

Monterey County Water Resources Agency

Nacimiento Dam Multi-Year Maintenance Plan

SUBJECT TO REVISION

**Reservoir Operations Committee
May 5, 2016**

Chris Moss, P.E.
Sr. Water Resources Engineer

Monterey County Water Resources Agency

**Nacimiento Dam
Multi-Year Maintenance Plan
as of
May 5, 2016**

- Costs escalated at 2-percent per year (per U.S. Army Corps of Engineers Civil Works Construction Cost Index System, Amendment 7, 30 Sep 2015)
- Revenue escalated at 2-percent per year
- The scope of work for some items needs to be better defined and coordinated with/between FERC and DSOD
- Man-hours for station assigned employees not balanced in all years. This will need balancing as plan progresses.

Nacimiento Dam - Large Upcoming Maintenance Projects

Work Item	Project	Projected Fiscal Year	Estimated Cost 2016 Dollars
	Install Piezometers (for early warning of internal erosion by looking for sudden pressure change that may indicate piping/internal erosion)	TBD	\$ 266,000
TBD	Spillway Plunge Pool Erosion Repair - ENGINEERING	TBD	\$ 250,000
TBD	Spillway Plunge Pool Erosion Repair - CONSTRUCTION	TBD	\$ 3,157,000
31	Replace LLOW Valve #6 (1 of 6)	16-17	\$ 171,000
60	Naci Lake Dr Maint - AREA 5 - Bridge Maint/Repair	17-18	\$ 115,000
94	Replace LLOW 24" Outlet Valve (2 of 6 valves)	18-19	\$ 164,000
131	Replace LLOW 24" Outlet Valve (3 of 6 valves)	19-20	\$ 114,000
163	Replace LLOW 24" Outlet Valve (4 of 6 valves)	20-21	\$ 104,000
193	Naci Lake Dr Maint - AREA 1 - Northern Limit to Turn	21-22	\$ 106,000
194	Naci Lake Dr Maint - AREA 6 - Dam Crest	21-22	\$ 96,000
195	Replace LLOW 24" Outlet Valve (5 of 6 valves)	21-22	\$ 104,000
227	Replace LLOW 24" Outlet Valve (6 of 6 valves)	22-23	\$ 104,000
228	Naci Lake Dr Maint - AREA 8 - Southern Limit	22-23	\$ 101,000

SUBJECT TO REVISION

LLOW Low Level outlet works

Nacimiento Dam

ITEMS THAT REQUIRE FURTHER DEFINITION OF WORK SCOPE

Item	Description	Estimated Fiscal Year	Regulatory Reference	Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
	Geologic review of slope stability adjacent power house	18-19	FERC Part 12D p.1-7 Item 6	\$ 11,239	\$ 34,673	\$ -	\$ 34,673	\$ 45,912	\$ 48,722
	Install Piezometers (for early warning of internal erosion by looking for sudden pressure change that may indicate piping/internal erosion)	19-20	FERC Part 12D p.1-6 Item 4	\$ 46,256	\$ 220,000	\$ -	\$ 220,000	\$ 266,256	\$ 288,204
	Field Investigation to Characterize Foundation Material for Liquefaction Potential & Perform Numerical Stability and Deformation Analysis to Ascertain Seismic Stability	19-20	FERC Part 12D p.1-6 Item 5; DSSMR p.2.7.e	\$ 21,163	\$ 45,000	\$ -	\$ 45,000	\$ 66,163	\$ 71,617
	Strong Motion Sensors should be Installed at Crest and Toe of Dam (to determine site specific response spectra and damping factors)	19-20	FERC Part 12D p.1-6 bottom of pg	\$ 24,451	\$ 19,982	\$ -	\$ 19,982	\$ 44,433	\$ 48,095
	Spillway Plunge Pool Erosion Repair - ENGINEERING	19-20		\$ 49,582	\$ 200,000		\$ 200,000	\$ 249,582	\$ 270,156
	Spillway Plunge Pool Erosion Repair - CONSTRUCTION	20-21		\$ 156,927	\$ 3,000,000		\$ 3,000,000	\$ 3,156,927	\$ 3,485,502
TOTALS:				\$ 309,618	\$ 3,519,655		\$ 3,519,655	\$ 3,829,273	

FOR FURTHER CONSIDERATION

198 Debris Boom Repair	21-22		\$ 52,678		\$ 5,000	\$ 5,000	\$ 57,678
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= dam safety program compliance item

SUBJECT TO REVISION

Multi-Year Plan YEAR: 1

Item	Description	Fiscal Year	Regulatory Reference
1	Spillway - Exercise Inflatable Gates & Emergency Generator, clean, verify operation of all components	16-17	
2	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	16-17	
3	LLOW Valve exercise U/S, D/S, hydraulic system	16-17	
4	Vegetation Control, Rodent Control	16-17	
5	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	16-17	FERC & DSOD
6	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	16-17	
7	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	16-17	
8	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	16-17	
9	Annual General report to FERC	16-17	ODSP 6.2
10	Manage DSSMR Consultant, Review & Submit DSSMR	16-17	
11	Prepare and submit 2014-2015 DSSMR	16-17	DSSMR
12	Prepare updated DSSMP	16-17	DSSMP
13	EAP Annual Status Report	16-17	FERC
14	EAP Annual Update (incl. High Flow Ops Plan)	16-17	FERC
15	EAP Annual Orientation - MCWRA Staff	16-17	EAP
16	EAP Annual Orientation - External Entities	16-17	EAP
17	EAP Annual Notification Chart "Call-Down" Test	16-17	FERC
18	Security Plan Annual Review & Letter to FERC	16-17	FERC
19	CDSE Perform Annual Dam Safety internal Assessment	16-17	ODSP 10.1
20	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	16-17	ODSP
21	Reservoir Operations Committee: Annual Dam Safety Presentation	16-17	ODSP 6.1.6
22	Board of Directors: Annual Dam Safety Presentation	16-17	ODSP
23	Review Signage and Lighting Plan - Update as-needed	16-17	Security Plan, Item 9
24	Review Security Plan - Update as-needed	16-17	FERC
25	Obermeyer gate operations MCWRA staff training	16-17	ODSP
26	Dam Inspections: FERC, DSOD, MCWRA & earthquake	16-17	ODSP
27	RFP & Hire Consultant for Annual DSSMR Preparation for next 5 years	16-17	
28	Update O&M Manual for Obermeyer Gate Operations & Submit to DSOD	16-17	DSOD & DSSMR p.2 & Part 12D p.1-6 & 1-7
29	Remote Operated Vehicle (ROV) Inspection of Low Level Outlet System every 3 to 5 yrs (Last Inspection: 2012)	16-17	Part 12D p.1-6 Item 3
30	EAP Functional Exercise	16-17	FERC
31	Replace LLOW Valve #6 (1 of 6)	16-17	DSSMR p.2.a
32	Warning System for Bradley	16-17	
33	Contingency	16-17	

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Years' Cost
Escalated from 2016 Doll
0

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,260
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,214
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 3,945
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 21,683
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 15,832
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 6,288
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 4,931
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 8,548
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,116
\$ 7,936	\$ -	\$ -	\$ -	\$ 7,936	\$ 7,936
\$ 6,349	\$ -	\$ -	\$ -	\$ 6,349	\$ 6,349
\$ 5,291	\$ -	\$ -	\$ -	\$ 5,291	\$ 5,291
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 4,561
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,233
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 10,494
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 7,672
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,503
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,058
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 6,678
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 3,567
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 1,852
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 397
\$ 10,972	\$ 7,500	\$ -	\$ 7,500	\$ 18,472	\$ 18,472
\$ 5,620	\$ -	\$ -	\$ -	\$ 5,620	\$ 5,620
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 7,520
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 11,774
\$ 5,820	\$ 25,000	\$ -	\$ 25,000	\$ 30,820	\$ 30,820
\$ 12,562	\$ -	\$ -	\$ -	\$ 12,562	\$ 12,562
\$ 11,496	\$ 30,000	\$ -	\$ 30,000	\$ 41,496	\$ 41,496
\$ 15,857	\$ -	\$ -	\$ -	\$ 15,857	\$ 15,857
\$ 40,889	\$ 20,000	\$ 110,000	\$ 130,000	\$ 170,889	\$ 170,889
\$ 33,671	\$ 20,000	\$ 20,000	\$ 40,000	\$ 73,671	\$ 73,671
\$ 68,546	\$ -	\$ -	\$ -	\$ 68,546	\$ 68,546
\$ 344,135	\$ 107,000	\$ 143,500	\$ 250,500	\$ 594,635	\$ 594,635
Target Budget for Items Shown:					\$ 594,692
Budget - Estimated Total Cost:					\$ 57

Multi-Year Plan YEAR: 2

Item	Description	Fiscal Year	Regulator Reference
34	Spillway - Exercise Inflatable Gates & Emergency Generator, clean, verify operation of all components	17-18	
35	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	17-18	
36	LLOW Valve exercise U/S, D/S, hydraulic system	17-18	
37	Vegetation Control, Rodent Control	17-18	
38	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	17-18	FERC & DSOD
39	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	17-18	
40	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	17-18	
41	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	17-18	
42	Annual General report to FERC	17-18	ODSP 6.2
43	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review & Submit DSSMR to FERC	17-18	
44	Review DSSMP - update as-needed	17-18	DSSMP
45	EAP Annual Status Report	17-18	FERC
46	EAP Annual Update (incl. High Flow Ops Plan)	17-18	FERC
47	EAP Annual Orientation - MCWRA Staff	17-18	EAP
48	EAP Annual Orientation - External Entities	17-18	EAP
49	EAP Annual Notification Chart "Call-Down" Test	17-18	FERC
50	Security Plan Annual Review & Letter to FERC	17-18	FERC
51	CDSE Perform Annual Dam Safety internal Assessment	17-18	ODSP 10.1
52	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	17-18	ODSP
53	Reservoir Operations Committee: Annual Dam Safety Presentation	17-18	ODSP 6.1.6
54	Board of Directors: Annual Dam Safety Presentation	17-18	ODSP
55	Review Signage and Lighting Plan - Update as-needed	17-18	Security Plan, Item 9
56	Review Security Plan - Update as-needed	17-18	FERC
57	Obermeyer gate operations MCWRA staff training	17-18	ODSP
58	Dam Inspections: FERC, DSOD, MCWRA & earthquake	17-18	ODSP
59	Repair existing spillway camera system	17-18	
60	Naci Lake Dr Maint - AREA 5 - Bridge Maint/Repair	17-18	
61	Install anchor/base plates at LLOW Valve Nos. 1, 2 & 6	17-18	DSSMR p.2.b
62	Improve Main Gate at top of Dam	17-18	Security Plan, Item 17
63	Install Additional Survey Monuments on D/S Bench Roads	17-18	Part 12D p.1-4, 6, 1-7 Item 7
64	Develop Plan and Schedule to address spillway plunge pool erosion	17-18	DSSMR p.2.e
65	Dietel fence / land resolution	17-18	
66	Purchase Hydraulic Actuator for 42" Intake Valve (1 of 3)	17-18	
67	Contingency	17-18	

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Years' Cost
Escalated from 2016 Doll

1

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,365
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,318
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,024
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 22,116
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 16,149
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 6,413
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,030
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 8,719
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,159
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 33,595
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,159
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 4,653
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,317
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 10,704
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 7,825
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,573
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,079
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 6,811
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 3,639
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 1,889
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 405
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 6,532
\$ 5,620	\$ -	\$ -	\$ -	\$ 5,620	\$ 5,732
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 7,671
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 12,009
\$ 9,909	\$ 5,265	\$ -	\$ 5,265	\$ 15,174	\$ 15,477
\$ 38,320	\$ 77,000	\$ -	\$ 77,000	\$ 115,320	\$ 117,626
\$ 39,260	\$ 35,661	\$ -	\$ 35,661	\$ 74,921	\$ 76,420
\$ 12,452	\$ 3,000	\$ -	\$ 3,000	\$ 15,452	\$ 15,761
\$ 21,729	\$ 1,200	\$ -	\$ 1,200	\$ 22,929	\$ 23,387
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,079
\$ 38,243	\$ 24,000	\$ -	\$ 24,000	\$ 62,243	\$ 63,488
\$ 16,931	\$ 40,000	\$ -	\$ 40,000	\$ 56,931	\$ 58,069
\$ 46,437	\$ -	\$ -	\$ -	\$ 46,437	\$ 47,366
\$ 364,541	\$ 178,926	\$ 51,200	\$ 230,126	\$ 594,667	\$ 606,560
				Target Budget for Items Shown:	\$ 606,586
				Budget - Estimated Total Cost:	\$ 25

NO REVISION

Multi-Year Plan YEAR: 3

Item	Description	Fiscal Year	Regulatory Referen
	Spillway - Exercise Inflatable Gates & Emergency Generator, clean, 68 verify operation of all components	18-19	
69	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	18-19	
70	LLOW Valve exercise U/S, D/S, hydraulic system	18-19	
71	Vegetation Control, Rodent Control	18-19	
72	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	18-19	FERC & DSOD
73	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	18-19	
74	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	18-19	
75	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	18-19	
76	Annual General report to FERC	18-19	ODSP 6.2
77	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review & Submit DSSMR to FERC	18-19	
78	Review DSSMP - update as-needed	18-19	DSSMP
79	EAP Annual Status Report	18-19	FERC
80	EAP Annual Update (incl. High Flow Ops Plan)	18-19	FERC
81	EAP Annual Orientation - MCWRA Staff	18-19	EAP
82	EAP Annual Orientation - External Entities	18-19	EAP
83	EAP Annual Notification Chart "Call-Down" Test	18-19	FERC
84	Security Plan Annual Review & Letter to FERC	18-19	FERC
85	CDSE Perform Annual Dam Safety internal Assessment	18-19	ODSP 10.1
86	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	18-19	ODSP
87	Reservoir Operations Committee: Annual Dam Safety Presentation	18-19	ODSP 6.1.6
88	Board of Directors: Annual Dam Safety Presentation	18-19	ODSP Security Plan,
89	Review Signage and Lighting Plan - Update as-needed	18-19	Item 9
90	Review Security Plan - Update as-needed	18-19	FERC
91	Obermeyer gate operations MCWRA staff training	18-19	ODSP
92	Dam Inspections: FERC, DSOD, MCWRA & earthquake	18-19	ODSP
93	Install Hydraulic Actuator for 42" Intake Valve (1 of 3)	18-19	
94	Replace LLOW 24" Outlet Valve (2 of 6 valves)	18-19	
95	Naci Lake Dr Maint - AREA 2 - North Sharp Turn	18-19	
96	Address "coordination" action items from Security Plan	18-19	Table 9.1b
97	FERC Part 12D Inspection & Report	18-19	FERC
98	Develop Plan & Schedule for Items Identified in Part 12D Rpt & Send to FERC	18-19	Part 12D
99	Outside Audit of MCWRA Dam Safety Program	18-19	ODSP 10.2
100	Contingency	18-19	

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Years' Cost
Escalated from 2016 Doll
2

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,473
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,425
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,105
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 22,559
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 16,472
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 6,542
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,131
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 8,893
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,202
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 34,267
\$ 5,291	\$ -	\$ -	\$ -	\$ 5,291	\$ 5,505
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 4,746
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,404
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 10,918
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 7,982
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,645
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,101
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 6,947
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 3,712
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 1,927
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 413
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 6,663
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,544
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 7,824
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 12,249
\$ 12,554	\$ 30,000	\$ -	\$ 30,000	\$ 42,554	\$ 44,273
\$ 24,451	\$ 30,000	\$ 110,000	\$ 140,000	\$ 164,451	\$ 171,095
\$ 21,805	\$ 44,000	\$ -	\$ 44,000	\$ 65,805	\$ 68,464
\$ 24,369	\$ -	\$ -	\$ -	\$ 24,369	\$ 25,353
\$ 15,200	\$ -	\$ -	\$ 42,000	\$ 57,200	\$ 59,510
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,202
\$ 8,065	\$ 10,000	\$ -	\$ 10,000	\$ 18,065	\$ 18,794
\$ 35,917	\$ -	\$ -	\$ -	\$ 35,917	\$ -
\$ 284,679	\$ 151,000	\$ 117,000	\$ 310,000	\$ 594,679	\$ 618,704
Target Budget for Items Shown:					\$ 618,718
Budget - Estimated Total Cost:					\$ 14

TO REVISION

Multi-Year Plan YEAR: 4

Item	Description	Fiscal Year	Regulatory Reference
	Spillway - Exercise Inflatable Gates & Emergency Generator, clean,		
101	verify operation of all components	19-20	
102	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	19-20	
103	LLOW Valve exercise U/S, D/S, hydraulic system	19-20	
104	Vegetation Control, Rodent Control	19-20	
105	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	19-20	FERC & DSOD
106	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	19-20	
	General Maintenance of Signs, Guardrails, Fences, Gutters,		
107	Maint/Access Roads, etc.	19-20	
	Asst. Maint. Supt. - Supervision of Maintenance - Coordination,		
108	Timekeeping, Reporting	19-20	
109	Annual General report to FERC	19-20	ODSP 6.2
	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review &		
110	Submit DSSMR to FERC	19-20	
111	Review DSSMP - update as-needed	19-20	DSSMP
112	EAP Annual Status Report	19-20	FERC
113	EAP Annual Update (incl. High Flow Ops Plan)	19-20	FERC
114	EAP Annual Orientation - MCWRA Staff	19-20	EAP
115	EAP Annual Orientation - External Entities	19-20	EAP
116	EAP Annual Notification Chart "Call-Down" Test	19-20	FERC
117	Security Plan Annual Review & Letter to FERC	19-20	FERC
118	CDSE Perform Annual Dam Safety internal Assessment	19-20	ODSP 10.1
	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE,		
119	DCDSE)	19-20	ODSP
120	Reservoir Operations Committee: Annual Dam Safety Presentation	19-20	ODSP 6.1.6
121	Board of Directors: Annual Dam Safety Presentation	19-20	ODSP
			Security Plan,
122	Review Signage and Lighting Plan - Update as-needed	19-20	Item 9
123	Review Security Plan - Update as-needed	19-20	FERC
124	Obermeyer gate operations MCWRA staff training	19-20	ODSP
125	Dam Inspections: FERC, DSOD, MCWRA & earthquake	19-20	ODSP
126	Naci Lake Dr Maint - AREA 7 - South Resort Intersection	19-20	
127	Naci Lake Dr Maint - AREA 4 - Main Gate Area	19-20	
128	Purchase & Install Hydraulic Actuator for 42" Intake Valve (2 of 3)	19-20	
129	Replace Intake Valve Hydraulic Operator System in Rucker House	19-20	
130	Address prevention of LLOW concrete floor erosion	19-20	DSSMR p.2.c
131	Replace LLOW 24" Outlet Valve (3 of 6 valves)	19-20	
	Inflatable spillway crest gate maintenance (paint, restraining straps,		
132	acid wash wall plates, control equip & software maint)	19-20	
133	Contingency	19-20	

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Years' Cost
Escalated from 2016 Doll
3

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,582
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,533
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,187
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 23,010
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 16,801
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 6,672
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,233
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 9,071
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,246
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 34,952
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,246
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 4,841
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,492
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 11,137
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 8,141
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,718
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,123
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 7,086
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 3,786
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 1,965
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 421
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 6,796
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,595
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 7,981
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 12,494
\$ 21,805	\$ 24,000	\$ -	\$ 24,000	\$ 45,805	\$ 48,609
\$ 21,805	\$ 24,000	\$ -	\$ 24,000	\$ 45,805	\$ 48,609
\$ 18,903	\$ 30,000	\$ 40,000	\$ 70,000	\$ 88,903	\$ 94,345
\$ 8,578	\$ 20,000	\$ -	\$ 20,000	\$ 28,578	\$ 30,328
\$ 15,693	\$ 39,448	\$ -	\$ 39,448	\$ 55,141	\$ 58,516
\$ 19,160	\$ 30,000	\$ 65,000	\$ 95,000	\$ 114,160	\$ 121,148
\$ 17,157	\$ 5,000	\$ -	\$ 5,000	\$ 22,157	\$ 23,513
\$ 13,068	\$ -	\$ -	\$ -	\$ 13,068	\$ 13,868
\$ 273,198	\$ 204,448	\$ 117,000	\$ 321,448	\$ 594,646	\$ 631,043
Target Budget for Items Shown:					631,092
Budget - Estimated Total Cost:					49

TO REVISION

Item	Description	Fiscal Year	Regula Refer
134	Spillway - Exercise Inflatable Gates & Emergency Generator, clean, verify operation of all components	20-21	
135	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	20-21	
136	LLOW Valve exercise U/S, D/S, hydraulic system	20-21	
137	Vegetation Control, Rodent Control	20-21	
138	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	20-21	FERC & DS
139	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	20-21	
140	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	20-21	
141	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	20-21	
142	Annual General report to FERC	20-21	ODSP 6.2
143	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review & Submit DSSMR to FERC	20-21	
144	Review DSSMP - update as-needed	20-21	DSSMP
145	EAP Annual Status Report	20-21	FERC
146	EAP Annual Update (incl. High Flow Ops Plan)	20-21	FERC
147	EAP Annual Orientation - MCWRA Staff	20-21	EAP
148	EAP Annual Orientation - External Entities	20-21	EAP
149	EAP Annual Notification Chart "Call-Down" Test	20-21	FERC
150	Security Plan Annual Review & Letter to FERC	20-21	FERC
151	CDSE Perform Annual Dam Safety internal Assessment	20-21	ODSP 10.1
152	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	20-21	ODSP
153	Reservoir Operations Committee: Annual Dam Safety Presentation	20-21	ODSP 6.1.6
154	Board of Directors: Annual Dam Safety Presentation	20-21	ODSP
155	Review Signage and Lighting Plan - Update as-needed	20-21	Security Plan Item 9
156	Review Security Plan - Update as-needed	20-21	FERC
157	Obermeyer gate operations MCWRA staff training	20-21	ODSP
158	Dam Inspections: FERC, DSOD, MCWRA & earthquake	20-21	ODSP
159	Naci Lake Dr Maint - AREA 3 - North: South of Turn	20-21	
160	Staff Guage Improvement	20-21	
161	Purchase & Install Hydraulic Actuator for 42" Intake Valve (3 of 3)	20-21	
162	Remote Operated Vehicle (ROV) Inspection of Low Level Outlet System every 3 to 5 yrs (with Intake actuator work)	20-21	Part 12D p.1- Item 3
163	Replace LLOW 24" Outlet Valve (4 of 6 valves)	20-21	
164	RFP & Hire Consultant for Annual DSSMR Preparation for next 5 years	20-21	
165	Torque inflatable crest gate anchor bolts (each year after impounding water, or every 5 years when not impounding water)	20-21	DSOD
166	Consider lighting D/S dam face, make recommendation to O&M Div. Chief	20-21	
167	Contingency	20-21	

ento Dam

Years' Cost
Escalated from 2016 Doll

4

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,694
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,644
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,270
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 23,470
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 17,137
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 6,806
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,338
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 9,252
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,291
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 35,651
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,291
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 4,937
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,582
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 11,359
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 8,304
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,792
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,145
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 7,228
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 3,862
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 2,004
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 430
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 6,932
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,647
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 8,140
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 12,744
\$ 21,805	\$ 44,000	\$ -	\$ 44,000	\$ 65,805	\$ 71,230
\$ 20,406	\$ 7,500	\$ -	\$ 7,500	\$ 27,906	\$ 30,206
\$ 18,903	\$ 30,000	\$ 40,000	\$ 70,000	\$ 88,903	\$ 96,232
\$ 1,716	\$ 10,000	\$ -	\$ 10,000	\$ 11,716	\$ 12,681
\$ 19,160	\$ 20,000	\$ 65,000	\$ 85,000	\$ 104,160	\$ 112,746
\$ 5,820	\$ -	\$ -	\$ -	\$ 5,820	\$ 6,300
\$ 11,979	\$ -	\$ 500	\$ 500	\$ 12,479	\$ 13,508
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,291
\$ 94,744	\$ -	\$ -	\$ -	\$ 94,744	\$ 102,554
\$ 333,677	\$ 141,000	\$ 120,000	\$ 261,000	\$ 594,677	\$ 643,698
				Target Budget for Items Shown:	\$ 643,714
				Budget - Estimated Total Cost:	\$ 16

TO REVISION

Multi-Year Plan YEAR: 6

Item	Description	Fiscal Year	Regulat Referen
168	Spillway - Exercise Inflatable Gates & Emergency Generator, clean, verify operation of all components	21-22	
169	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	21-22	
170	LLOW Valve exercise U/S, D/S, hydraulic system	21-22	
171	Vegetation Control, Rodent Control	21-22	
172	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	21-22	FERC & DSC
173	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	21-22	
174	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	21-22	
175	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	21-22	
176	Annual General report to FERC	21-22	ODSP 6.2
177	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review & Submit DSSMR to FERC	21-22	
178	Review DSSMP - update as-needed	21-22	DSSMP
179	EAP Annual Status Report	21-22	FERC
180	EAP Annual Update (incl. High Flow Ops Plan)	21-22	FERC
181	EAP Annual Orientation - MCWRA Staff	21-22	EAP
182	EAP Annual Orientation - External Entities	21-22	EAP
183	EAP Annual Notification Chart "Call-Down" Test	21-22	FERC
184	Security Plan Annual Review & Letter to FERC	21-22	FERC
185	CDSE Perform Annual Dam Safety internal Assessment	21-22	ODSP 10.1
186	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	21-22	ODSP
187	Reservoir Operations Committee: Annual Dam Safety Presentation	21-22	ODSP 6.1.6
188	Board of Directors: Annual Dam Safety Presentation	21-22	ODSP Security Plan
189	Review Signage and Lighting Plan - Update as-needed	21-22	Item 9
190	Review Security Plan - Update as-needed	21-22	FERC
191	Obermeyer gate operations MCWRA staff training	21-22	ODSP
192	Dam Inspections: FERC, DSOD, MCWRA & earthquake	21-22	ODSP
193	Naci Lake Dr Maint - AREA 1 - Northern Limit to Turn	21-22	
194	Naci Lake Dr Maint - AREA 6 - Dam Crest	21-22	
195	Replace LLOW 24" Outlet Valve (5 of 6 valves)	21-22	
196	EAP Functional Exercise	21-22	FERC Security Plan,
197	Improve surveillance system at Naci Dam	21-22	Item 19
198	Debris Boom Repair	21-22	
199	Domestic water well for residence	21-22	
200	Rucker House structure roof repair	21-22	
201	Contingency	21-22	

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Years' Cost
Escalated from 2016 Doll
5

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,808
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,757
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,356
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 23,940
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 17,480
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 6,942
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,445
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 9,437
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,337
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 36,364
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,337
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 5,036
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,673
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 11,587
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 8,470
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,868
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,168
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 7,373
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 3,939
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 2,045
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 438
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 7,070
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,700
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 8,303
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 12,999
\$ 21,805	\$ 84,000	\$ -	\$ 84,000	\$ 105,805	\$ 116,818
\$ 21,805	\$ 74,000	\$ -	\$ 74,000	\$ 95,805	\$ 105,777
\$ 19,160	\$ 20,000	\$ 65,000	\$ 85,000	\$ 104,160	\$ 115,001
\$ 15,857	\$ -	\$ -	\$ -	\$ 15,857	\$ 17,507
\$ 4,890	\$ 5,311	\$ -	\$ 5,311	\$ 10,201	\$ 11,263
\$ 52,678	\$ 5,000	\$ -	\$ 5,000	\$ 57,678	
\$ 43,554	\$ 20,000	\$ -	\$ 20,000	\$ 63,554	
\$ 13,037	\$ 2,500	\$ -	\$ 2,500	\$ 15,537	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 329,815	\$ 240,311	\$ 79,500	\$ 319,811	\$ 649,626	\$ 566,235
			Target Budget for Items Shown:	\$	\$ 656,588
			Budget - Estimated Total Cost:	\$	\$ 90,353

Multi-Year Plan YEAR: 7

Item	Description	Fiscal Year	Regulat Referen
	Spillway - Exercise Inflatable Gates & Emergency Generator, clean,		
202	verify operation of all components	22-23	
203	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	22-23	
204	LLOW Valve exercise U/S, D/S, hydraulic system	22-23	
205	Vegetation Control, Rodent Control	22-23	
206	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	22-23	FERC & DSC
207	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	22-23	
208	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	22-23	
209	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	22-23	
210	Annual General report to FERC	22-23	ODSP 6.2
	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review &		
211	Submit DSSMR to FERC	22-23	
212	Review DSSMP - update as-needed	22-23	DSSMP
213	EAP Annual Status Report	22-23	FERC
214	EAP Annual Update (incl. High Flow Ops Plan)	22-23	FERC
215	EAP Annual Orientation - MCWRA Staff	22-23	EAP
216	EAP Annual Orientation - External Entities	22-23	EAP
217	EAP Annual Notification Chart "Call-Down" Test	22-23	FERC
218	Security Plan Annual Review & Letter to FERC	22-23	FERC
219	CDSE Perform Annual Dam Safety internal Assessment	22-23	ODSP 10.1
220	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	22-23	ODSP
221	Reservoir Operations Committee: Annual Dam Safety Presentation	22-23	ODSP 6.1.6
222	Board of Directors: Annual Dam Safety Presentation	22-23	ODSP
223	Review Signage and Lighting Plan - Update as-needed	22-23	Security Plan Item 9
224	Review Security Plan - Update as-needed	22-23	FERC
225	Obermeyer gate operations MCWRA staff training	22-23	ODSP
226	Dam Inspections: FERC, DSOD, MCWRA & earthquake	22-23	ODSP
227	Replace LLOW 24" Outlet Valve (6 of 6 valves)	22-23	
228	Naci Lake Dr Maint - AREA 8 - Southern Limit	22-23	
229	Strong Motion Sensors should be Installed at Crest and Toe of Dam (to determine site specific response spectra and damping factors)	22-23	Part 12D p.1- bottom of pg
230	Contingency	22-23	

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Years' Cost
Escalated from 2016 Doll
6

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 5,924
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,872
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,443
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 24,418
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 17,829
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 7,081
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,554
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 9,626
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,383
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 37,092
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,383
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 5,137
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,767
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 11,818
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 8,640
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 3,945
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,192
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 7,520
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 4,018
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 2,085
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 447
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 7,212
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,754
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 8,469
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 13,259
\$ 19,160	\$ 20,000	\$ 65,000	\$ 85,000	\$ 104,160	\$ 117,301
\$ 21,805	\$ 79,000	\$ -	\$ 79,000	\$ 100,805	\$ 113,523
\$ 24,451	\$ 19,982	\$ -	\$ 19,982	\$ 44,433	\$ 50,039
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 202,444	\$ 155,982	\$ 72,000	\$ 227,982	\$ 430,426	\$ 484,729
Target Budget for Items Shown:					\$ 669,720
Budget - Estimated Total Cost:					\$ 184,990

NO REVISION

Multi-Year Plan YEAR: 8

Item	Description	Fiscal Year	Regulatory Referen
	Spillway - Exercise Inflatable Gates & Emergency Generator, clean,		
231	verify operation of all components	23-24	
232	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	23-24	
233	LLOW Valve exercise U/S, D/S, hydraulic system	23-24	
234	Vegetation Control, Rodent Control	23-24	
235	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	23-24	FERC & DSO
236	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	23-24	
	General Maintenance of Signs, Guardrails, Fences, Gutters,		
237	Maint/Access Roads, etc.	23-24	
	Asst. Maint. Supt. - Supervision of Maintenance - Coordination,		
238	Timekeeping, Reporting	23-24	
239	Annual General report to FERC	23-24	ODSP 6.2
	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review &		
240	Submit DSSMR to FERC	23-24	
241	Review DSSMP - update as-needed	23-24	DSSMP
242	EAP Annual Status Report	23-24	FERC
243	EAP Annual Update (incl. High Flow Ops Plan)	23-24	FERC
244	EAP Annual Orientation - MCWRA Staff	23-24	EAP
245	EAP Annual Orientation - External Entities	23-24	EAP
246	EAP Annual Notification Chart "Call-Down" Test	23-24	FERC
247	Security Plan Annual Review & Letter to FERC	23-24	FERC
248	CDSE Perform Annual Dam Safety internal Assessment	23-24	ODSP 10.1
	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE,		
249	DCDSE)	23-24	ODSP
250	Reservoir Operations Committee: Annual Dam Safety Presentation	23-24	ODSP 6.1.6
251	Board of Directors: Annual Dam Safety Presentation	23-24	ODSP
			Security Plan,
252	Review Signage and Lighting Plan - Update as-needed	23-24	Item 9
253	Review Security Plan - Update as-needed	23-24	FERC
254	Obermeyer gate operations MCWRA staff training	23-24	ODSP
255	Dam Inspections: FERC, DSOD, MCWRA & earthquake	23-24	ODSP
	Fence roadway from top of dam to dam keepers house (1800 LF 6-ft		Security Plan,
256	tall chain link fence, 2 gates)	23-24	Item 18
257	FERC Part 12D Inspection & Report	23-24	FERC
	Develop Plan & Schedule for Items Identified in Part 12D Rpt & Send		
258	to FERC	23-24	Part 12D
259	Outside Audit of MCWRA Dam Safety Program	23-24	ODSP 10.2
260	Domestic water well for residence		
261	Rucker House structure roof repair		
262	Contingency	23-24	

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Years' Cost
Escalated from 2016 Doll

7

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 6,042
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 5,989
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,532
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 24,907
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 18,186
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 7,222
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,665
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 9,819
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,431
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 37,833
\$ 5,291	\$ -	\$ -	\$ -	\$ 5,291	\$ 6,077
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 5,240
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,862
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 12,055
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 8,812
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 4,024
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,215
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 7,671
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 4,098
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 2,127
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 456
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 7,356
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,809
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 8,638
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 13,524
\$ 37,109	\$ -	\$ 34,478	\$ 34,478	\$ 71,587	\$ 82,231
\$ 15,200	\$ -	\$ -	\$ 42,000	\$ 57,200	\$ 65,704
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,431
\$ 8,065	\$ 15,000	\$ -	\$ 15,000	\$ 23,065	\$ 26,494
\$ 43,554	\$ 20,000	\$ -	\$ 20,000	\$ 63,554	\$ 73,004
\$ 13,037	\$ 2,500	\$ -	\$ 2,500	\$ 15,537	\$ 17,847
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 259,283	\$ 72,000	\$ 43,978	\$ 157,978	\$ 417,261	\$ 479,301
				Target Budget for Items Shown:	\$ 683,114
				Budget - Estimated Total Cost:	\$ 203,813

Multi-Year Plan YEAR: 9

Item	Description	Fiscal Year	Regulatory Referen
	Spillway - Exercise Inflatable Gates & Emergency Generator, clean,		
263	verify operation of all components	24-25	
264	HLOW - Exercise Gates, Emergency Generator, clean, grease, etc.	24-25	
265	LLOW Valve exercise U/S, D/S, hydraulic system	24-25	
266	Vegetation Control, Rodent Control	24-25	
267	Annual Settlement Survey (Survey Bench Rds every 5 yrs)	24-25	FERC & DSO
268	Public Works Dept Naci Lake Dr. Maint (and guard rail, trees, etc)	24-25	
269	General Maintenance of Signs, Guardrails, Fences, Gutters, Maint/Access Roads, etc.	24-25	
270	Asst. Maint. Supt. - Supervision of Maintenance - Coordination, Timekeeping, Reporting	24-25	
271	Annual General report to FERC	24-25	ODSP 6.2
272	DSSMR Consultant Cost, Staff Manage DSSMR Contract, Review & Submit DSSMR to FERC	24-25	
273	Review DSSMP - update as-needed	24-25	DSSMP
274	EAP Annual Status Report	24-25	FERC
275	EAP Annual Update (incl. High Flow Ops Plan)	24-25	FERC
276	EAP Annual Orientation - MCWRA Staff	24-25	EAP
277	EAP Annual Orientation - External Entities	24-25	EAP
278	EAP Annual Notification Chart "Call-Down" Test	24-25	FERC
279	Security Plan Annual Review & Letter to FERC	24-25	FERC
280	CDSE Perform Annual Dam Safety internal Assessment	24-25	ODSP 10.1
281	WRA Exec. Staff Dam Safety Meeting (GM, AGM, Maint Supt, CDSE, DCDSE)	24-25	ODSP
282	Reservoir Operations Committee: Annual Dam Safety Presentation	24-25	ODSP 6.1.6
283	Board of Directors: Annual Dam Safety Presentation	24-25	ODSP
284	Review Signage and Lighting Plan - Update as-needed	24-25	Security Plan Item 9
285	Review Security Plan - Update as-needed	24-25	FERC
286	Obermeyer gate operations MCWRA staff training	24-25	ODSP
287	Dam Inspections: FERC, DSOD, MCWRA & earthquake	24-25	ODSP
288	Remote Operated Vehicle (ROV) Inspection of Low Level Outlet System every 3 to 5 yrs	24-25	Part 12D p.1 Item 3
289	Inflatable spillway crest gate maintenance (paint, restraining straps, acid wash wall plates, control equip & software maint)	24-25	
290	Contingency	24-25	

imiento Dam

Years' Cost
Escalated from 2016 Doll
8

Estimated Staff Cost	Estimated Consultant Contractor Cost	Estimated Service & Supplies Cost	Estimated Consultant Contractor Supplies Cost	2016 DOLLARS Estimated Total Project Cost	ESCALATION FROM 16-17 Estimated Total Project Cost
\$ 5,260	\$ -	\$ -	\$ -	\$ 5,260	\$ 6,163
\$ 5,214	\$ -	\$ -	\$ -	\$ 5,214	\$ 6,109
\$ 3,945	\$ -	\$ -	\$ -	\$ 3,945	\$ 4,622
\$ 18,683	\$ -	\$ 3,000	\$ 3,000	\$ 21,683	\$ 25,405
\$ 3,832	\$ 12,000	\$ -	\$ 12,000	\$ 15,832	\$ 18,550
\$ 3,288	\$ -	\$ 3,000	\$ 3,000	\$ 6,288	\$ 7,367
\$ 4,931	\$ -	\$ -	\$ -	\$ 4,931	\$ 5,778
\$ 8,548	\$ -	\$ -	\$ -	\$ 8,548	\$ 10,015
\$ 2,116	\$ -	\$ -	\$ -	\$ 2,116	\$ 2,480
\$ 7,936	\$ 25,000	\$ -	\$ 25,000	\$ 32,936	\$ 38,590
\$ 5,291	\$ -	\$ -	\$ -	\$ 5,291	\$ 6,199
\$ 4,561	\$ -	\$ -	\$ -	\$ 4,561	\$ 5,344
\$ 4,233	\$ -	\$ -	\$ -	\$ 4,233	\$ 4,959
\$ 10,494	\$ -	\$ -	\$ -	\$ 10,494	\$ 12,296
\$ 7,672	\$ -	\$ -	\$ -	\$ 7,672	\$ 8,989
\$ 3,503	\$ -	\$ -	\$ -	\$ 3,503	\$ 4,105
\$ 1,058	\$ -	\$ -	\$ -	\$ 1,058	\$ 1,240
\$ 6,678	\$ -	\$ -	\$ -	\$ 6,678	\$ 7,824
\$ 3,567	\$ -	\$ -	\$ -	\$ 3,567	\$ 4,180
\$ 1,852	\$ -	\$ -	\$ -	\$ 1,852	\$ 2,170
\$ 397	\$ -	\$ -	\$ -	\$ 397	\$ 465
\$ 5,404	\$ 1,000	\$ -	\$ 1,000	\$ 6,404	\$ 7,503
\$ 2,445	\$ -	\$ -	\$ -	\$ 2,445	\$ 2,865
\$ 7,520	\$ -	\$ -	\$ -	\$ 7,520	\$ 8,811
\$ 11,774	\$ -	\$ -	\$ -	\$ 11,774	\$ 13,795
\$ 11,496	\$ 30,000	\$ -	\$ 30,000	\$ 41,496	\$ 48,619
\$ 17,157	\$ 5,000	\$ -	\$ 5,000	\$ 22,157	\$ 25,960
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 168,855	\$ 67,000	\$ 12,000	\$ 79,000	\$ 247,855	\$ 290,401
Target Budget for Items Shown:					\$ 696,776
Budget - Estimated Total Cost:					\$ 406,375

NO REVISION