701\Common\J.Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template	

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
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The following quantities are for 1 well. There are 72 wells in the well field. See Summary Sheet for cost of 72 wells.

20	SITE PREPARATION		8320				
20A	Site Preparation: Mobilization of Equipment			1	LS	Included in Summary	
20B	Site Preparation: access improvements, leveling drill pad, constructing mud pit, constructing or improving discharge facilities, stockpiling excavate materials			1	LS	\$8,500.00	\$8,500.00
20C	Site Preparation: Demobilization of Equipment			1	LS	Included in Summary	
21	PUMPING WELL INSTALLATION		8320				
21A	Mobilization of Drilling Equipment: drill rig, support equipment and vehicles, materials, ancillary materials and facilities			1	LS	Included in Summary	
21B	Drilling surface casing borehole, 14" diameter			3.00	LF	\$310.00	\$930.00
21C	Set Surface Casing; Mild Steel, Schd 10, 14" diameter 0.250 wall thickness; Includes cost of labor, etc.			6.00	LF	\$360.00	\$2,160.00
21D	Surface Casing cement (Includes 3' stickup)			2.16	FT ³	\$250.00	\$540.00
21E	Drilling well borehole, 8" diameter ; includes cost of sampling, temporary conductor casing, labor, sample storage, sample handling, etc.			715.00	LF	\$75.00	\$53,625.00
21F	Install wells, 8" diameter; - includes cost of labor, drill rig, centering guides, etc.			1	LS	\$12,000.00	\$12,000.00
21G	Blank Casing, 8" Diameter: Galvanized Steel, (includes 3' stickup)			300.00	LF	\$47.00	\$14,100.00
21H	Locking Mild Steel Surface Cap, 14" diameter			1	EA	\$260.00	\$260.00
21I	Well development (air lift or pumping) 4 mins min development per foot of open hole			1	LS	\$19,500.00	\$19,500.00
21J	6" diameter submersible pump or equivalent Grundfos 150S300-15, 30 HP, Nominal			1.00	EA	\$15,000.00	\$15,000.00
21K	Riser Pipe/Conductor, Sch 40 SS or equivalent			680.00	LF	\$77.00	\$52,360.00
SUBTOTAL THIS SHEET							\$178,975.00

QUANTITIES		PRICES	
BY W. Robert Talbot, 86-68320	CHECKED John Earle 11/30/2012	BY Jim Jetton, P.E., C.C.E.	CHECKED 2/5/13 Tom Hanke
DATE PREPARED 11/29/12	PEER REVIEW / DATE Leslie Stone 12/04/2012	DATE PREPARED 02/05/13	PEER REVIEW / DATE 2/6/13

FEATURE: FRIANT FISH HATCHERY WATER SUPPLY ALTERNATIVE 2: DEEP WELLS IN GRANITE Appraisal Estimate Assumed top of Aquifer Unit 500 feet bgs 1 Well	PROJECT: Central Valley Project - California <hr/> WOID: A029F ESTIMATE LEVEL: Appraisal REGION: MP UNIT PRICE LEVEL: Oct-12 FILE: H:\D81701Common\Jettor\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template
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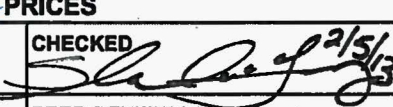
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
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The following quantities are for 1 well. There are 72 wells in the well field. See Summary Sheet for cost of 72 wells.							
	22	AQUIFER TESTING (PUMPING)	8320				
	22A	Aquifer Step Test, includes cost of monitoring/recording equipment, data collection, analysis and reporting; minimum testing durations (hrs). 16 Pumping 24 Recovery		1	LS	\$10,000.00	\$10,000.00
	22B	Aquifer Constant Rate Test, inclds cost of monitoring/logging equipment, data collection, analysis and reporting; minimum testing durations (hrs). 72 Pumping 48 Recovery		1	LS	\$14,500.00	\$14,500.00
	22C	Water Quality Testing: includes cost of sampling materials, sample collection, shipping, analysis, and reporting.		1	LS	\$1,100.00	\$1,100.00
	22D	Discharge System (estimated) - includes settling basin if needed, flow valves, flow meters, sampling ports, discharge point protection, etc		1	LS	\$5,100.00	\$5,100.00
	22E	Power: all necessary generators, wiring, connections, controls, fuel, maintenance, rentals, etc. to install, develop, and test PW and OWS (as needed), Conduct Constant Rate Test.		1	LS	Included in 22A-22D	\$0.00
	23	DEMobilIZATION	8320				
	23A	Demobilization: includes cost to demob drill rig, support equipment, removal of all equipment and materials, mob and demob of equipment necessary to rehabilitate/reclaim the site, abandon wells (as necessary), and site reclamation		1	LS	Included in Summary	\$0.00
	24	CONTRACT ADMINISTRATION	8320				
	24A	Contract Close-out: reports, logs, maintenance records and schedules, as-builts, etc.		1	LS	Included in Overheads	\$0.00
	24B	Meetings, site visits, debriefings, etc.		1	LS	Included in Overheads	\$0.00
SUBTOTAL THIS SHEET							\$30,700.00

QUANTITIES		PRICES	
BY W. Robert Talbot, 86-68320	CHECKED John Earle 11/30/2012	BY <i>[Signature]</i> Jim Jettor, P.E., C.C.E.	CHECKED <i>[Signature]</i> 2/5/13
DATE PREPARED 11/29/12	PEER REVIEW / DATE Leslie Stone 12/04/2012	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanks 2/6/13

FEATURE: San Joaquin River Restoration Program Friant Fish Hatchery Salmonid Conservation & Research Facility Alternative 1 - 20 cfs Bypass Pipeline <p style="text-align: center;">Summary Sheet</p>	PROJECT: Central Valley Project - California <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;">WOID: A029F</td> <td style="width:70%;">ESTIMATE LEVEL: Appraisal</td> </tr> <tr> <td>REGION: MP</td> <td>UNIT PRICE LEVEL: Oct-12</td> </tr> </table> FILE: H:\D8170\Common\J.Jetton\San Joaquin River Restoration Program\Friant Fish Hatchery Pipeline or Wells\Estimates\Alternative 2\SJRRP Friant Fish Hatchery Alt 2 02-05-2013.xlsx\Field Cost Summary Sht Template	WOID: A029F	ESTIMATE LEVEL: Appraisal	REGION: MP	UNIT PRICE LEVEL: Oct-12
WOID: A029F	ESTIMATE LEVEL: Appraisal				
REGION: MP	UNIT PRICE LEVEL: Oct-12				

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Subtotal					
		Sheet 1	8140				\$3,894,600.00
		Sheet 2	8140				\$18,578,410.00
		Sheet 3	8140				\$13,581,980.00
		Sheet 4	8140				\$6,308,760.00
		Sheet 5	8450				\$397,000.00
		Sheet 6	8430				\$436,000.00
		Sheet 7	8420				\$109,781.00
		Sheet 8 For 1 Well	8320	72	EA	\$178,975.00	\$12,886,200.00
		Sheet 9 For 1 Well	8320	72	EA	\$30,700.00	\$2,210,400.00
		Subtotal for 72 Wells					\$58,403,131.00
		Mobilization	5%	+/-			\$2,900,000.00
		Subtotal with Mobilization					\$61,303,131.00
		Contract Cost Allowances (Sum of):	20%	+/-			\$12,696,869.00
		Design Contingencies, 15 % (+/-)					
		APS, 5 % (+/-). Type of procurement: Request for Proposal (Assumed)					
		CONTRACT COST					\$74,000,000.00
		Construction Contingencies	25%	+/-			\$18,000,000.00
		FIELD COST (Unit Price Level Oct 2012)					\$92,000,000.00
		Escalation to Notice to Proceed (NTP), from Unit Price Level (Oct 2012) to NTP (Oct 2015)					
			at	3.0%	per year for	3.00	years
		FIELD COST (with Escalation to NTP, Price Level Oct 2015)					\$100,000,000.00
		Non-Contract Costs				To be determined by the appropriate responsible office	
		CONSTRUCTION COST				To be determined by the appropriate responsible office	
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY See Previous	CHECKED See Previous	BY  Jim Jetton, P.E., C.C.E.	CHECKED  Tom Hanke ^{2/5/13}
DATE PREPARED See Previous	PEER REVIEW / DATE See Previous	DATE PREPARED 02/05/13	PEER REVIEW / DATE Tom Hanke ^{2/6/13}