



**Operations
&
Maintenance Budget
FY 2020 – FY 2021 (Draft)**

FY 2020

(Draft)

FRIANT WATER AUTHORITY OPERATION AND MAINTENANCE BUDGET

TABLE OF CONTENTS **FY-2020**

Section

1. Assumptions & Considerations
2. Historical Comparison
3. Total Labor & Materials
4. Detail of Materials - Construction & Maintenance
5. Details of Materials - Administration & Water Operations
6. Extraordinary O&M Project Justifications
7. Vehicle & Equipment Justification
8. Ten Year Plan
9. Friant-Kern Canal Facilities

TABLE OF CONTENTS **FY-2021**

Section

1. Assumptions & Considerations
2. Total Labor & Materials
3. Detail of Materials - Construction & Maintenance
4. Details of Materials - Administration & Water Operations
5. Extraordinary O&M Project Justifications
6. Vehicle & Equipment Justification

ASSUMPTIONS
&
CONSIDERATIONS

**Friant Water Authority
Proposed Fiscal Year 2020 Budget
for
Operation and Maintenance
Friant-Kern Canal and Supporting Facilities**

Summary of
Assumptions and Considerations

1. Labor

A. Total staffing levels for FY 2020 are proposed as follows:

<u>Position</u>	<u>Total Positions</u>
1. Chief Executive Officer	1
2. Chief Operating Officer	1
3. Chief Financial Officer	1
4. Chief of External Affairs.....	1
5. Accounting Operations Administrator	1
6. Accounting Technician.....	2
7. Administrative Assistant.....	1
8. Canal Maintenance Worker *.....	21
9. Canal System Operator.....	6
10. Director of Technology	1
11. Director of Water Policy	1
12. Electrician.....	1
13. Electronic Technician	2
14. Engineering Technician.....	1
15. Equipment Mechanic.....	2
16. Equipment Operator *.....	4
17. Executive Assistant.....	1
18. Executive Secretary.....	1
19. General Superintendent	1
20. Governmental Affairs & Communications Manager	1
21. Human Resources/Risk Analyst.....	1
22. Instrumentation Technician	1
23. Maintenance Foreman	3
24. Maintenance Supervisor*.....	1
25. Office Technician	2
26. Operations Supervisor	1
27. Senior Accountant	1
28. Senior Engineer	1
29. Resources Manager*.....	1
30. Water Resources Manager*	1
31. Water Resources Technician	1
32. Intern(s) (Ops./Engineering & Technical Services).....	3
Total Full Time Positions.....	<u>68</u>

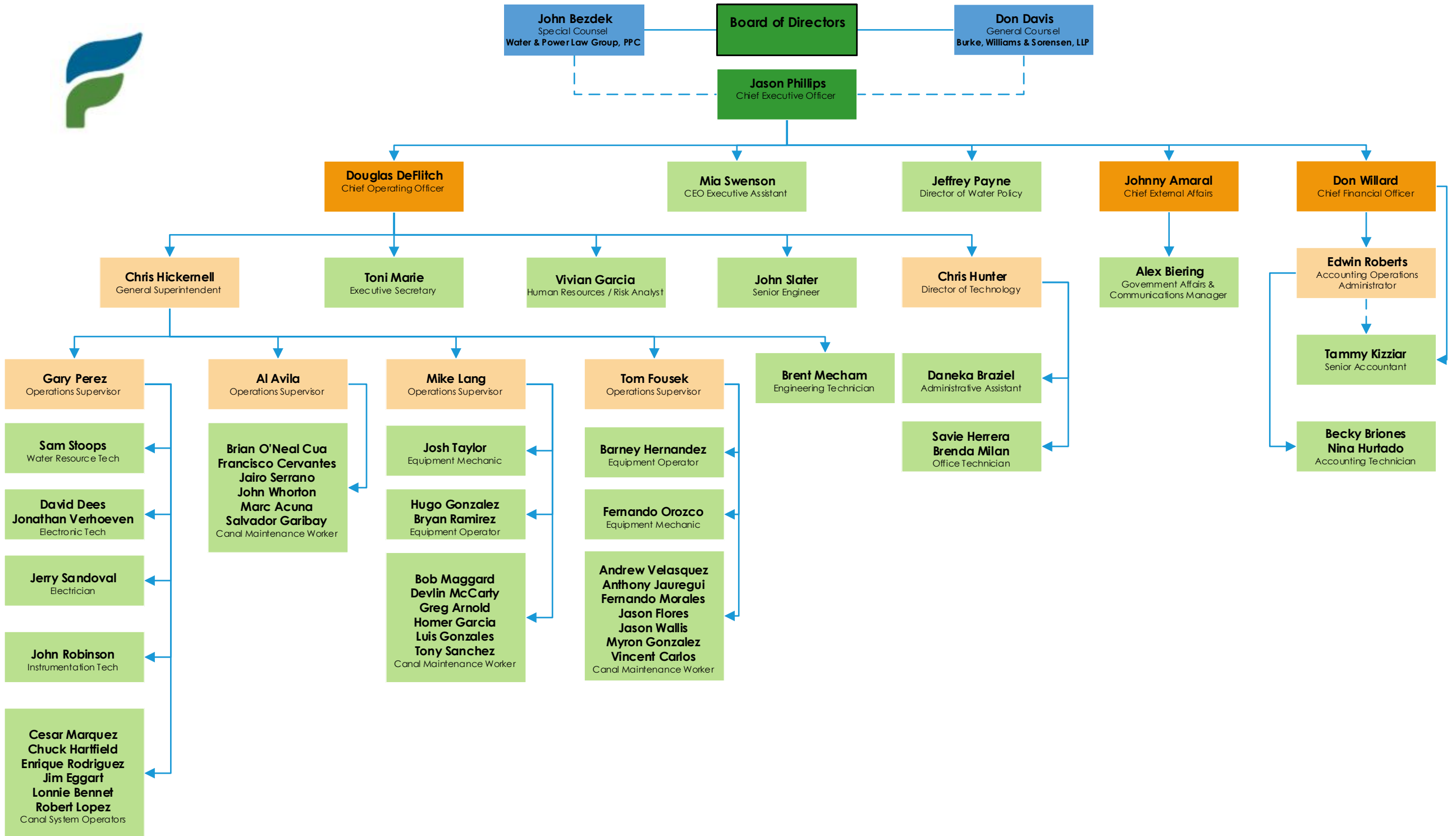
*One Equipment Operator position, two Canal Maintenance Worker positions, one Maintenance Supervisor, one Water Resource Manager, and one Resources Manager will remain vacant and no dollar amount will be budgeted for FY 2020.

An inflation factor of 3.00% per year was used in the projected wage rates to cover both the "merit increases" and "cost of living adjustment (COLA)" that will occur in FY 2020 (FY 2019 wages were used as the base).

- B. Overtime hours associated with routine and extra ordinary projects equaling a total of 3.8% of total man-hours.

2. Materials

- A. An inflation factor of 2.5% per year and 8.75% sales tax was used in the calculation of the majority of the required materials for FY 2020. The inflation factor and sales tax is computed on the budget worksheets. **Supporting documentation reflects current dollars and current sales tax.**
- B. Routine maintenance materials were budgeted with the assumption that the planned FY 2020 purchases occur in full.
- C. It is the policy of the Authority to capitalize all property, plant and equipment, except equipment costing less than \$1,000 and equipment installed directly onto the Friant-Kern Canal, which is a federally owned facility. The budgeted costs for capitalize property are in the accounts of 6299, 6399 and 6799.



Acquisition, Special & Major Maintenance Projects

Project Summary

FY 2020

	Project Title		Non Labor Costs		Total Project Cost
Job Code	Major Maintenance	Project Location	Dept.	(Incl. Fuel, x\$1000)	(x\$1000)
6040	Roadway Chip Seal Project	MP 0.0 to 15.0	Maintenance	116.9	134.5
6060	Motor & Gearbox Upgrade	MP 71.29 (Kaweah) & 88.22 (5th Avenue)	Operations	118.3	127.9
6060	Tule River Radial Gate Replacement	MP 95.66 (Tule River Check)	Operations	420.0	482.3
				655.2	744.7
			Tax/Inflation:	73.7	76.4
			Sub-Total:	728.9	821.1
	Special Projects				
6221	Pump Back Project		Maintenance	125.0	147.4
6225/6226	FKC Subsidence	MP 88.2 to MP 121.5	Maintenance	4,813.9	5,000.0
6230	GSA Engagement		Maintenance	120.0	120.0
6345	Water supply coordination & monitoring		Maint. / Ops. / Admin	102.4	210.2
6370	Water Quality		Operations	13.8	71.7
6402	FKC Title Transfer		Maintenance	718.9	789.8
			* Sub-Total:	5,894.0	6,339.1
	Acquisitions				
6399	One 3/4 Ton Utility Pickup		Operations		43.0
6399	One 1/2 Ton Crew Cab Pickup		Maintenance		34.3
6299	One 1/2 Ton Pickup		Maintenance		22.0
6299	One Crew Cab Pickup		Engineering		35.0
6299	Boom Truck - (additional \$50 added to FY 2019)		Maintenance		50.0
6299	One Off Road Utility Forklift		Maintenance		104.0
6299	Pumps, yard equipment, ect		Maintenance		23.6
6799	Barracuda Backup and Protection Plan	Lindsay	Administration		60.0
6799	Cloud Scale Platform	Lindsay	Administration	150.0	200.0
6799	Network & Computer Equipment	Lindsay	Administration		67.1
				150.0	639.0
			Tax/Inflation:	16.9	71.9
			Sub-Total:	166.9	710.9
			Subtotals:	6,699.2	7,722.8
			Tax/Inflation:	90.6	148.3
			Totals:	6,789.8	7,871.1

* Includes tax and inflation

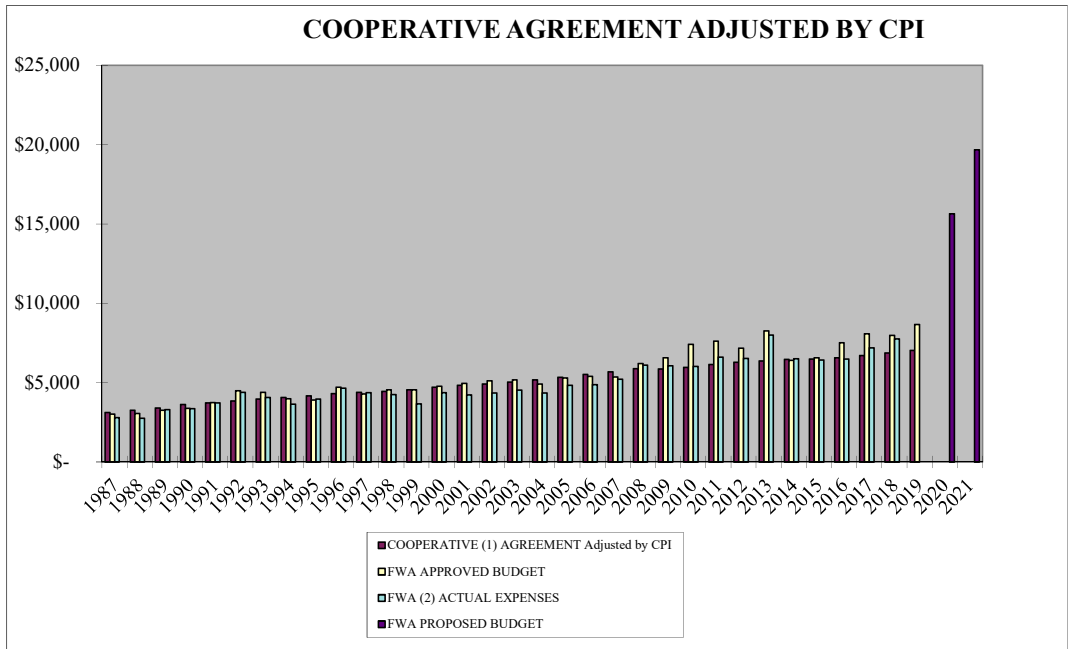
HISTORICAL COMPARISON

**FRIANT WATER AUTHORITY
BUDGET COMPARISON SUMMARY
FY 1987 THROUGH FY 2021**

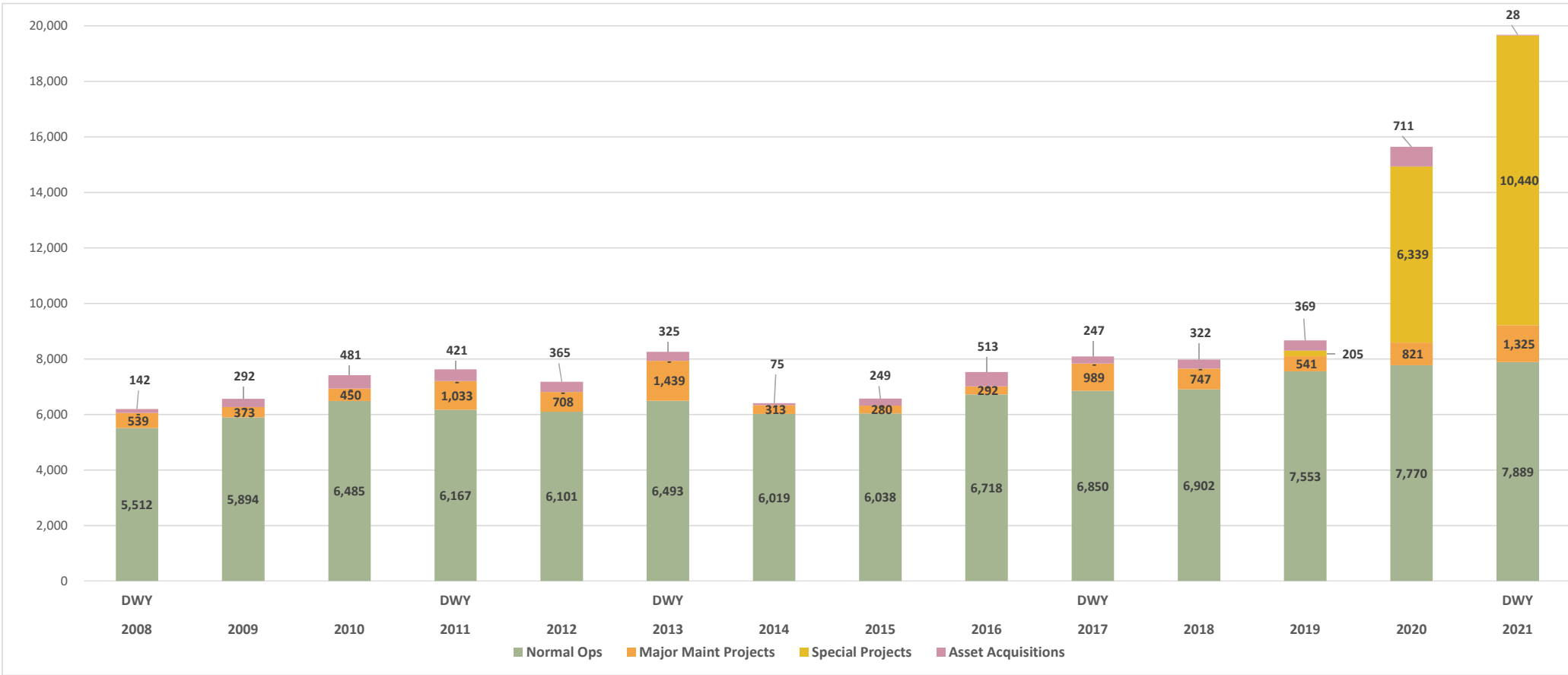
FISCAL YEAR	CPI (Oct)	COOPERATIVE (1) AGREEMENT Adjusted by CPI	FWA APPROVED BUDGET	FWA (2) ACTUAL EXPENSES	FWA PROPOSED BUDGET	BUDGET VS. ACTUAL
1987		\$ 3,124	\$ 3,017	\$ 2,797		\$ 220
1988	4.30%	3,259	3,050	2,749		301
1989	4.60%	3,409	3,265	3,307		(42)
1990	6.40%	3,627	3,387	3,362		25
1991	2.80%	3,728	3,737	3,717		20
1992	3.30%	3,851	4,481	4,380		101
1993	2.80%	3,959	4,381	4,069		312
1994	2.60%	4,062	3,976	3,650		326
1995	2.70%	4,172	3,905	3,961		(57)
1996	3.10%	4,301	4,715	4,655		60
1997	2.10%	4,392	4,294	4,371		(77)
1998	1.50%	4,457	4,545	4,243		302
1999	2.20%	4,556	4,550	3,657		894
2000	3.40%	4,710	4,767	4,365		402
2001	2.80%	4,842	4,957	4,235		723
2002	1.60%	4,920	5,105	4,355		750
2003	2.30%	5,033	5,172	4,536		636
2004	2.70%	5,169	4,914	4,357		557
2005	3.40%	5,345	5,287	4,837		450
2006	3.20%	5,516	5,397	4,869		528
2007	2.80%	5,670	5,347	5,210		137
2008	3.80%	5,886	6,194	6,110		85
2009	-0.40%	5,862	6,559	6,073		486
2010	1.60%	5,956	7,416	6,013		1,403
2011	3.20%	6,146	7,621	6,612		1,009
2012	2.10%	6,275	7,174	6,526		648
2013	1.50%	6,370	8,257	7,991		266
2014	1.60%	6,471	6,406	6,497		(90)
2015	0.10%	6,478	6,567	6,431		137
2016	1.30%	6,562	7,523	6,496		1,027
2017	2.10%	6,700	8,086	7,200		886
2018	2.40%	6,861	7,971	7,749		223
2019	2.50%	7,032	8,667	0		8,667
2020					15,642	-
2021					19,682	-
TOTALS			\$ 180,692	\$ 159,377	\$ 35,323	\$ 21,314

FY18 Audit not final

- (1) The Transfer Agreement became effective March 1, 1998
 - (2) FY 1996 Budget & Expenses included \$570,000 in RAX and Enterprise funds.
- NOTE: Prior to June 30, 2004 FWUA operated & maintained the FKC.
Beginning July 1, 2004, FWA operates & maintains the FKC.



**FRIANT WATER AUTHORITY
COMPARATIVE BUDGETED SPENDING BY CATEGORY
FY 2008 THROUGH FY 2021**



TOTAL LABOR
&
MATERIALS

FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2020

TOTAL ORGANIZATION
 REVISED: 6/20/2019 10:02

								COMPARISON TO FY 2019 BUDGET			
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)
O&M BILLING:											
Maintenance	68,382	2,038,510	1,242	43,123	2,081,633	8,494,497	10,576,130	1,997,591	2,774,352	4,771,943	121.63%
Water Operations	27,592	835,979	2,520	105,096	941,076	1,627,614	2,568,690	778,730	1,371,332	2,150,062	19.47%
General Administration	26,208	889,184	175	6,792	895,976	1,600,802	2,496,778	665,245	1,079,667	1,744,912	43.09%
Total Revenues	122,182	3,763,673	3,937	155,011	3,918,684	11,722,913	15,641,597	3,441,566	5,225,351	8,666,917	80.47%
Less: Interest and misc revenue							106,000			50,000	112.00%
O&M BILLING							15,535,597			8,616,917	80.29%

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2020**
TOTAL ORGANIZATION

REVISED: 6/20/2019 10:02

									COMPARISON TO FY 2019 BUDGET			
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)	
CANAL MAINTENANCE:												
6010 Vehicle & Equipment Service	7,603	189,846	1,050	36,710	226,556	509,906	736,462	214,905	464,606	679,511	8.38%	
6020 Maintenance Supervision	6,676	326,014	72	2,500	328,514	-	328,514	381,746	-	381,746	-13.94%	
6025 Right of Way Management	1,978	23,012	-	-	23,012	-	23,012	91,541	-	91,541	-74.86%	
6030 Weed & Pest Control	11,340	264,772	30	1,001	265,773	409,921	675,694	254,861	397,984	652,845	3.50%	
6032 Implem Biol. Opinion	-	-	-	-	-	42,634	42,634	-	42,425	42,425	0.49%	
6040 Road Maintenance	2,250	52,807	-	-	52,807	150,983	203,791	41,392	137,312	178,704	14.04%	
6050 Yard & Building Maintenance	5,680	131,513	20	647	132,160	133,661	265,821	108,875	135,286	244,161	8.87%	
6060 Structure & Gate Maintenance	3,320	72,045	20	647	72,692	30,832	103,524	70,887	30,685	101,572	1.92%	
6070 Right of Way & Structure Cleaning	1,981	44,874	-	-	44,874	-	44,874	29,724	-	29,724	50.97%	
6080 Bargate, Guardrail & Lock Maintenance	1,596	36,791	-	-	36,791	17,159	53,951	37,687	21,072	58,759	-8.18%	
6090 Embankment Maintenance	2,219	50,590	-	-	50,590	11,927	62,517	66,683	7,099	73,782	-15.27%	
6100 Bridge Maintenance	1,772	36,266	-	-	36,266	37,863	74,129	57,626	31,995	89,621	-17.29%	
6110 Miscellaneous Maintenance	100	4,952	-	-	4,952	15,264	20,216	10,479	24,711	35,190	-42.55%	
6120 Concrete Lining Repair	310	6,106	-	-	6,106	2,508	8,614	9,372	1,664	11,036	-21.95%	
6130 Drainditch & Channel Maintenance	1,148	26,553	-	-	26,553	-	26,553	28,171	-	28,171	-5.74%	
6140 Fence Maintenance	1,380	30,586	-	-	30,586	7,459	38,046	34,851	11,120	45,971	-17.24%	
6160 Mudjacking	548	12,986	-	-	12,986	1,478	14,464	19,520	1,428	20,948	-30.95%	
6170 Painting	2,006	45,761	-	-	45,761	10,261	56,021	42,066	31,474	73,540	-23.82%	
6190 Sump Pump Maintenance	80	1,907	-	-	1,907	-	1,907	1,846	-	1,846	3.27%	
6200 Cross Drainage & Structure Maintenance	548	13,873	-	-	13,873	-	13,873	10,386	-	10,386	33.57%	
6210 Rip-Rapping	285	6,566	-	-	6,566	-	6,566	19,045	-	19,045	-65.52%	
6221 USBR Pump Back Project	390	22,483	-	-	22,483	125,000	147,483	40,596	6,101	46,697	215.83%	
6225 FKC Subsidence	2,468	186,064	-	-	186,064	4,813,936	5,000,000	61,233	16,639	77,872	6320.82%	
6230 GSA Engagement	-	-	-	-	-	120,000	120,000	-	-	-	0.00%	
6299 Vehicle & Equipment Acquisition	-	-	-	-	-	299,756	299,756	-	276,281	276,281	8.50%	
6340 Operations Supervision	798	41,923	-	-	41,923	-	41,923	42,130	-	42,130	-0.49%	
6345 Water supply coordination & monitoring	168	13,383	-	-	13,383	-	13,383	-	-	-	0.00%	
6402 FKC Title Transfer	964	70,981	-	-	70,981	718,850	789,831	-	80,000	80,000	887.29%	
6405 Legal Expense	-	-	-	-	-	6,140	6,140	-	6,110	6,110	0.49%	
6420 Safety & First Aid Training	1,560	41,445	-	-	41,445	40,974	82,419	45,354	42,428	87,782	-6.11%	
6440 Payroll Preparation	72	2,393	-	-	2,393	-	2,393	2,334	-	2,334	2.52%	
6450 General Meetings	302	12,031	-	-	12,031	11,275	23,306	13,062	7,956	21,018	10.88%	
6451 Meeting Expenses-Board of Directors	144	9,844	-	-	9,844	-	9,844	9,781	-	9,781	0.64%	
6452 Meeting Expenses-Subcommittee	96	6,562	-	-	6,562	-	6,562	6,746	-	6,746	-2.72%	
6453 Meeting Expenses-Staff	281	13,036	-	-	13,036	1,538	14,573	12,470	1,020	13,490	8.03%	
6460 Training & Education	1,076	30,497	50	1,618	32,115	28,581	60,695	26,555	29,190	55,745	8.88%	
6480 Procurement Expense	255	8,856	-	-	8,856	-	8,856	9,879	-	9,879	-10.36%	
6490 Inventory & Property Management	328	10,398	-	-	10,398	-	10,398	5,058	-	5,058	105.58%	
6501 Employee Benefit-Holiday	2,352	64,313	-	-	64,313	-	64,313	64,887	-	64,887	-0.88%	
6503 Employee Benefit-Vacation	3,680	103,987	-	-	103,987	-	103,987	105,563	-	105,563	-1.49%	
6520 Travel Expense	-	-	-	-	-	8,610	8,610	-	8,400	8,400	2.50%	
6540 Personnel Administration	282	10,186	-	-	10,186	-	10,186	9,397	6,000	15,397	-33.85%	
6610 Employee Retirement	-	-	-	-	-	249,796	249,796	-	239,711	239,711	4.21%	
6620 Medical & Disability Insurance	-	-	-	-	-	539,147	539,147	-	576,620	576,620	-6.50%	
6660 Payroll Taxes	-	-	-	-	-	37,562	37,562	-	37,701	37,701	-0.37%	
6670 Utilities	-	-	-	-	-	77,181	77,181	-	76,805	76,805	0.49%	
6680 Telephone Expense	-	-	-	-	-	12,911	12,911	-	17,830	17,830	-27.59%	
6720 Dues & Subscriptions	-	-	-	-	-	21,385	21,385	-	6,699	6,699	219.22%	
6730 Budget Preparation	346	12,308	-	-	12,308	-	12,308	10,883	-	10,883	13.10%	
TOTAL MAINTENANCE	68,382	2,038,510	1,242	43,123	2,081,633	8,494,497	10,576,130	1,997,591	2,774,352	4,771,943	121.63%	

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2020**
TOTAL ORGANIZATION
 REVISED: 6/20/2019 10:02

									COMPARISON TO FY 2019 BUDGET			
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)	
WATER OPERATIONS:												
6010	Vehicle & Equipment Service	80	2,121	-	-	2,121	1,806	3,926	2,341	1,664	4,005	-1.97%
6050	Yard & Building Maintenance	584	15,291	40	1,562	16,853	64,451	81,305	21,501	65,468	86,969	-6.51%
6060	Structure & Gate Maintenance	1,460	37,996	160	6,249	44,245	640,444	684,689	49,422	319,123	368,545	85.78%
6070	Right of Way & Structure Cleaning	336	8,284	-	-	8,284	669	8,953	7,971	998	8,969	-0.18%
6080	Bargate, Guardrail & Lock Maintenance	56	1,381	-	-	1,381	3,687	5,068	1,329	4,376	5,705	-11.16%
6190	Sump Pump Maintenance	-	-	-	-	-	32,445	32,445	-	32,287	32,287	0.49%
6230	GSA Engagement	-	-	-	-	-	-	-	-	-	-	0.00%
6305	Comm. & Instr. (General)	432	14,354	40	1,722	16,077	669	16,746	-	666	666	2416.05%
6306	Comm. & Instr. (SCADA)	2,248	74,868	320	15,949	90,817	166,376	257,193	92,854	336,098	428,952	-40.04%
6310	Meter Repair & Calibration	3,464	92,841	416	16,489	109,330	71,738	181,068	95,042	103,554	198,596	-8.83%
6320	Canal Patrol	6,800	161,104	904	32,311	193,416	-	193,416	186,305	666	186,971	3.45%
6330	Operations Reports	2,336	82,512	640	30,813	113,326	2,174	115,499	108,912	2,163	111,075	3.98%
6340	Operations Supervision	1,000	42,415	-	-	42,415	-	42,415	41,379	-	41,379	2.50%
6345	Water supply coordination & monitoring	512	61,444	-	-	61,444	102,409	163,853	-	-	-	0.00%
6350	Water Measurement	2,320	62,687	-	-	62,687	5,016	67,703	59,893	26,216	86,109	-21.38%
6360	Miscellaneous Operations	160	4,241	-	-	4,241	-	4,241	4,188	-	4,188	1.26%
6370	Water Quality	1,844	57,906	-	-	57,906	13,762	71,668	-	-	-	0.00%
6380	Groundwater & Seepage Well Measurement	168	4,419	-	-	4,419	-	4,419	4,243	222	4,465	-1.03%
6399	Vehicle & Equipment Acquisition	-	-	-	-	-	47,975	47,975	-	43,039	43,039	11.47%
6420	Safety & First Aid Training	312	8,866	-	-	8,866	8,649	17,515	8,054	8,940	16,993	3.07%
6440	Payroll Preparation	12	509	-	-	509	-	509	497	-	497	2.50%
6450	Meeting Expenses-General	96	4,072	-	-	4,072	-	4,072	3,972	-	3,972	2.50%
6453	Meeting Expenses-Staff	156	4,433	-	-	4,433	-	4,433	4,027	-	4,027	10.09%
6460	Training & Education	472	14,538	-	-	14,538	18,988	33,526	11,861	22,466	34,327	-2.33%
6480	Procurement Expense	24	1,018	-	-	1,018	-	1,018	993	-	993	2.50%
6490	Inventory & Property Management	160	5,016	-	-	5,016	-	5,016	4,745	-	4,745	5.72%
6501	Employee Benefit-Holiday	936	26,599	-	-	26,599	-	26,599	24,161	-	24,161	10.09%
6503	Employee Benefit-Vacation	1,600	46,044	-	-	46,044	-	46,044	44,047	-	44,047	4.53%
6610	Employee Retirement	-	-	-	-	-	112,929	112,929	-	93,448	93,448	20.85%
6620	Medical & Disability Insurance	-	-	-	-	-	231,747	231,747	-	231,031	231,031	0.31%
6660	Payroll Taxes	-	-	-	-	-	16,873	16,873	-	14,568	14,568	15.83%
6670	Utilities	-	-	-	-	-	26,753	26,753	-	20,161	20,161	32.70%
6680	Telephone Expense	-	-	-	-	-	57,491	57,491	-	43,620	43,620	31.80%
6700	Employee Incentives & Awards	-	-	-	-	-	-	-	-	-	-	0.00%
6710	Postage	-	-	-	-	-	564	564	-	561	561	0.49%
6730	Budget Preparation	24	1,018	-	-	1,018	-	1,018	993	-	993	2.50%
TOTAL WATER OPERATIONS		27,592	835,979	2,520	105,096	941,076	1,627,614	2,568,690	778,730	1,371,332	2,150,062	19.47%

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2020**
TOTAL ORGANIZATION
 REVISED: 6/20/2019 10:02

									COMPARISON TO FY 2019 BUDGET			
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)	
ADMINISTRATION:												
6306	Comm. & Instr. (SCADA)	250	12,888	-	-	12,888	-	12,888	25,145	-	25,145	-48.74%
6345	Water supply coordination & monitoring	192	12,241	-	-	12,241	-	12,241	-	-	-	0.00%
6410	Administrative Supervision	250	12,888	-	-	12,888	-	12,888	12,573	6,120	18,693	-31.05%
6402	FKC Title Transfer	-	-	-	-	-	-	-	-	-	-	0.00%
6405	Legal Expense - Direct	-	-	-	-	-	-	-	-	-	-	0.00%
6420	Safety & First Aid Training	156	5,524	-	-	5,524	12,584	18,108	4,521	11,396	15,917	13.77%
6430	Office Administration (Typing, etc.)	9,372	252,649	100	3,496	256,145	-	256,145	243,471	-	243,471	5.21%
6440	Payroll Preparation	228	7,669	10	372	8,041	-	8,041	8,836	-	8,836	-9.00%
6450	Meeting Expenses-General	120	5,654	-	-	5,654	9,938	15,593	7,532	714	8,246	89.09%
6451	Meeting Expenses-Board of Directors	198	9,939	-	-	9,939	148,265	158,204	11,531	60,588	72,119	119.36%
6452	Meeting Expenses-Subcommittee	144	8,595	-	-	8,595	62,137	70,732	6,020	47,940	53,960	31.08%
6453	Meeting Expenses-Staff	126	6,442	-	-	6,442	20,500	26,942	5,764	2,448	8,212	228.09%
6460	Training & Education	148	6,295	-	-	6,295	36,388	42,682	5,273	20,910	26,183	63.01%
6470	Miscellaneous Administration	55	1,426	-	-	1,426	2,786	4,213	867	54,583	55,450	-92.40%
6480	Procurement Expense	-	-	-	-	-	-	-	-	1,785	1,785	-100.00%
6490	Inventory & Property Management	66	2,178	-	-	2,178	-	2,178	1,284	-	1,284	69.59%
6500/6501	Employee Benefit-Holiday	864	28,555	-	-	28,555	-	28,555	22,798	-	22,798	25.25%
6503	Employee Benefit-Vacation	1,240	41,726	-	-	41,726	-	41,726	36,067	-	36,067	15.69%
6510	Data Processing	1,080	55,678	-	-	55,678	134,943	190,621	41,741	158,255	199,996	-4.69%
6520	Travel Expense	-	-	-	-	-	16,700	16,700	-	8,700	8,700	91.95%
6530	Accounting & Auditing	9,451	337,325	20	744	338,069	18,000	356,069	223,443	15,000	238,443	49.33%
6540	Personnel Administration	1,974	66,916	45	2,180	69,096	71,335	140,430	3,767	13,992	17,759	690.77%
6610	Employee Retirement	-	-	-	-	-	107,517	107,517	-	79,829	79,829	34.68%
6611	Retirement Administration	-	-	-	-	-	5,300	5,300	-	5,300	5,300	0.00%
6620	Medical & Disability Insurance	-	-	-	-	-	201,050	201,050	-	168,021	168,021	19.66%
6630	Liability/Property Insurance	-	-	-	-	-	139,400	139,400	-	138,720	138,720	0.49%
6640	Workers Compensation Insurance	-	-	-	-	-	120,000	120,000	-	120,000	120,000	0.00%
6650	Legal Services	-	-	-	-	-	-	-	-	10,200	10,200	-100.00%
6660	Payroll Taxes	-	-	-	-	-	16,964	16,964	-	12,103	12,103	40.17%
6670	Utilities	-	-	-	-	-	45,756	45,756	-	25,337	25,337	80.59%
6680	Telephone Expense	-	-	-	-	-	24,815	24,815	-	24,694	24,694	0.49%
6690	Office Supplies	-	-	-	-	-	76,957	76,957	-	40,367	40,367	90.65%
6700	Employee Incentives & Awards	-	-	-	-	-	20,500	20,500	-	8,160	8,160	151.23%
6710	Postage	-	-	-	-	-	4,510	4,510	-	4,488	4,488	0.49%
6720	Dues & Subscriptions	-	-	-	-	-	123,422	123,422	-	88,006	88,006	40.24%
6730	Budget Preparation	294	14,595	-	-	14,595	-	14,595	4,610	-	4,610	216.57%
6790	Lease Office Equipment	-	-	-	-	-	24,877	24,877	-	34,088	34,088	-27.02%
6799	Vehicle & Equipment Acquisition	-	-	-	-	-	364,439	364,439	-	49,362	49,362	638.30%
	GM administration allocation	-	-	-	-	-	(208,282)	(208,282)	-	(131,438)	(131,438)	58.46%
TOTAL GENERAL ADMINISTRATION		26,208	889,184	175	6,792	895,976	1,600,802	2,496,778	665,245	1,079,667	1,744,912	43.09%
ORGANIZATION TOTALS		122,182	\$ 3,763,673	3,937	\$ 155,011	\$ 3,918,684	\$ 11,722,913	\$ 15,641,597	\$ 3,441,566	\$ 5,225,351	\$ 8,666,917	80.47%
	Capital Purchases	-	-	-	-	-	(712,170)	(712,170)	-	(368,681)	(368,681)	93.17%
	Depreciation	-	-	-	-	-	300,000	300,000	-	300,000	300,000	0.00%
	Budget per financial statements		\$ 3,763,673		\$ 155,011	\$ 3,918,684	\$ 11,310,743	\$ 16,053,767	\$ 3,441,566	\$ 5,156,670	\$ 8,598,236	86.71%

DETAILS OF
MATERIALS
CONSTRUCTION
&
MAINTENANCE

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2020

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
Labor Dollars	476,163	472,420	350,588	287,614	494,848	2,081,633
6010 - Vehicle & Equipment Service						
Lubricants:						
Motor oil	-	-	-	9,475	-	9,475
Subtotal Lubricants	-	-	-	9,475	-	9,475
Fuels						
Gasoline	82,650	86,035	61,988	-	-	230,672
Diesel	42,413	31,445	10,603	-	-	84,460
(Project) Diesel	-	-	-	-	-	-
LPG	334	268	424	-	-	1,026
Subtotal Fuels	125,397	117,747	73,014	-	-	316,158
Outside Services:						
Smog Certifications	-	-	-	1,128	-	1,128
Smoke Test	-	-	-	1,255	-	1,255
Red Bluff Motor Long Term Storage (per year)	-	-	-	3,280	-	3,280
Outside Vendor PM Services:						
PM Service-Heavy and Light Vehicles	-	-	-	30,750	-	30,750
Subtotal Outside Services	-	-	-	36,412	-	36,412
Service Parts and Supplies:						
Light Vehicles:						
Parts and Supplies	-	-	-	108,013	-	108,013
Subtotal Service Parts & Supplies	-	-	-	108,013	-	108,013
Operational Parts and Supplies	6,150	6,218	-	-	-	12,368
Subtotal Operational Parts and Supplies	6,150	6,218	-	-	-	12,368
Tools and Supplies:						
Miscellaneous Tools and Supplies	-	-	3,344	8,249	-	11,593
Shop supplies	-	-	4,100	4,613	-	8,713
Safety Kleen service	-	-	-	7,175	-	7,175
Subtotal Tools & Supplies	-	-	7,444	20,036	-	27,480
Overhauls:						
Equipment Rental	-	-	-	-	-	-
Subtotal Overhauls	-	-	-	-	-	-
TOTAL 6010	131,547	123,964	80,458	173,936	-	509,906
6030 Weed & Pest Control						
Weed Control Products:						
Copper Sulfate	-	-	-	168,000	-	168,000
Chelated Copper Sulfate	-	-	-	60,000	-	60,000
Round-Up Custom	-	-	-	25,000	-	25,000
Surfactant	-	-	-	2,000	-	2,000
Round-Up Pro Concentrate	-	-	-	40,000	-	40,000
Finale	-	-	-	3,000	-	3,000
Milestone VM	-	-	-	4,000	-	4,000
Pre-emergant (Diuron)	-	-	-	38,000	-	38,000
Experimental Chemical	-	-	-	20,000	-	20,000
Grass Seeds	-	-	-	500	-	500
Diphacinone (rodent control)	-	498	-	2,229	-	2,728
Subtotal Weed Control Products	-	498	-	362,729	-	363,228
Water Quality Monitoring (NPDES)						
Misc. Water Sampling / Laboratory costs	-	-	-	10,250	-	10,250
NPDES Permitting Consultation	-	-	-	20,910	-	20,910
Subtotal Water Quality Monitoring	-	-	-	31,160	-	31,160

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2020

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
Miscellaneous Supplies:						
Hose, nozzles, etc.; repairs	2,787	1,470	1,115	-	-	5,372
Rodent Controls / Bait Stations	557	-	-	-	-	557
Subtotal Miscellaneous Supplies	3,344	1,470	1,115	-	-	5,929
Outside Services:						
P.C.A. Recommendations	-	-	-	9,604	-	9,604
Subtotal Outside Services	-	-	-	9,604	-	9,604
TOTAL 6030	3,344	1,969	1,115	403,494	-	409,921
6032 Implem Biol. Opinion						
Biological Opinion Implementation	-	-	-	38,903	-	38,903
Compliance training CDFG 1600, NEPA, FESA	-	-	-	3,731	-	3,731
TOTAL 6032	-	-	-	42,634	-	42,634
6040 - Road Maintenance						
Road Repair:						
Materials	11,147	3,956	2,229	-	-	17,332
Road Chip Seal	130,307	-	-	-	-	130,307
Road Repair tools	2,787	557	-	-	-	3,344
TOTAL 6040	144,241	4,513	2,229	-	-	150,983
6050 Yard & Building Maintenance						
Maintenance Facilities:						
Miscellaneous Wood Material	1,672	1,998	557	-	-	4,227
Miscellaneous Metal materials	10,590	2,209	3,901	-	-	16,700
Carpenter Shop Supplies	1,338	1,406	557	-	-	3,301
Welding Shop Supplies	4,459	1,128	3,901	-	-	9,488
Asphalt resurface	-	-	3,901	-	-	3,901
Shop Tool Replacements	-	1,421	1,115	-	-	2,536
Subtotal Maintenance Facilities	18,058	8,162	13,934	-	-	40,153
Outside services:						
Cleaning Service contract	8,200	10,209	5,474	-	-	23,883
Alarm service contract	974	1,993	1,025	-	-	3,991
Uniform cleaning & mats contract	9,020	10,394	5,970	-	-	25,383
Starr Recyclables services	-	-	78	-	-	78
Culligan water service contract	1,025	535	-	-	-	1,560
Air Board testing of fuel tanks	974	461	615	-	-	2,050
Other Misc Outside Services	1,538	1,079	1,025	-	-	3,642
Fire Extinguisher Service	1,230	1,483	820	-	-	3,533
Wash System Waste Disposal	1,538	860	513	-	-	2,910
Pest control	615	523	513	-	-	1,650
Subtotal Outside Services	25,113	27,537	16,031	-	-	68,680
Miscellaneous Supplies:						
Kitchen/restroom supplies	613	1,087	557	-	-	2,257
Maintenance parts for yards	6,131	5,293	11,147	-	-	22,570
Subtotal Miscellaneous Supplies	6,744	6,379	11,704	-	-	24,827
TOTAL 6050	49,914	42,078	41,669	-	-	133,661
6060 Structures & Gates Maintenance						
General Canal:						
Emergency Hardware	780	2,285	1,115	-	-	4,180
Spill Containment Supplies	446	-	557	-	-	1,003
Subtotal General Canal	1,226	2,285	1,672	-	-	5,183

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2020

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
Turnouts:						
Turnout metal work rehab / Trash Racks	-	-	1,115	-	-	1,115
Emergency Repair Parts	-	1,917	1,115	-	-	3,032
Subtotal Turnouts	-	1,917	2,229	-	-	4,147
Checks and Wasteways:						
Mechanical:						
Hardware	-	-	2,229	-	-	2,229
Emergency Repair Parts	6,131	6,800	1,115	-	-	14,045
Radial Gate Inspection by Structural Engineer	-	-	-	5,228	-	5,228
Electrical:						
Motor & Gear box upgrade	-	-	-	-	-	-
Motor Control Repair / Upgrade	-	-	-	-	-	-
Subtotal Checks and Wasteways	6,131	6,800	3,344	5,228	-	21,502
TOTAL 6060	7,357	11,002	7,245	5,228	-	30,832
6080 - Bargate, Guardrail, and Lock Maintenance						
Signs:						
Traffic / Safety signs	1,672	1,421	4,013	-	-	7,106
Hardware Kits	-	-	-	-	-	-
Sign Posts	-	-	-	-	-	-
Subtotal Signs	1,672	1,421	4,013	-	-	7,106
Bargate Materials:						
Welding gases	-	474	-	-	-	474
Welding rod/wire	-	390	-	-	-	390
Locks	613	-	-	-	-	613
8" x 7" pipe	-	554	1,115	-	-	1,669
2-3/8" pipe	-	582	1,115	-	-	1,697
Barrier Blocks	1,672	418	-	-	-	2,090
Guardrail Materials	-	-	1,338	-	-	1,338
Cement	892	-	557	-	-	1,449
Chain 3/8" (feet)	334	-	-	-	-	334
Subtotal Bargate Materials	3,511	2,418	4,124	-	-	10,053
TOTAL 6080	5,183	3,839	8,137	-	-	17,159
6090 - Embankment Maintenance						
Equipment Rental:						
Equipment Rental	-	-	5,573	-	-	5,573
Tree Removal	-	-	-	-	-	-
Erosion Control:						
Downdrains:						
Funnels	3,344	-	-	-	-	3,344
Flumes	1,672	-	-	-	-	1,672
Culverts:						
CMP (various) and Hardware	1,338	-	-	-	-	1,338
Subtotal Erosion Control	6,354	-	5,573	-	-	11,927
TOTAL 6090	6,354	-	5,573	-	-	11,927
6100 - Bridge Maintenance						
Materials:						
Running Pads	5,573	6,421	5,016	-	-	17,010
Deck Boards	5,573	1,761	-	-	-	7,335
Bridge Inspection by Structural Engineer	-	-	-	5,228	-	5,228
Copper coat	2,229	4,269	557	-	-	7,056
Nails	334	343	557	-	-	1,235
Subtotal Materials	13,711	12,794	6,131	5,228	-	37,863

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2020

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
TOTAL 6100	13,711	12,794	6,131	5,228	-	37,863
6110 Miscellaneous Maintenance						
Equipment Rental	2,500	-	5,000	-	-	7,500
USBR services:						
USBR services/outside inspection	-	-	-	-	-	-
Subtotal Tools and Supplies	2,500	-	5,000	-	-	7,500
Tools and supplies:						
Field tools--Replacements	1,115	1,330	1,115	-	-	3,559
Wood Shop Tools	557	494	557	-	-	1,608
Welding Shop Tools	1,672	367	557	-	-	2,596
Subtotal Tools and Supplies	3,344	2,190	2,229	-	-	7,764
TOTAL 6110	5,844	2,190	7,229	-	-	15,264
6120 - Concrete Lining Repair						
Concrete and Formwork:						
6" Rock	1,672	-	-	-	-	1,672
Misc Materials	836	-	-	-	-	836
Subtotal Concrete and Formwork	2,508	-	-	-	-	2,508
Dewatering:						
(Dewatering) Canal Lining repair	-	-	-	-	-	-
Subtotal Dewatering	-	-	-	-	-	-
TOTAL 6120	2,508	-	-	-	-	2,508
6130- Drainditch and Channel						
(Dewatering) Aquatic Weed	-	-	-	-	-	-
(Dewatering) Canal Desilting	-	-	-	-	-	-
TOTAL 6130	-	-	-	-	-	-
6140 - Fence Maintenance						
Fabric Fence:						
Miscellaneous Material	1,338	-	1,115	-	-	2,452
Subtotal Fabric Fence	1,338	0	1,115	-	-	2,452
Barbed Wire Fence:						
Miscellaneous Material	3,901	1,106	-	-	-	5,007
Subtotal Barbed Wire Fence	3,901	1,106	-	-	-	5,007
TOTAL 6140	5,239	1,106	1,115	-	-	7,459
6160 - Mudjacking						
Cement for mudjacking	1,003	475	-	-	-	1,478
TOTAL 6160	1,003	475	-	-	-	1,478
6170 - Painting						
Paint						
Paint & Thinner	334	1,082	4,793	-	-	6,210
Misc. Supplies	167	540	2,787	-	-	3,493
Body & Fender	-	557	-	-	-	557
TOTAL 6170	502	2,179	7,580	-	-	10,261
6221-USBR Pump Back Project						
USBR Pump Back Project	-	-	-	125,000	-	125,000
TOTAL 6221	-	-	-	125,000	-	125,000
6225-FKC Subsidence						
Design, Engineering & Pre-Construction	-	-	-	-	4,784,596	4,784,596
TOTAL 6225	-	-	-	-	4,784,596	4,784,596

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2020

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
6226-FKC Capacity Correction (FWA)						
FKC Capacity Correction (FWA)	-	-	-	-	29,340	29,340
TOTAL 6226	-	-	-	-	29,340	29,340
6230 - GSA Engagement						
GSA Engagement	-	-	-	-	120,000	120,000
TOTAL 6230	-	-	-	-	120,000	120,000
6299 Vehicle & Equipment Acquisition						
Light Vehicles	24,523	-	-	-	38,278	62,801
Light Vehicles - Engineering	-	-	-	39,014	-	39,014
Design Jet Printer - Engineering	-	-	-	7,245	-	7,245
All Terran Forklift	-	115,928	-	-	-	115,928
Submersible Pumps	-	10,450	-	-	-	10,450
Boom Truck	55,734	-	-	-	-	55,734
Yard Equipment	-	-	5,573	-	-	5,573
Gopher X Rodent Control	-	-	2,452	-	-	2,452
Confined Space Equipment / Lid Repair	-	-	-	557	-	557
TOTAL 6299	80,258	126,378	8,026	46,817	38,278	299,756
6402 FKC Title Transfer						
Legal Expense	-	-	-	-	75,000	75,000
Legal Expense-Federal Litigation	-	-	-	-	18,850	18,850
Consultants	-	-	-	-	600,000	600,000
Communication Outreach	-	-	-	-	25,000	25,000
TOTAL 6402	-	-	-	-	718,850.00	718,850.00
6405 Legal Expense						
Legal Expense	-	-	-	6,140	-	6,140
TOTAL 6405	-	-	-	6,140	-	6,140
6420 Safety & First Aid Training						
Safety Supplies	4,459	5,403	2,787	3,623	-	16,271
Individual awards (not to supervisors)	820	820	615	103	-	2,358
Group awards	923	923	718	410	205	3,178
Annual awards	1,845	1,845	1,435	820	410	6,355
Physical examinations	-	-	-	-	6,150	6,150
First Aid and CPR course materials	-	-	-	-	2,050	2,050
DOT Drug and Alcohol Testing Program	-	-	-	-	4,613	4,613
TOTAL 6420	8,046	8,990	5,554	4,955	13,428	40,974
6450 General Meetings						
Meeting Expenses	-	-	-	-	11,275	11,275
TOTAL 6450	-	-	-	-	11,275	11,275
6453 Staff Meetings						
Miscellaneous Meeting Expenses	-	-	-	513	1,025	1,538
TOTAL 6453	-	-	-	513	1,025	1,538
6460 Education and training						
Training - Engineering	-	-	-	1,115	-	1,115
Training Supervisors	3,274	3,274	3,274	-	-	9,822
Training for Mechanics	870	870	870	-	-	2,611
Weed and pest Continuing Education	1,893	1,893	1,893	-	-	5,679
Safety training	1,522	1,522	1,522	-	-	4,566
Crane Operator training / certification	1,596	1,596	1,596	-	-	4,788
TOTAL 6460	9,155	9,155	9,155	1,115	-	28,581

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2020

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
6520 Travel						
Mileage reimbursement	-	-	-	-	8,610	8,610
TOTAL 6520	-	-	-	-	8,610	8,610
6610 Employee Retirement						
Retirement plan contribution	57,140	56,690	42,071	34,514	59,382	249,796
TOTAL 6610	57,140	56,690	42,071	34,514	59,382	249,796
6620 Medical and Disability Insurance						
Disability insurance	5,402	5,361	3,924	3,219	5,740	23,647
Term Life insurance	11,047	10,960	8,134	6,438	11,480	48,059
Medical/EAP/dental/vision insurance	151,632	169,776	124,416	53,136	41,472	540,432
Less employee paid portion for dependents	(18,818)	(29,808)	(16,718)	-	(7,646)	(72,991)
TOTAL 6620	149,263	156,289	119,755	62,793	51,046	539,147
6660 Payroll Taxes						
SUI	2,142	2,142	1,666	952	476	7,378
Medicare taxes	6,904	6,850	5,084	4,170	7,175	30,184
TOTAL 6660	9,046	8,992	6,750	5,122	7,651	37,562
6670 Utilities						
Gas and electricity	-	-	-	-	65,190	65,190
Water, sewer and garbage fees	-	-	-	-	7,257	7,257
Internet services	-	-	-	-	4,734	4,734
TOTAL 6670	-	-	-	-	77,181	77,181
6680 Telephone Expense						
Phone charges	-	-	-	-	8,093	8,093
Verizon Wireless	-	-	-	-	4,818	4,818
TOTAL 6680	-	-	-	-	12,911	12,911
6720 Dues & Subscriptions						
Ron Turley and Associates	-	-	-	2,870	-	2,870
GPS Service (Fleet Tek)	-	-	-	1,230	-	1,230
Engineering - Civil License	-	-	-	308	-	308
Engineering - GSI software/consulting	-	-	-	14,005	-	14,005
Engineering - Auto Cad	-	-	-	1,128	-	1,128
Engineering - APN service	-	-	-	1,845	-	1,845
TOTAL 6720	-	-	-	21,385	-	21,385
TOTAL Construction & Maint.	1,165,818	1,045,025	710,380	1,226,485	6,428,422	10,576,130

DETAILS OF
MATERIALS
ADMIN
&
OPERATIONS

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Labor Dollars	941,076	895,976	1,837,052
	Vehicle and Equipment Service			
6010	Supplies and materials-Water Ops vehicles	1,806	-	1,806
6010	Seat upholstery	-	-	-
	Total 6010	1,806	-	1,806
	Yard and Building Maintenance			
6050	Electronic repair parts/services--Water Ops	1,338	-	1,338
6050	Annual Water Quality Testing (houses)	635	-	635
6050	Electrial upkeep and repairs, yards and offices	33,441	-	33,441
6050	Repair and Replace Security, yard lights	11,147	-	11,147
6050	Misc. Repairs to Blockhouses	7,725	-	7,725
6050	Rehab & Repairs, CSO residences	10,166	-	10,166
	TOTAL 6050	64,451	-	64,451
	Structure and Gate Maintenance			
6060	Electronic Parts/Services (checks/turnouts)	20,064	-	20,064
6060	Repair/Replace Turnout Gate and Actuators	-	-	-
6060	Replace access lids to Venturi and Pitot Wells	20,343	-	20,343
6060	Tule River Check Structure Gates	468,169	-	468,169
6060	Dodge Avenue Check Structure Gates	-	-	-
6060	Motor & Gear box upgrade	131,868	-	131,868
	Total 6060	640,444	-	640,444
	Cleaning Right-of-Way			
6070	Misc Equip (shovels,rakes,brooms, etc)	669	-	669
	Total 6070	669	-	669
	Bargate, Guardrail and Lock Maintenance			
6080	Blockhouse locks	134	-	134
6080	FWA standard issue locks	3,554	-	3,554
	Total 6080	3,687	-	3,687
	Sump Pump Maintenance			
6190	Electrical Parts	1,784	-	1,784
6190	Motor Repairs	565	-	565
6190	Sump Pump replacement/repair	16,720	-	16,720
6190	Sump Pump meter replacement/repair	13,376	-	13,376
	Total 6190	32,445	-	32,445

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	FKC Subsidence			
6225	FKC Subsidence	-	-	-
	Total 6225	-	-	-
	C&I Maintenance (General)			
6305	Voice radio repair support	669	-	669
6305	Voice radio misc. parts	-	-	-
	Total 6305	669	-	669
	C&I Maintenance (SCADA)			
6306	SCADA Electronic Recorders, enclosures & wiring	11,051	-	11,051
6306	SCADA, Radio and modem support	2,947	-	2,947
6306	Redundant stand alone SCADA site	-	-	-
6306	SCADA updates / support	-	-	-
6306	Alarm Platform	22,294	-	22,294
6306	SCADA IntelliSite development & operating cost	112,137	-	112,137
6306	Level Sensors (checks, turnouts)	5,429	-	5,429
6306	Gate position sensor replacement	3,010	-	3,010
6306	RTU replacement, maintenance	3,378	-	3,378
6306	Clear Scada annual update (software support plan)	6,131	-	6,131
	Total 6306	166,376	-	166,376
	Meter Repair and Calibration			
6310	Honeywell recorders	-	-	-
6310	Propellor meter parts and conversion kits	3,188	-	3,188
6310	Propellor meter calibration	8,026	-	8,026
6310	Propellor meter replacement	2,564	-	2,564
6310	Propellor meter conversion to ADCP	53,649	-	53,649
6310	Electronic pressure transmitters	1,719	-	1,719
6310	Annual calibration atmospheric monitors	1,672	-	1,672
6310	Annual DVM calibration	921	-	921
	Total 6310	71,738	-	71,738
	Canal Patrol			
6320	Miscellaneous supplies	-	-	-
	Total 6320	-	-	-
	Operations Reports			
6330	Operations miscellaneous supplies	2,174	-	2,174
	Total 6330	2,174	-	2,174

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Water supply coordination & monitoring			
6345	Water supply coordination & monitoring	130,283	-	130,283
6345	SLDMWA Legal & Administrative Consultations	16,168	-	16,168
6345	Additional Participant Cost Offset	(44,042)	-	(44,042)
	Total 6345	102,409	-	102,409
	Water Measurement			
6350	Staff Gages & Numbers	-	-	-
6350	Sump pumps	2,842	-	2,842
6350	Annual calibration of measuring equipment	2,174	-	2,174
	Total 6350	5,016	-	5,016
	Water Quality			
6370	Water Quality	13,762	-	13,762
	Total 6370	13,762	-	13,762
	Groundwater & Seepage Well Measurement			
6380	Stainless steel tapes (500')	-	-	-
6380	Well Sounder (400 ft w replacement tips)	-	-	-
	Total 6380	-	-	-
	Operations Fixed Assets Acquisition			
6399	Replacement vehicles	47,975	-	47,975
	Total 6399	47,975	-	47,975
	FKC Title Transfer			
6402	Contracted Services	-	-	-
	Total 6402	-	-	-
	Safety			
6420	Misc Supplies--Administration	-	1,115	1,115
6420	Individual awards (not to supervisors)	1,230	923	2,153
6420	Group awards	1,333	1,640	2,973
6420	Annual awards	1,333	1,640	2,973
6420	Safety related training--Administration	-	5,016	5,016
6420	Employee safety equipment	2,101	-	2,101
6420	Fall protection, safety harness & lifeline	1,338	-	1,338
6420	Physical examinations	-	1,230	1,230
6420	Background check	-	308	308
6420	First Aid and CPR course materials	535	713	1,248
6420	Safety Air monitor confined space	780	-	780

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
6420	DOT Drug and Alcohol Testing Prog.	-	-	-
6420	Medical aid and travel	-	-	-
	Total 6420	8,649	12,584	21,233
	General Meetings expense			
6450	Per diem and travel related costs	-	9,938	9,938
	Total 6450	-	9,938	9,938
	Board of Directors Meetings expense			
6451	Room rental	-	44,532	44,532
6451	General Counsel	-	36,900	36,900
6451	Board Meetings	-	66,218	66,218
6451	Other expenses	-	615	615
	Total 6451	-	148,265	148,265
	Subcommittee Meetings Expense			
6452	General Counsel	-	33,825	33,825
6452	Committee Meeting expense	-	28,312	28,312
	Total 6452	-	62,137	62,137
	Staff Meetings			
6453	Misc. meeting expenses	-	20,500	20,500
	Total 6453	-	20,500	20,500
	Education and Training			
6460	Training classes	4,100	2,563	6,663
6460	Supervisor Continuing Education	-	3,075	3,075
6460	SCADA training	14,888	-	14,888
6460	Training for Administration	-	5,125	5,125
6460	Education and Training - Data Proc	-	25,625	25,625
	Total 6460	18,988	36,388	55,376
	Miscellaneous Administrative			
6470	Temporary Services/Employees	-	1,025	1,025
6470	Consulting / HR Services	-	-	-
6470	Printing Services - FWA Directory	-	-	-
6470	Check printing, other bank services	-	1,761	1,761
	Total 6470	-	2,786	2,786
	Computer Systems & Services			
6510	IT consulting	-	69,700	69,700
6510	Computer peripherals and hardware	-	1,538	1,538

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
6510	IT contracts	-	63,706	63,706
	Total 6510	-	134,943	134,943
	Travel			
6520	Mileage reimbursement	-	16,700	16,700
	Total 6520	-	16,700	16,700
	Accounting and Auditing			
6530	Annual audit	-	18,000	18,000
	Total 6530	-	18,000	18,000
	Personnel Administration			
6540	Job advertisements	-	6,150	6,150
6540	Legal Counsel for personnel services	-	51,250	51,250
6540	CEA membership	-	2,050	2,050
6540	CofC membership and supplies	-	738	738
6540	Forms, handouts, posters, etc.	-	11,147	11,147
	Total 6540	-	71,335	71,335
	Employee Retirement			
6610	Retirement plan contribution	112,929	107,517	220,446
	Total 6610	112,929	107,517	220,446
	Retirement Administration			
6611	Quarterly administration fees	-	5,300	5,300
	Total 6611	-	5,300	5,300
	Medical and Disability Insurance			
6620	Disability insurance	9,697	10,315	20,012
6620	Term life insurance	19,395	20,629	40,024
6620	Medical/EAP/dental/vision insurance	250,994	221,791	472,784
6620	Less employee paid portion for dependents	(48,339)	(51,685)	(100,024)
	Total 6620	231,747	201,050	432,797
	Liability and Property Insurance			
6630	Liability insurance	-	128,125	128,125
6630	Fidelity insurance	-	1,025	1,025
6630	Property insurance	-	10,250	10,250
	Total 6630	-	139,400	139,400

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Workers' Compensation Insurance			
6640	WC insurance	-	120,000	120,000
	Total 6640	-	120,000	120,000
	Payroll Taxes			
6660	SUI	3,228	3,973	7,201
6660	Medicare taxes	13,646	12,992	26,637
	Total 6660	16,873	16,964	33,838
	Utilities			
6670	Water, sewer and garbage fees	-	4,920	4,920
6670	Water conditioning services	-	-	-
6670	Rent for offsite offices	-	20,295	20,295
6670	Internet services	-	10,701	10,701
6670	Verizon SCADA services	26,753	-	26,753
6670	Gas and electricity	-	9,840	9,840
	Total 6670	26,753	45,756	72,509
	Telephone charges			
6680	Phone charges	-	15,006	15,006
6680	Answering service	1,476	-	1,476
6680	Verizon wireless M to M	47,098	-	47,098
6680	Verizon wireless	8,918	9,809	18,727
	Total 6680	57,491	24,815	82,307
	Office Supplies and Services			
6690	Office supplies	-	73,836	73,836
6690	Office Chairs / Tables	-	3,121	3,121
	Total 6690	-	76,957	76,957
	Merit Program			
6700	Merit awards	-	20,500	20,500
	Total 6700	-	20,500	20,500
	Postage and Shipping			
6710	Postage and UPS, Fedex	564	4,510	5,074
	Total 6710	564	4,510	5,074

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2020**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Dues and Subscriptions			
6720	Dues and subscriptions	-	123,422	123,422
	Total 6720	-	123,422	123,422
	Lease Office Equipment			
6790	Leased office equipment	-	24,877	24,877
	Total 6790	-	24,877	24,877
	Fixed Assets Acquisition			
6799	Desktop Computers	-	10,032	10,032
6799	Laptop Computers	-	18,450	18,450
6799	Network Communication Equipment	-	25,638	25,638
6799	Mobile Devices	-	20,500	20,500
6799	Private cloud infrastructure	-	222,938	222,938
6799	Servers	-	-	-
6799	Backup & Replication	-	66,881	66,881
6799	Workstations	-	-	-
	Total 6799	-	364,439	364,439
	WATER OPERATIONS AND ADMINISTRATION	2,568,690	2,705,059	5,273,749

O & M
PROJECT
JUSTIFICATIONS

Acquisition, Special & Major Maintenance Projects

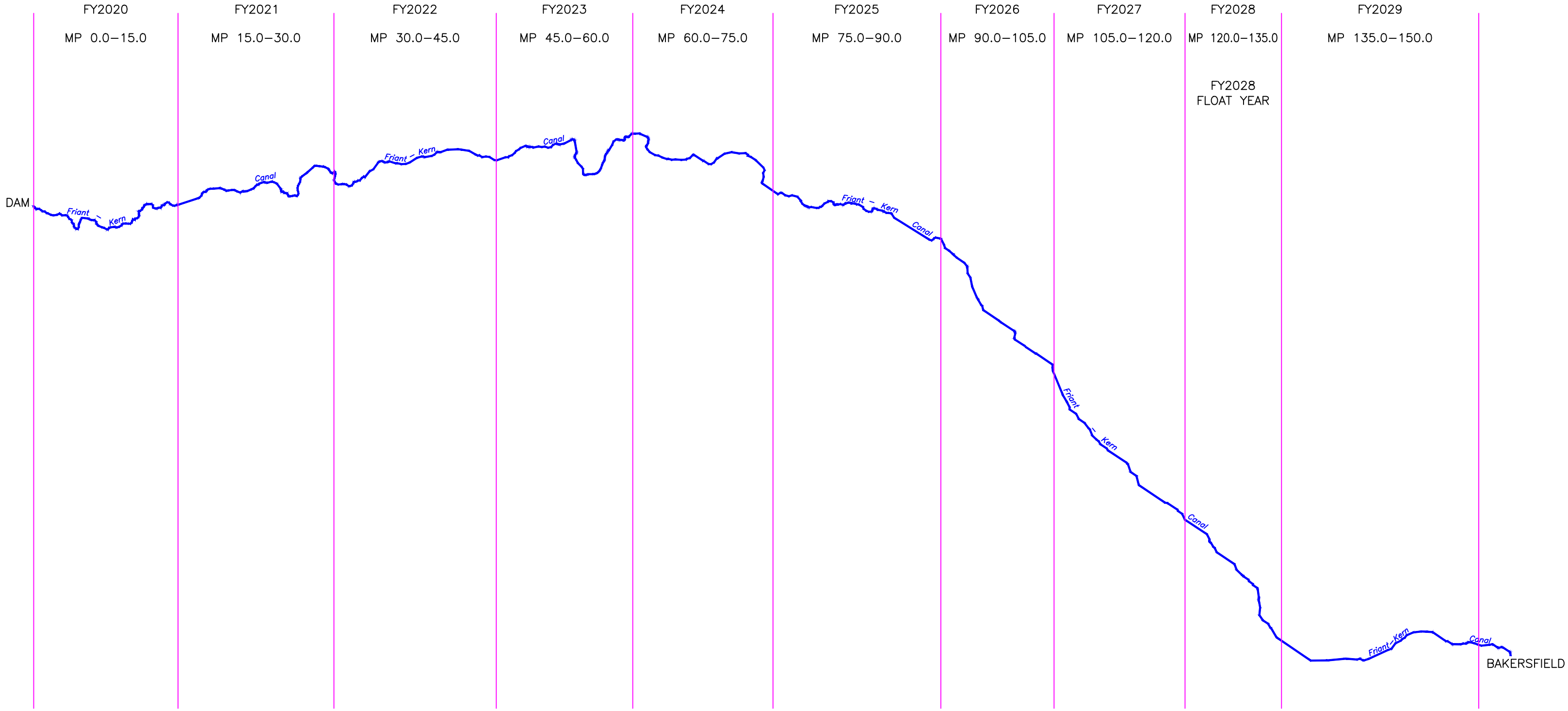
Project Summary

FY 2020

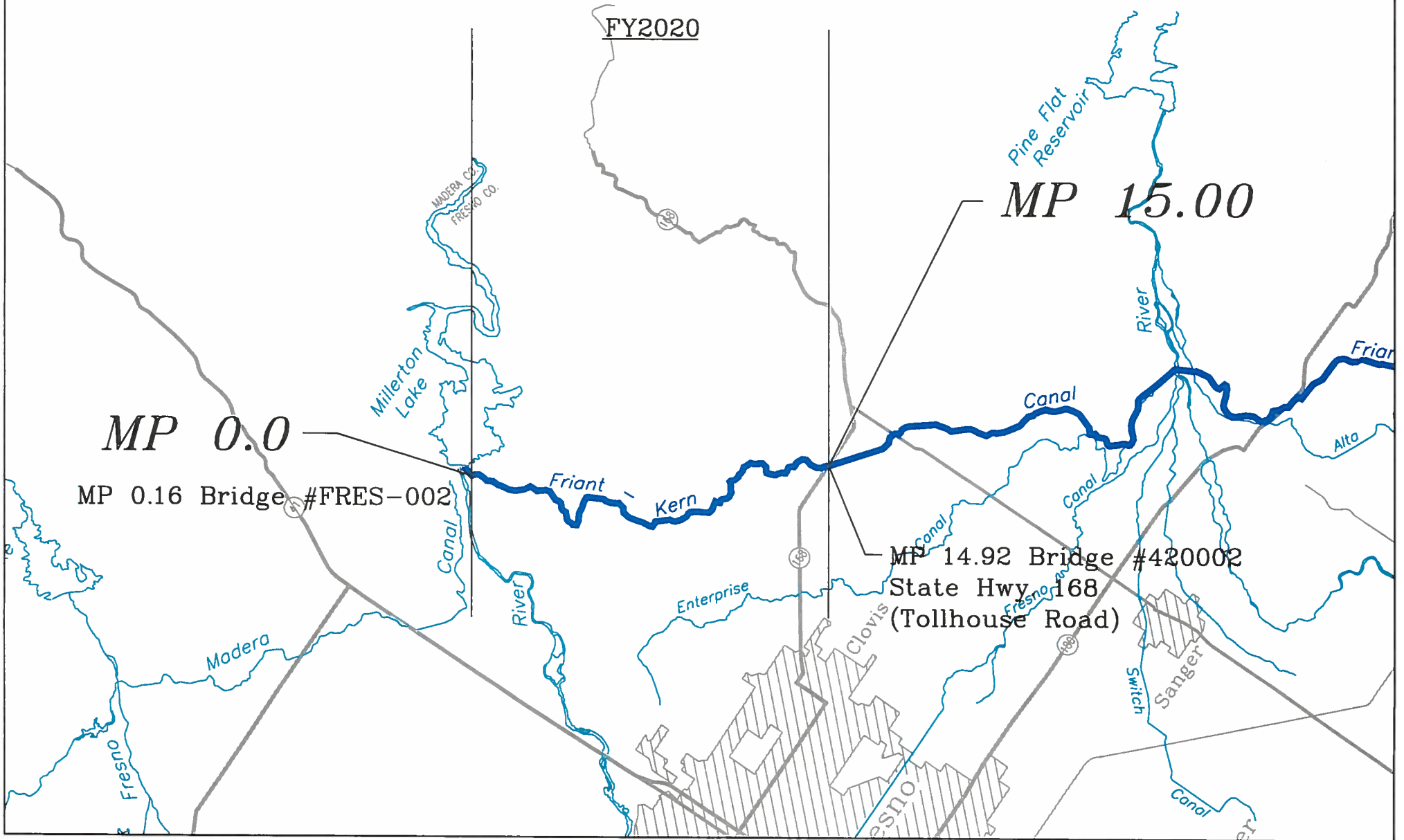
Project Title		Non Labor Costs			Total Project Cost
Job Code	Major Maintenance	Project Location	Dept.	(Incl. Fuel, x\$1000)	(x\$1000)
6040	Roadway Chip Seal Project	MP 0.0 to 15.0	Maintenance	116.9	134.5
6060	Motor & Gearbox Upgrade	MP 71.29 (Kaweah) & 88.22 (5th Avenue)	Operations	118.3	127.9
6060	Tule River Radial Gate Replacement	MP 95.66 (Tule River Check)	Operations	420.0	482.3
				655.2	744.7
				Tax/Inflation:	73.7
				73.7	76.4
				Sub-Total:	728.9
					821.1
Special Projects					
6221	Pump Back Project		Maintenance	125.0	147.4
6225/6226	FKC Subsidence	MP 88.2 to MP 121.5	Maintenance	4,813.9	5,000.0
6230	GSA Engagement		Maintenance	120.0	120.0
6345	Water supply coordination & monitoring		Maint. / Ops. / Admin	102.4	210.2
6370	Water Quality		Operations	13.8	71.7
6402	FKC Title Transfer		Maintenance	718.9	789.8
				* Sub-Total:	5,894.0
					6,339.1
Acquisitions					
6799	Barracuda Backup and Protection Plan	Lindsay	Administration		60.0
6799	Cloud Scale Platform	Lindsay	Administration	150.0	200.0
				150.0	260.0
				Tax/Inflation:	16.9
				16.9	29.3
				Sub-Total:	166.9
					289.3
				Subtotals:	6,699.2
				6,699.2	7,343.8
				Tax/Inflation:	90.6
				90.6	105.6
				Totals:	6,789.8
					7,449.4

* Includes tax and inflation

FRIANT WATER AUTHORITY
CHIP SEAL PROJECT
10-YEAR CYCLE



Proposed Chip Seal (Orange Cove)



Friant Water Authority
Extraordinary Maintenance Project
Summary Sheet
Proposed For FY 2020

Project Title: Operation and Maintenance Roadway Chip Seal.

Job Code: 6040

Project Location and Maintenance Department: Approx. MP 0.0 to MP 15.00 / Orange Cove

Project Description: Chip seal a 15 mile section of canal roadway with 3/8” rock and CRS-2H asphalt emulsion. An in-house hauling operation will stock pile chip material from a local plant staging it along the 15-mile section of roadway. Outside service contractor will provide emulsion trucks to disperse asphaltic emulsion onto the existing road. Authority staff will follow behind operating a chipping machine, placing rock chips over the emulsion. The rock chips will be forced into the emulsion with two rented roller compactors. Once the rock/emulsion mixture sets, the roadway is swept to remove loose chips.

Estimated Total Project Cost (x1000): \$134.5

Estimated Total Project Cost (Excluding Regular Labor Costs, x1000): \$116.9

General Justification: Chip seal applications are repeated on a 10-year rolling cycle. Chip sealing slows down serious deterioration of the operational canal roadways lessening the need for road removal and reconstruction. An inspection of the 152 miles of operational roadway is conducted each year to determine sections to be chip sealed.

Operating Impact: Failure to maintain good road conditions could directly delay operation and maintenance in the event of road failure, as well as pose a serious threat to the safety of those traveling on the canal roadways.

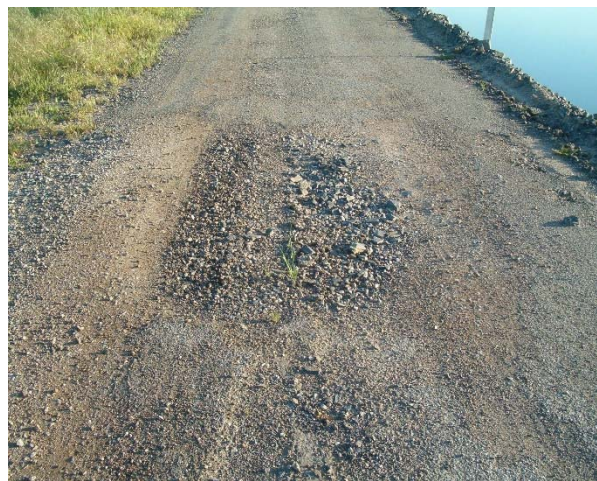


Photo of Existing Conditions

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2020

Project Title: Roadway Chip Seal Project

Project Location and Maintenance Department: Approx. MP 0.0 to MP 15.00 / Orange Cove

Estimated Total Project Cost (x1000): \$134.5

Estimated Total Project Cost (Excluding Regular Labor Costs x1000): \$116.9

Breakdown of Estimated Costs

Contract Services: (3 day project)

Emulsion Truck Spread Time - (\$135/hr. for 24 hours.)	\$ 3,240
Chip Spreader w/Operator - (\$5,000 per 8 hr. day)	\$15,000
	Subtotal: \$18,240

Materials:

Emulsion (150 Ton @ \$415/Ton)	\$62,250
Screenings (1,700 Ton @ \$15/Ton)	\$25,500
	Subtotal: \$87,750

Rental Equipment:

Roller - (\$1,300 per week x 2 units)	\$ 2,600
Sweeper – (\$1,135 per week)	\$ 1,135
	Subtotal: \$3,735

Fuel:

Stockpile – 1,932 gal (23 gal/day x 28 days x 3 trucks)	\$ 6,666
Roller – 90 gal (15 gal/day x 3 days x 2 units)	\$ 311
Sweeper – 30 gal (10 gal/day x 3 days)	\$ 104
Diesel = \$3.45/gallon	
	Subtotal: \$7,081

Regular Labor (Hours and Cost):

Stockpile – 3 CMW (28 days x 8 hr./day @ \$21.65/hr.)	\$14,550
Chip-Seal – 6 CMW (3 days x 8 hr./day @ \$21.65/hr.)	\$ 3,118
	Subtotal: \$17,668

Total: \$134,474

Friant Water Authority
Extraordinary Maintenance Projects
Summary Sheet
Proposed For FY 2020

Project Title: Motor and Gearbox Upgrade

Job Code: 6060

Project Location and Department: Scheduled motor and gearbox upgrades at Kaweah Check Structure and 5th Ave. Check Structure (MP 71.29 and 88.22) unless noted otherwise. / Operations.

Project Description: This will be a replacement of both the motors and gearboxes that raise and lower the gates at these two sites. A total of eleven motors and gearboxes will be replaced. This is part of the standardization plan in the canal system.

Estimated Total Project Cost (x1000): \$ 127.9

Estimated Total Material Cost (Including Fuel Costs, x1000): \$ 118.3

General Justification: This effort is to bring this site to a higher level of operational reliability and to standardize motor and gearboxes along the canal system.

Operating Impact: Replacement of these motors and gearboxes will bring a higher level of operational reliability to the canal system by both having new components in service and having standardization in the event of a failure thereby reducing operational downtime.



View of Similar Conditions

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2020

Project Title: Motor and Gearbox Upgrade

Project Location and Department: Scheduled motor and gearbox upgrades at Kaweah Check Structure and 5th Ave. Check Structure (MP 71.29 and 88.22) unless noted otherwise. / Operations.

Estimated Total Project Cost (x1000): \$128.9

Estimated Total Material Cost (Including Fuel Costs, x1000): \$118.3

Breakdown of Estimated Costs

Contract Service: n/a

Subtotal: n/a

Materials:

4 - 1 Hp Motor & Gearbox Waste Way Gate @ \$4,725 ea.	\$18,900
12 - 2 Hp Motor & Gearbox Check Gate @ \$7,875 ea.	\$ 94,500
17 - Motor Mount Adapters @ \$289 ea.	\$ 4,913
<i>(Motor Prices include starters, breaks, and cabinets.)</i>	

Subtotal: \$118,313

Rental Equipment: n/a

Subtotal: n/a

Fuel: n/a

Subtotal: n/a

Regular Labor (Hours and Cost):

1 - Electrician (25 days @ 8 hr @ \$30.77/hr)	\$ 6,154
1 - CMW (20 days x 8 hr./day @ \$21.65/hr.)	\$ 3,464

Subtotal: \$9,618

Total: \$ 127,931

Friant Water Authority
Extraordinary Maintenance Projects
Summary Sheet
Proposed For FY 2020

Project Title: Radial Gate Replacement

Job Code: 6060

Project Location and Department: Proposed replacement of the radial control gates on the Tule River Check Structure (MP 95.66) /Operations.

Project Description: This will be a replacement of radial gates, control arms, pins and seals. A total of four (4) 144" X 210" radial control gates will be replaced. This is part of the refurbishment 10 year plan of the canal system.

Estimated Total Project Cost (x1000): \$ 482.0

Estimated Total Material Cost (Including Fuel Costs, x1000): \$ 420.0

General Justification: This effort is to bring this site to a higher level of operational reliability by replacing worn and fatigued metal gates that are over 70 years old.

Operating Impact: Replacement of these radial gates will bring a higher level of operational reliability to the canal system by both having new components in service reducing the likelihood of a failure thereby reducing operational downtime.



View of Tule River Check Structure

Extraordinary Maintenance Projects

Cost Summary

Proposed For FY 2020

Project Title: Radial Gate Replacement

Project Location and Department: Proposed replacement of the radial control gates on the Tule River Check Structure (MP 95.66) / Operations.

Estimated Total Project Cost (x1000): \$482.0

Estimated Total Material Cost (Including Fuel Costs, x1000): \$420.0

Breakdown of Estimated Costs

Contract Service: N/A

Subtotal: N/A

Materials:

4 – 144” X 210” radial gate @ \$105,000 ea.

\$420,000

Subtotal: \$420,000

Rental Equipment: N/A

Subtotal:

Fuel: N/A

Subtotal: N/A

Regular Labor (Hours and Cost):

12 – CMW (30 days x 8 hr. /day @ \$21.65/hr.)

\$ 62,352

Subtotal: \$62,352

Total: \$ 482,352

Friant Water Authority
Extraordinary Maintenance Project
Summary Sheet
Proposed for FY 2020

Project Title: Friant Kern Canal Reverse Pump-Back Project

Job Code: 6221

Project Location: Friant-Kern Canal from terminus MP 151.8 to Tule River pool MP 95.67

Project Description: The Secretary of the Interior is authorized in PL-111-11 Section 10201 and directed to conduct feasibility studies in coordination with Friant Water Authority and create improvements or reverse flow pump-back facilities on the Friant-Kern Canal to help manage for water supply lost as part of the San Joaquin River Restoration Program Settlement. In August 2016, Friant Water Authority (FWA) entered into a Financial Assistance Agreement (FAA) with the U. S. Bureau of Reclamation to design and construct Reverse flow Pump-Back facilities in the lower reaches of the FKC. The current project is at 30% design and is looking to build reverse flow pump-back facilities at Shafter Check, Woollomes Check and Deer Creek Check.

Estimated Project Costs (x1000): \$56,000 pre- 30% design estimate
Fiscal Year 2020 Budget = \$147.5

General Justification: This project originally stemmed from the SJRRP to help facilitate the Long-Term Recapture and Recirculation program. It was authorized as part of the settlement program to help Friant Division Contractors keep access to their water utilized to help restore the SJR fishery. This program helps keep the SJR settlement viable.

Operating Impact: The reverse flow pump-back project provides a significant amount of flexibility in making the San Joaquin River Settlement Water Supply initiatives successful. Facilities also have the potential for use by FKC contractors at other drought times when the return of supplies wouldn't be possible without this infrastructure.



Search ...

[HOME](#) ▾

[PROJECTS](#) ▾

[SCIENCE](#) ▾

[RESTORATION
FLOWS](#) ▾

[FISHERIES
REINTRODUCTION](#) ▾

[GET INVOLVED](#) ▾



[San Joaquin River Restoration Program](#) > [Projects](#) > [Water Management](#) > [Reverse Flow Facilities](#)

[Project Updates](#)

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed for FY 2020

Project Title: Friant Kern Canal Reverse Pump-Back Project

Project Location and Department: Friant-Kern Canal from terminus MP 151.8 to Tule River Check MP 95.67 / Maintenance Department.

Estimated Total Project Cost (x1000): \$56,000 pre- 30% design estimate
Fiscal Year 2020 Budget = \$147.5

Estimated Total Material Cost (Including Fuel Costs, x1000): \$125.0

Breakdown of Estimated Costs

Contract Service:

To assist in bridging the funding gap between the Federal FAA and the Financial Assistance Agreement with the Department of Water Resources

Subtotal: \$125,000

Materials: n/a

Subtotal: n/a

Rental Equipment: n/a

Subtotal: n/a

Fuel: n/a

Subtotal: n/a

Regular Labor (Hours and Cost):

Executive Team (COO, CEO, etc....)	40 hrs @153.01	\$ 6,121
Senior Engineer.....	300 hrs @49.52	\$14,856
Engineering Technician.....	50 hrs @ \$30.14	\$ 1,507

Subtotal: \$22,483

Total: \$ 147,483

Friant Water Authority
Extraordinary Maintenance Project
Summary Sheet
Proposed for FY 2020

Project Title: FKC Capacity Correction Project – Subsidence Correction

Job Code: 6225 & 6226

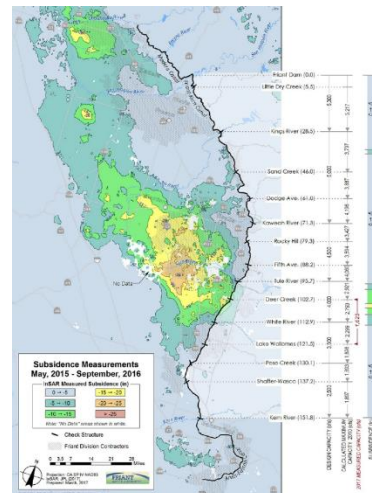
Project Location: Middle Reach - Approx. MP 88.2 to MP 121.5

Project Description: Friant Water Authority is undertaking evaluations of potential conveyance and operational improvements to the FKC to address original design and subsidence induced capacity reductions. The FKC has been subject to regional subsidence for several years. This subsidence-induced capacity reduction is most prevalent in the FKC Middle Reach (MP 88 and MP 122). Increased groundwater pumping during the drought period from 2012 through 2016 has caused further subsidence of the FKC and reduced canal capacity to levels that have the potential to impair water delivery operations.

Estimated Project Costs (x1000): \$350,000 to \$400,000
Fiscal Year 2020 Budget = \$5,000

General Justification: For the Subsidence Correction Project, at the March 28, 2019 meeting, the Board of Directors authorize up to \$5M in pre-construction costs to be considered OM&R and directed Staff to budget accordingly. The allocation of the remaining balance of the Project will be determined once the scope of the Project is defined and the Board takes final action to proceed with the construction of the Project.

Operating Impact: Without correction, the capacity of the FKC to deliver a full run of Class 2 supplies would be impaired below Deer Creek Check. This directly affects the flexibility of several districts to schedule contract supplies for delivery.



Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed for FY 2020

Project Title: FKC Capacity Correction Project – Subsidence Correction

Project Location and Department: Middle Reach - Approx. MP 88.2 to MP 121.5 /
Maintenance Department.

Estimated Total Project Cost (x1000): \$350,000 to \$400,000
Fiscal Year 2020 Budget = \$5,000

Estimated Total Material Cost (Including Fuel Costs, x1000): unknown

Breakdown of Estimated Costs

The Financial Assistance Agreement, (FAA), currently in place with the USBR to address pre-construction and immediate repairs, requires a **\$1.9 million** 50% Cost Share, (FY2018 WIIN Act Funding).

It is anticipated that the WIIN Act Funding through the 2019 appropriation will require an additional approximately **\$2.3 million** in Local Cost Share.

In addition, there are other costs associated with the project which are not eligible for inclusion or reimbursement under the FAA. An example of these costs includes the exploration of funding for the project or understanding Friant's ability to self-financing through bonding or other mechanisms. **\$0.8 million.**

It is expected that a significant portion of these funds will be utilized to compensate contracts for design, engineering, environmental permitting and contracting

Total: \$ 5,000,000

Friant Water Authority Extraordinary Maintenance Project Summary Sheet Proposed for FY 2020

Project Title: Groundwater Sustainability Agencies Engagement

Job Code: 6230

Project Location: Friant-Kern Canal and associated facilities

Project Description: Friant Water Authority is undertaking a review of the various Groundwater Sustainability Plans (GSP) that have the potential to affect the lands adjacent to the Friant-Kern Canal. Through the engagement of Groundwater Sustainability Agencies (GSA), the Authority seeks to protect the facility from adverse impacts like subsidence.

Estimated Project Costs (x1000): \$unknown
Fiscal Year 2020 Budget = \$120.0

General Justification: At the May 23, 2019 meeting, the Board of Directors approved the sending of a notice letter regarding undesirable subsidence impacts on the Friant-Kern Canal. This letter requested that each GSP identify the effects of subsidence emanating from or within the various basins on the Friant-Kern Canal and treat it as an undesirable result that must be avoided. It is unknown how much detail GSA's will put in their GSPs, but it is paramount that the Authority ensure this edict is followed.

Operating Impact: Potentially has a high operational impact if the Friant-Kern Canal continues to subside.

Sustainable Groundwater Management Act

Groundwater Basins (Basins)
Department of Water Resources (DWR) Subtitle 18 identifies 55 alluvial groundwater basins in California. The SGMA requires these basins to develop a process for groundwater management and directs DWR to develop a process for reviewing basins by June 1, 2020.

Groundwater Sustainability Agency (GSA)
A local agency, combination of local agencies, or county may establish a GSA. The GSA is responsible for identifying and implementing groundwater sustainability plans for basins of beneficial uses and users of groundwater in its basin. GSAs must be formed by June 30, 2022.

Groundwater Sustainability Plan (GSP)
GSAs must develop GSPs to fit measurable objectives and inform decisions that ensure basin sustainability. A basin may be managed by a single GSP or multiple approved GSPs. DWR will develop regulations for evaluating GSPs and alternatives to GSPs by June 1, 2020.

High and Medium Priority Basins
DWR considers an initial prioritization of all 55 basins. The 2008 water right and regulatory basins develop GSPs, low and medium priority basins are encouraged to develop GSPs.

Basins in Critical Overdraft
DWR will identify basins subject to critical conditions if overlaid by January 1, 2022, and basins with moderate to critical overdraft must develop GSPs by January 31, 2020.

Alternatives to Groundwater Sustainability Plans
A basin can be managed by an alternative to a GSP if approved by DWR. Alternatives to GSPs include: 1) DWR for evaluation and approval by January 1, 2022.

Final Basin Prioritization

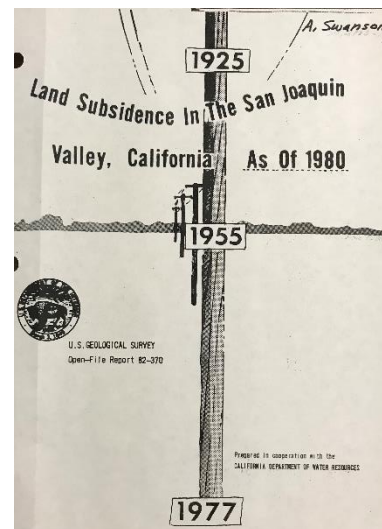
State Backstop

Local agencies are managing groundwater sustainably, the SGMA directs the State Water Resources Control Board (State Water Board) to direct the state and local agency groundwater sustainability management. The State Water Board may include the State Board to process the following circumstances:

- A higher priority basin is overlaid on a GSP or the GSP is inadequate after January 31, 2020.
- A higher priority basin is overlaid on a GSP or the GSP is inadequate after January 31, 2022.
- A higher priority basin is overlaid on a GSP or the GSP is inadequate and there are significant violations of determined surface waters after January 31, 2025.

Steps to Sustainability

- June 1, 2010**: 2007 water right regulation requiring groundwater sustainability plans.
- June 30, 2017**: Groundwater sustainability agency formation.
- January 31, 2020**: High and medium priority basins must develop groundwater sustainability plans.
- January 31, 2022**: All high and medium priority basins managed by groundwater sustainability plans.
- January 31, 2020/2022**: All groundwater sustainability plans must include groundwater sustainability plans from all basins overlaid.



Friant Water Authority
Extraordinary Maintenance Project
Summary Sheet
Proposed for FY 2020

Project Title: Water Supply Coordination & Monitoring

Job Code: 6345

Project Location: Friant Division, Exchange Contract and San Luis Unit

Project Description: There are four components that are encompassed within this task for which Friant Water Authority is responsible to its members.

1. Friant Division Water Supply forecasting, monitoring and reporting.
2. Delta & CVP Water Supply forecasting, monitoring and reporting.
3. San Joaquin River Settlement Supplies monitoring, coordinating and reporting.
4. San Luis Delta-Mendota Water Authority-
 - a. Participation and representation on the Finance & Administration and O&M Committees
 - b. Monitoring and reporting on the activities and actions of the SLDMWA Board of Director and Authority operations.

Estimated Project Costs (x1000): \$210

General Justification: The forecasting, monitoring and reporting of Friant Division water supplies directly relates to contractor allocation, and impacts the coordination of operations and maintenance activities of the Division. In addition, the information gathered by these activities is critical for Friant Water Authority's efforts to defend, protect and maintain San Joaquin River supplies, including the San Joaquin River Settlement.

As part of the San Joaquin River Exchange Agreement, Friant division districts pay for the operations and maintenance of facilities to provide an alternative supply of Delta water via the San Luis Delta Mendota Water Authority (SLDMWA). In 2019 it is estimated that approximately \$13.5 Million will be paid to SLDMWA from Friant Division contractors to cover conveyance and pumping cost. This is a very significant expense and requires dedicated staff time and additional resources to protect the interests of the Friant Division members. Tracking projects, such as the Jones Pumping Plant Rewind Project, and their financing, through attendance and participation at the Finance Committee and Board of Directors Meetings is a necessity. There are several big projects / issues, which are on the horizon, that will require FWA Staff attention (i.e. Intertie O&M cost allocation, and transmission line replacement).

Re-consultation of the CVP Biological Opinion, Coordinated Operations Agreement with the State of California in the Delta and the Voluntary Settlement Agreement activities are included within the scope of this task as those tasks look to stabilize the supplies of the Division and ensure that substitute supplies from the Delta remain viable.

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed for FY 2020

Project Title: Water Supply Coordination & Monitoring

Project Location and Department: Friant Division, Exchange Contract and San Luis Unit

Estimated Total Project Cost (x1000): \$210

Breakdown of Estimated Costs

Counsel / Consultant Services: **Subtotal: \$143,123**
(Consultant tasks related to forecasting, monitoring and reporting on water Supplies. Counsel tasks related to potential Intertie negotiations.)

Materials: n/a **Subtotal: n/a**

Travel / Mileage: **Subtotal: \$ 3,328**

Regular Labor (Hours and Cost):

Executive Team (CEO, DWP, etc....)	512 hrs @120.01	\$ 61,444
O&M Management & Administration	360 hrs @71.18	\$ 25,624
<i>Labor Subtotal:</i>		<u>\$ 87,068</u>

Non FKC Contractors Cost Offset **\$(44,042)**
(Approx. 19% reimbursement from Non FKC Beneficiaries)

Total: \$210,241

Friant Water Authority
Extraordinary Maintenance Project
Summary Sheet
Proposed for FY 2020

Project Title: Friant Kern Canal Water Quality Program

Job Code: 6370

Project Location: Friant-Kern Canal (entire 152 miles)

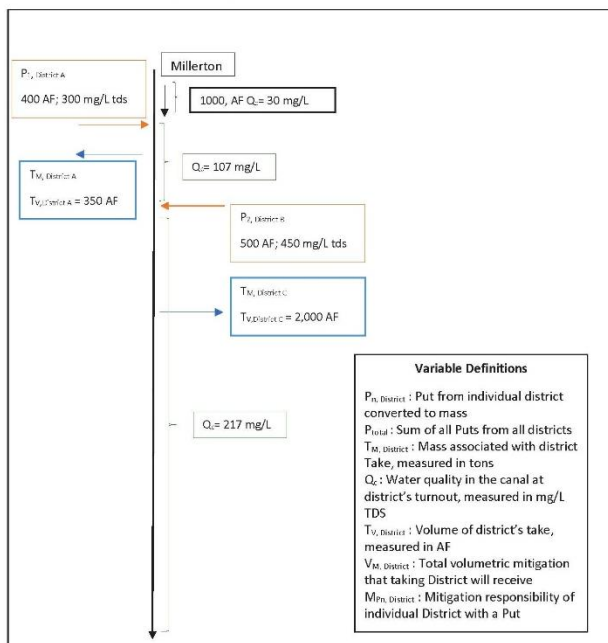
Project Description: Friant Water Authority is embarking on the management of the quality of water delivered through the Friant-Kern Canal. The FKC water quality program will consist of monitoring, measuring and reporting various water quality changes in the FKC associated with the introduction of non-Millerton Lake water. This is the initial costs of standing up a program to be able to satisfy the needs of contractors throughout the system.

Estimated Project Costs (x1000): \$unknwon (depends on the final constituents list and program requirements)
Fiscal Year 2020 Budget = \$71.7

General Justification: The Board of Directors, at the request of the Water Quality Ad Hoc group has requested that staff pursue management of a Water Quality Plan. This plan originally stemmed from the environmental requirements of both the Long-Term Recapture and Recirculation EIS/R (LTRREIS) and the Friant-Kern Canal Reverse Pump-back Project Environmental Assessment (EA). While the full water quality plan is still being scoped, the Water Quality Ad Hoc group and the Board of Directors requested Staff create a model, start monitoring as appropriate, and create notification when water from the cross-valley system were being introduced to the FKC.

Operating Impact: remains unknown and will be dependent on the Final Water Quality Plan, Monitoring and notification requirements of the plan.

Ledger Example with Calculations:



Note: This example is purely hypothetical. All numbers are completely made up for the purpose of showing the process involved in calculating mitigation using the proposed ledger program. The example shown represents a very simplified version of the system. As described above, the program should evaluate various example scenarios including scenarios that include bidirectional flow and takes from the mixing pool.



Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed for FY 2020

Project Title: Friant Kern Canal Water Quality Program

Project Location and Department: Friant-Kern Canal (entire 152 miles) / Maintenance Department.

Estimated Total Project Cost (x1000): \$Unknown (depends on the final constituents list and program requirements)
Fiscal Year 2020 Budget = \$71.7

Estimated Total Material Cost (Including Fuel Costs, x1000): \$13.7

Breakdown of Estimated Costs

Contract Service:

Expected coordination tasks between FKC work and Pump-back and LTRREIS

Subtotal: \$13,762

Materials: n/a

Subtotal: n/a

Rental Equipment: n/a

Subtotal: n/a

Fuel: n/a

Subtotal: n/a

Regular Labor (Hours and Cost):

Executive Team (COO, CEO, etc....)	40 hrs @129.07	\$6,121
Water Quality Specialist	1804 hrs @28.71	\$51,786

Subtotal: \$57,906

Total: \$ 71,668

Friant Water Authority Extraordinary Maintenance Project Summary Sheet Proposed for FY 2020

Project Title: Friant Division Title Transfer

Job Code: 6402

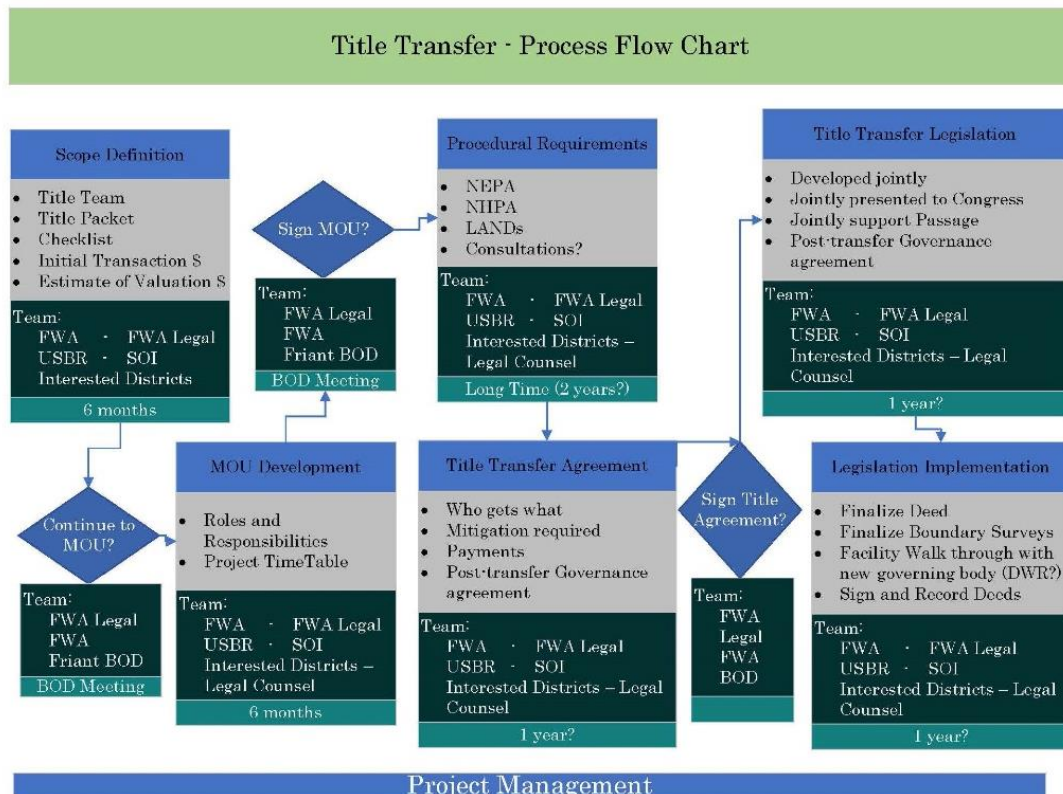
Project Location: Friant-Kern Canal and associated facilities, Madera Canal, federally owned distribution facilities in the Friant Division

Project Description: Friant Water Authority is undertaking evaluations of the potential to transfer in fee, the titles of the FKC, the Madera Canal and the federally owned distribution facilities in the Friant division. The title transfer process could take several years and include the need for lands, environmental and other procedural requirements as well as crafting both a memorandum of understanding (MOU) with Reclamation and a Title Transfer agreement.

Estimated Project Costs (x1000): \$2,547 in 2019 dollars
(\$1,783 in process and \$763.5 in funding owed)
Fiscal Year 2020 Budget = \$789.8

General Justification: In November of 2017 and continually since, the Board of Directors has requested that staff pursue the transfer of title to the Friant-Kern Canal. The transfer of title would allow greater flexibility in operations, maintenance and replacement, will limit Endangered Species Act (ESA) exposure, provide eligibility for non-reclamation federal funding sources, and has the potential to provide flexibility to use the lands as collateral.

Operating Impact: None immediately, the advantages of transfer of title come after the facility is transferred and FWA can more appropriately manage the lands and the repairs needed by the FKC.



Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed for FY 2020

Project Title: Friant Division Title Transfer

Project Location and Department: Friant-Kern Canal and associated facilities, Madera Canal, federally owned distribution facilities in the Friant Division / Maintenance Department.

Estimated Total Project Cost (x1000): \$2,547 in 2019 dollars
(\$1,783 in process and \$763.5 in funding owed)
Fiscal Year 2020 Budget = \$189.8

Estimated Total Material Cost (Including Fuel Costs, x1000): \$718.9

Breakdown of Estimated Costs

Contract Service:

*Special Counsel for drafting of MOU
and pre-drafting of title transfer agreement tenants*

Subtotal: \$718,850

Materials: n/a

Subtotal: n/a

Rental Equipment: n/a

Subtotal: n/a

Fuel: n/a

Subtotal: n/a

Regular Labor (Hours and Cost):

Executive Team (COO, CEO, etc....)	414 hrs @129.07	\$53,436
Senior Engineer.....	50 hrs @48.08	\$ 2,404
Engineering Technician.....	500 hrs @ \$29.26	\$14,630

Subtotal: \$70,981

Total: \$ 789,831

Friant Water Authority
Extraordinary Administration Project
Summary Sheet
Proposed For FY 2020

Project Title: Barracuda Backup and Protection Services

Job Code: 6720

Project Description: Renew Barracuda Backup and Protection Services

Estimated Total Project Cost (x1000): \$60,000

General Justification: The Authority utilizes Barracuda Backup and Barracuda Total Email Protection services for backup, recovery, and email protection services. Each service is up for three-year renewal in FY20.

Operating Impact: Failure to provide essential backup services for the Authority's server and application infrastructure could lead to catastrophic loss of intellectual property and severely hinder the Authority daily activities. Failure to provide protection services presents an unnecessary risk to data exposure and loss from digital threats.

Due to cost, the Authority has not invested in duplication technologies, and therefore the basic set of services within online backup and protection services provides the base level of required services

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2020

Project Title: Barracuda Backup and Protection Services

Estimated Total Project Cost (x1000): \$60,000

Breakdown of Estimated Costs

Contract Services:

Barracuda Backup (3 Year)	\$50,000
Barracuda Total Email Protection (3 Year)	\$10,000
	Subtotal: \$60,000

Total: \$60,000

Friant Water Authority
Extraordinary Administration Project
Summary Sheet
Proposed For FY 2020

Project Title: Cloud-Scale Infrastructure

Job Code: 6799

Project Description: Replace Nutanix web-scale platform.

Estimated Total Project Cost (x1000): \$200,000

General Justification: In 2015, the Authority adopted virtualization and the webscale approach to application deployment. The adoption has proven to be highly successful, removing downtime, allowing a dynamic response, and eliminating excess hardware and licensing procurement expenditures.

The Authority's web-scale platform is a single device that contains converged hardware that provides the platform for the Authority's application infrastructure, virtual servers, and virtual networking requirements. The current system is scheduled to be replaced at the five-year interval, which concludes the support contract.

Operating Impact: All of the Authority's business processes rely on application and services provided by the Authority's web-scale platform. Failure to provide appropriate hardware and support services to this infrastructure could present critical failures within the Authority's SCADA, accounting, and critical business systems.

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2020

Project Title: Cloud-Scale Infrastructure

Estimated Total Project Cost (x1000): \$200,000

Breakdown of Estimated Costs

Contract Services:

Engineering and Deployment	\$10,000
Five Year Support Services	\$40,000
	Subtotal: \$50,000

Equipment:

Hardware	\$150,000
	Subtotal: \$200,00

Total: \$200,000

VEHICLE
&
EQUIPMENT



FWA Vehicle/Equipment Replacement Philosophy

The objective of the FWA is to provide safe and efficient vehicles and equipment for our personnel. This will be done by replacing vehicles/equipment and components, and by assigning or reassigning vehicles/equipment within the organization so that maximum utilization of the unit may be obtained.

Light Vehicle Replacement

Light Vehicles will be considered for replacement when they have met the following Minimum criteria:

1. 200,000 miles
2. Excessive repair costs
3. Reliability problems
4. Mechanic's recommendation for replacement

The FWA will utilize full size vehicles. Supervisors will be assigned ½ ton/extended cab pickups or sedans. Water Ops personnel will be assigned ½ ton/regular cab pickups and maintenance crews will be assigned ¾ - 1 ton vehicles depending upon the use of the vehicle.

Heavy Duty Truck and Equipment Replacement

Heavy-duty trucks and equipment will be considered for replacement using the following minimum criteria:

1. Availability of repair/replacement parts due to age.
2. Reliability of operation.
3. Excessive maintenance costs.
4. Mechanic's recommendation for replacement due to mechanical failures and safety concerns.

Component Replacement

Vehicles meeting replacement criteria will be evaluated for component replacement to minimize costs. Components such as engines, transmissions and drive trains will be rebuilt/replaced provided the overall vehicle is in otherwise acceptable condition.

Vehicle and Heavy Equipment Acquisition

FY 2020 Light Vehicle Acquisition

		<u>Department</u>	<u>Mileage</u>	<u>Age</u>	<u>Cost</u> <i>(x 1,000)</i>
A.	One 3/4 Ton Utility Pickup	Water Ops.			\$43.0
B.	One 1/2 ton Crew Cab Pickup	Water Ops./Maint	195,814	5	\$34.3
C.	One 1/2 ton Pickup	Maintenance	142,000	11	\$22.0
D.	One Crew Cab Pickup	Engineering	200,100	14	\$35.0
				Sub Total	\$134.3
				Estimated Inflation	\$2.7
				Sales Tax	\$12.0
				Grand Total	\$149.0

FY 2020 Heavy Equipment

		<u>Department</u>	<u>Mileage/Hrs</u>	<u>Age</u>	<u>Cost</u> <i>(x 1,000)</i>
A.	Boom Truck - (additional \$50K to FY 2019 ask)	Orange Cove Maint.	45,046	18	\$50.0
B.	One Off Road Utility Forklift	Maintenance	8,455	39	\$104.0
				Sub Total	\$154.0
				Estimated Inflation	\$3.1
				Sales Tax	\$13.7
				Grand Total	\$170.8

Friant Water Authority
Vehicle/Equipment Replacement
Justification Form
Proposed for FY 2020

Date: 5/8/2019

FY-2020

Vehicle/Equipment: Ford F 250 Service Truck

Job Code: 6299

Replacement: **Addition:**

Estimated Cost: \$43,039

Proposed Delivery Date: FY-2020

Department: Water Operations

Maintenance Yard: Lindsay

Purpose of Vehicle/Equipment: This vehicle will be used by the Water Quality Technician to calibrate instrumentation and meter water quality throughout the canal; it is driven on and off-road. Estimating 21K plus miles will be put on the vehicle annually traveling to various sites in the canal service area. This vehicle is available to respond to alarms and emergency call outs as may be required.

Description of How Vehicle/Equipment Augmentation Facilitates O&M Activities: This vehicle is driven by the Water Quality Technician (if approved) and is subject to being called out at any time. Operations will need a reliable vehicle to cover their assigned service area and possibly work out of their respective service area.



Proposed Utility Truck for Water Quality Technician

Friant Water Authority
Vehicle/Equipment Replacement
Justification Form
Proposed For FY 2020

Date: 05/17/2018

FY-2020

Vehicle/Equipment: (RTA 2040) 2015 F-150 Crew Cab Pickup

Job Code: 6299

Replacement: **Addition:**

Estimated Cost: \$ 34,340

Proposed Delivery Date: FY-2020

Department: Operations/Maintenance

Maintenance Yard: Lindsay

Purpose of Vehicle/Equipment: This vehicle is used by the General Superintendent to supervise and observe both the Water Operations and Maintenance Department activities. Currently 47k plus miles are put on the vehicle annually traveling to various sites in the canal service area. This vehicle is available to respond to alarms and emergency call outs as may be required.

Reason(s) for Replacement: This vehicle is projected to be at sufficient mileage to warrant replacement as per FWA mileage guidelines.

Description of How Vehicle/Equipment Augmentation Facilitates O&M Activities: This vehicle is driven by the General Superintendent to monitor both the Water Operations and Maintenance Departments on the Friant-Kern Canal and is subject to emergency call outs. The General Superintendent needs a reliable vehicle to cover activities both inside the canal service area and out.



Photo of current truck.

Friant Water Authority
Vehicle/Equipment Replacement Justification
Mechanics Report
Proposed For FY 2020

Date: 05/17/2018

Vehicle/Equipment I.D.: 2040

License #: 1470527

Year: 2015

Age (yrs.): 5

Make: Ford

Model: F-150 Crew Cab

Department: Operations/Maint.

Maintenance Yard: Lindsay

Mileage/Hours: 183,814 (*Estimated at time of replacement*)

GENERAL CONDITIONS:	POOR	FAIR	GOOD	EXCELLENT
Body and Interior:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Suspension:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Drive Train:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

History of Repairs: Normal maintenance items.

Estimated Future Repair Cost: Transmission, brakes: \$ 4,400

Safety Concerns: This vehicle is subject to call out to respond to canal issues and public safety response.

Mechanic's Recommendations: Due to the high mileage and usage, it is recommended to replace this vehicle at the recommended replacement schedule.

Estimated Salvage Value: \$11,150

Prepared By: Darryl Rasmussen

Friant Water Authority
Vehicle/Equipment Replacement
Justification Form
Proposed For FY 2020

Date: 04-24-2019

FY-2020

Vehicle/Equipment: 1020

Job Code: 6299

Replacement: **Addition:**

Estimated Cost: \$ 22,000

Proposed Delivery Date: FY-2020

Department: Maintenance

Maintenance Yard: Orange Cove

Purpose of Vehicle/Equipment: Transport staff and materials to and from canal.

Reason(s) for Replacement: Engine failure and estimated repair cost.

Description of How Vehicle/Equipment Augmentation Facilitates O&M Activities:

This vehicle is utilized by canal maintenance staff primarily for weed and pest control.



Friant Water Authority
Vehicle/Equipment Replacement Justification
Mechanics Report
Proposed For FY 2020

Date: 04-24-2019

Vehicle/Equipment I.D. 1020

License #: 1269834

Year: 2008

Age (yrs.): 11

Make: Chevy

Model: 1500

Department: Maintenance

Maintenance Yard: O.C.

Current Mileage/Hours: 142,000

GENERAL CONDITIONS:	POOR	FAIR	GOOD	EXCELLENT
Body and Interior:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suspension:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive Train:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

History of Repairs: Normal wear parts.

Estimated Future Repair Cost: Engine, Transmission.

Safety Concerns: Engine failure.

Mechanic's Recommendations: Replace due to major component failure.

Estimated Salvage Value: \$1500

Prepared By: Josh Taylor

Friant Water Authority
Vehicle/Equipment Replacement
Justification Form
Proposed for FY 2020

Date: 05/24/2019

FY-2020

Vehicle/Equipment: (RTA 222) 2007 Chevy Ext. Cab Pickup

Job Code: 6299

Replacement: **Addition:**

Estimated Replacement Cost: \$ \$35,000

Proposed Delivery Date: January 2020.

Department: Engineering

Location: Lindsay Office.

Purpose of Vehicle/Equipment: This vehicle is used by FWA engineer and staff for numerous projects including special projects for the new parallel canal, pump back projects. Also land reviews of parcels for the new canal for land transfer from USBR and ROW encroachments. As well as routine work performed both on and off the canal system. This vehicle is available to respond to emergencies in bad weather conditions, as may be required.

Reason(s) for Replacement: This vehicle is projected to be at sufficient mileage to warrant replacement as per FWA mileage guidelines.

Description of Engineering, O&M Activities: This vehicle is driven by the Engineer and FWA staff for FKC projects, survey equipment, engineering inspections, site meets with contractors and hauling materials to various sites FKC sites. *The picture from previous staff in 2016.*



Friant Water Authority
Vehicle/Equipment Replacement Justification
Mechanics Report
 FY 2020

Date: 05/24/2019

Vehicle/Equipment I.D.: 2022

License #: 1269784

Year: 2007

Age: 14 years

Make: Chevy

Model: Silverado 1500

Department: Engineering

Maintenance Yard: Lindsay

Current Mileage: 200,100 *(Estimated, a trouble notification is blocking final odometer reading.)*

GENERAL CONDITIONS:	POOR	FAIR	GOOD	EXCELLENT
Body and Interior:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suspension:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Drive Train:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Tires:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tool Box <i>(will be retained by FWA):</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

History of Repairs: Cooling system, brakes, transmission, and normal maintenance items.

Estimated Future Repair Cost: Engine, transmission, old Firestone tires: \$ 6,500

Safety Concerns: This vehicle is subject to call out to respond to canal issues and public safety response.

Mechanic's Recommendations: Due to the high mileage and usage, it is recommended to replace this vehicle at the recommended replacement schedule.

Estimated Salvage Value: \$1,500

Prepared By: John Slater

Synopsis: Depending on final COO determination. There are possible vehicle configuration changes. They include smaller engine in a mid-size truck with crew cab (ie. Colorado, Ranger), all-wheel drive for all weather, flood and non-operational (mud road) side of canal. Better gas millage will be a plus. This will allow off-road access during mass grading inspections of the new parallel canal. A smaller truck in the fleet will allow for options in operations for access into tight spaces with no or poor road conditions. To be shared with Operations and CEO/COO for media and public tours of mass grading/flood conditions, etc.

Friant Water Authority
Vehicle/Equipment Replacement
Justification Form
Proposed For FY 2019

Date: 05/17/2018

FY-2019

Vehicle/Equipment: (RTA 1109) OC Boom Truck

Job Code: 6299

Replacement: **Addition:**

Estimated Cost: \$166,388 (depends on size)

Proposed Delivery Date: FY-2019

Department: Maintenance

Maintenance Yard: Orange Cove

Purpose of Vehicle/Equipment: This vehicle is used by the Orange Cove maintenance staff to lift material and objects both on and off the FKC system. It provides lifting where a forklift or similar equipment is unsuitable.

Reason(s) for Replacement: The biggest reason for replacement is safety, this boom truck is a 1994 model that was bought used by the Authority and has seen a lot of service time. The telescopic feature has problems on a regular basis and often the boom will not telescope in or out without landing the load. Staff is aware of the issue and have been able so far to work around it, but it is possible to get into a situation where the truck could become “stuck” with a load that can’t be landed. The boom telescope feature needs to be completely disassembled and rebuilt. The friction reduction pads inside the boom for the telescope feature are also an issue as they come loose regularly and are difficult to replace. The outrigger hydraulics are also needing repair. Due to the age of the vehicle, its load indicating device is very antiquated and makes lifting items of unknown weight unsafe.

Description of How Vehicle/Equipment Augmentation Facilitates O&M Activities: The boom truck is a vital piece of equipment on the FKC, it is used regularly for lifting activities on the canal and in the maintenance yards. The boom truck serves well on routine maintenance activities such as; bridge repair, debris removal from water, pump deployment, building construction and maintenance, heavy equipment repair, setting portable equipment, moving concrete barriers, many other activities that exceed the capacity or reach of a forklift.



Photos of Current Unit

Friant Water Authority
Vehicle/Equipment Replacement Justification
Mechanics Report
Proposed For FY 2019

Date: 05/17/2018

Vehicle/Equipment: (RTA 1109)

License #: 1250118

Year: 2001 (chassis)

Age (yrs.): 18

Make: Ford

Model: F750

Department: Maintenance

Maintenance Yard: O.C.

Current Mileage/Hours: 35000

GENERAL CONDITIONS:	POOR	FAIR	GOOD	EXCELLENT
Body and Interior:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suspension:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive Train:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

History of Repairs: Normal maintenance items.

Estimated Future Repair Cost: Boom Rebuild \$15,000-25,000, Outrigger hydraulic rebuild \$7,500.

Safety Concerns: This vehicle is a vital piece of equipment to daily maintenance activities. Age and reliability issues are the main safety concerns.

Mechanic's Recommendations: Replace before major component failure.

Estimated Salvage Value: \$17,500

Prepared By: Josh Taylor

**Friant Water Authority
Vehicle/Equipment
Justification Form**

Date: 05/9/19

FY - 2020

Vehicle/Equipment: Forklift

Job Code: Vehicle &
Equipment Maintenance
6299

Replacement: **Addition:**

ESTIMATED COSTS: \$104,000

Proposed Delivery Date: FY 2020

Department: Maintenance

Maintenance Yard: Delano/Orange Cove/Lindsay

Purpose of Vehicle/Equipment: A large forklift is necessary to lift heavy & oversized equipment and materials exceeding 3000 lbs, i.e. bridge timbers, sand blast media tote bags, metal materials, etc.

Reason(s) for Replacement: Delano's current forklift is 39 years old, Lindsay is 20 years old and Orange Cove's is 39 years old and has a high frequency of mechanical, electrical and hydraulic problems, and lacks safety devices included on newer model forklifts. Also, repair parts are unavailable due to the age of units. It is being proposed to retire the forklifts for CARB reasons to keep the Authority on schedule for carbon credits by buying one (1) off road forklift that can be utilized by all three divisions and be a compliant Tier 4 final power plant.

Description of How Vehicle/Equipment Augmentation Facilitates O&M Activities: The forklift would allow the safe, efficient and dependable handling and transferring of equipment and materials in the Maintenance yards of the Authority.



Picture of proposed unit



Picture of existing Orange Cove and Delano forklift



Picture of existing Lindsay forklift

**Friant Water Authority
Vehicle/Equipment Replacement Justification
Mechanics Report**

Date: 5/9/19

Vehicle/Equipment PCN 163066

License #: N/A

Year: 1980, 1980, & 1989

Age (yrs.): 39

Make: Wiggins, Wiggins, JCB

Model: W56HPST5R

Department: Maintenance

Maintenance Yard: Delano, Orange Cove, Lindsay

Current Mileage/Hours: Approx. 8,455 hours

GENERAL CONDITIONS:	POOR	FAIR	GOOD	EXCELLENT
Body and Interior:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suspension:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive Train:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

History of Repairs: Have repair history beginning in 1980 only. Engine overhaul, 1988; clutch, 1987; ring gear 1989.

Estimated Future Repair Cost:

Engine overhaul needed	\$5,500 – 7,000
New radiator	\$575
Mast overhaul or replacement	no parts, repairs not feasible
Rear and pinion shaft	no parts available
Brake parts needed	none available

Safety Concerns: The condition of this forklift is very poor. No parts are available. The hydraulic system, the mast and rams has no safety devices due to the age of design. There is no pilot or holding valves to hold load in case of a burst hose.

MECHANICS RECOMMENDATIONS: We should replace this forklift because of the safety factors involved. This unit is unreliable.

ESTIMATED SALVAGE VALUE:

PREPARED BY: Chris Hickernell

TEN YEAR PLAN

**Friant Water Authority
10-Year Plan for FKC**

**** Cost In Thousands of Dollars ****

	FY-20	FY-21	FY-22	FY-23	FY-24	FY-25	FY-26	FY-27	FY-28	FY-29	FY-30
Summary		Canal Dewatering		Canal Dewatering			Canal Dewatering			Canal Dewatering	
6030 Weed & Pest Control			-		-	-					
6040 Road Maintenance	135	135	135	135	135	135	135	135	135	135	135
6050 Yard & Building Maintenance	178	178	248	208	128	191	190	128	248	128	128
6060 Structure and Gate Maintenance	319	103	59	377	88	67	342	49	68	342	72
6100 Bridge Maintenance	30	30	283	33	30	283	33	30	283	33	30
6120 Concrete Lining Repair	303	303	-	400			400				400
6130 Drain & Ditch Maintenance	120	130	-		130			130			130
6150 Communications & Instrumentation (General)	45	45	50	50	45	50	50	45	50	50	45
6151 Communications & Instrumentation (SCADA)	20	20	25	15	25	25	15	25	25	15	25
6210 Rip-Rapping			5	5		5	5		5	5	
6299 Vehicle and Equipment Acquisition	36	36	430	453	115	465	325	160	109	261	105
Dewatering Labor	-	-	-	-			-	-	-	-	-
Grand Totals	1,186	980	1,235	1,676	696	1,221	1,495	702	923	969	1,070
Ten Year Grand Total						12,153	**** Cost in Thousands of Dollars****				

FOREWARD

The Central Valley Project's Friant-Kern Canal, operated and maintained by the Friant Water Authority, has always been vital to the southern San Joaquin Valley's East Side. Now, well into its sixth decade of serving valley farmers and communities with crucial supplies of San Joaquin River water, the Friant-Kern Canal is showing its age.

This Ten-Year Plan for the Friant-Kern



Canal's operation, maintenance and improvement represents an effort to provide an examination of the canal's extraordinary needs over an extended period as well as budgeting for the funding needed to achieve these objectives. The plan anticipates that over its 10-year period, projects and activities valued at \$13,260,000 will be required.

At the same time, it is the Ten Year Plan's purpose to result in a document that will assist directors, managers, and staff, now and in the

future, in establishing priorities and processes. It is meant to be dynamic and flexible, with review each year by the Operation and Maintenance Committee and Friant Water Authority staff to determine whether or how it needs to be updated, refined, or changed.

The plan proposes to continue the Authority's tradition of maximizing extraordinary maintenance and construction as well as routine

O&M activities within reasonable budget objectives and reliance upon its own staff, achieving economies and efficiencies whenever possible.

Along with identified needs, the plan summaries a great deal of the Friant-Kern Canal's lengthy construction, operation, and maintenance record. While hardly historically glamorous, it holds immense im-

portance to the facility's future ability to provide essential water supplies. This history that has been so well documented successively by the U.S. Bureau of Reclamation, Friant Water Authority is critical knowledge to maintain pass forward.

This is a substantial planning effort because the Friant-Kern Canal is an extraordinary element in a remarkable region. The Friant-Kern Canal provides a reliable CVP water supply to nearly one million acres of the world's most



productive irrigated farmland from the San Joaquin River near Fresno to the foot of the Tehachapi Mountains in Kern County. The Authority water supports and sustains a tremendous variety of crops, the majority of which are permanent plantings of grapes, nuts, tree fruits, and citrus. A significant amount of row and field crops is produced within the Friant Division and the region leads the nation dairy production. The Friant service area's agricultural variety and productivity are amazing in their scope and value. What makes the region even more unique is its ability to achieve this diverse production on small family farms that average approximately 100 acres in size. There are some 15,000 Friant Division

farmers, most of whom operate small family ranching operations. They are renowned for their highly efficient use of irrigation water.

These farmers along with residents, businesses, and industries in a half dozen East Side cities and towns also rely, in many cases exclusively, on CVP water that Friant Water Authority delivers to them on behalf of the U.S. Bureau of Reclamation. They count on the Friant-Kern Canal to always be ready to meet their needs.

This Ten-Year Plan is dedicated to making certain that always happens.

THE PAST

Introduction to the Friant-Kern Canal

Since 1986, Friant-Kern Canal users and contractors have relied upon the Friant Water Users Authority and, in later years, the Friant Water Authority for operation and maintenance of the Central Valley Project's Friant-Kern Canal. The canal's planning and initial development from the 1930's until 1951 represented a monumental task for the U.S. Bureau of Reclamation (Bureau), and its contractors and water user community.

Factors such as the canal's original site selections, construction techniques, as-built route, topographical and geological conditions, and operational challenges such as liner failure and subsidence have all been part of the Friant-Kern Canal's operation and maintenance history.

From 1951-86, Reclamation had responsibility for all O&M work. In 1986, the newly-organized Friant Water Users Authority (FWUA) took over the canal's O&M under a

cooperative agreement with the Bureau. In 1998, the cooperative agreement was replaced by an O&M contract wherein the water users directly funded the canal O&M as opposed to the funding received from the Bureau under the cooperative agreement. This arrangement continued until the O&M contract was transferred to the new Friant Water Authority (FWA) – members which were all contractors receiving water delivered from the Friant-Kern Canal – in 2004.

Since 1986, Reclamation has retained overall ownership of the canal, its facilities and its right-of-way. The Bureau has acted in support, advisory, and oversight roles in relation to the canal, as well as continuing to administer the Friant Division's Central Valley Project water supply and handling O&M responsibilities for Friant Dam and a section of the Friant-Kern Canal for a short distance downstream from Friant Dam. Reclamation has also maintained oversight of both capital and maintenance O&M activities conducted by the FWUA and, later, the FWA under the O&M contract with the United States.

The FWA, headquartered in the Tulare County community of Lindsay, includes 19 member



agencies (in portions of Fresno, Kern, and Tulare counties, California) that contract with the U.S. Bureau of Reclamation for CVP-Friant Division water delivered through the Friant-Kern Canal.

The 152-mile-long Friant-Kern Canal, between Friant Dam and the Kern River in Bakersfield, is among the major facilities of the CVP's Friant Division. This Interior Department project also consists of Friant Dam and Millerton Lake on the San Joaquin River northeast of Fresno and the 36-mile Madera Canal that runs northwest from Friant Dam to Ash Slough, a branch of the Chowchilla River. The Bureau operates and maintains Friant Dam and Millerton Lake, and administers the CVP's Friant Division water entitlements. The Madera Canal's O&M is handled by the Madera-Chowchilla Water and Power Authority.

O&M activities along the Friant-Kern Canal are vital to ensure that its facilities are ready at all times to meet water delivery demands, which average just over one-million acre-feet per year. The canal is a supplemental water supply for significant portions of the service area that are blessed with good quality aquifers and a firm groundwater supply.

On the other hand, there are portions of Friant's service area, including some cities and towns, that rely totally on Friant water as their sole source of supply. The canal is also crucial at times in helping move flood or other surplus water from storage, often to beneficial use in locations utilized for groundwater recharge or banking.

The Friant-Kern Canal also delivers municipal and industrial water supplies to the Cities of Fresno, Orange Cove, and Lindsay as well as unincorporated communities that utilize Friant water that include Friant, Strathmore, and Terra Bella. Friant and Orange Cove are 100% dependent on Friant water for their supplies. Fresno, the San Joaquin Valley's largest city, depends on Friant water for 40% of the city's total supply.

THE PAST

Historical Background

The Friant-Kern Canal has been part of the southern San Joaquin Valley's East Side landscape since 1951 when it was completed by contractors working for the U.S. Bureau of Reclamation. It is largely taken for granted now but if it were not for the canal and the local irrigation delivery systems that the Friant-Kern supplies, much of the East Side's familiar countryside and its surroundings would be a much different landscape today. Thanks to water deliveries from the Friant-Kern Canal, many hundreds of thousands of acres have been sustained as the world's most productive farmland.

The canal is among the most important original features of the Central Valley Project and, in particular, the CVP's Friant Division, one of the world's largest and most complex and extensive water transport and delivery systems.

Within its 152-mile reach from Friant Dam through parts of Fresno, Tulare, and Kern counties to the Kern River in Bakersfield, the Friant-Kern Canal provides a vital supplemental source of water to irrigated agriculture as well as full or partial supplies of municipal and industrial water relied upon by one major city and several smaller cities and towns.

As with other key major Friant Division features- Friant Dam, Millerton Lake and the smaller 35-mile long Madera Canal that serves portions of Madera and Merced counties – the Friant-Kern Canal's origins were contained in visionary planning and political actions during the 1920's and 1930's.

Pre-project Conditions

Much of the Friant Division was developed for agricultural purposes even earlier. Some lands within what is now the Friant-Kern Canal ser-

vice area were first cultivated in the 1870's and 1880's, particularly in portions of the country with surface water availability from local rivers and streams flowing from the Sierra Nevada foothills.

Other areas were less favorably located. Advancements in well and pump designs in the early 20th century motivated many people to develop what had been native ground, untilled grazing land or dry-land farming into irrigated agriculture. By pumping, more of the East Side's fertile farmland could be brought into production, taking advantage of the region's nearly ideal growing climate.

Intense pumping also brought with it severe groundwater overdraft conditions. In some areas, groundwater came to be exhausted. Many permanent plantings, particularly of citrus, had been abandoned simply because of a lack of water. As water well levels fell or failed, a sense of desperation grew. Tens of thousands of other areas lacked any water supply and remained uncultivated. Some East Side communities economically wilted. Much of East Side did not prosper as it might. Friant Division planners identified nearly one million acres in portions of Kern, Tulare, Fresno, and Madera counties with the potential to receive irrigation water from the Friant system's two proposed canals. Much of that territory was short of water.

In 1943, the Water Project Authority of the State of California concluded that local surface supplies and some 11,500 then existing wells were "insufficient to furnish the irrigation requirements of the existing irrigated lands, resulting in serious depletion of underground water supplies in certain areas. About 400,000 acres of presently irrigated lands have only about half enough water supply to meet irrigation requirement. . . . Already, about 50,000 acres of land have been abandoned."

Early CVP Planning and Approval

The solution that ultimately made the East Side come alive was an incredible water development program. In 1921, a dozen years of comprehensive studies and research on water storage and conveyance began, prompted in large part by the East Side's seriously deterioration water conditions in which local water tables were plunging.

Meanwhile, a federal-state Water Resources Commission (the Hoover-Young Commission) was set up by President Herbert Hoover and California Governor C.C. Young. It recommended the Central Valley Project. The commission determined that without the CVP's development, "in the neighborhood of 200,000 acres of highly-developed land... must largely go back to desert conditions unless the supply of water is increased. It is not a case of providing water for the development of more land, it is a case of providing water to save lands already developed and which have demonstrated their value."

All states studies were molded in 1931 into the California State Water Plan. The plan included many of the CVP's original principal features which were to be linked as a comprehensive system. Those were to include Shasta Dam on the Sacramento River, Friant Dam on the San Joaquin River northeast of Fresno, and the Madera and Friant-Kern canals, and the water exchange at Mendota Pool that makes the Friant Division's operation possible. Hydroelectric power generation and transmission facilities were included.

In 1933, the California Legislature provided for a CVP revenue bond issue of up to \$170 million, a measure narrowly approved by state voters on December 19, 1933. State efforts to win a large-scale federal grant for the CVP were unsuccessful. Nor could a market, in the depths of the Great Depression, be found for the state bonds.

CVP's Change into a Reclamation Project

The federal government, meanwhile, had embarked upon a large program of public works to create employment opportunities and spur the economy, in large part through development of the nation's rivers and other natural resources.

The federal government became interested in the CVP. For California, federal involvement offered an opportunity to get the project constructed and create short and long-term benefits of enormous importance. A drought had begun in 1928. It coincided with the Depression's economic anguish, creating a feeling of desperation. Largely with the state's blessing, the United States moved to take over the CVP's development, substantially following the state's basic water plan for the CVP but as a federal Reclamation project.

In 1935, President Roosevelt approved a feasibility report calling for federal construction of the CVP, initially authorizing \$15 million with which to begin the work. Congress in 1935-36 authorized the CVP. Then, Congress subsequently reauthorized the project in the Rivers and Harbors Act on August 26, 1937, placing it under the auspices of the U.S. Bureau of Reclamation. Congress subsequently made repeated appropriations of hundreds of millions of dollars for the Friant Division's development. Reclamation obtained assignment of pending water rights applications to the predecessor agency of California's State Water Resources Control Board to appropriate San Joaquin water at Friant.

By 1939, a Purchase Contract and an Exchange Contract were executed to make water from the Friant Division available for appropriation.

The CVP represented an entirely new approach to meeting water needs – that of a basin-wide strategy that recognized that development in one portion of a basin could affect other areas. Under this regional approach, the means were developed for transferring substantial amounts

of surplus from the north to the parched south as part of an integrated, coordinated project. The Central Valley Project was the first U.S. basin-wide project. Distribution of water from the main CVP canals, including the Madera and Friant-Kern canals, to individual users remained the responsibility of local districts. As developed, the CVP came to supply irrigation water to 3,757,000 acres, more than one-third of California's farmland, making possible the production of 220 different types of crops. The CVP also became the provider of municipal and industrial water to many cities and towns, including several communities within the Friant Division.

Detailed field survey work began late in 1935. The CVP's first construction, in February 1937, was a warehouse at Friant, built in anticipation of Friant Dam's construction to harness the San Joaquin River.

CVP Development Beginnings

Construction of Friant Dam and the Sacramento River's Shasta Dam followed. Friant Dam's construction was under way in 1939. The basic dam structure was in place by 1942. Despite wartime materials shortages, outlet valves were obtained from Boulder (now Hoover) Dam in 1943 to be installed in Friant Dam in order to permit the first releases in to the Madera Canal. Friant Dam was essentially completed in 1944 (although the spillway dam gates and other finishing touches were not in place until 1947).

Friant and Shasta Dams were built to store and regulate river flows, and to capture and control floodwater then being lost to the ocean to conserve it for beneficial uses. Storage began at Shasta Dam in January 1944.

The Tracy Pumping Plant and Delta-Mendota Canal were construction to transfer Sacramento River water 113 miles from the Delta to the San Joaquin River where it would be exchanged for San Joaquin River water diverted at Friant Dam. Power plants were developed at Shasta and Keswick dams near Redding.

The Delta Cross Canal helped shorten the path water had to take across the Delta. For water deliveries, the Contra Costa Canal was developed in the north and the Madera and Friant-Kern canals were constructed in the San Joaquin Valley. A number of other CVP units were later authorized and developed.

By 1951, the project's initial development was fully operational.

THE PAST

Initial Development

From the time planning began, the Friant-Kern Canal was envisioned as a key Central Valley Project facility for the delivery of San Joaquin Valley's East Side. The canal was to be the final CVP link in a system of transferring and conveying water from the Sacramento River basin, where a supply surplus existed, into the water deficient San Joaquin Valley hundreds of miles to the south.

The Friant-Kern Canal is the larger of the Friant Division's two conveyance canals (the other being the shorter Madera Canal).

The U.S. Bureau of Reclamation originally intended to begin Friant-Kern Canal construction while Friant Dam was still under construction and actually called for bids in October 1941 to build the first six-mile reach. The onset of World War II delayed its construction four years even though work was continued to complete Friant Dam and begin construction the Madera Canal.

Friant-Kern Canal construction began in 1945 and by the time it was completed in 1951 the canal extended 152 miles from Friant Dam on the San Joaquin River northeast of Fresno to the Kern River on Bakersfield's western side. Most of the country is served was deficient or lacking in local surface and groundwater supplies, although the land was recognized, as a 1943 government report put it, as "one of the most fertile and productive farming regions in California as well as the nation as a whole.

Three of these four counties rank among the first four of all counties in the United States in value of agricultural products in 1942." That is still true nearly 70 years later.

Within the Friant-Kern Canal

At Friant and for its first 28 miles, the Friant-Kern Canal is capable of handling flows of 5,300 cubic feet per second. Then the capacity diminishes gradually. At the canal's terminus, its capacity is 2,000 cubic feet per second.

AS was also the case with the Madera Canal, the Friant-Kern Canal's headworks at Friant were located at an elevation on the dam's face sufficiently high to permit water to flow through the canal's entire length by gravity. The canal features several hundred separate and varied structures. Those included 93 turn-outs to piped distribution systems and 19 turn-outs to open channel distribution systems, all of which are metered with permanent chart reorders for proper flow management and water accounting. Other structures include over-chutes, drainage inlets, and irrigation crossings.

The canal's largest structure, built between 1946-48, is a 24-foot, 3-inch diameter tube siphon carrying the canal's waters beneath the Kings River's streambed for a distance of more than 3,000 feet.

Public Anticipation and Applause

Construction of the Friant-Kern Canal was among the most widely anticipated and applauded improvements in San Joaquin Valley history.

Virtually all of what would become the canal's service area had been highly developed decades earlier into a fertile and productive farming region that was declining. Its water supplies – both on the surface and from the aquifer – were inadequate to meet demands.

Opening of the canal began to lift a growing cloud of desperation that hung over East Side farming communities. Three thousand valley residents, mostly from Orange Cove and Tulare County, were on hand at Friant Dam on July 9, 1949, to see the Friant-Kern Canal's first flow. Buttons opening two 96-inch valves in Friant Dam were pressed by W.B. Kiggins of Lindsay, the San Joaquin Water Conservation and Development Association's first president, and G.H. Hogue. Hogue, a Bureau of Reclamation engineer, who prepared the canal's plans.

Governor Earl Warren called the canal "one of the outstanding accomplishments of the nation

in the last half century.” He termed the occasion “a stirring day for one like myself who was raised in the valley and though the years has shared the dreams and hopes for the valley and knows the great importance of water to the area. The most precious natural resource the state has is water and we do not have an overabundance of it. We need every drop that falls on the mountains and the plains.”

Arrival of Friant-Kern Canal water at Orange Cove, in eastern Fresno County, on July 10, 1949, prompted a huge celebration. The Orange Cove Irrigation District was the first agency to contract for and receive water from the Friant-Kern Canal. Other contractors began receiving water as the canal reached further south. Federal promises and deliveries of a substantial and certain water supply made it possible for land and communities along the Friant-Kern Canal to thrive.



Aerial View of the Kings River Check and Wasteway.

Size and Capacity Considerations

An incredible amount of precise and calculated planning went into the Friant-Kern Canal’s design. Surprisingly, those exercises did not extend to the canal’s intended capacity. Nearly a year after construction began on the canal’s first 70 miles, the U.S. Bureau of Reclamation had only a general idea of how much water it should be capable of carrying, at least on the lower end, although those concepts were considerably larger than earlier planners intended.

Creating this uncertainty were several factors, not the least of which involved how many local irrigation districts would opt to sign water service contracts. Amounts of contracted water were in some cases little more than guesswork. Nor were planners of the canal any-

where near sure of what future roles the Friant-Kern Canal might be called upon to perform. In the second of two reports entitled “Desirable Capacities of Friant-Kern Canal,” the Bureau confessed these uncertainties by saying, “There is no exact way of determining the desirable capacities of (the) Friant-Kern Canal; rather, the solution must be based on reasonable studies and logical judgement. Since many important factors relating to use of water from the canal are not definitely known, it seems reasonable that capacities should be selected somewhat on the conservative or “high” side,

thereby providing more freedom in future canal operation. Various capacities have been suggested previously for (the) Friant-Kern Canal between Kings and Kern rivers but all of these were based on conditions which are now changed.”

In fact, most of the canal’s upper canal reaches were originally conceived for a maximum capacity of 3,500 c.f.s. When construction began in 1945, the same reach’s capacity was being listed at 4,000 c.f.s. (with a maximum capacity of 5,000 c.f.s. available if the freeboard were to be reduced to three inches), with the as-built capacity as far as Kings River ending up at about 4,000 c.f.s. Many years later, the Friant-Kings River section was enlarged to 5,200 c.f.s. by extending the concrete liners along each bank.

The Bureau ended up providing canal capacities based upon two differing types of operation, *independent* and *coordinated*. The independent method is that which has mostly been used since the canal began to become operational in 1949. It contemplated that Millerton Lake would be, at least initially, the Friant-Kern Canal's sole water source.

In the more distant future (which for the most part has still not arrived) the Bureau envisioned the Friant-Kern Canal being part of a coordinated water supply system that would make use of integrated regulation of other valley rivers and streams.

Route Selection; Geological Conditions

Not surprisingly, the route ultimately adopted for the Friant-Kern Canal featured a wide variety of topographical and geological conditions, many of which were challenging to designers. Some ended up presenting unanticipated operational problems after the canal went into service.

The lower portion was the easiest. Downstream from Milepost 87.60 in the Lindsay area, the canal was largely built through level, sandy soil or blends of silt and sand. Oddly, the exact canal alignment of some southern Friant-Kern reaches was still being selected and right-of-way obtained even as the canal was taking shape with its construction nearer Friant Dam and beginning to snake its way south.

It was a different story to the north. The original design decision for the canal to flow by gravity for its entire length meant that the routing would in many of its upper reaches of necessity hug the low foothills. As a

result, the selected course was largely through side hill terrain from Friant Dam to Milepost 87.60.

There were exceptions in which the canal passed through more typical valley topography. Some of these were in portions of segments within Fresno County between Big Dry Creek and Kings River, and through much of the Orange Cove Irrigation District.

Another such "valley" canal passage occurred in crossing with wide stream basin of the St. John's and Kaweah rivers, and Yokohl Creek. In these reaches, the terrain was considerably smoother, sloping gently to the west, and construction challenges were generally fewer and simpler.

Especially along and through the side hills, soils encountered in the canal route north of Milepost 87.60 ended to be predominately clay, with rock outcroppings. Rock had to be excavated extensively in the hillside reaches. Cobblestone deposits proved to be extensive along the Kings River.

One of the biggest challenges, and one that would later result in significant operational problems, was an 85-foot hill immediately south of the Kings River. Originally, designers feared the hill was solid granite and planned to skirt the obstacle but when they determined the hill was composed of decomposed granite, a decision was made to excavate a large cut that



proved to have its own difficulties. South of this hill to the Kaweah River, clay proved to be an ongoing problem during construction, just as it would be to subsequent operators. They clay cracked widely and deeply under hot, dry conditions, only to swell into a miserable “plastic” under winter rains. More clay was encountered along the hillsides between Exeter and Lindsay.

The canal’s capacity uncertainties caused some problems. Most of the upper canal reaches were surveyed in the 1930’s when it was planned that the canal below Friant would have a maximum capacity of 3,500 c.f.s. The canal alignment was based upon this assumption and some right-of-way was acquired. By the time construction began in 1945, it had been decided to increase the canal capacity.

The result was that some sections featured more curves that probably would have been the case had the design and course been based upon the larger capacity. Surveyors did record detailed topography at structure sites during location surveys.

According to the U.S. Bureau of Reclamation’s “Technical Record of Design and Construction, Friant-Kern Canal” (Denver, 1958), “Early design and construction criteria prescribed that the canal should be concrete lined throughout but...about 25 miles of the 152 miles are in earth section. Analysis of soil samples submitted by field forces before and after construction strongly

indicated that the canal through many of the clay reaches should be in earth section. However, local interests strongly favored concrete lining as it was claimed the earth sections would leak and thus create a drainage problem. The decision to install concrete lining in these clay reaches was made to meet these objections of the local interests. Later events proved that much of the canal through the clay areas should have been earth section. On the other hand, lining its clearly indicated in the sandier soil areas below Mile 98, as wave action had produced bank erosion and breaching to a large degree in earth section No.2” (east of Delano).

Design Decisions and Features **Concrete Lining**

Concrete lining was planned to be installed in most of the Friant-Kern Canal during construction. The lining was to be unreinforced except that where the foundation material was deemed unsatisfactory by the concrete on some of the tighter curves to prevent scouring.

The design base width for concrete-lined sections varied from 24 feet to 36 feet, and the lining height from 16 feet to 18 feet, 6 inches.



The concrete thickness was 3 ½ inches and side slopes were 1 ¼ to 1. Longitudinal and transverse grooves were spaced at approximate 12-foot centers in an effort to control anticipated cracking.

Where canal excavation was in rock, the rock was to be excavated for nine inches outside of the finished canal prism and the excavation backfilled with a minimum of three inches of compacted earth between the rock points and concrete. Under-drains were also installed, particularly in areas where groundwater was encountered.

In some areas, problems did not take long to emerge. The “Technical Record” states, “As concrete lining progressed, suspicion was aroused that all was not well when lining was placed on plastic clays. Laboratory tests indicated a high percentage of swell when the clays became saturated as they eventually would under concrete lining.” This expansive clay problem was far more serious than the Friant-Kern designers originally realized and would haunt those operating and maintaining the canal from the day its concrete lining was poured to the present.

Earth Lining

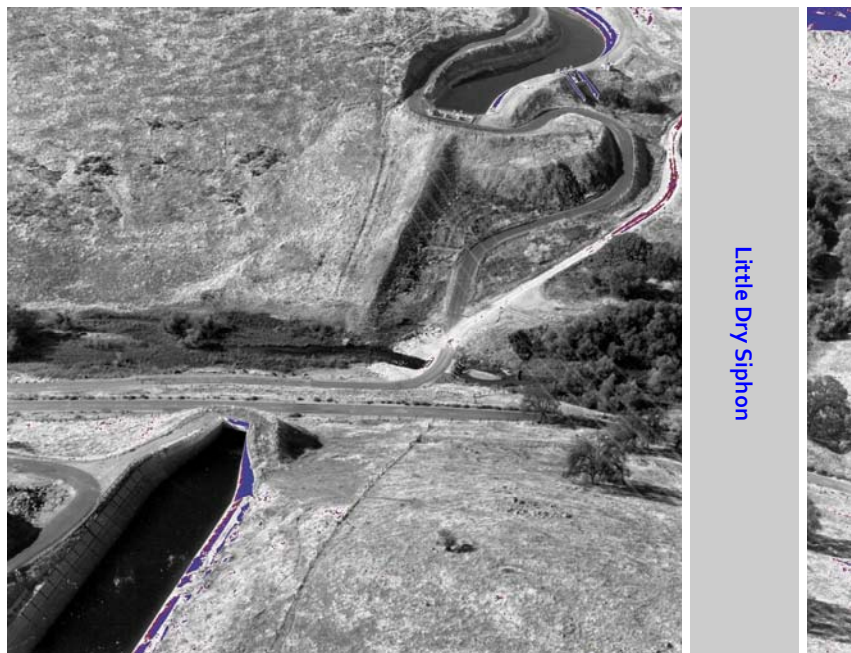
Compacted earth lining was utilized to a lesser extent along approximately 25 miles of the canal.

Through the Orange Cove area, earth section No.1 was designed with a base width of 64 feet, a water depth of 17.32 feet at normal capacity and 1 ½ to 1 side slopes. A second earth section along Lake Woollomes (the canal’s equalizing reservoir near Delano), with a lesser capacity, was designed with a base of 40 feet and a water depth of 17.22 feet, and 2 to 1 and 1 ½ to 1 side slopes on the left and right banks respectively. Some reaches of the canal that sustained significant

numbers of concrete panel failures due to underlying soil conditions in the first several years of operation were converted from concrete lined to earthen lined prior to 1956.

Siphons, Wasteways; Related Structures

Designers also began fashioning the canal’s larger structures. The first of these involved the Little Dry Creek check, wasteway and siphon, 5 ½ miles downstream from Friant Dam. Several types of crossings were investigated, including various designs for flumes and siphons. For economic and structural reasons, the final design was a round, monolithic concrete 77-foot-long siphon with a 22-foot inside diameter and related facilities. The three-bay radial gate installation and wasteway (built atop solid rock) were designed to be able to evacuate the canal’s entire flow into Little Dry Creek. The finished project became one the canal’s most spectacular engineering feats. Another was located 23 miles downstream at the Kings River, the largest stream that the canal had to cross. Designers responded by conceiving the Friant-Kern Canal’s largest structure – a siphon of 3,047 feet in length, with associated checks, wasteways, and turnout. Designed was a round monolithic concrete siphon with an inside diameter of 24 feet, 3 inches. Because of varying loading conditions



along the siphon's length, four different barrel sections and two different concrete thicknesses were used to minimize reinforcement. The project included a turnout barrel in the form of a riser with a motor operated cylinder gate to permit releases from the siphon of 500 c.f.s. to the Alta Irrigation District. The turnout has seldom been used.

Siphons under the St. John's and Kaweah rivers were designed to feature a five-barrel structure with each barrel 11 feet square. Checks and wasteways were also provided, but with provision to prevent high groundwater or flood flows in the rivers from backing into the canal. There were also siphon installations, each with four barrels, further downstream at Tule River, Deer Creek, White River, and Poso Creek, along with wasteways at those locations and linking the canal's terminal check with the Kern River in Bakersfield. Of those, only the wasteways into the Tule and Kern rivers were designed to evacuate the canal's full flow into adjacent streambeds. The Deer Creek, White River, and Poso Creek wasteways can handle lesser amounts.

Equalizing Reservoir

Designers recognized the need for including an equalizing reservoir along the Friant-Kern Canal's lower reaches. This reservoir was provided because, due to the canal's length, it was guaranteed water releases could not be tweaked closely enough to meet variations in downstream irrigation demands. The reservoir's purpose was to provide storage so water could be turned into the reservoir when the canal was carrying more water than was needed to meet downstream demands.

A control structure was provided at the downstream end of the reservoir along with a check structure.

Check Structures

Original canal designs provided for check structures to be constructed at Little Dry Creek, Kings River, Kaweah River, Tule River, Deer Creek, White River, the equalizing

reservoir and Poso Creek. The terminal check at Kern River was also included.

After the canal became operational, it was found that some additional check structures were needed in order to make deliveries when the canal was carrying only partial capacity. This had been anticipated but, during the design phase, many of the turnout points were unknown. Construction was subsequently completed on four additional check structures. Each check structure contained from two to four radial gates. Gate widths varied from 10 to 20 feet with the number and width of gates depending upon the area required to pass the ultimate canal capacity at each location with permissible hydraulic losses. Check structures combined with siphons were sited between the siphon inlet transition and barrel sections, with wasteways provided immediately upstream. Openings were provided downstream from the gates in the vertical walls between gates to equal-water pressure in the different barrels in case the gates were not opened an equal amount. At other locations, overflow areas were provided on both sides of the check gate bays to permit a considerable amount of water to pass downstream before the canal lining is overtopped, should gates not be opened sufficiently. Each gate was constructed with manually operated electric hoists.

Turnout Structures

The Friant-Kern Canal's purpose was to have a means of delivering water to CVP contracting agencies. Turnout structures were designed to convey water from the canal into contractors' delivery systems. A number of designs were utilized and moss screen guides were provided in front of gates in anticipation of moss growth within the canal.

Bridges

Many types of bridges were designed for construction along the Friant-Kern Canal. Those included timber farm bridges, timber county road bridges, county highway bridges, state highway bridges, operations road bridges, and one railroad bridge. Designs were standard-

ized when possible, especially on the smaller bridges, but some designs of necessity depended upon conditions and needs. (The U.S. Bureau of Reclamation's "Technical Record of Design and Construction, Friant-Kern Canal" contains many details on bridges and their design and development.)

In an area of significant subsidence east of Delano, provisions were made during design for the future raising of bridges if required. The abutments were designed to hold greater fills.

Steel Pipe Overchutes

At several locations, designers provided for steel pipe overchutes to carry small amounts of water typically for irrigation use across the canal. In each case, concrete transitions were installed on the inlet and outlet ends of the structure. Precast concrete pipe was installed within the canal bank linked to the transition headwalls by short sections of steel pipe. The canal span was accomplished using a continuous length of welded steel pipes with a standard support and suspension system.

Other Structures

A large number of other structures were required. These ranged from additional large siphons needed for passing the canal flow beneath facilities such as railroads and highways as well as smaller streams, to varied structures of a more minor nature. Several of those were designed to transport or divert natural drainage and existing canals under, over or into the canal.

Siphons or culverts were utilized in many cases to accommodate cross drainage with each structure having to be considered based on its watershed's unique local conditions. Drain inlets were used extensively.

Wash overchutes were used at locations where it was not economical to transport the canal under the cross channels in siphons and where the profiles would not permit free drainage of flows under the canal. These overchutes were designed to handle high velocity flows and in-

cluded stilling pools below the canal crossing.

Contractors

The Bureau of Reclamation awarded construction contracts to several contractors in connection with various reaches and individual facilities along the canal. Contractors in turn engaged subcontractors to supplement their own forces. (The "Technical Record" contains a complete list of these firms.)

Construction

General Plan

Friant-Kern canal construction followed a general plan. Typically built first were the cross drainage, irrigation culverts and siphons. These usually preceded excavation and lining of the canal prism. Turnouts, bridge footings and abutments, and drainage inlets were usually completed to near canal section lines prior to placing the lining and then completed once the lining was in place.

At most stream crossings, excavation for siphons was partially performed and embankments constructed to allow lining equipment to be moved across the streams on rails. Fortunately for builders, most streams were dry during construction. Streamflow could still be carried by use of culverts, as was done at the Kaweah River. At the Little Dry Creek siphon, the lining equipment had to be disassembled and moved across the canyon where it was reconstructed. At railroads and some highways, the equipment was loaded on trailers and dollies to be moved.

Land Clearing

Friant-Kern Canal construction on the valley floor was nearly all through existing farmland. Clearing of orchards and vineyards within the right-of-way was accomplished by use of heavy crawler tractors and bulldozers, some-

times equipped with attachments to cut through roots. All the area intended to be located under compacted embankments was plowed.

Construction of Canal Prism

The canal took shape as its prism was formed. After black adobe was stripped from the prism and from under the line of embankments, it was placed in the outer embankments. Compacted embankments were usually built in stretches of 500-1,000 feet. Where structures were not complete, embankment sites would be bypassed.

Draglines were then used to remove much of the material remaining in the prism. Deep rock cuts were taken out in lifts but ordinary cuts (of the prism's size) were drilled to the grade's bottom before blasting. The prism in rock cuts was over excavated by 5 ½ inches, with a three-inch minimum, then backfilled.

Within the earth-lined sections, considerable black adobe was encountered. It was stripped to a width eight feet wider than the normal prism and then placed in the normal bank. In some areas, the additional eight feet of excavation extended to the canal's sections, the canal and side excavation were carried two feet below grade and compacted earth started at that location. When compacted earth lining was not placed on the bottom, the base was ripped to a one-foot depth, wetted and compacted. Many underdrains were required due to many varied conditions because, designers recognized, the canal's concrete lining would tolerate very little hydrostatic pressure. High groundwater sometimes caused builders to utilize gravel filled trenches and blankets for added drainage.

Slip-form concrete lining was applied where possible by machine, but hand methods were used near siphons and other large structures, as well as within an unstable 85-foot rock cut - in a ridge of decomposed granite - just south of the Kings River. Initially, this section was unlined. Concrete lining was installed after two

seasons of operations late in 1950 and early 1951.

Trimming machines were used throughout much of the prism to remove unexcavated material and trim the prism to true section and grade. These machines spanned the canal and rode on rails 95 feet apart (a track gauge that was narrower in southern reaches downstream.) It moved at 1.5 feet per minute.

The trimming process improved as the work moved south and experience grew. Alterations had to be made in the machines when the canal prism became reduced in the Friant-Kern's lower reaches.

Separate machines were manufactured to place the concrete lining. The traveling slip form had a working perimeter corresponding to the canal prism section. This device also traveled on the rails laid upon the canal berm. A paving mixer, receiving, and mixing previously proportioned concrete materials, traveled along the right side of the slip form, into which mixed concrete was deposited and spread through use of a series of open bottom hoppers. As with the trimming machine, the concrete lining process was steadily improved and refined as the work moved downstream. Finishing work was by hand. Other machines and equipment were developed or utilized for special functions such as trimming berms and deep cuts, placing gravel in underdrains and tamping canal side slopes, the "Technical Record" discusses concrete production in detail. Twelve hours after concrete was placed in a barrel section, forms were removed and a curing compound was applied.

Equalizing Reservoir

What became Lake Wollomes east of Delano was constructed with tractor drawn scrapers that placed considerable borrow material for construction of canal banks, dikes, and fills. This material was obtained from within the equalizing reservoir site itself. Available materials were mostly sandy clays with an excess of

silt. As much as practical, clay topsoil were blended with sandy subsoils.

Turnouts

Turnouts were mostly excavated with drag-lines, with as much of the work done in advance of the canal lining's installation as possible.

Beginnings of Operations

Friant-Kern Canal operations began on a brutally hot day, July 9, 1949 during ceremonies in which two valves were opened at Friant Dam to the delight of 3,000 people, mostly from Orange Cove and Tulare County, the first canal beneficiaries.

“First came a fizzing sound, then an expanding whoosh which built into a drumming roar as the long-awaited water shot out of the hollow jet valves, churned the settling basin full and set off in huge waves around the first bend in the great Friant-Kern Canal,” The Fresno Bee reported. A columnist in the Orange Cove News wrote, “The first San Joaquin River water gushing into the bright new canal from Friant Dam produced music which the listening San Joaquin Valley residents found more delightful than the most magnificent symphony.” The roar was so loud that the flow had to be halted so that the ceremonies could be completed.

The U.S. Bureau of Reclamation initially permitted a flow of 1,000 cubic feet per second, then a little more than one-fifth of the canal's capacity at Friant, to move water south into the first 73-mile reach, as far as the St. John's River, near Woodlake in Tulare County. After the canal was “primed,” flows were cut to a much smaller rate, reflecting the limited number of users that then existed.

A day later, July 10, 1949 the water reached Orange Cove, the canal's first user and a community in which growth and agricultural production coupled with the lack of a surface sup-

ply and years of inadequate precipitation had created a crisis. The Orange Cove News reported, “The parched and thirsty land on the eastern slope of the San Joaquin Valley, facing death because pumps are exhausting underground water supplies, were given a new lease on life...when water started pouring into the canal, “Orange Cove responded with a huge celebration. The big moment arrived when M.N. Jensen, OCID president, and E.M. Sheridan, Orange Cove pioneer, gave the signal which started a pump through which a small symbolic flow was soon passing. The token stream poured from a pipe onto the hot, dry ground, creating a wading pool which proved popular. OCID diversions began immediately. No turnouts or distribution system existed then. Water was pumped from the canal into ditches and local streams.

The U.S. Bureau of Reclamation began overseeing canal operation and maintenance. Immediately, the Bureau found itself having to make repairs, largely because of problems and failures with concrete liner panels caused by expansive clay soils underlying several reaches. (These challenges are discussed in greater detail elsewhere.) Reclamation continued these O&M duties until 1986 when the Friant Water Users Authority took over. The canal's operations were extended to the terminal check at Kern River in Bakersfield, 152 miles from Friant Dam, in 1951.

Post-Construction Canal Problems

Expansive Clays

Construction of a water conveyance system with literally hundreds of structures both large and small stretched over 152 miles of varied soil and rock conditions was bound to run into conditions and situations that would pose operation and maintenance dilemmas. None, however, proved to be such a problem as expansive clays.

These clay-type soils experienced dramatic volume changes because of variations in moisture content. These soils were characterized by a relatively high percentage of colloids, low shrinkage limits and large plasticity index (the differences between liquid limit and plastic limit). They were a problem during and immediately following Friant-Kern Canal construction through many reaches, and have caused failures in concrete canal liner panels ever since.

Recognition of Problem

Expansive clays were first considered to be worthy of serious attention on the project in 1946, when canal construction was just getting under way. Excavators immediately began encountering “Black Adobe” as they worked southeasterly from Friant Dam along and through the lowest elevation Sierra Nevada foothills in Fresno County.

Even as construction was proceeding, the U.S. Bureau of Reclamation launched an extensive study that on September 12, 1949, resulted in a “Report on Expansive Clays of Friant-Kern Canal.” (by J.J. Waddell, Concrete, and Earthwork Control Engineer). This study examined possible effects that the clay soils being encountered would have on the concrete lining constructed through those same reaches.

Early Encounters and Findings

Test borings were made along the proposed canal’s side hill route during the Summer of 1946 and indicated that there were extensive reaches of clay-type and adobe soils through which construction would have to proceed and concrete lining would need to be built.

Information was also gained from the Lindsay/Strathmore Irrigation District in relation to its gunite-lined canal, located mostly on side hills paralleling the Friant-Kern Canal’s route. It then conveyed Kaweah River water to the Lindsay and Strathmore areas in Tulare County. It turned out that expansive clay caused significant disruption and damage, including liner failures to the LSID canal through the entire clay reach. There were several undisturbed earthen samples that were tested by Reclamation at its Denver Laboratory.

Canal construction continued. Black adobe was stripped and deposited in the canal’s outer embankment. Red clay material was used for compacted embankments, refilling stripped areas and backfilling in rock sections. Although there were pockets of expansive clay between Friant and Orange Cove, the first large-scale problem area encountered was on a gently sloping hillside around Stokes Mountain. This promontory, jutting onto the valley floor east of the Tulare County communities of Cutler and Orosi, was filled with expansive clays. There were portions excavated from rock that were backfilled with expansive clay. No groundwater was encountered during excavation. Longitudinal drains were installed in several locations.

Concrete lining was installed during mostly dry weather between September 23- December 13, 1947. Cracks occurred within the new lining almost immediately. Over the next 16 months, Reclamation engineers studied the situation and decided to import a supply of water to experimentally fill a section of the as-yet unused canal through the Stokes Mountain reach that had displayed the worst cracks.

The test was scheduled from late March through late April in 1949. As the canal was not yet in service that far south, arrangements were made with the Alta Irrigation District to transport water from the Friant-Kern Canal's Kings River siphon where it would be diverted to the Alta system through the siphon's cylinder gate, two earthen dikes were constructed across the Friant-Kern Canal. Pumps were installed to transport water to the test section.

Two crack surveys of the test section were made in November 1948 and March 1949 (with a third survey made in late April after the test had concluded; a fourth survey showed a continuous growth of cracks even before the water test began. Surveys were made and bench levels were set. Water elevation and evaporation gauges were installed. Fourteen undisturbed pre-test earth samples were taken behind concrete panels.

The water surface rose to a depth of 16 feet before pumping into the canal ended April 12, 1949. Over the next six days, with no water being added and negligible evaporation and dike seepage occurring, the test section water level plunged 3 ½ feet. Measurements of the lining were made after the test but the naked eye was good enough to see that movement of liner panels, including bulging, was extensive. Comparison soil tests behind the concrete produced irregular results but expansive clay volume change ranged from high to very high. Soil moisture increased about 5% during the tests.

A second, but much smaller and less elaborate, test was made near Rocky Hill in the Exeter area where excavation of the canal prism had occurred but liner installation had not occurred. It examined moisture levels and gathered data related to liner construction.

As a result, a 2,000-foot test section was designated for application of a hot air-blown asphalt membrane over which the concrete liner would be constructed to help seal off the clay. This technique initially showed some promise.

However, by 1951, some 2,000 feet of lining had been damaged by sloughing of compacted material. Other large cracks had been detected on a nearly additional mile of lining.

Operational Failures Corrective Actions

The 1951 failures within the asphalt membrane test section were only part of a much larger problem that emerged by 1949 once water service within the Friant-Kern Canal reached as far south as the Kaweah River. Almost immediately, failures in canal sections began to occur. The first three types of failures were readily corrected. The fourth type, involving failure of concrete liner sections on the expansive clay surfaces, was far more serious and has continued to plague canal operators to this day.

The first three failures, all within Fresno County, included:

- A failure of eight concrete panels immediately upstream from the Fancher Creek overchute. The overchute's floor was four feet above the swale that carries Fancher Creek, causing water to be impounded behind the canal's outer surface to a depth of 15 feet over canal grade. Hydrostatic pressure led to the liners' failures in 1952. Permanent repairs included a 24-inch steel pipe to detain ponded water.
- The deep cut just south of Kings River where the Tehachapi earthquake in 1952 caused slides that filled the canal with soil and displaced several newly-poured concrete panels. The solution involved heavy construction to move spoil banks along the canal's east side further back and reducing remaining slopes.
- Failures of concrete panels just downstream from Friant Dam in a rock cut section. Panels were reconstructed with free-draining gravel behind the lining and gated weep holes placed near the base of the slope slabs.

The fourth type failure, probably to no one's surprise given the earlier experience and test results, seemed to evade a ready, easy, or eco-

nomical solution.

Cracking and/or failure of concrete liner panels occurred along those reaches of canal built up on side hills with slopes of expansive clay. By this time, the canal's designers and builders were well aware that these clays would shrink considerably when dried by hot, dry summer weather, only to swell when winter rains of canal seepage occurred.

The Bureau's "Technical Record" conceded that..." the full destructive properties of the various Porterville clays were not fully appreciated with respect to canal operations." The 1949 expansive clays report concluded, "It is believed that, at the present time, there is nothing that will completely prevent damage to the canal. The seriousness can be alleviated by measures which will serve to maintain, a nearly a possible, a constant moisture content of the subgrade soil or to seal breaks in the concrete lining.

According to the Bureau's 1958 report, "Minor cracking of the canal lining had occurred prior to 1949 and examination of the lining at the time did not lead to the realization that the situation would become as serious a later developed. It now appears that distress has been caused in the concrete linings by slides as the expanded clay loses shear strength, and by uplift forces on the side slopes and bottom."

In 1958, Reclamation undertook a field experiment along a short section to attempt to stabilize canal slopes using electrochemical methods, adding lime or Portland cement to soil. Reclamation found that use of either material as a mixing agent reduced plasticity, shrinkage and expansion properties of the soil and increased soil stability. Properties of lime-treated soil were more favorable than those of cement, although the cement was better at reducing soil shrinkage. These efforts were not great successes and were not economically feasible.

Many other failures occurred in the years that followed. Some troublesome reaches were converted to earth lining treated with lime,

with flattened slopes. Riprap was dumped onto some areas where large slides had occurred. Many of these repairs also failed.

The Bureau increased its lime stabilization efforts with some success, improving soil workability and strength while absorbing moisture. A December 1976 report from the Bureau's Engineering and Research Center entitled, "Lime Stabilization on the Friant-Kern Canal." It details extensive tests and applications during the 1970's.

However, problems continued. After the canal's operation and maintenance passed to Authority control, many hundreds of failed and/or severely cracked panels were replaced, with the old problematic compacted clay removed from behind the panels in favor of lighter soils imported from other areas. Lining in some troublesome reaches was converted from concrete to compacted earth.

Subsidence

A second major problem was land subsidence. It was recognized prior to the canal's construction. The anticipated difficulty became reality in some reaches, resulting in diminished canal capacities.

Approximately 30 miles of the canal (between mile-posts 95 and 125) were located on the periphery of the major Tulare-Wasco subsiding area. In the three decades following the canal's completion in 1951, the ground level in the area through which the canal was built decreased in elevation by some three feet in some places. Much of this subsidence was believed to have been caused by groundwater overdraft conditions, a significant amount of which apparently occurred beyond the Friant-Kern Canal's service area.

It did not take long for subsidence to begin interfering with canal operations. In the drought years of 1976 and 1977, nearly 16 miles of the canal were rehabilitated with concrete liner extensions. Bridges were also raised. From 1979-1980, three subsided pumping plants

were lifted. The cost of these projects totaled \$4.7 million.

The U.S. Bureau of Reclamation addressed the situation in a 1984 report entitled, "Predictions of Future Subsidence Along Friant-Kern Canal in California," by Nikola P. Prokopovich, a Bureau geologist. He predicted future subsidence could total 17-19 feet by 2020 by acknowledged, "The quality of future leveling along the canal is questionable because of the apparent instability of reference bench marks."

Land subsidence was hardly a local concern. Geologist Prokopovich pointed out that the problem was occurring in many parts of the world. It happened to be particularly acute within portions of the Friant-Kern Canal service area, largely because of the same massive groundwater overdraft conditions that motivated Reclamation to quickly develop the Friant project to keep hundreds of thousands of acres of farmland in production rather than being fallowed because of a lack of water. This subsidence is believed to have begun about 1925-26, a period in which deep-well pumping came into general use to bring many tens of thousands of acres in water-short portions of Tulare and Kern Counties into production.

Making the situation more frustrating for Reclamation geologists and engineers after the Friant-Kern Canal was built was the realization that local conditions were probably not to blame. Instead, distant overdraft of the aquifer was the culprit, resulting in groundwater being "pulled" from under the land irrigated with Friant water, even though the canal generally stabilized its service area's water balance or even locally reserved overdraft conditions. There was also subsidence detected in the Bakersfield area near the canal's terminus but with limited operational effects.

The regional geology tends to be complex. It is detailed in the Prokopovich report. The geologist did state: "It is generally assumed that aquifers along the canal are of unconfined or semiconfined character." The report said that a confined fresh water aquifer system is present

and developed locally east of the canal in a limited area between Deer Creek and Richgrove in southern Tulare County.

This problem has continued and has become evident in other areas as well as the southern Tulare County reach. As part of the contemporary San Joaquin River Litigation Settlement's Water Management Goal to recover water used in river restoration, it is proposed to restore lost capacity within the canal at key "Choke Points." These other capacity constraints are south of the Kings River near the Belmont Avenue alignment in Fresno County, and in Tulare County northeast of Exeter where some capacity recovery work has been undertaken.

General Description

The Friant-Kern Canal (FKC) system contains some 2,400 acres of right of way. The 152-mile system is comprised of 127 miles of concrete lined portions and 25 miles of earthen lined portion. Currently, the earthen lined section near Orange Cove contains western water milfoil, an aquatic plant that constrains flow and creates debris which are transferred to the districts through turnouts.

Background

The Authority first noted the existence of a “new” invasive aquatic weed growing in the

Woollomes Equalizing Reservoir, areas of the FKC that are concrete lined and contain silt accumulation, and numerous facilities including canals, laterals, and recharge basins operated by Contractors who take delivery of water from the FKC.

Efforts to identify the invasive weed began in 2001 and continued through 2004. Participants involved in the identification process included Friant Water Authority, United States Bureau of Reclamation, California Department of Food and Agriculture, University of California at Davis, and the United States Department of Agriculture - Agricultural Research Service. Ultimately, the invasive weed was identified as *Myriophyllum hippuroides* or western watermilfoil (WWM). Western watermilfoil is a perennial aquatic plant. Most of the plant grows submerged below the water surface, but stems which bear reproductive structures do penetrate the water surface. The plant is rooted in earthen sections of the FKC and on a more limited

Authority staff removing milfoil from canal prism.



canal in 1998. The location of the initial identification was near the transition from concrete lined to earthen canal at MP 34.94. Over the past 19 years, the invasive weed has spread to entire sections encompassing 22.37 miles of earthen canal in Tulare and Fresno Counties, a 2.01 mile earthen section adjacent to Woollomes Equalizing Reservoir in Kern County,

basis where silt has accumulated in concrete lined sections. Vegetative growth can be extensive, with plants having multiple stems of ten or more feet in length. WWM forms roots which store nutrient reserves to support the spread of vegetative growth in the water column. In addition to spreading by root growth, stem fragments

that break off from plants can settle on the substrate. These fragments subsequently root and generate new plants.

efforts by hand and machine have aimed to remove WWM from the FKC. These efforts have had limited impact on the infestation of WWM in the FKC.

Past Management Efforts

The Authority has undertaken efforts to manage WWM in the FKC. Since 2003, on one occasion for each control chemical, FWA has applied diquat, glyphosate, and triclopyr on various limited and broad based control efforts. Observations of the treated areas suggested that existing WWM plants were only minimal-

In the winter of 2012 and 2016, the Authority performed chemical treatments during the canal drawdown, using a mix of fluridone and imazamox. Both chemicals were identified by SePRO Corporation as having notable effect on WWM in past studies.



ly affected, reportedly responding to the contact herbicides only by leaf-tip and terminal “burning and dieback”; complete dieback and plant death did not occur. Significant projects to remove silt accumulations which provide a substrate for WWM have been completed. Furthermore, intensive mechanical extraction

performed if large areas of growth is found.

Future Actions

The timing and scope of future WWM treatments are not yet fully known given that evaluation of regrowth and program effectiveness will continue for some time. However, as the treatment program’s goal was to control or manage WWM and not to eradicate it, the need for future treatments is fully anticipated. Contemplation and integration of the items noted above, continued input from Contractors related to operational impacts, and evaluation of new or alternative means of WWM control will all be essential in the formulation of future treatment efforts.

The Authority has funds allocated every dewatering year for chemical treatment in the 10 year plan. These funds will be available so when the canal is dewatered a treatment could be

General Description

There is approximately 160 miles of asphalt roadways along the Friant-Kern Canal (FKC). The type of roads within the system are heavy chip seal, asphalt, decomposed granite, and dirt roads. These roadways require a maintenance program that range from minimal projects such as minor patching of pot holes with a “cold mix” asphalt to complete reconstruction which is referred to as chip seal.

Causes

There are different reasons as to why maintenance of the roads is needed. In the northern section of the system, there are cross drains present that deteriorate the road in addition to heavy traffic. Additionally, the roads deteriorate due to weathering of the asphalt roads which result in potholes in the roadway. Chip seal is performed on the roadways in order to keep the road surface in a safe and reliable condition. Once the road surface has deteriorated beyond the point of applying chip seal, the road must be reconstructed which involves extensive man hours and material costs. The current estimated costs to reconstruct one mile of roadway is approximately \$87,000 for materials only. Whereas chip seal can be performed at an approximate cost of \$9,000 per mile.

Locations

Chip seal operations occur in the areas which are considered by Authority maintenance supervisors to be in need of reconstruction. It was customary to perform 10 miles of chip seal each non-dewatering year. However, with multiple years of deferring chip seal projects, the Authority has defined new criteria. In the Authority’s updated 10 year Chip Seal

Authority staff placing chip seal stock at project site.



Program, staff now has a 15 mile chip seal project occurring every year. That cycle will allow the entire canal to be chip sealed in that 10 year window.

When It Takes Place

Chip seal and road reconstruction normally occur in the hot summer months between July and September.

Process

The chip seal process consists of 3/8” x #6 rock chips trucked in and stockpiled at predetermined sites. These sites are kept at maximum intervals of two miles to minimize the turn around time for the dump trucks. It requires approximately 100 tons of chips for each mile.

The roadway must be swept clean of any loose material and debris that may prevent the emulsion oil from adhering to the existing asphalt surface. This is accomplished by the use of a self-propelled road sweeper that is contracted from a local asphalt contractor. Following pre-construction activities, an outside contractor is called upon to furnish the emulsion oil and spreader trucks.

During the chip seal application, the spreader truck spreads the oil over the roadway. A self-propelled chipper box follows close behind applying the rock chips at the rate of twenty-eight pounds a square yard. This process is then followed by two or three twelve-ton pneumatic wheel rollers to compact the rock chips into the oil.

Future Activities

In order to maintain and ensure roadways are in good operating condition, it is the plan of

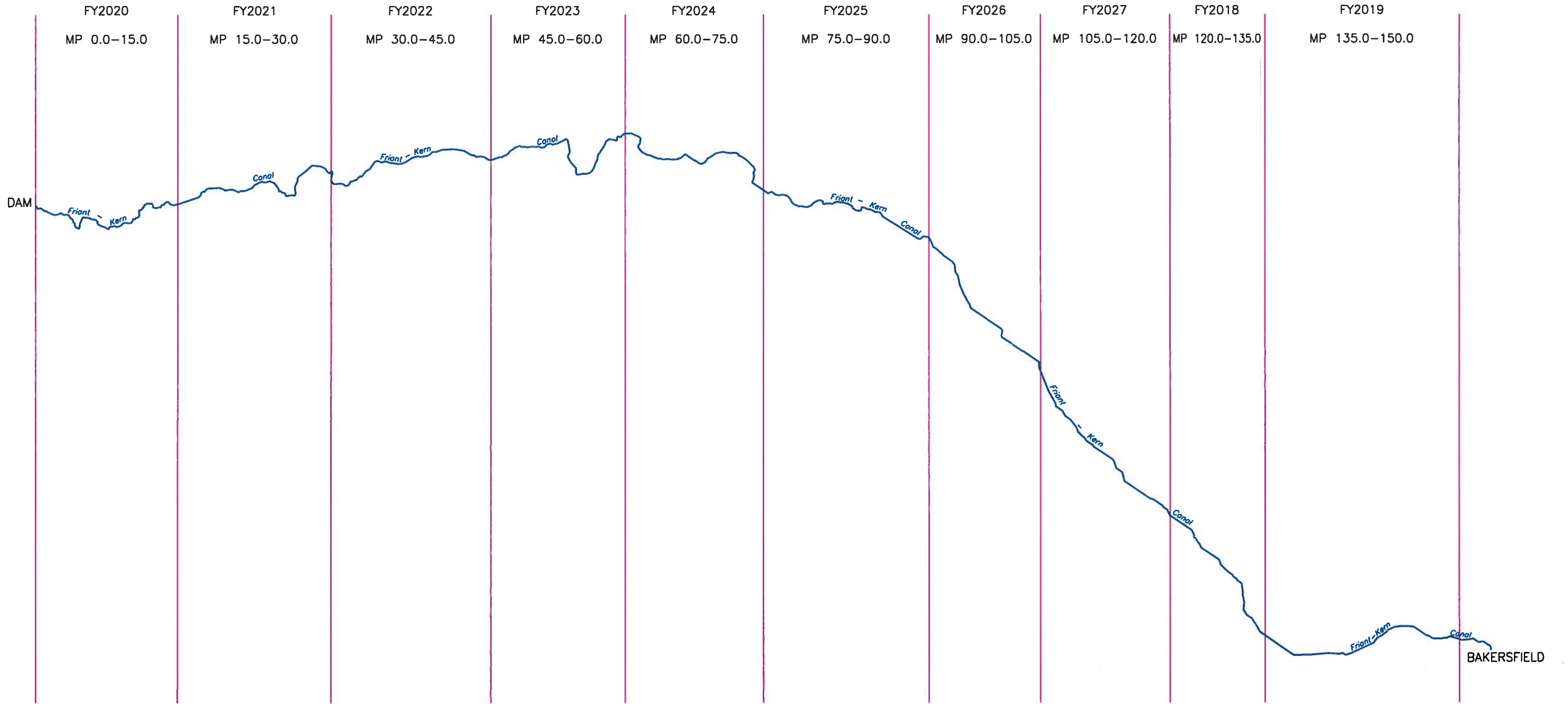
the FWA Maintenance Department to chip seal approximately 15 miles of roads each year. This will insure that the operational roadways are maintained in a safe and reliable state.

See the enclosed 10 year Chip Seal Project schedule that outlines what year each 15 mile section will be covered.



Authority staff placing chip seal along operational roadway.

FRIANT WATER AUTHORITY
CHIP SEAL PROJECT
10-YEAR CYCLE



BUILDINGS -

Minor/Major Repairs

General Description

The Friant-Kern Canal (FKC) system contains numerous small structures and buildings. The primary buildings are located at one of the three Authority maintenance yards; Orange Cove, Lindsay, or Delano. These buildings include an administration office, mechanic shops, carpenter shops, welding shops, warehouses, foreman offices, and chemical storage areas.

Causes

Most of the FKC facilities are over 30 years old, with only minor updates and repairs being performed over the years. Major building updates will need to be performed within the next 10 years to keep the structures in safe working order.

Locations

The Authority has three main facilities; the Orange Cove, Lindsay, and Delano maintenance yards. Additionally, the Authority maintains three CSO residences at Kings River, Kaweah River, and Tule River locations.

Past Activities

The Authority has performed routine repairs on a yearly basis to maintenance and operational structures, including CSO residences.

Future Activities

The Authority has funds allocated every year for minor repair to structure and buildings. However with more major repairs coming up in the future, funds will need to be allocated towards specific building projects. These projects include; parking lot repair/replacement, roof repair, building addition/remodel, and electrical upgrade. All projects are listed in the 10 year plan with the associated costs.



THE CANAL - Checks, Waste ways, & Turnouts

Motor & Gearbox Upgrade / Standardization

General Description

The main motor gearbox and brake assembly controls the wire drums that raise and lower the radial gates on each structure. With few exceptions, all checks, waste ways and turnout gates are the originals from 1944 to 1947.

Causes

Replacement is necessary due to the age and reliability of the motors and gearboxes. They pose problems for radial gates operations. Additionally, emergency replacements are necessary due to potential failure. Replacement parts such as brakes, worm drive gears and motor couplers are very difficult to purchase as they are outdated. Additionally, since parts are unavailable the Authority has no other choice but to purchase custom machine parts that are more expensive than normal parts.

Locations

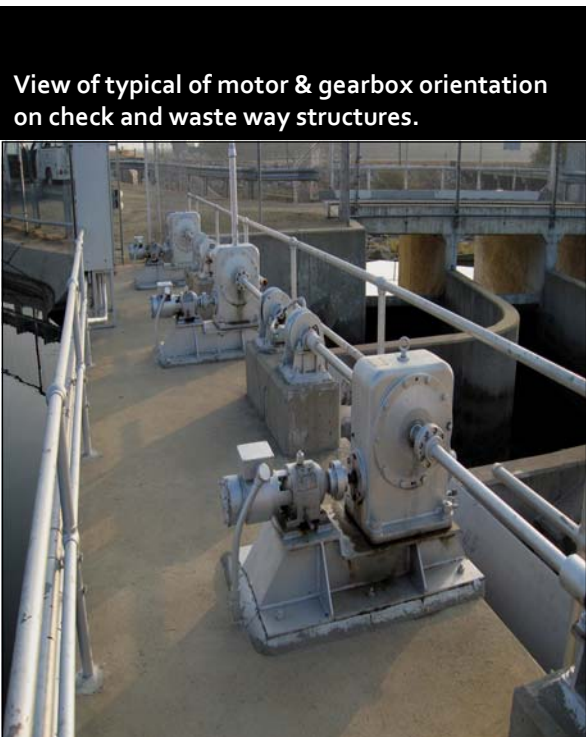
Upgrades are planned for all check structures and waste ways within the Friant-Kern Canal system.

When It Takes Place

Scheduled replacement is for two site upgrades per year, with the remainder being added in the later years of the ten year plan .

Under The Authority

The Authority is working to bring standardization to canal structures. Using the same motor gearbox assembly at each check and waste way.



structure staff can increase long term operation reliability, reduce downtime repairs, and lower repair costs.

Past Activities

2017 marked the first year of the motor & gearbox standardization project.

Future Activities

The Authority will continue to perform motor and gearbox upgrades on a yearly basis with consideration to drawdown years. Two locations are scheduled for replacement per year, as shown in the 10 year plan.

General Description

Radial gates within the Friant-Kern Canal (FKC) are utilized to control water within the canal prism and are normally located at check structures and wasteway structures. These radial gates vary in sizes from 10' x 7' to 32' x 20'. There are approximately 14 Check Structures and 7 waste way structures that are each approximately 7 miles apart on the FKC system.



Causes

When metal is submersed in water for extended periods of time, deterioration and corrosion of the gate components will naturally occur. Failure to properly maintain protective coatings may result in failure of gate components which subsequently affect water deliveries. Research has shown that Amerilock 400 Epoxy Paint (protective coating) has a coating life of 10-15 years.

Additionally, gate hardware and J-seals are stripped. Cables are also replaced if needed. Adjustments and alignments are then made to ensure proper, safe and dependable operation of the radial gates.

Locations

Sandblasting & paint operations occurs at all check and wasteway structures along the canal. During the scheduled canal dewatering period, the Authority typically performs sandblasting and painting according to an inspection schedule. This work normally occurs every three years.

Past Activities

In the 2016-17 drawdown operation, a total of 6 radial gates were rehabilitated at Woollomes and Shafter Checks.

Process

Inspections are performed to evaluate the condition of radial gates and gate components in order to prioritize follow-up work during subsequent de-watering years. Upon completion of this task, it is customary to clean the metalwork; sandblast with blast media (green diamond sand) and paint with Amerilock 400 Epoxy Paint at a minimum of .22 mils.

Future Activities

The Authority will continue to inspect all radial gate structures and their components for proper operation every dewatering year. Sandblasting and painting radial gate structures will be scheduled every dewatering.

Radial gate replacement is scheduled as part of our 10-year plan. Gate replacement will be needed due to metal age and loss of strength. Radial gate cost is estimated at \$80k per gate.

General Description

Slide gates within the Friant-Kern Canal (FKC) are utilized to deliver to water member districts. The slide gates are of various sizes and shapes, ranging from 8 inches in diameter to 6 feet by 5 feet square type. They are installed vertically or on a slope and are operated manually, electrically, or both.

Causes

When metal is submersed in water for extended periods of time, deterioration and corrosion of the gate components will naturally occur. Failure to properly maintain protective coatings may result in failure of gate components which subsequently affect water deliveries. Research has shown that Amerilock 400 Epoxy Paint (protective coating) has a coating life of 10-15 years.

Locations

Sandblasting and paint operations occur at various locations along the 152 miles of the system. There are approximately 147 slide gates on the FKC system and depending upon deteriorated conditions, are sandblasted and painted every three years (or when the next dewatering occurs).

Process

Inspections are performed to evaluate the condition of turnout gates and gate components in order to prioritize follow-up work during subsequent de-watering years. Upon completion of this task, it is customary to remove silt and debris from turnouts; clean the metalwork; sandblast with blast media (green diamond sand) and paint with Amerilock 400 Epoxy



Paint at a minimum of .22 mils. To ensure proper, safe and dependable operation of the slide gate, adjustments and alignments are made to gates and stems .

Past Activities

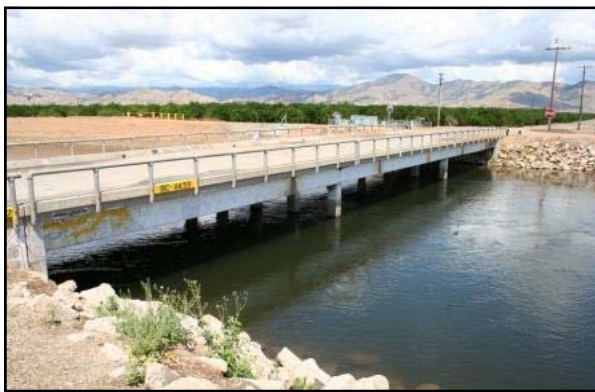
In the 2016-17 drawdown operation, a total of 22 slide gates were rehabilitated from MP 7.57 to MP 68.13

Future Activities

In order to maintain and ensure that slide gates are in good operating condition, it is the plan of the Authority to repair a section of gates every drawdown. Traditionally, gate sections correspond to each yard's territory; Orange Cove, Lindsay, or Delano.

General Description

Within the Friant system there are numerous bridges at various locations along the 152 miles of the Friant-Kern Canal (FKC). These bridges can be classified in type according to their purpose such as county bridges, state bridges (CalTrans), farm bridges, etc. There are over 200 bridges within the Right-Of-Way boundaries of the FKC.



Causes

As the designers and planners of the FKC began their work to implement one of the largest open canal water delivery systems ever built, one of the early logistical issues was means of crossing the canal. Concern had to be given for the crossing of existing roads, new roads, rail roads, operational bridges required in remote areas, and farm bridges required to provide access to land owners whose property would now straddle the canal. As time evolved, many of the bridges that were constructed of timber and were found to be deteriorating.

Locations

Bridges intersect the canal at locations from near the headworks, throughout the entirety of the system, and near the final check at the Kern River.

Under The Authority

During the early days of the Authority, maintenance of the bridges was carried out much as it had during the time of the Bureau of Reclamation. However, over time, it became clear the property owners were not maintaining the bridges adequately or in many cases at all. County and State agencies have for the most part provided the minimum amount of maintenance required for safety.

The Authority began the replacement of the farm and operational bridge running wear pads along with larger support members once it was realized the land owners were not fulfilling their maintenance obligations.

Future Activities

Currently there are a handful of bridges that require major rehabilitation or replacement. The work required on these bridges is considered extraordinary and is detailed in the 10 year plan spreadsheet. Ongoing replacement of running wear pads on bridge decks is considered ordinary maintenance and costs for this work is included in the yearly maintenance budget.



CANAL BANKS - Concrete Liner Replacement

General Description

Concrete lining failure and replacement has become a major factor in the maintenance of the Friant-Kern Canal (FKC). On a triennial basis the FKC is dewatered to allow repairs and maintenance to the system. Liner failures occur in different areas of the system for geological reasons such as soil issues. Unfortunately, failures continue to occur and plague maintenance activities.

Causes

There are many contributing factors as to why the liners have failed in the past and continue to fail. In particular areas which are referred to as Stokes Mountain and Red Banks, the canal embankment consists of the expansive plastic clay that contracts when dry and expands when wet. This movement causes the panels to buckle and slide down to the bottom of the canal. These two particular areas continue to be a on-going problem for the Authority, in which we average one-hundred panel failures that need replacement every three years.

What is known as the Sausalito area (MP 99.52– MP 109.35) has the largest number of damaged panels at one time. In 1989, a survey was conducted to determine the extent of the damage and to find the cause. The review team inspected the canal section for all lining panels which reflected clear signs of irregular cracking, slipping and/or lateral/vertical displacement. A total of 170 sites and 914 panels were identified as in need of rehabilitation.

In June of 1976, canal lining rehabilitation specification 200C-953 was issued for raising the canal lining 1 to 6 feet between canal posts 99.37 to 115.94. This rehabilitation work was necessary to regain the canals capacity lost to subsidence.



It can be reasonably assumed that embankment movement due to continued subsidence may still be occurring. The most probable cause of lining failure may be attributed to the deterioration of the elastomeric joint seals in the upper canal panels. This deterioration occurred when the joint seals were exposed to continuous sunlight for a prolonged period.

This happened because the upper four feet of the canal panels were originally the canals free board, thereby exposing the upper joint seals. After subsidence and construction of the raised lining, the old upper joints were submerged, allowing water to seep behind the canal panels.

Locations

There are three areas where we are continually experiencing significant failures. The first area is the Stokes Mountain area (MP 53.8-56.5) where failures occur due to the expansive clay. The second area is the Red Banks area (MP.62.00-65.74) which also occur due to plastic clays. The third area is the Sausalito area (MP99-109.7) which is known as our subsidence area. These three sites are the primary targets for Authority maintenance staff during every dewatering.

Process

The process to replace failed liners on the system is quite complicated but in summary here is the process: stockpile of imported backfill material at every pre-determined site, utilizing heavy equipment failed liner material and soil is removed, backfill the site, compact the backfill material and establishing a final grade. After the cavity is filled, then concrete form work is performed followed by the placement (pouring) of concrete panels in which expansion joint sealing is applied once dried.



Under The Authority

The Authority took over the canal lining replacement duties which were previously done through contracted services due to a decision by the Authority that as much work as possible would be done in-house to help control costs as well as maintain a high degree quality and consistency.



Past Activities

During our most recent dewatering, liner repairs were made in the subsidence area and near Stokes Mountain.

Future Activities

The repairs in the subsidence area were not fully completed during the past dewatering. In future dewatering's the subsidence area will be highlighted for repair work along with any other locations that have failed.

The Authority currently budgets for concrete panel replacement every dewatering year, usually on a triennial basis.

General Description

Canal desilting is an operation that is performed during scheduled dewatering of the Friant-Kern Canal (FKC), where the process of mechanical extraction is utilized.

The process of mechanical extraction includes the utilization of heavy equipment to stockpile material and then extract the material from the canal prism.

Causes

Due to rain runoff and flood waters which carry sand and dirt into the canal, FKC water sometimes carries large amounts of sediment. Canal flow velocity and volume determine where the residue settles within the canal. Generally, silt deposits accumulate on the inside curves of the canal prism. Silt deposits must be removed to bring the canal volume back to design capacities.

Locations

De-silting occurs in all areas of the canal where silt has the tendency to accumulate. The general areas of most accumulation occur in the areas where the canal is adjacent to the Sierra foothills which is other wise referred to as the northern section of the system where water runoff flow directly into the canal. Another location of accumulation is the area where subsidence low points have occurred. This area is located approximately from MP 99.35 to MP 109.47 southwest of the city of Porterville.

Past Activities

During our most recent dewatering, desilting occurred in the subsidence area near the city of Porterville.



Maintenance staff removing debris from canal prism during dewatering.

Future Activities

The desilting in the subsidence area was not fully completed during the past dewatering. In future dewatering's the subsidence area will be highlighted for desilting work along with any other locations that have silt built up.

The Authority currently budgets for canal desilting every dewatering year, usually on a triennial basis.

VEHICLE & EQUIPMENT – Replacement

General Description

Within its responsibilities as a U.S. Bureau of Reclamation conveyance contractor, the Friant Water Authority (Authority) operates and maintains the Friant-Kern Canal (FKC). Operation and maintenance (O&M) demands have steadily increased as the 152-mile-long FKC, one of California's oldest and largest open-channel water conveyance systems, ages. The FKC has entered its second half century of service to the southern San Joaquin Valley's East Side and both its structural and operational components are quickly approaching their usage life span and will require significant and on going rehabilitation work.

Much of the Authority's O&M work involves, of necessity, heavy construction equipment, such as dump trucks, excavators, loaders, boom trucks and transport equipment.

Why It Happens

Air Board Requirements

By 2019 the Authority must comply with diesel emissions regulations that will take effect. These regulations were established as a fleet rule, adopted by the California Environmental Protection Agency's Air Resources Control Board (CARB). CARB also approved regulations to reduce emissions from existing on-road diesel vehicles used in California operated by municipalities and small businesses. These regulations establish deadlines for implementing Best Available Control Technology (BACT) options within the Authority heavy equipment fleet.

Action Plan

Under the Authority's on-road replacement program, our fleet is currently in compliance with emission requirements. Now the Authority must focus on their off-road equip-



ment fleet. As a result, the Authority has developed a 10 year action program to review and analyze the Authority's off-road equipment needs and demands. This action program has analyzed equipment usage along with anticipated regular and emergency maintenance activities. It has also sought to determine the adequacy of the types and numbers of equipment units. This analysis has also examined possible reliance in some cases upon rental equipment.

In summary the various actions proposed by this plan range from fiscal years FY2018-FY2028. The program identifies actions that result in the replacement of 6 major pieces of equipment, addition of one new unit, and the retirement of 5 units. The total estimated cost over the next 10 years is approximately \$1,075,000. Please refer to the replacement spreadsheet contained in the plan for details.

Light Vehicle Replacement Philosophy

The objective of the Authority is to provide safe and efficient vehicles and equipment for our personnel. This will be done by replacing vehicles, equipment, or components and by assigning or reassigning vehicles and equipment within the organization so that maximum utilization of the unit may be obtained.

Vehicles meeting replacement criteria will be evaluated for component replacement to minimize costs. Components such as engines and transmissions and drive trains will be rebuilt/replaced provided the overall vehicle condition is in otherwise acceptable condition.



Light vehicles will be considered for replacement when they have met the following criteria:

1. 200,000 miles or 20 years
2. Excessive repair costs
3. Reliability problems
4. Mechanics recommendation for replacement

Please refer to the forecasted light vehicle replacement spreadsheet contained in the plan for details.

The Authority will utilize full size vehicles. Supervisors will be assigned 1/2 ton/extended cab pickups or sedans. Water ops personnel will be assigned 1/2 ton/regular cab pickups and maintenance crews will be assigned 3/4-1 ton vehicles depending on use of the vehicle.

General Description

To support the SCADA telemetry system on the Friant-Kern Canal the Authority has deployed a LTE secured private wireless network. The private wireless network runs on the Verizon backbone, and is currently deployed at one-hundred sites along the FKC utilizing Cisco 819 wireless routers.

yearly maintenance costs. In addition, the Authority will seek to optimize the infrastructure for performance, stability, and redundancy.

Cause

The Authority deployed the private wireless telemetry system to replace the previous radio system. Using LTE technology, the Authority achieved complete visibility of the 152 miles of the FKC at a fraction of the cost of replacing the previous radio based system.



Location

The SCADA telemetry system is deployed at the 14 control structures and eight-six delivery sites.

Process

Technological advancements and operational requirements will drive the process for replacement.

Future Needs

The Authority will work to move components of the telemetry that are physical and leased monthly, to software based solutions that will significantly reduce the



COMMUNICATIONS — Server Platform

General Description

The Authority operates a computer network that spans five offices from the south end at Delano to the north at Sacramento. In order to provide Authority personnel the resources required to perform their duties, a private cloud, public cloud infrastructures and client devices are utilized.



Replacement Policy

The Authority maintains network hardware based on a scheduled life expectancy schedule. This reduces cost and prevents downtime. The life expectancy of hardware and software are as follows:

Telemetry: A minimum of three years, unless a unforeseen requirement is requested by the Authority

Private Cloud Infrastructure: Five years, unless Authority IT/OT requirements drive replacement

Computers: Four to five years depending on usage requirements.



Under The Authority

From 1986 to 1999 the Authority deployed individual computers in the maintenance yards, and a small 10 Base-T network in the Lindsay office. From 2000 –2014 on, the Authority has made a concerted effort to deploy technologies that increase data reliability, access, and efficiency which has allowed the Authority to engage in a increased amount of activities with fewer personnel resources. Currently the Authority has engaged in cloud infrastructures and virtualization to drive down cost, improve performance, provide flexibility, increase resiliency of service.

Future Activities

The Authority will continue to pursue converged technologies that provide superior performance and reduce technical footprint and cost. The Authority will also develop a continuity of operations plan.

FKC
FACILITIES

THE FRIANT-KERN CANAL

GENERAL INFORMATION

The Friant-Kern Canal is an important feature of the United States Bureau of Reclamation's great Central Valley Project. Constructed during the years 1945 through 1951, this canal is now one of the oldest and largest of the open channel water conveyance systems in the State of California.

The canal extends from Friant Dam, just north of Fresno, to the Kern River at Bakersfield. It conveys a supply of irrigation and M&I water from Millerton Reservoir southward along the east side of the San Joaquin Valley for about 152 miles (refer to Location Map). The canal system has a maximum capacity of 5,300 cubic feet per second (cfs) at Friant Dam and 2,500 cfs at the Kern River.

The canal is the principal component of the Central Valley Project's Friant Division (Consisting of Millerton Lake, the Friant-Kern Canal and the Madera Canal) which delivers San Joaquin River Basin water to more than 1,000,000 acres of irrigable farm land on the eastside of the Southern San Joaquin Valley (refer to Friant Division Map).

CANAL STATISTICS

The canal's main structures include the following:

<u>Canal Appurtenances</u>	<u>Quantity</u>
Canal Siphons	34
Wasteways	8
Control Checks	14
Overchutes	3
Cross Drainage Channels	47
Equalizing Reservoirs	1
*State Highway Bridges	15
Operating Bridges	11
Farm Bridges	82
*County Highway Bridges	104
*Railroad Bridges	1
Culverts	68
Turnouts	87
Maintenance Yards	3
Miles of Paved Roadway	150
Radio Repeater Sites	2

*Structures maintained by others.

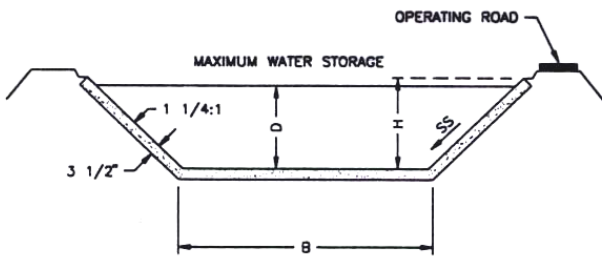
The canal system is comprised of approximately 127 miles of concrete lined sections and 25 miles of earth lined sections.

The largest of the main canal structures is the Kings River Siphon. This structure is 3,200 feet in length, with an inside barrel diameter of 24.25 feet and a capacity of 4,600 cfs.

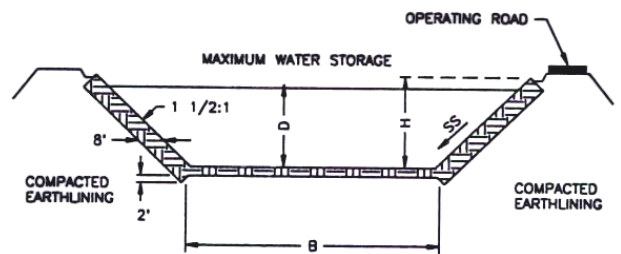
CANAL DIMENSIONS AND HYDRAULIC PROPERTIES

Concrete Lined Canal Sections

Canal Mile Posts Start	Canal Mile Posts Stop	Area	Velocity	Discharge	Hydraulic Radius	Manning's Coefficient	Canal Slope	d	ss	H	B
0.12	28.45	1213.99	4.37	5300	12.16	.018	.00010	19.93	1¼:1	22.33	36
29.15	29.51	849.98	5.88	5000	10.24	.014	.00015	17.18	1¼:1	17.50	28
29.51	34.94	989.00	5.06	5000	10.86	.014	.00010	17.20	1¼:1	17.50	36
53.00	57.14	1073.28	4.66	5000	11.37	.014	.00008	18.25	1¼:1	18.50	36
62.00	69.56	1073.28	4.66	5000	11.37	.014	.00008	18.25	1½:1	18.50	36
69.56	71.29	1149.50	4.35	5000	9.00	.015	.00010	11.00	1½:1	13.50	88
71.37	79.83	976.39	4.61	4500	10.78	.014	.00008	17.04	1¼:1	17.30	36
79.83	80.18	1031.94	4.36	4500	10.70	.015	.00008	17.04	1½:1	19.57	35
80.18	95.63	976.39	4.61	4500	10.78	.014	.00008	17.04	1¼:1	17.30	36
95.76	112.90	989.79	4.04	4000	10.86	.014	.00006	17.21	1¼:1	17.50	36
112.96	119.49	888.72	3.94	3500	10.43	.014	.00006	17.24	1¼:1	17.50	30
121.54	130.03	888.72	3.94	3500	10.43	.014	.00006	17.24	1¼:1	17.50	30
130.12	151.80	686.81	3.64	2500	9.24	.014	.00006	15.73	1¼:1	16.0	24



**TYPICAL SECTION
"CONCRETE LINED"**



**TYPICAL SECTION
"COMPACTED EARTH LINING"**

Earth Lined Canal Sections

Canal Mile Posts Start	Canal Mile Posts Stop	Area	Velocity	Discharge	Hydraulic Radius	Manning's Coefficient	Canal Slope	d	ss	H	B
34.94	36.95	1558.45	3.21	5000	12.33	.020	.00006	17.32	1½:1	18.32	64
36.95	38.40	1633.30	3.06	5000	11.83	.020	.00006	17.01	2:1	23.00	62
38.40	52.98	1558.45	3.21	5000	12.33	.020	.00006	17.32	1½:1	18.32	64
57.14	58.82	1657.05	3.02	5000	12.07	.020	.00006	17.73	2:1	22.00	58
58.82	61.99	1558.45	3.21	5000	12.33	.020	.00006	17.32	1½:1	18.32	64
119.50	121.51	1207.73	2.90	3500	11.02	.020	.000055	17.22	1½:1 2:1		40

FY 2021

(Draft)

FRIANT WATER AUTHORITY OPERATION AND MAINTENANCE BUDGET

TABLE OF CONTENTS **FY-2020**

Section

1. Assumptions & Considerations
2. Historical Comparison
3. Total Labor & Materials
4. Detail of Materials - Construction & Maintenance
5. Details of Materials - Administration & Water Operations
6. Extraordinary O&M Project Justifications
7. Vehicle & Equipment Justification
8. Ten Year Plan
9. Friant-Kern Canal Facilities

TABLE OF CONTENTS **FY-2021**

Section

1. Assumptions & Considerations
2. Total Labor & Materials
3. Detail of Materials - Construction & Maintenance
4. Details of Materials - Administration & Water Operations
5. Extraordinary O&M Project Justifications
6. Vehicle & Equipment Justification
7. Vehicle & Equipment Justification

ASSUMPTIONS
&
CONSIDERATIONS

**Friant Water Authority
Proposed Fiscal Year 2021 Budget
for
Operation and Maintenance
Friant-Kern Canal and Supporting Facilities**

Summary of
Assumptions and Considerations

1. Labor

A. Total staffing levels for FY 2021 are proposed as follows:

<u>Position</u>	<u>Total Positions</u>
1. Chief Executive Officer	1
2. Chief Operating Officer	1
3. Chief Financial Officer	1
4. Chief of External Affairs.....	1
5. Accounting Operations Administrator	1
6. Accounting Technician.....	2
7. Administrative Assistant.....	1
8. Canal Maintenance Worker *.....	21
9. Canal System Operator.....	6
10. Director of Technology	1
11. Director of Water Policy	1
12. Electrician.....	1
13. Electronic Technician	2
14. Engineering Technician.....	1
15. Equipment Mechanic.....	2
16. Equipment Operator *	4
17. Executive Assistant.....	1
18. Executive Secretary.....	1
19. General Superintendent	1
20. Governmental Affairs & Communications Manager	1
21. Human Resources/Risk Analyst.....	1
22. Instrumentation Technician	1
23. Maintenance Foreman	3
24. Maintenance Supervisor*.....	1
25. Office Technician	2
26. Operations Supervisor	1
27. Senior Accountant	1
28. Senior Engineer	1
29. Resources Manager*.....	1
30. Water Resources Manager*	1
31. Water Resources Technician	1
32. Intern(s) (Ops./Engineering & Technical Services)	3
Total Full Time Positions.....	<u>68</u>

*One Equipment Operator position, two Canal Maintenance Worker positions, one Maintenance Supervisor, one Water Resource Manager, and one Resources Manager will remain vacant and no dollar amount will be budgeted for FY 2021.

An inflation factor of 3.00% per year was used in the projected wage rates to cover both the "merit increases" and "cost of living adjustment (COLA)" that will occur in FY 2021 (FY 2019 wages were used as the base).

- B. Overtime hours associated with routine and extra ordinary projects equaling a total of 5.8% of total man-hours.

2. Materials

- A. An inflation factor of 2.5% per year and 8.75% sales tax was used in the calculation of the majority of the required materials for FY 2021. The inflation factor and sales tax is computed on the budget worksheets. **Supporting documentation reflects current dollars and current sales tax.**
- B. Routine maintenance materials were budgeted with the assumption that the planned FY 2021 purchases occur in full.
- C. It is the policy of the Authority to capitalize all property, plant and equipment, except equipment costing less than \$1,000 and equipment installed directly onto the Friant-Kern Canal, which is a federally owned facility. The budgeted costs for capitalize property are in the accounts of 6299, 6399 and 6799.

Acquisition, Special & Major Maintenance Projects

**Project Summary
FY 2021**

	Project Title		Non Labor Costs		Total Project Cost
Job Code	Major Maintenance	Project Location	Dept.	(Incl. Fuel, x\$1000)	(x\$1000)
6040	Roadway Chip Seal Project	MP 15.0 to 28.54	Maintenance	116.9	134.5
6060	Motor & Gearbox Upgrade	MP 46.04 (Sand Creek) & 61.03 (Dodge Ave)	Operations	118.3	127.9
6060	Radial Gate Replacement	MP 61.03 Dodge Ave.	Operations	413.8	531.8
6130	Canal Desilting	MP 99.37 to MP 110.5	Maintenance	89.1	119.9
6120	Concrete Panel Replacement	MP 30.50 to 106.19	Maintenance	118.4	303.5
				856.5	1,217.6
			Tax/Inflation:	96.4	107.2
			Sub-Total:	952.9	1,324.8
	Special Projects				
6221	Pump Back Project		Maintenance	125.0	148.1
6225/6226	FKC Subsidence	MP 88.2 to MP 121.5	Maintenance	9,000.0	9,217.8
6230	GSA Engagement		Maintenance	120.0	120.0
6345	Water supply coordination & monitoring		Operations	102.4	190.9
6370	Water Quality		Operations	14.1	72.3
6402	FKC Title Transfer		Maintenance	618.9	690.7
			* Sub-Total	9,980.4	10,439.8
	Acquisitions				
6299	One 1/2 Ton Forman Pickup		Maintenance		25.0
				0.0	25.0
			Tax/Inflation:	0.0	2.8
			Sub-Total:	0.0	27.8
			Subtotal:	10,836.9	11,682.4
			Tax/Inflation:	96.4	110.0
			Total:	10,933.3	11,792.4

* Includes tax and inflation

**TOTAL LABOR
&
MATERIALS**

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2021**

TOTAL ORGANIZATION

REVISED: 6/18/2019 13:43

Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	COMPARISON TO FY 2020 BUDGET				
								Total Labor\$	Total Materials	FWA Total \$	Change (%)	
O&M BILLING:												
Maintenance	69,022	2,116,180	3,790	136,954	2,253,133	12,657,482	14,910,616	2,081,633	8,494,497	10,576,130		40.98%
Water Operations	27,592	861,402	2,120	82,354	943,755	1,564,007	2,507,763	941,076	1,627,614	2,568,690		-2.37%
General Administration	26,208	922,474	185	7,405	929,878	1,333,340	2,263,218	895,976	1,600,802	2,496,778		-9.35%
Total Revenues	122,822	3,900,055	6,095	226,712	4,126,767	15,554,829	19,681,597	3,918,684	11,722,913	15,641,597		25.83%
Less: Interest and misc revenue							106,000			106,000		0.00%
O&M BILLING							19,575,597			15,535,597		26.00%

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2021**
TOTAL ORGANIZATION

REVISED: 6/18/2019 13:43

								COMPARISON TO FY 2020 BUDGET				
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)	
CANAL MAINTENANCE:												
6010	Vehicle & Equipment Service	6,401	167,106	1,998	71,326	238,433	523,258	761,690	226,556	509,906	736,462	3.43%
6020	Maintenance Supervision	6,756	340,255	72	2,587	342,842	-	342,842	328,514	-	328,514	4.36%
6025	Right of Way Management	1,978	23,817	-	-	23,817	-	23,817	23,012	-	23,012	3.50%
6030	Weed & Pest Control	9,159	220,491	30	1,036	221,527	410,736	632,263	265,773	409,921	675,694	-6.43%
6032	Implem Biol. Opinion	-	-	-	-	-	43,699	43,699	-	42,634	42,634	2.50%
6040	Road Maintenance	2,032	49,229	-	-	49,229	154,758	203,986	52,807	150,983	203,791	0.10%
6050	Yard & Building Maintenance	4,868	116,266	20	670	116,935	132,432	249,367	132,160	133,661	265,821	-6.19%
6060	Structure & Gate Maintenance	4,239	97,317	980	36,192	133,509	60,518	194,028	72,692	30,832	103,524	87.42%
6070	Right of Way & Structure Cleaning	1,911	44,734	-	-	44,734	-	44,734	44,874	-	44,874	-0.31%
6080	Bargate, Guardrail & Lock Maintenance	1,481	35,268	-	-	35,268	17,588	52,856	36,791	17,159	53,951	-2.03%
6090	Embankment Maintenance	2,189	51,627	-	-	51,627	12,225	63,852	50,590	11,927	62,517	2.14%
6100	Bridge Maintenance	1,902	40,713	-	-	40,713	38,705	79,418	36,266	37,863	74,129	7.13%
6110	Miscellaneous Maintenance	740	15,919	-	-	15,919	15,458	31,377	4,952	15,264	20,216	55.21%
6120	Concrete Lining Repair	4,102	99,019	640	23,468	122,487	137,849	260,336	6,106	2,508	8,614	2922.14%
6130	Drainditch & Channel Maintenance	1,148	27,483	-	-	27,483	101,802	129,284	26,553	-	26,553	386.89%
6140	Fence Maintenance	1,240	28,235	-	-	28,235	7,646	35,881	30,586	7,459	38,046	-5.69%
6160	Mudjacking	1,051	25,846	-	-	25,846	1,515	27,361	12,986	1,478	14,464	89.16%
6170	Painting	2,175	51,494	-	-	51,494	10,517	62,011	45,761	10,261	56,021	10.69%
6190	Sump Pump Maintenance	80	1,973	-	-	1,973	-	1,973	1,907	-	1,907	3.50%
6200	Cross Drainage & Structure Maintenance	548	14,358	-	-	14,358	-	14,358	13,873	-	13,873	3.50%
6210	Rip-Rapping	285	6,796	-	-	6,796	-	6,796	6,566	-	6,566	3.50%
6221	USBR Pump Back Project	390	23,086	-	-	23,086	125,000	148,086	22,483	125,000	147,483	0.41%
6225	FKC Subsidence	2,468	188,492	-	-	188,492	9,029,340	9,217,832	186,064	4,813,936	5,000,000	84.36%
6230	GSA Engagement	-	-	-	-	-	120,000	120,000	-	120,000	120,000	0.00%
6299	Vehicle & Equipment Acquisition	-	-	-	-	-	11,997	11,997	-	299,756	299,756	-96.00%
6340	Operations Supervision	798	43,390	-	-	43,390	-	43,390	41,923	-	41,923	3.50%
6345	Water supply coordination & monitoring	168	13,981	-	-	13,981	-	13,981	13,383	-	13,383	4.47%
6402	FKC Title Transfer	964	71,854	-	-	71,854	618,850	690,704	70,981	718,850	789,831	-12.55%
6405	Legal Expense	-	-	-	-	-	6,293	6,293	-	6,140	6,140	2.50%
6420	Safety & First Aid Training	1,181	33,566	-	-	33,566	41,998	75,564	41,445	40,974	82,419	-8.32%
6440	Payroll Preparation	72	2,476	-	-	2,476	-	2,476	2,393	-	2,393	3.50%
6450	General Meetings	290	12,202	-	-	12,202	11,557	23,758	12,031	11,275	23,306	1.94%
6451	Meeting Expenses-Board of Directors	144	10,253	-	-	10,253	-	10,253	9,844	-	9,844	4.16%
6452	Meeting Expenses-Subcommittee	96	6,835	-	-	6,835	-	6,835	6,562	-	6,562	4.16%
6453	Meeting Expenses-Staff	281	13,535	-	-	13,535	1,576	15,111	13,036	1,538	14,573	3.69%
6460	Training & Education	1,060	31,173	50	1,674	32,848	30,438	63,285	32,115	28,581	60,695	4.27%
6480	Procurement Expense	245	8,921	-	-	8,921	-	8,921	8,856	-	8,856	0.74%
6490	Inventory & Property Management	304	10,175	-	-	10,175	-	10,175	10,398	-	10,398	-2.14%
6501	Employee Benefit-Holiday	2,208	63,109	-	-	63,109	-	63,109	64,313	-	64,313	-1.87%
6503	Employee Benefit-Vacation	3,440	101,904	-	-	101,904	-	101,904	103,987	-	103,987	-2.00%
6520	Travel Expense	-	-	-	-	-	8,825	8,825	-	8,610	8,610	2.50%
6540	Personnel Administration	282	10,542	-	-	10,542	-	10,542	10,186	-	10,186	3.50%
6610	Employee Retirement	-	-	-	-	-	270,376	270,376	-	249,796	249,796	8.24%
6620	Medical & Disability Insurance	-	-	-	-	-	566,618	566,618	-	539,147	539,147	5.10%
6660	Payroll Taxes	-	-	-	-	-	40,048	40,048	-	37,562	37,562	6.62%
6670	Utilities	-	-	-	-	-	79,111	79,111	-	77,181	77,181	2.50%
6680	Telephone Expense	-	-	-	-	-	13,234	13,234	-	12,911	12,911	2.50%
6720	Dues & Subscriptions	-	-	-	-	-	13,514	13,514	-	21,385	21,385	-36.80%
6730	Budget Preparation	346	12,739	-	-	12,739	-	12,739	12,308	-	12,308	3.50%
TOTAL MAINTENANCE		69,022	2,116,180	3,790	136,954	2,253,133	12,657,482	14,910,616	2,081,633	8,494,497	10,576,130	40.98%

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2021**
TOTAL ORGANIZATION

REVISED: 6/18/2019 13:43

								COMPARISON TO FY 2020 BUDGET				
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)	
WATER OPERATIONS:												
6010	Vehicle & Equipment Service	80	2,195	-	-	2,195	1,714	3,909	2,121	1,806	3,926	-0.45%
6050	Yard & Building Maintenance	584	15,826	40	1,617	17,443	46,913	64,357	16,853	64,451	81,305	-20.85%
6060	Structure & Gate Maintenance	1,460	39,326	120	4,851	44,177	641,687	685,864	44,245	640,444	684,689	0.17%
6070	Right of Way & Structure Cleaning	336	8,574	-	-	8,574	1,028	9,602	8,284	669	8,953	7.25%
6080	Bargate, Guardrail & Lock Maintenance	56	1,429	-	-	1,429	4,507	5,936	1,381	3,687	5,068	17.13%
6190	Sump Pump Maintenance	-	-	-	-	-	10,969	10,969	-	32,445	32,445	-66.19%
6305	Comm. & Instr. (General)	432	14,857	40	-	14,857	686	15,542	16,077	669	16,746	-7.19%
6306	Comm. & Instr. (SCADA)	2,248	77,488	160	8,254	85,742	184,687	270,429	90,817	166,376	257,193	5.15%
6310	Meter Repair & Calibration	3,464	96,090	136	6,348	102,439	42,761	145,200	109,330	71,738	181,068	-19.81%
6320	Canal Patrol	6,800	166,743	984	36,522	203,266	686	203,951	193,416	-	193,416	5.45%
6330	Operations Reports	2,336	85,400	640	24,761	110,162	857	111,018	113,326	2,174	115,499	-3.88%
6340	Operations Supervision	1,000	43,900	-	-	43,900	-	43,900	42,415	-	42,415	3.50%
6345	Water supply coordination & monitoring	512	61,742	-	-	61,742	102,409	164,152	-	-	-	0.00%
6350	Water Measurement	2,320	64,881	-	-	64,881	3,009	67,890	62,687	5,016	67,703	0.28%
6360	Miscellaneous Operations	160	4,390	-	-	4,390	-	4,390	4,241	-	4,241	3.50%
6370	Water Quality	1,844	58,187	-	-	58,187	14,106	72,293	57,906	13,762	71,668	0.87%
6380	Groundwater & Seepage Well Measurement	168	4,574	-	-	4,574	229	4,803	4,419	-	4,419	8.67%
6399	Vehicle & Equipment Acquisition	-	-	-	-	-	20,566	20,566	-	47,975	47,975	-57.13%
6420	Safety & First Aid Training	312	9,156	-	-	9,156	9,265	18,421	8,866	8,649	17,515	5.17%
6440	Payroll Preparation	12	527	-	-	527	-	527	509	-	509	3.50%
6450	Meeting Expenses-General	96	4,214	-	-	4,214	-	4,214	4,072	-	4,072	3.50%
6453	Meeting Expenses-Staff	156	4,578	-	-	4,578	-	4,578	4,433	-	4,433	3.27%
6460	Training & Education	472	14,978	-	-	14,978	23,140	38,118	14,538	18,988	33,526	13.70%
6480	Procurement Expense	24	1,054	-	-	1,054	-	1,054	1,018	-	1,018	3.50%
6490	Inventory & Property Management	160	5,185	-	-	5,185	-	5,185	5,016	-	5,016	3.36%
6501	Employee Benefit-Holiday	936	27,468	-	-	27,468	-	27,468	26,599	-	26,599	3.27%
6503	Employee Benefit-Vacation	1,600	47,586	-	-	47,586	-	47,586	46,044	-	46,044	3.35%
6610	Employee Retirement	-	-	-	-	-	113,251	113,251	-	112,929	112,929	0.28%
6620	Medical & Disability Insurance	-	-	-	-	-	237,698	237,698	-	231,747	231,747	2.57%
6660	Payroll Taxes	-	-	-	-	-	16,912	16,912	-	16,873	16,873	0.23%
6670	Utilities	-	-	-	-	-	27,421	27,421	-	26,753	26,753	2.50%
6680	Telephone Expense	-	-	-	-	-	58,929	58,929	-	57,491	57,491	2.50%
6710	Postage	-	-	-	-	-	578	578	-	564	564	2.50%
6730	Budget Preparation	24	1,054	-	-	1,054	-	1,054	1,018	-	1,018	3.50%
TOTAL WATER OPERATIONS		27,592	861,402	2,120	82,354	943,755	1,564,007	2,507,763	941,076	1,627,614	2,568,690	-2.37%

**FRIANT WATER AUTHORITY
PROPOSED BUDGET
FISCAL YEAR 2021**
TOTAL ORGANIZATION
 REVISED: 6/18/2019 13:43

								COMPARISON TO FY 2020 BUDGET				
Budget Category	Regular Hours	Regular Labor \$	Overtime Hours	Overtime Labor \$	Total Labor \$	Total Materials	FWA Total \$	Total Labor\$	Total Materials	FWA Total \$	Change (%)	
ADMINISTRATION:												
6306	Comm. & Instr. (SCADA)	250	13,339	-	-	13,339	-	13,339	12,888	-	12,888	3.50%
6345	Water supply coordination & monitoring	192	12,731	-	-	12,731	-	12,731	12,241	-	12,241	4.00%
6410	Administrative Supervision	250	13,339	-	-	13,339	-	13,339	12,888	-	12,888	3.50%
6420	Safety & First Aid Training	156	5,732	-	-	5,732	12,899	18,631	5,524	12,584	18,107	2.89%
6430	Office Administration (Typing, etc.)	9,388	262,019	100	3,618	265,637	-	265,637	256,145	-	256,145	3.71%
6440	Payroll Preparation	253	8,180	10	387	8,567	-	8,567	8,041	-	8,041	6.54%
6450	Meeting Expenses-General	80	4,565	-	-	4,565	10,187	14,752	5,654	9,938	15,593	-5.39%
6451	Meeting Expenses-Board of Directors	198	10,308	-	-	10,308	150,721	161,029	9,939	148,265	158,204	1.79%
6452	Meeting Expenses-Subcommittee	144	8,927	-	-	8,927	64,211	73,138	8,595	62,137	70,732	3.40%
6453	Meeting Expenses-Staff	108	6,096	-	-	6,096	21,013	27,109	6,442	20,500	26,942	0.62%
6460	Training & Education	148	6,529	-	-	6,529	37,297	43,826	6,295	36,388	42,682	2.68%
6470	Miscellaneous Administration	67	1,873	-	-	1,873	3,973	5,846	1,426	2,786	4,213	38.76%
6490	Inventory & Property Management	38	1,342	-	-	1,342	-	1,342	2,178	-	2,178	-38.36%
6500/6501	Employee Benefit-Holiday	864	29,618	-	-	29,618	-	29,618	28,555	-	28,555	3.72%
6503	Employee Benefit-Vacation	1,240	43,285	-	-	43,285	-	43,285	41,726	-	41,726	3.74%
6510	Data Processing	1,080	57,626	-	-	57,626	138,317	195,943	55,678	134,943	190,621	2.79%
6520	Travel Expense	-	-	-	-	-	16,700	16,700	-	16,700	16,700	0.00%
6530	Accounting & Auditing	9,604	356,460	30	1,142	357,602	18,000	375,602	338,069	18,000	356,069	5.49%
6540	Personnel Administration	1,974	69,277	45	2,257	71,534	64,549	136,083	69,096	71,335	140,430	-3.10%
6610	Employee Retirement	-	-	-	-	-	111,585	111,585	-	107,517	107,517	3.78%
6611	Retirement Administration	-	-	-	-	-	5,300	5,300	-	5,300	5,300	0.00%
6620	Medical & Disability Insurance	-	-	-	-	-	207,961	207,961	-	201,050	201,050	3.44%
6630	Liability/Property Insurance	-	-	-	-	-	142,885	142,885	-	139,400	139,400	2.50%
6640	Workers Compensation Insurance	-	-	-	-	-	132,000	132,000	-	120,000	120,000	10.00%
6660	Payroll Taxes	-	-	-	-	-	25,556	25,556	-	16,964	16,964	50.64%
6670	Utilities	-	-	-	-	-	46,900	46,900	-	45,756	45,756	2.50%
6680	Telephone Expense	-	-	-	-	-	25,436	25,436	-	24,815	24,815	2.50%
6690	Office Supplies	-	-	-	-	-	78,881	78,881	-	76,957	76,957	2.50%
6700	Employee Incentives & Awards	-	-	-	-	-	21,013	21,013	-	20,500	20,500	2.50%
6710	Postage	-	-	-	-	-	4,623	4,623	-	4,510	4,510	2.50%
6720	Dues & Subscriptions	-	-	-	-	-	126,508	126,508	-	123,422	123,422	2.50%
6730	Budget Preparation	174	11,227	-	-	11,227	-	11,227	14,595	-	14,595	-23.08%
6790	Lease Office Equipment	-	-	-	-	-	25,499	25,499	-	24,877	24,877	2.50%
6799	Vehicle & Equipment Acquisition	-	-	-	-	-	24,992	24,992	-	364,439	364,439	-93.14%
	GM administration allocation	-	-	-	-	-	(183,664)	(183,664)	-	(208,282)	(208,282)	-11.82%
TOTAL ADMINISTRATION		26,208	922,474	185	7,405	929,878	1,333,340	2,263,218	895,976	1,600,802	2,496,777	-9.35%
ORGANIZATION TOTALS		122,822	\$ 3,900,055	6,095	\$ 226,712	\$4,126,767	\$ 15,554,829	\$ 19,681,597	\$ 3,918,684	\$ 11,722,913	\$ 15,641,596	25.83%
	Capital Purchases	-	-	-	-	-	(57,555)	(57,555)	-	(712,170)	(712,170)	-91.92%
	Depreciation	-	-	-	-	-	300,000	300,000	-	300,000	300,000	0.00%
	Budget per financial statements		\$ 3,900,055		\$ 226,712	\$4,126,767	\$ 15,797,275	\$ 19,439,151	\$ 3,918,684	\$ 11,310,743	\$ 15,229,426	27.64%

DETAILS OF
MATERIALS
CONSTRUCTION
&
MAINTENANCE

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2021

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
Labor Dollars	528,351	512,423	362,858	341,805	507,696	2,253,133
6010 - Vehicle & Equipment Service						
Lubricants:						
Motor oil	-	-	-	9,712	-	9,712
Subtotal Lubricants	-	-	-	9,712	-	9,712
Fuels						
Gasoline	82,650	86,035	61,988	-	-	230,672
Diesel	42,413	31,445	10,603	-	-	84,460
(Project) Diesel	8,483	-	-	-	-	8,483
LPG	343	274	434	-	-	1,051
Subtotal Fuels	133,888	117,753	73,025	-	-	324,666
Outside Services:						
Smog Certifications	-	-	-	1,156	-	1,156
Smoke Test	-	-	-	1,286	-	1,286
Red Bluff Motor Long Term Storage (per year)	-	-	-	3,362	-	3,362
Outside Vendor PM Services:						
PM Service-Heavy and Light Vehicles	-	-	-	31,519	-	31,519
Subtotal Outside Services	-	-	-	37,322	-	37,322
Service Parts and Supplies:						
Light Vehicles:						
Services Parts & Supplies	-	-	-	110,714	-	110,714
Subtotal Service Parts & Supplies	-	-	-	110,714	-	110,714
Operational Parts and Supplies:	6,304	6,373	-	-	-	12,677
Subtotal Operational Parts and Supplies	6,304	6,373	-	-	-	12,677
Tools and Supplies:						
Miscellaneous Tools and Supplies	-	-	3,428	8,455	-	11,883
Shop supplies	-	-	4,203	4,728	-	8,930
Safety Kleen service	-	-	-	7,354	-	7,354
Subtotal Tools & Supplies	-	-	7,630	20,537	-	28,167
Overhauls:						
Equipment Rental	-	-	-	-	-	-
Subtotal Overhauls	-	-	-	-	-	-
TOTAL 6010	140,192	124,126	80,655	178,285	0	523,258
6030 Weed & Pest Control						
Weed Control Products:						
Copper Sulfate	-	-	-	168,000	-	168,000
Chelated Copper Sulfate	-	-	-	60,000	-	60,000
Round-Up Custom	-	-	-	25,000	-	25,000
Surfactant	-	-	-	2,000	-	2,000
Round-Up Pro Concentrate	-	-	-	40,000	-	40,000
Finale	-	-	-	3,000	-	3,000
Milestone VM	-	-	-	4,000	-	4,000
Pre-emergant (Diuron)	-	-	-	38,000	-	38,000
Experimental Chemical	-	-	-	20,000	-	20,000
Grass Seeds	-	-	-	500	-	500
Diphacinone (rodent control)	-	511	-	2,285	-	2,796
Subtotal Weed Control Products	-	511	-	362,785	-	363,296
Water Quality Monitoring (NPDES)						
Misc. Water Sampling / Laboratory costs	-	-	-	10,506	-	10,506
NPDES Permitting Consultation	-	-	-	21,013	-	21,013
Subtotal Water Quality Monitoring	-	-	-	31,519	-	31,519

SUMMARY BY YARD

FISCAL YEAR 2021

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
Miscellaneous Supplies:						
Hose, nozzles, etc.; repairs	2,856	1,507	1,143	-	-	5,506
Rodent Controls / Bait Stations	571	-	-	-	-	571
Subtotal Miscellaneous Supplies	3,428	1,507	1,143	-	-	6,077
Outside Services:						
P.C.A. Recommendations	-	-	-	9,844	-	9,844
Subtotal Outside Services	-	-	-	9,844	-	9,844
TOTAL 6030	3,428	2,018	1,143	404,148	-	410,736
6032 Implem Biol. Opinion						
Biological Opinion Implementation	-	-	-	39,875	-	39,875
Compliance training CDFG 1600, NEPA, FESA	-	-	-	3,824	-	3,824
TOTAL 6032	-	-	-	43,699	-	43,699
6040 - Road Maintenance						
Road Repair:						
Materials	11,426	4,055	2,285	-	-	17,766
Road Chip Seal	133,565	-	-	-	-	133,565
Road Repair tools	2,856	571	-	-	-	3,428
TOTAL 6040	147,847	4,626	2,285	-	-	154,758
6050 Yard & Building Maintenance						
Maintenance Facilities:						
Miscellaneous Wood Material	1,143	2,047	571	-	-	3,761
Miscellaneous Metal materials	10,854	2,265	3,999	-	-	17,118
Carpenter Shop Supplies	1,371	1,441	571	-	-	3,383
Welding Shop Supplies	4,570	1,156	3,999	-	-	9,725
Asphalt resurface	-	-	-	-	-	-
Shop Tool Replacements	-	1,457	1,143	-	-	2,599
Subtotal Maintenance Facilities	17,938	8,366	10,283	-	-	36,587
Outside services:						
Cleaning Service contract	8,405	10,464	5,610	-	-	24,480
Alarm service contract	998	2,042	1,051	-	-	4,091
Uniform cleaning & mats contract	9,246	10,653	6,119	-	-	26,018
Starr Recyclables services	-	-	80	-	-	80
Culligan water service contract	1,051	548	-	-	-	1,599
Air Board testing of fuel tanks	998	473	630	-	-	2,101
Other Misc Outside Services	1,576	1,106	1,051	-	-	3,733
Fire Extinguisher Service	1,261	1,520	841	-	-	3,622
Wash System Waste Disposal	1,576	881	525	-	-	2,983
Pest control	630	536	525	-	-	1,692
Subtotal Outside Services	25,740	28,225	16,432	-	-	70,397
Miscellaneous Supplies:						
Kitchen/restroom supplies	628	1,114	571	-	-	2,314
Maintenance parts for yards	6,284	5,425	11,426	-	-	23,134
Subtotal Miscellaneous Supplies	6,912	6,539	11,997	-	-	25,448
TOTAL 6050	50,591	43,130	38,712	-	-	132,432
6060 Structures & Gates Maintenance						
General Canal:						
Emergency Hardware	800	2,342	1,143	-	-	4,285
Spill Containment Supplies	457	-	571	-	-	1,028
Subtotal General Canal	1,257	2,342	1,714	-	-	5,313

SUMMARY BY YARD

FISCAL YEAR 2021

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
Turnouts:						
Turnout metal work rehab / Trash Racks	-	-	1,143	-	-	1,143
Emergency Repair Parts	29,021	1,965	1,143	-	-	32,129
Subtotal Turnouts	29,021	1,965	2,285	-	-	33,271
Checks and Wasteways:						
Mechanical:						
Hardware	-	-	2,285	-	-	2,285
Emergency Repair Parts	6,284	6,970	1,143	-	-	14,396
Radial Gate Inspection by Structural Engineer	-	-	-	5,253	-	5,253
Electrical:						
Motor & Gear box upgrade	-	-	-	-	-	-
Motor Control Repair / Upgrade	-	-	-	-	-	-
Subtotal Checks and Wasteways	6,284	6,970	3,428	5,253	-	21,934
TOTAL 6060	36,562	11,277	7,427	5,253	-	60,518
6080 - Bargate, Guardrail, and Lock Maintenance						
Signs:						
Traffic / Safety signs	1,714	1,457	4,113	-	-	7,284
Hardware Kits	-	-	-	-	-	-
Sign Posts	-	-	-	-	-	-
Subtotal Signs	1,714	1,457	4,113	-	-	7,284
Bargate Materials:						
Welding gases	-	486	-	-	-	486
Welding rod/wire	-	400	-	-	-	400
Locks	628	-	-	-	-	628
8" x 7' pipe	-	568	1,143	-	-	1,710
2-3/8" pipe	-	596	1,143	-	-	1,739
Barrier Blocks	1,714	428	-	-	-	2,142
Guardrail Materials	-	-	1,371	-	-	1,371
Cement	914	-	571	-	-	1,485
Chain 3/8" (feet)	343	-	-	-	-	343
Subtotal Bargate Materials	3,599	2,478	4,227	-	-	10,305
TOTAL 6080	5,313	3,935	8,341	-	-	17,588
6090 - Embankment Maintenance						
Equipment Rental:						
Equipment Rental	-	-	5,713	-	-	5,713
Tree Removal	-	-	-	-	-	-
Erosion Control:						
Downdrains:						
Funnels	3,428	-	-	-	-	3,428
Flumes	1,714	-	-	-	-	1,714
Culverts:						
CMP (various) and Hardware	1,371	-	-	-	-	1,371
Subtotal Erosion Control	6,513	-	5,713	-	-	12,225
TOTAL 6090	6,513	-	5,713	-	-	12,225
6100 - Bridge Maintenance						
Materials:						
Running Pads	5,713	6,581	5,141	-	-	17,435
Deck Boards	5,713	1,805	-	-	-	7,518
Bridge Inspection by Structural Engineer	-	-	-	5,253	-	5,253
Copper coat	2,285	4,376	571	-	-	7,232
Nails	343	352	571	-	-	1,266
Subtotal Materials	14,053	13,114	6,284	5,253	-	38,705

SUMMARY BY YARD

FISCAL YEAR 2021

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
TOTAL 6100	14,053	13,114	6,284	5,253	-	38,705
6110 Miscellaneous Maintenance						
Equipment Rental	2,500	-	5,000	-	-	7,500
USBR services:						
USBR services/outside inspection	-	-	-	-	-	-
Subtotal Tools and Supplies	2,500	-	5,000	-	-	7,500
Tools and supplies:						
Field tools--Replacements	1,143	1,363	1,143	-	-	3,648
Wood Shop Tools	571	506	571	-	-	1,649
Welding Shop Tools	1,714	376	571	-	-	2,661
Subtotal Tools and Supplies	3,428	2,245	2,285	-	-	7,958
TOTAL 6110	5,928	2,245	7,285	-	-	15,458
6120 - Concrete Lining Repair						
Concrete and Formwork:						
6" Rock	1,714	-	-	-	-	1,714
Misc Materials	857	-	-	-	-	857
Subtotal Concrete and Formwork	2,571	-	-	-	-	2,571
Dewatering:						
(Dewatering) Canal Lining repair	-	135,278	-	-	-	135,278
Subtotal Dewatering	-	135,278	-	-	-	135,278
TOTAL 6120	2,571	135,278	-	-	-	137,849
6130- Drainditch and Channel						
(Dewatering) Aquatic Weed	-	-	-	-	-	-
(Dewatering) Canal Desilting	-	101,802	-	-	-	101,802
TOTAL 6130	-	101,802	-	-	-	101,802
6140 - Fence Maintenance						
Fabric Fence:						
Miscellaneous Material	1,371	-	1,143	-	-	2,514
Subtotal Fabric Fence	1,371	0	1,143	0	0	2,514
Barbed Wire Fence:						
Miscellaneous Material	3,999	1,133	-	-	-	5,132
Subtotal Barbed Wire Fence	3,999	1,133	-	-	-	5,132
TOTAL 6140	5,370	1,133	1,143	-	-	7,646
6160 - Mudjacking						
Cement for mudjacking	1,028	487	-	-	-	1,515
TOTAL 6160	1,028	487	-	-	-	1,515
6170 - Painting						
Paint						
Paint & Thinner	343	1,109	4,913	-	-	6,365
Misc. Supplies	171	553	2,856	-	-	3,581
Body & Fender	-	571	-	-	-	571
TOTAL 6170	514	2,234	7,769	-	-	10,517
6221-USBR Pump Back Project						
USBR Pump Back Project	-	-	-	125,000	-	125,000
TOTAL 6221	-	-	-	125,000	-	125,000
6225-FKC Subsidence						
Design, Engineering & Pre-Construction	-	-	-	-	9,000,000	9,000,000
TOTAL 6225	-	-	-	-	9,000,000	9,000,000

SUMMARY BY YARD

FISCAL YEAR 2021

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
6226-FKC Capacity Correction (FWA)						
FKC Capacity Correction (FWA)	-	-	-	-	29,340	29,340
TOTAL 6226	-	-	-	-	29,340	29,340
6230 - GSA Engagement						
GSA Engagement	-	-	-	-	120,000	120,000
TOTAL 6230	-	-	-	-	120,000	120,000
6299 Vehicle & Equipment Acquisition						
Light Vehicles	-	-	-	-	-	-
Light Vehicles - Engineering	-	-	-	-	-	-
Design Jet Printer - Engineering	-	-	-	-	-	-
All Terran Forklift	-	-	-	-	-	-
Submersible Pumps	-	-	-	-	-	-
Boom Truck	-	-	-	-	-	-
Yard Equipment	-	-	5,713	-	-	5,713
Gopher X Rodent Control	-	-	-	-	-	-
Confined Space Equipment / Lid Repair	-	-	-	6,284	-	6,284
TOTAL 6299	-	-	5,713	6,284	-	11,997
6402 FKC Title Transfer						
Legal Expense	-	-	-	-	75,000	75,000
Legal Expense-Federal Litigation	-	-	-	-	18,850	18,850
Consultants	-	-	-	-	500,000	500,000
Communication Outreach	-	-	-	-	25,000	25,000
TOTAL 6402	-	-	-	0	618,850.00	618,850
6405 Legal Expense						
Legal Expense	-	-	-	6,293	-	6,293
TOTAL 6405	0	0	0	6,293	0	6,293
6420 Safety & First Aid Training						
Safety Supplies	4,570	5,538	2,856	3,713	-	16,678
Individual awards (not to supervisors)	841	841	630	105	-	2,416
Group awards	946	946	735	420	210	3,257
Annual awards	1,891	1,891	1,471	841	420	6,514
Physical examinations	-	-	-	-	6,304	6,304
First Aid and CPR course materials	-	-	-	-	2,101	2,101
DOT Drug and Alcohol Testing Program	-	-	-	-	4,728	4,728
TOTAL 6420	8,247	9,215	5,693	5,079	13,763	41,998
6450 General Meetings						
Meeting Expenses	-	-	-	-	11,557	11,557
TOTAL 6450	-	-	-	-	11,557	11,557
6453 Staff Meetings						
Miscellaneous Meeting Expenses	-	-	-	525	1,051	1,576
TOTAL 6453	-	-	-	525	1,051	1,576
6460 Education and training						
Training - Engineering	-	-	-	2,285	-	2,285
Training Supervisors	3,356	3,356	3,356	-	-	10,067
Training for Mechanics	892	892	892	-	-	2,676
Weed and pest Continuing Education	1,940	1,940	1,940	-	-	5,821
Safety training	1,560	1,560	1,560	-	-	4,680
Crane Operator training / certification	1,636	1,636	1,636	-	-	4,908
TOTAL 6460	9,384	9,384	9,384	2,285	-	30,438

FRIANT WATER AUTHORITY

SUMMARY BY YARD

FISCAL YEAR 2021

Job Code-Material	Orange Cove	Lindsay	Delano	Tech Ser/ Engineer	O&M Mgmt	Total C&M
6520 Travel						
Mileage reimbursement	-	-	-	-	8,825	8,825
TOTAL 6520	-	-	-	-	8,825	8,825
6610 Employee Retirement						
Retirement plan contribution	63,402	61,491	43,543	41,017	60,923	270,376
TOTAL 6610	63,402	61,491	43,543	41,017	60,923	270,376
6620 Medical and Disability Insurance						
Disability insurance	5,591	5,549	4,062	3,457	5,889	24,548
Term Life insurance	12,258	11,888	8,418	6,914	11,779	51,257
Medical/EAP/dental/vision insurance	159,214	178,265	130,637	55,793	43,546	567,454
Less employee paid portion for dependents	(19,759)	(31,298)	(17,554)	-	(8,029)	(76,640)
TOTAL 6620	157,304	164,403	125,562	66,163	53,185	566,618
6660 Payroll Taxes						
SUI	2,142	2,142	1,666	952	476	7,378
Medicare taxes	7,661	7,430	5,261	4,956	7,362	32,670
TOTAL 6660	9,803	9,572	6,927	5,908	7,838	40,048
6670 Utilities						
Gas and electricity	-	-	-	-	66,820	66,820
Water, sewer and garbage fees	-	-	-	-	7,438	7,438
Internet services	-	-	-	-	4,853	4,853
TOTAL 6670	-	-	-	-	79,111	79,111
6680 Telephone Expense						
Phone charges	-	-	-	-	8,296	8,296
Verizon Wireless	-	-	-	-	4,938	4,938
TOTAL 6680	-	-	-	-	13,234	13,234
6720 Dues & Subscriptions						
Ron Turley and Associates	-	-	-	2,942	-	2,942
GPS Service (Fleet Tek)	-	-	-	1,261	-	1,261
Engineering - Civil License	-	-	-	315	-	315
Engineering - GSI software/consulting	-	-	-	5,950	-	5,950
Engineering - Auto Cad	-	-	-	1,156	-	1,156
Engineering - APN service	-	-	-	1,891	-	1,891
TOTAL 6720	-	-	-	13,514	-	13,514
TOTAL Construction & Maint.	1,196,400	1,211,894	726,436	1,250,513	10,525,372	14,910,616

DETAILS OF
MATERIALS
ADMIN
&
OPERATIONS

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Labor Dollars	943,755	929,878	1,873,634
	Vehicle and Equipment Service			
6010	Supplies and materials-Water Ops vehicles	1,714	-	1,714
6010	Seat upholstery	-	-	-
	Total 6010	1,714	-	1,714
	Yard and Building Maintenance			
6050	Electronic repair parts/services--Water Ops	2,742	-	2,742
6050	Annual Water Quality Testing (houses)	651	-	651
6050	Electrical upkeep and repairs, yards and offices	27,421	-	27,421
6050	Repair and Replace Security, yard lights	2,285	-	2,285
6050	Misc. Repairs to Blockhouses	3,393	-	3,393
6050	Rehab & Repairs, CSO residences	10,420	-	10,420
	TOTAL 6050	46,913	-	46,913
	Structure and Gate Maintenance			
6060	Electronic Parts/Services (checks/turnouts)	20,566	-	20,566
6060	Repair/Replace Turnout Gate and Actuators	2,742	-	2,742
6060	Replace access lids to Venturi and Pitot Wells	10,426	-	10,426
6060	Tule River Check Structure Gates	-	-	-
6060	Dodge Avenue Check Structure Gates	472,789	-	472,789
6060	Motor & Gear box upgrade	135,164	-	135,164
	Total 6060	641,687	-	641,687
	Cleaning Right-of-Way			
6070	Misc Equip (shovels,rakes,brooms, etc)	1,028	-	1,028
	Total 6070	1,028	-	1,028
	Bargate, Guardrail and Lock Maintenance			
6080	Blockhouse locks	137	-	137
6080	FWA standard issue locks	4,370	-	4,370
	Total 6080	4,507	-	4,507
	Sump Pump Maintenance			
6190	Electrical Parts	1,371	-	1,371
6190	Motor Repairs	1,143	-	1,143
6190	Sump Pump replacement/repair	5,713	-	5,713
6190	Sump Pump meter replacement/repair	2,742	-	2,742
	Total 6190	10,969	-	10,969

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	FKC Subsidence			
6225	FKC Subsidence	-	-	-
	Total 6225	-	-	-
	C&I Maintenance (General)			
6305	Voice radio repair support	686	-	686
6305	Voice radio misc. parts	-	-	-
	Total 6305	686	-	686
	C&I Maintenance (SCADA)			
6306	SCADA Electronic Recorders, enclosures & wiring	12,111	-	12,111
6306	SCADA, Radio and modem support	3,021	-	3,021
6306	Redundant stand alone SCADA site	-	-	-
6306	SCADA updates / support	-	-	-
6306	Alarm Platform	22,851	-	22,851
6306	SCADA IntelliSite development & operating cost	114,940	-	114,940
6306	Level Sensors (checks, turnouts)	5,141	-	5,141
6306	Gate position sensor replacement	7,541	-	7,541
6306	RTU replacement, maintenance	12,568	-	12,568
6306	Clear Scada annual update (software support plan)	6,513	-	6,513
	Total 6306	184,687	-	184,687
	Meter Repair and Calibration			
6310	Honeywell recorders	11,997	-	11,997
6310	Propellor meter parts and conversion kits	6,170	-	6,170
6310	Propellor meter calibration	6,855	-	6,855
6310	Propellor meter replacement	5,256	-	5,256
6310	Propellor meter conversion to ADCP	-	-	-
6310	Electronic pressure transmitters	9,826	-	9,826
6310	Annual calibration atmospheric monitors	1,714	-	1,714
6310	Annual DVM calibration	944	-	944
	Total 6310	42,761	-	42,761
	Canal Patrol			
6320	Miscellaneous supplies	686	-	686
	Total 6320	686	-	686
	Operations Reports			
6330	Operations miscellaneous supplies	857	-	857
	Total 6330	857	-	857

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Water supply coordination & monitoring			
6345	Water supply coordination & monitoring	130,283	-	130,283
6345	SLDMWA Legal & Administrative Consultations	16,168	-	16,168
6345	Additional Participant Cost Offset	(44,042)	-	(44,042)
	Total 6345	102,409	-	102,409
	Water Measurement			
6350	Staff Gages & Numbers	96	-	96
6350	Sump pumps	-	-	-
6350	Annual calibration of measuring equipment	2,914	-	2,914
	Total 6350	3,009	-	3,009
	Water Quality			
6370	Water Quality	14,106	-	14,106
	Total 6370	14,106	-	14,106
	Groundwater & Seepage Well Measurement			
6380	Stainless steel tapes (500')	-	-	-
6380	Well Sounder (400 ft w replacement tips)	229	-	229
	Total 6380	229	-	229
	Operations Fixed Assets Acquisition			
6399	Replacement vehicles	20,566	-	20,566
	Total 6399	20,566	-	20,566
	FKC Title Transfer			
6402	Contracted Services	-	-	-
	Total 6410	-	-	-
	Safety			
6420	Misc Supplies--Administration	-	1,143	1,143
6420	Individual awards (not to supervisors)	1,261	946	2,206
6420	Group awards	1,366	1,681	3,047
6420	Annual awards	1,366	1,681	3,047
6420	Safety related training--Administration	-	5,141	5,141
6420	Employee safety equipment	2,496	-	2,496
6420	Fall protection, safety harness & lifeline	1,371	-	1,371
6420	Physical examinations	-	1,261	1,261
6420	Background check	-	315	315
6420	First Aid and CPR course materials	548	731	1,280
6420	Safety Air monitor confined space	857	-	857

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
6420	DOT Drug and Alcohol Testing Prog.	-	-	-
6420	Medical aid and travel	-	-	-
	Total 6420	9,265	12,899	22,164
	General Meetings expense			
6450	Per diem and travel related costs	-	10,187	10,187
		-	-	
	Total 6450	-	10,187	10,187
	Board of Directors Meetings expense			
6451	Room rental	-	45,645	45,645
6451	General Counsel	-	37,823	37,823
6451	Board Meetings	-	66,623	66,623
6451	Other expenses	-	630	630
	Total 6451	-	150,721	150,721
	Subcommittee Meetings Expense			
6452	General Counsel	-	34,671	34,671
6452	Committee Meeting expense	-	29,540	29,540
	Total 6452	-	64,211	64,211
	Staff Meetings			
6453	Misc. meeting expenses	-	21,013	21,013
	Total 6453	-	21,013	21,013
	Education and Training			
6460	Training classes	7,880	2,627	10,506
6460	Supervisor Continuing Education	-	3,152	3,152
6460	SCADA training	15,260	-	15,260
6460	Training for Administration	-	5,253	5,253
6460	Education and Training - Data Proc	-	26,266	26,266
	Total 6460	23,140	37,297	60,437
	Miscellaneous Administrative			
6470	Temporary Services/Employees	-	1,025	1,025
6470	Consulting / HR Services	-	-	-
6470	Printing Services - FWA Directory	-	1,143	1,143
6470	Check printing, other bank services	-	1,805	1,805
	Total 6470	-	3,973	3,973
	Computer Systems & Services			
6510	IT consulting	-	71,443	71,443
6510	Computer peripherals and hardware	-	1,576	1,576

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
6510	IT contracts	-	65,298	65,298
	Total 6510	-	138,317	138,317
	Travel			
6520	Mileage reimbursement	-	16,700	16,700
	Total 6520	-	16,700	16,700
	Accounting and Auditing			
6530	Annual audit	-	18,000	18,000
	Total 6530	-	18,000	18,000
	Personnel Administration			
6540	Job advertisements	-	6,304	6,304
6540	Legal Counsel for personnel services	-	52,531	52,531
6540	CEA membership	-	2,101	2,101
6540	CofC membership and supplies	-	756	756
6540	Forms, handouts, posters, etc.	-	2,856	2,856
	Total 6540	-	64,549	64,549
	Employee Retirement			
6610	Retirement plan contribution	113,251	111,585	224,836
	Total 6610	113,251	111,585	224,836
	Retirement Administration			
6611	Quarterly administration fees	-	5,300	5,300
	Total 6611	-	5,300	5,300
	Medical and Disability Insurance			
6620	Disability insurance	9,992	10,701	20,693
6620	Term life insurance	19,985	22,901	42,886
6620	Medical/EAP/dental/vision insurance	257,269	227,335	484,604
6620	Less employee paid portion for dependents	(49,547)	(52,977)	(102,524)
	Total 6620	237,698	207,961	445,659
	Liability and Property Insurance			
6630	Liability insurance	-	131,328	131,328
6630	Fidelity insurance	-	1,051	1,051
6630	Property insurance	-	10,506	10,506
	Total 6630	-	142,885	142,885

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Workers' Compensation Insurance			
6640	WC insurance	-	132,000	132,000
	Total 6640	-	132,000	132,000
	Payroll Taxes			
6660	SUI	3,228	3,973	7,201
6660	Medicare taxes	13,684	21,583	35,268
	Total 6660	16,912	25,556	42,468
	Utilities			
6670	Water, sewer and garbage fees	-	5,043	5,043
6670	Water conditioning services	-	-	-
6670	Rent for offsite offices	-	20,802	20,802
6670	Internet services	-	10,969	10,969
6670	Verizon SCADA services	27,421	-	27,421
6670	Gas and electricity	-	10,086	10,086
	Total 6670	27,421	46,900	74,321
	Telephone charges			
6680	Phone charges	-	15,381	15,381
6680	Answering service	1,513	-	1,513
6680	Verizon wireless M to M	48,275	-	48,275
6680	Verizon wireless	9,140	10,054	19,195
	Total 6680	58,929	25,436	84,364
	Office Supplies and Services			
6690	Office supplies	-	75,682	75,682
6690	Office Chairs / Tables	-	3,199	3,199
	Total 6690	-	78,881	78,881
	Merit Program			
6700	Merit awards	-	21,013	21,013
	Total 6700	-	21,013	21,013
	Postage and Shipping			
6710	Postage and UPS, Fedex	578	4,623	5,201
	Total 6710	578	4,623	5,201

**FRIANT WATER AUTHORITY
WATER OPERATIONS AND ADMINISTRATION
BUDGET FOR FISCAL YEAR 2021**

Code	Description of Product or Service	OPERATIONS	ADMINISTRATION	TOTAL
	Dues and Subscriptions			
6720	Dues and subscriptions	-	126,508	126,508
	Total 6720	-	126,508	126,508
	Lease Office Equipment			
6790	Leased office equipment	-	25,499	25,499
	Total 6790	-	25,499	25,499
	Fixed Assets Acquisition			
6799	Desktop Computers	-	10,283	10,283
6799	Laptop Computers	-	9,456	9,456
6799	Network Communication Equipment	-	-	-
6799	Mobile Devices	-	5,253	5,253
6799	Private cloud infrastructure	-	-	-
6799	Servers	-	-	-
6799	Backup & Replication	-	-	-
6799	Workstations	-	-	-
	Total 6799	-	24,992	24,992
	WATER OPERATIONS AND ADMINISTRATION	2,507,763	2,446,882	4,954,645

O & M
PROJECT
JUSTIFICATIONS

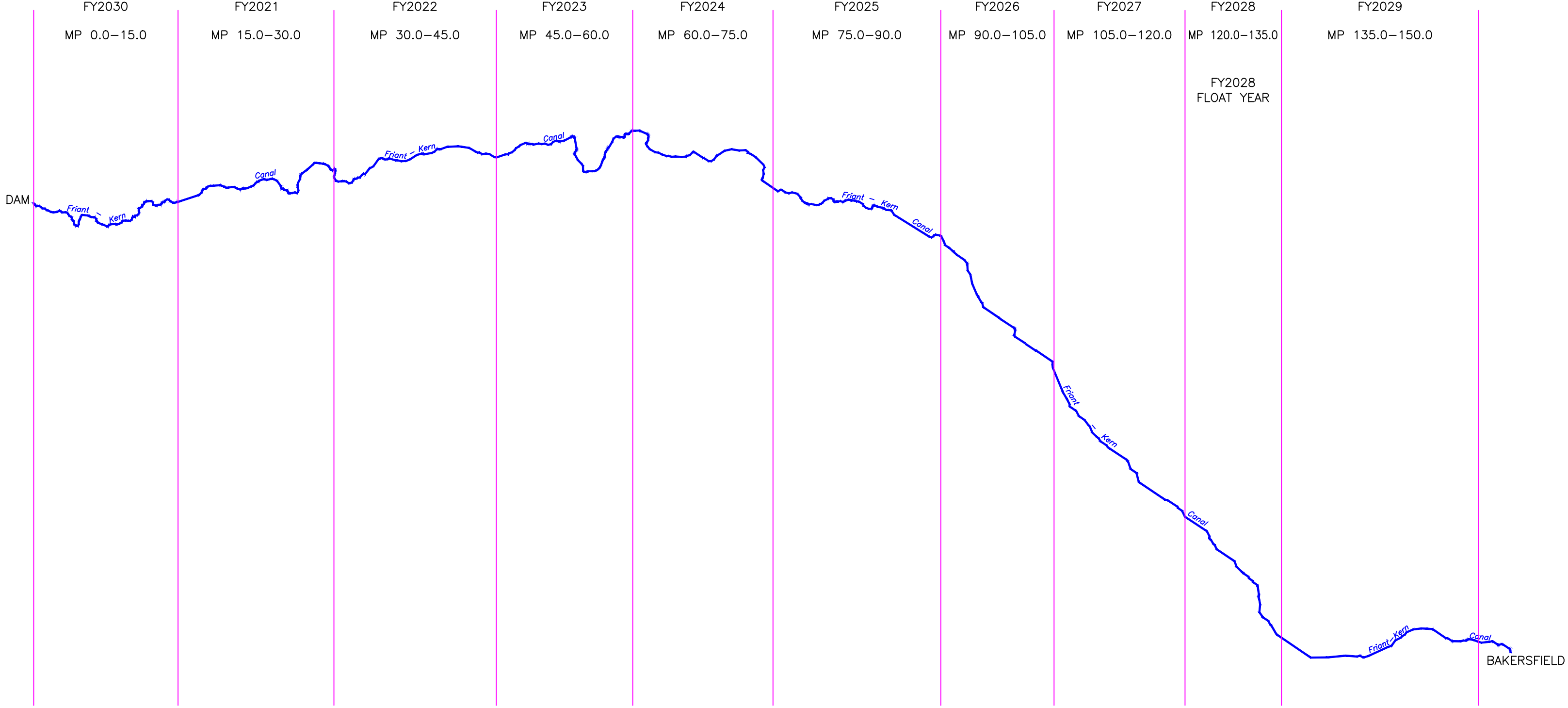
Acquisition, Special & Major Maintenance Projects

**Project Summary
FY 2021**

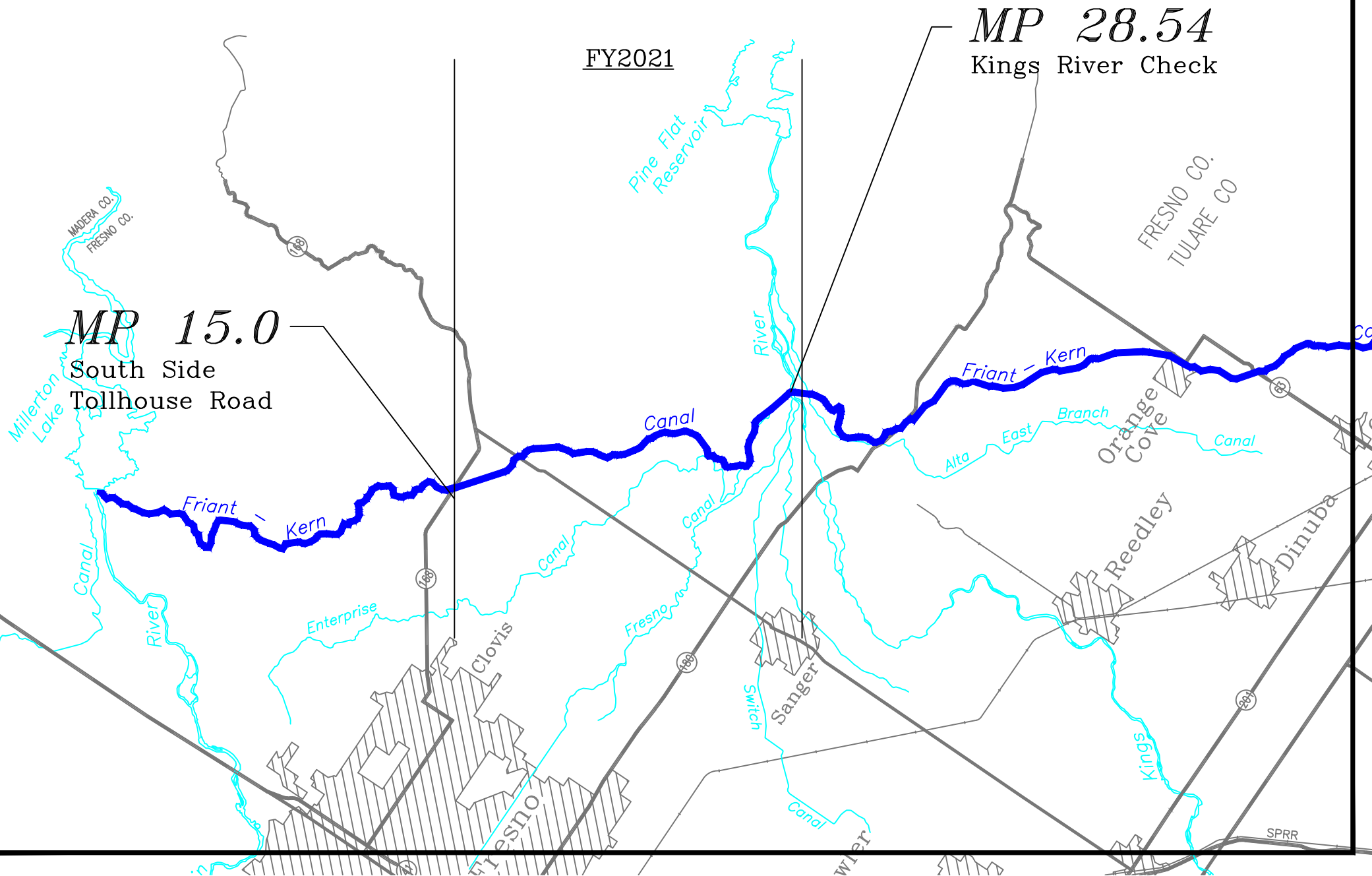
	Project Title		Non Labor Costs		Total Project Cost
Job Code	Major Maintenance	Project Location	Dept.	(Incl. Fuel, x\$1000)	(x\$1000)
6040	Roadway Chip Seal Project	MP 15.0 to 28.54	Maintenance	116.9	134.5
6060	Motor & Gearbox Upgrade	MP 46.04 (Sand Creek) & 61.03 (Dodge Ave)	Operations	118.3	127.9
6060	Radial Gate Replacement	MP 61.03 Dodge Ave.	Operations	413.8	531.8
6130	Canal Desilting	MP 99.37 to MP 110.5	Maintenance	89.1	119.9
6120	Concrete Panel Replacement	MP 30.50 to 106.19	Maintenance	118.4	303.5
				856.5	1,217.6
			Tax/Inflation:	96.4	107.2
			Sub-Total:	952.9	1,324.8
	Special Projects				
6221	Pump Back Project		Maintenance	125.0	148.1
6225/6226	FKC Subsidence	MP 88.2 to MP 121.5	Maintenance	9,000.0	9,217.8
6230	GSA Engagement		Maintenance	120.0	120.0
6345	Water supply coordination & monitoring		Operations	102.4	190.9
6370	Water Quality		Operations	14.1	72.3
6402	FKC Title Transfer		Maintenance	618.9	690.7
			* Sub-Total	9,980.4	10,439.8
			Tax/Inflation:	0.0	0.0
			Sub-Total:	0.0	0.0
			Subtotal:	10,836.9	11,657.4
			Tax/Inflation:	96.4	107.2
			Total:	10,933.3	11,764.6

* Includes tax and inflation

FRIANT WATER AUTHORITY
CHIP SEAL PROJECT
10-YEAR CYCLE



Proposed Chip Seal (Orange Cove)



Friant Water Authority
Extraordinary Maintenance Project
Summary Sheet
Proposed For FY 2021

Project Title: Operation and Maintenance Roadway Chip Seal.

Job Code: 6040

Project Location and Maintenance Department: Approx. MP 15.0 to MP 28.54 / Orange Cove

Project Description: Chip seal a 15 mile section of canal roadway with 3/8” rock and CRS-2H asphalt emulsion. An in-house hauling operation will stock pile chip material from a local plant staging it along the 15-mile section of roadway. Outside service contractor will provide emulsion trucks to disperse asphaltic emulsion onto the existing road. Authority staff will follow behind operating a chipping machine, placing rock chips over the emulsion. The rock chips will be forced into the emulsion with two rented roller compactors. Once the rock/emulsion mixture sets, the roadway is swept to remove loose chips.

Estimated Total Project Cost (x1000): \$134.5

Estimated Total Project Cost (Excluding Regular Labor Costs, x1000): \$116.9

General Justification: Chip seal applications are repeated on a 10-year rolling cycle. Chip sealing slows down serious deterioration of the operational canal roadways lessening the need for road removal and reconstruction. An inspection of the 152 miles of operational roadway is conducted each year to determine sections to be chip sealed.

Operating Impact: Failure to maintain good road conditions could directly delay operation and maintenance in the event of road failure, as well as pose a serious threat to the safety of those traveling on the canal roadways.



Photo of Existing Conditions

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2021

Project Title: Roadway Chip Seal Project

Project Location and Maintenance Department: Approx. MP 0.0 to MP 15.00 / Orange Cove

Estimated Total Project Cost (x1000): \$134.5

Estimated Total Project Cost (Excluding Regular Labor Costs x1000): \$116.9

Breakdown of Estimated Costs

Contract Services: (3 day project)

Emulsion Truck Spread Time - (\$135/hr. for 24 hours.)	\$ 3,240
Chip Spreader w/Operator - (\$5,000 per 8 hr. day)	\$15,000
	Subtotal: \$18,240

Materials:

Emulsion (150 Ton @ \$415/Ton)	\$62,250
Screenings (1,700 Ton @ \$15/Ton)	\$25,500
	Subtotal: \$87,750

Rental Equipment:

Roller - (\$1,300 per week x 2 units)	\$ 2,600
Sweeper – (\$1,135 per week)	\$ 1,135
	Subtotal: \$3,735

Fuel:

Stockpile – 1,932 gal (23 gal/day x 28 days x 3 trucks)	\$ 6,666
Roller – 90 gal (15 gal/day x 3 days x 2 units)	\$ 311
Sweeper – 30 gal (10 gal/day x 3 days)	\$ 104
Diesel = \$3.45/gallon	
	Subtotal: \$7,081

Regular Labor (Hours and Cost):

Stockpile – 3 CMW (28 days x 8 hr./day @ \$21.65/hr.)	\$14,550
Chip-Seal – 6 CMW (3 days x 8 hr./day @ \$21.65/hr.)	\$ 3,118
	Subtotal: \$17,668

Total: \$134,474

Friant Water Authority
Extraordinary Maintenance Projects
Summary Sheet
Proposed For FY 2021

Project Title: Motor and Gearbox Upgrade

Job Code: 6060

Project Location and Department: Scheduled motor and gearbox upgrades at Sand Creek and Dodge Ave Check Structures. (MP-46.04 & 61.03) unless noted otherwise. / Operations.

Project Description: This will be a replacement of both the motors and gearboxes that raise and lower the gates at these two sites. A total of eleven motors and gearboxes will be replaced. This is part of the standardization plan in the canal system.

Estimated Total Project Cost (x1000): \$ 127.9

Estimated Total Material Cost (Including Fuel Costs, x1000): \$ 118.3

General Justification: This effort is to bring this site to a higher level of operational reliability and to standardize motor and gearboxes along the canal system.

Operating Impact: Replacement of these motors and gearboxes will bring a higher level of operational reliability to the canal system by both having new components in service and having standardization in the event of a failure thereby reducing operational downtime.



View of Similar Conditions

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2021

Project Title: Motor and Gearbox Upgrade

Project Location and Department: Scheduled motor and gearbox upgrades at Sand Creek and Dodge Ave. Check Structures (MP-46.04 & 61.03) unless noted otherwise. / Operations.

Estimated Total Project Cost (x1000): \$127.9

Estimated Total Material Cost (Including Fuel Costs, x1000): \$118.3

Breakdown of Estimated Costs

Contract Service: n/a

Subtotal: n/a

Materials:

4 - 1 Hp Motor & Gearbox Waste Way Gate @ \$4,725 ea.	\$18,900
12 - 2 Hp Motor & Gearbox Check Gate @ \$7,875 ea.	\$ 94,500
17 - Motor Mount Adapters @ \$289 ea.	\$ 4,913
<i>(Motor Prices include starters, breaks, and cabinets.)</i>	

Subtotal: \$118,313

Rental Equipment: n/a

Subtotal: n/a

Fuel: n/a

Subtotal: n/a

Regular Labor (Hours and Cost):

1 - Electrician (25 days @ 8 hr @ \$30.77/hr)	\$ 6,154
1 - CMW (20 days x 8 hr./day @ \$21.65/hr.)	\$ 3,464

Subtotal: \$9,618

Total: \$ 127,931

Friant Water Authority
Extraordinary Maintenance Projects
Summary Sheet
Proposed For FY 2021

Project Title: Radial Gate Replacement

Job Code: 6060

Project Location and Department: Proposed replacement of the radial control gates on the Dodge Ave. Check Structure (MP 61.03) /Operations.

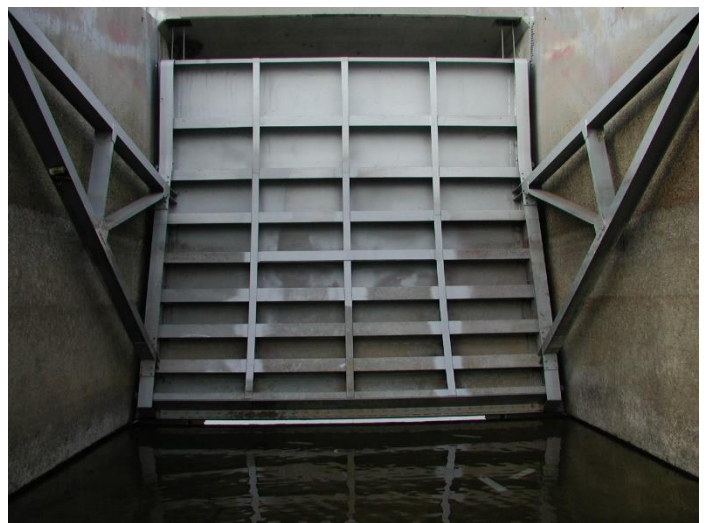
Project Description: This will be a replacement of radial gates, control arms, pins and seals. A total of four (3) 216" X 216" radial control gates will be replaced. This is part of the refurbishment 10 year plan of the canal system.

Estimated Total Project Cost (x1000): \$ 531.8

Estimated Total Material Cost (Including Fuel Costs, x1000): \$ 413.8

General Justification: This effort is to bring this site to a higher level of operational reliability by replacing worn and fatigued metal gates that are over 70 years old.

Operating Impact: Replacement of these radial gates will bring a higher level of operational reliability to the canal system by both having new components in service reducing the likelihood of a failure thereby reducing operational downtime.



View of Dodge Ave. Check Structure.

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2021

Project Title: Radial Gate Replacement

Project Location and Department: Proposed replacement of the radial control gates on the Dodge Ave. Check Structure (MP 61.03) / Operations.

Estimated Total Project Cost (x1000): \$531.8

Estimated Total Material Cost (Including Fuel Costs, x1000): \$337.8

Breakdown of Estimated Costs

Contract Service: N/A

Subtotal: N/A

Materials:

3 – 216” X 216” radial gate @ \$112,600 ea.

\$337,800

Subtotal: \$337,800

Rental Equipment: N/A

1- 400 Ton crane (20 days @ 8hr @ \$475 hr.)

\$ 76,000

Subtotal: \$76,000

Fuel: N/A

Subtotal: N/A

Regular Labor (Hours and Cost):

1 - Electrician (15 days @ 8 hr. @ \$30.77/hr.)

\$ 3,692

12 – CMW (55 days x 8 hr. /day @ \$21.65/hr.)

\$ 114,312

Subtotal: \$118,004

Total: \$ 531,804

Friant Water Authority
Extraordinary Maintenance Projects
Summary Sheet
Proposed For FY 2021
(Dewatering)

Project Title: Canal Desilting

Job Code: 6130

Project Location and Maintenance Department: MP 99.37 – MP 110.57/Lindsay

Project Description: Dewater the subsidence area of the canal, stockpile the accumulated silt, and remove silt from the canal prism.

Estimated Total Project Cost (x 1000): \$119.9

Estimated Total Material Cost (Including Fuel Costs x 1000): \$89.1

General Justification: Due to the hydraulics of the canal system, silt and debris build up on the inside of the curves and low areas of the canal prism. The area between MP 99.37 and 110.57 is a low area of the system. This area has not been cleaned for approximately 9 years prior to the FY-17 dewatering and accumulation of silt is expected in the subsidence area that needs to be removed for water quality purposes.

Operating Impact: By not removing the silt and debris from this area, it will reduce canal capacity and flow, thus reducing the effective delivery of water to the member districts in that area.



Photo of Similar Conditions

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2021
(Dewatering)

Project Title: Canal Desilting

Project Location and Maintenance Department: MP 99.37 – MP 110.57/Lindsay

Estimated Total Project Cost (x 1000): \$119.9

Estimated Total Material Cost (Including Fuel Costs x 1000): \$89.1

Breakdown of Estimated Costs

Contract Services: (Work Start 11/28)

Pump/Gen Set Delivery/Pickup	\$ 6,720
	Subtotal: \$6,720

Materials: n/a

Subtotal: n/a

Rental Equipment: (Prices for 2 Month Rentals)

Skid Steer Track Loader	\$ 7,200
10" Submersible Pump	\$ 8,334
225KW Gen Set	\$ 7,360
(3) 4" Submersible Pumps	\$ 5,670
(2) 25KW Gen Sets	\$ 5,000
	Subtotal: \$33,564

Fuel:

Excavator – 2,907 gal (57gal/day x 51 days)	\$11,628
Skid Steer – 1,428 gal (28 gal/day x 51 days)	\$ 5,712
225kW Gen Set – 3,264 gal (64 gal/day x 51 days)	\$13,056
25kW Gen Set – 4,590 (30 gal/day x 51 days x 3 units)	\$18,360
Diesel = \$4.00/gallon	
	Subtotal: \$48,756

Regular Labor (Hours and Cost):

2 CMW (43 days @ 8 hr/day @ \$21.36/hr.)	\$14,696
	Subtotal: \$14,696

Overtime Labor (Hours and Cost):

2 CMW (43 days @ 4 hr./day @ \$32.04/hr.)	\$11,022
2 CMW (8 Saturdays @ 10hr./day @ \$32.04/hr.)	\$ 5,127
	Subtotal: \$16,149

Total: \$119,885

Friant Water Authority
Extraordinary Maintenance Projects
Summary Sheet
Proposed For FY 2021
(Dewatering)

Project Title: Concrete Liner Replacement

Job Code: 6120

Project Location and Maintenance Department: MP 30.50, MP 64.40 &-MP 106.19/Lindsay

Project Description: Replace Failed/Cracked Concrete Liner Panels – 8 Sites, 40 Panels

Estimated Total Project Cost (x 1000): \$303.5

Estimated Total Material Cost (Including Fuel Costs x 1000): \$118.4

General Justification: Concrete panels in the Lindsay section are cracked/failing causing leaks and embankment failures.

Operating Impact: By not repairing the concrete panels, further failure/cracking will occur which will cause embankment instability, leaks and possible canal failure.



Photo of Existing Conditions

Friant Water Authority
Extraordinary Maintenance Projects
Cost Summary
Proposed For FY 2021
(Dewatering)

Project Title: Concrete Liner Replacement

Project Location and Maintenance Department: MP 30.50, MP 64.40 & MP 106.19/Lindsay

Estimated Total Project Cost (x 1000): \$303.5

Estimated Total Material Cost (Including Fuel Costs x 1000): \$118.4

Breakdown of Estimated Costs

Contract Services: (Work Start 11/28)

3 Employee (43 days x 8 hr/day @ \$13.96/hr.)	\$14,407
3 Employee (43 days x 4 hr/day OT @ \$20.94/hr.)	\$10,806
3 Employee (8 Saturdays x 10 hr/day OT @\$20.94/hr.)	\$ 5,026
Concrete Pump Truck	\$17,500
Subtotal:	\$47,739

Materials:

Concrete 300 yds x \$130/yd. (40 panels at 7.5 yds/panel)	\$39,000
Subtotal:	\$39,000

Equipment:

Long Reach Excavator (Price for 2 Month Rental)	\$18,960
Subtotal:	\$18,960

Fuel:

Excavator – 2,907 gal (57 gal/day x 51 days)	\$11,628
Roller Screed - 255 gal (5 gal/day x 51 days)	\$ 1,020
Diesel = \$4.00/gallon	
Subtotal:	\$12,648

Regular Labor (Hours and Cost):

12 CMW (43 days x 8 hr/day @ \$21.36/hr.)	\$88,175
Subtotal:	\$88,175

Overtime Labor (Hours and Cost):

12 CMW (43 days x 4 hr/day @ \$32.04/hr.)	\$66,131
12 CMW (8 Saturdays x 10 hr/day @ \$32.04/hr.)	\$30,759
Subtotal:	\$96,890

Total: \$303,412

VEHICLE
&
EQUIPMENT

Friant Water Authority
Vehicle/Equipment Replacement
Justification Form
Proposed For FY 2021

Date: 04-24-2019

FY-2021

Vehicle/Equipment: 1028

Job Code: 6299

Replacement: **Addition:**

Estimated Cost: \$25,000

Proposed Delivery Date: FY-2021

Department: Maintenance

Maintenance Yard: Orange Cove

Purpose of Vehicle/Equipment: This vehicle is used by the Maintenance Foreman to supervise Maintenance Department activities. Presently 23K plus miles are put on the vehicle annually traveling to various sites in the canal service area. This vehicle is available to respond to alarms and emergency call outs as required.

Reason(s) for Replacement: Oil Consumption-Potential engine failure.

Description of How Vehicle/Equipment Augmentation Facilitates O&M Activities: This vehicle is driven by the Maintenance Foreman to monitor Maintenance activities on the Friant-Kern Canal. The Maintenance Foreman is subject to being called out at any time and needs a reliable vehicle to cover their service area.



Friant Water Authority
Vehicle/Equipment Replacement Justification
Mechanics Report
Proposed For FY 2021

Date: 04-24-2019

Vehicle/Equipment I.D. 1028

License #: 1215939

Year: 2009

Age (yrs.): 10

Make: Chevy

Model: 1500

Department: Maintenance

Maintenance Yard: O.C.

Current Mileage/Hours: 179854

GENERAL CONDITIONS:	POOR	FAIR	GOOD	EXCELLENT
Body and Interior:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suspension:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive Train:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engine:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

History of Repairs: Normal wear parts.

Estimated Future Repair Cost: Engine, Suspension: \$5,000

Safety Concerns: This vehicle is subject to call out to respond to various alarms and public safety response.

Mechanic's Recommendations: Replace before major component failure.

Estimated Salvage Value: \$2,500

Prepared By: Josh Taylor