Lower Owens River Project
Work Plan, Budget, and Schedule

2020-2021 Fiscal Year

Prepared by
Inyo County Water Department and
Los Angeles Department of Water and Power

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The Inyo County Water Department and the Los Angeles Department of Water and Power jointly prepared this 2020-2021 Fiscal Year Lower Owens River Project Work plan. The Inyo County/Los Angeles Technical Group adopted this work plan on June 11, 2020. The Technical Group recommends that the Inyo County Board of Supervisors and the City of Los Angeles Board of Water and Power Commissioners or their designee approve the 2020-2021 Fiscal Year Lower Owens River Project Work Plan.

Introduction

The Final Environmental Impact Report for the Lower Owens River Project (LORP) Section 2.2.1 provides that in December of each year, the Long-Term Water Agreement (LTWA) Technical Group will develop and adopt an annual work program for the LORP, which describes LORP work to be performed in the following fiscal year. This work program identifies who will perform or oversee tasks, a schedule, and a budget. This work plan and budget was prepared according to the Agreement between the County of Inyo and City of Los Angeles Department of Water and Power Concerning Funding of the Lower Owens River Project (Funding Agreement) sections D, E, and F. Following adoption by the Technical Group, the work program will be submitted to the County and LADWP governing board for approval. Each governing board must approve the plan before this work plan and budget can be implemented. This Work Plan, Budget, and Schedule is in force from July 1, 2020 – June 30, 2021.

The objectives of this work plan are to maintain compliance with the July 11, 2007 Superior Court Stipulation and Order in Case No. S1CVCV01-29768, conduct monitoring necessary to achieve the LORP goals described in the 1997 Memorandum of Understanding, maintain infrastructure necessary to the operation of the LORP, and implement adaptive management measures. The following priorities are observed in this work plan:

1. Work and activities required to maintain required flows in the river and required water supplies to other LORP components.
2. Maintenance associated with flow compliance monitoring and reporting associated with the above referenced Stipulation and Order.
3. Habitat and water quality monitoring described in the LORP Monitoring and Adaptive Management Plan, or required to comply with the requirements of the Lahontan Regional Water Quality Control Board.
4. The preparation of the LORP Annual Report as required by Section 2.10.4 of the LORP Final EIR and by Section L of the above referenced Stipulation and Order.
5. Other work or activities including the implementation of adaptive management measures.

Section 1 of this work plan covers the budget and schedule for operations and maintenance, monitoring, mosquito abatement, noxious species control, saltcedar control, and reporting activities. Saltcedar control activities are identified but are funded under separate agreements and not budgeted in this work plan.

The budget amount reflects the additional costs above equal sharing of work by the parties and does not include the costs of Inyo and LA staff times where they offset.

LORP Operations & Maintenance and Monitoring Budget

Table 1 summarizes the costs of operation, maintenance and monitoring for the fiscal year and specifies the costs incurred by Inyo County, Los Angeles, and the cost of the MOU consultant. A summary of these activities follows in Section 1 below.

In 2020-2021 a total of 16 people days will be required to complete standard biologic and water quality monitoring tasks. Inyo County and LADWP will each contribute 8 days. Maintenance, Operations, and Hydrologic monitoring are tasks solely performed by LADWP, and are without offsetting costs. LADWP has allocated 120 days for Range Monitoring, which is a LADWP cost. Inyo County and LADWP will perform additional Adaptive Management tasks over 308 people days (Inyo County 154 and LADWP 154 days).

Based on this budget, total cost for the fiscal year is $724,902.83, with Inyo County contributing $110,440.00 and LADWP contributing $614,462.83. Inyo County's Post Implementation Credit will be decreased by $252,011.42. The credit deduction is calculated by subtracting the dollars LADWP will spend during the fiscal year from the amount spent by Inyo County, and dividing this figure by two.

Table 1. LORP Work Plan Summary Budget, FY 2020-2021

Inyo County	Budgeted Staff Work Days	Value of Additional Staff Time, Materials, and Equipment	Payment/Credit
Biologic and Water Quality	8	$0.00	
Mosquito Abatement	-	$30,000.00	
MOU Consultant	-	$30,440.00	
Noxious Species Control	-	$50,000.00	
Adaptive Management	154	$0.00	
Inyo County Totals	**162**	**$110,440.00**	**($252,011.42)**
LADWP	**Budgeted Staff Work Days**	**Budgeted Value of Additional Staff Time, Materials, and Equipment**	
Hydrologic Monitoring	-	$70,230.00	
Biologic and Water Quality	8	$0.00	
Operations and Maintenance	-	$496,232.83	
Mosquito Abatement	-	$30,000.00	
Rodent Control	-	$18,000.00	
Adaptive Management	154	$0.00	
LADWP Totals	**162**	**$614,462.83**	
Combined Total	**324**	**$724,902.83**	
Inyo County Credit Adjustment (1/2 of the Difference in Expenditures between Inyo County and LADWP)		**($252,011.42)**	

Footnote to Table 1. Post Implementation Credit and Trust Accounting

Original Post Implementation Credit		$2,253,033	$2,253,033
Increase Post Imp Credit by 2.9% based on the July 2007 price Index	2.9%	$65,338	$2,318,371
County's obligation for July 11, 2007 to June 30, 2008 period		$243,524	$2,074,847
Increase the remaining balance of the Post Implementation Credit by 5.7% based upon the July 2008 price index	5.7%	$118,266	$2,193,113
County's obligation for 2008-2009 fiscal year		$243,524	$1,949,589
Reduce the remaining balance of the Post Implementation Credit by 1.3% based upon the April 2009 price index	-1.3%	$25,345	$1,924,245
County's share of the costs for the 2009-2010 work plan and budget, including adaptive management.		$266,176	$1,658,069
Increase the remaining balance of the Post Implementation Credit by 1.9% based upon the April 2010 price index effective July 10, 2010	1.9%	$31,503	$1,689,572
County's share of the costs for the 2010-2011 work plan and budget, including adaptive management effective July 21, 2010.		$317,805	$1,371,767
Increase the remaining balance of the Post Implementation Credit by 3.3% based upon the April 2011 price index effective July 10, 2011.	3.3%	$45,268	$1,417,035
County's share of the costs for the 2011-2012 work plan and budget, including adaptive management effective July 21, 2011.		$48,278	$1,368,757
County's share of the costs for the Amended 2011-2012 work plan and budget, effective July 21, 2011.		$57,687	$1,311,070
Increase the remaining balance of the Post Implementation Credit by 1.5% based upon the April 2012 price index effective July 10, 2012.	1.5%	$19,666	$1,330,736
County's share of the costs for the 2012-2013 work plan and budget, including adaptive management effective July 23, 2012.		$14,084	$1,344,820
Increase the remaining balance of the Post Implementation Credit by 0.9% based upon the April 2013 price index effective July 10, 2013.	0.9%	$12,103	$1,356,924
County's share of the costs for the 2013-2014 work plan and budget, including adaptive management effective June 21, 2013.		$41,979	$1,398,903
Increase the remaining balance of the Post Implementation Credit by 1.4% based upon the April 2014 price index effective July 10, 2014.	1.4%	$19,585	$1,418,487
County's share of the costs for the 2014-2015 work plan and budget, including adaptive management effective June 21, 2014.		$78,483	$1,340,004
Increase the remaining balance of the Post Implementation Credit by 0.5% based upon the April 2015 consumer price index.	0.5%	$6,700	$1,346,704
County's share of the costs for the 2015-2016 work plan and budget, including adaptive management effective June 21, 2015.		$73,755	$1,272,949
Increase the remaining balance of the Post Implementation Credit by 2.0% based upon the April 2016 consumer price index.	2.0%	$25,459	$1,298,408
County's share of the costs for the 2016-2017 work plan and budget, including adaptive management effective June 21, 2016.		$84,704	$1,213,704
Increase the remaining balance of the Post Implementation Credit by 2.7% based upon the April 2017 consumer price index.	2.7%	$32,770	$1,246,474
County's share of the costs for the 2017-2018 work plan and budget, including adaptive management, effective October 31, 2018.		$114,857	$1,131,617
Increase the remaining balance of the Post Implementation Credit by 4.0% based upon the April 2018 consumer price index.	4.0%	$45,265	$1,176,882
County's share of the costs for the 2018-2019 work plan and budget, including adaptive management, effective October 31, 2019.		$139,493	$1,037,389
Increase the remaining balance of the Post Implementation Credit by 3.3% based upon the April 2019 consumer price index.	3.3%	$34,234	**$1,003,155**

The annual CPI adjustment will take place prior to deduction of a credit for County's annual share of the LORP post-implementation costs (PIA 8.4). The LORP Trust Account Balance as of February 28, 2020 was $2,392,818.19.

Section 1. Maintenance and Monitoring Tasks

LORP Tasks

The maintenance and monitoring portion of this work plan consists of four categories of tasks: operations and maintenance, hydrologic monitoring, biological monitoring, and range monitoring.

Operations and Maintenance

Maintenance activities consist of cleaning sediment accumulations and other obstructions from water measurement facilities, cleaning sediment and aquatic vegetation from ditches, mowing ditch margins, adjustments to flow control structures, maintenance/replacement of existing structures, and necessary annual maintenance to spillgates, ditches, dikes, berms, ponds and other features in the BWMA. Operation activities consist of setting and checking flows and ensuring that necessary flows reach the river to maintain mandated base and seasonal habitat flows. Estimates of the level of effort necessary for maintenance are adjusted as required by section II.D of the Funding Agreement, which allows that costs for maintenance of ditches, spillgates, and control structures that are above the baseline costs for facilities in the river corridor and Blackrock Waterfowl Management Area (BWMA) shall be shared. Additionally, LADWP will replace the LORP Intake Langemann gate with one with more vertical range of movement to minimize issues delivering and measuring mandated flows, and which is resistant to corrosion. The LORP Langemann Gate is a shared cost under the Funding Agreement Section II.D.2. Budgeted Operations and Maintenance costs and associated material costs are included in Table 2. The estimated 2020-2021 costs for River corridor and BWMA facilities are $394,654.70 and $259,998.93 respectively, for an overall 2020-2021 operations and maintenance expenditure of $654,653.63. This figure reduced by the combined CPI-adjusted baseline costs for the river corridor and BWMA facilities is $496,232.83 (Table 2).

Hydrologic Monitoring

Hydrologic monitoring consists of monitoring, analyzing, and reporting river baseflows and seasonal habitat flows, the flooded extent of the Blackrock Waterfowl Management Area (BWMA), the levels of the Off-River Lakes and Ponds, and baseflows, pulse flows, and seasonal habitat flows to the Delta. Hydrologic monitoring costs for the 2020-2021 fiscal year are $70,230.00 (Table 3).

Biological/Water Quality Monitoring

Biological monitoring, analysis, reporting, and report preparation will be jointly conducted by Inyo and LADWP as identified in Table 4.01 of the LORP Monitoring and Adaptive Management Plan (MAMP) (Table 4). LADWP and Inyo County will continue to monitor flooded extent in 2020-2021 at Blackrock as in past years. Inyo Staff and LADWP Staff will spend a total of 16 people days on LORP biological and water quality monitoring per the MAMP. There will be no off-setting costs.

Adaptive management

Inyo County and LADWP have identified adaptive management tasks to complete in the 2020-2021 fiscal year. Refer to Section 2 for more information. A total of 308 people-days is budgeted for adaptive management, with Inyo County contributing 154 people-days and Los Angeles contributing 154 days.

Table 2. LORP Operations and Maintenance Budget- 2020-2021 Fiscal Year

Labor					Equipment			
Location/Activity	**Labor type**	**Hours**	**Labor Rate**	**Total Labor**	**Equipment/Materials**	**Hours**	**Rate**	**Total Equip**
River								
Measuring Station Maintenance								
	Power Shovel Operator	20	$52.06	$1,041.20	Excavator	20	$108.80	$2,176.00
	Truck Driver	20	$45.30	$906.00	3 axle dump truck	20	$56.50	$1,130.00
	Operator	20	$49.37	$987.40	Mower	20	$90.10	$1,802.00
	Building Repairman	10	$45.88	$458.80	3/4 ton 4x4 pick- up	80	$13.60	$1,088.00
	MCH	50	$40.16	$2,008.00	Water truck	40	$31.23	$1,249.20
Subtotal				**$5,401.40**				**$7,445.20**
Intake Spillgate								
Maintenance	Building Repairman	40	$45.88	$1,835.20	Bull Dozer	80	$61.65	$4,932.00
	MCH	380	$40.16	$15,260.80	Backhoe and trailer	80	$37.19	$2,975.20
	Operator	180	$49.37	$8,886.60	3/4 ton 4x4 pick- up	580	$13.60	$7,888.00
	Power Shovel Operator	160	$52.06	$8,329.60	Mower	20	$90.10	$1,802.00
	Truck Driver	100	$45.30	$4,530.00	Excavator	160	$108.80	$17,408.00
					3 axle dump truck	100	$48.03	$4,803.00
Intake Langemann Gate Material Cost								$155,400.00
Subtotal				**$38,842.20**				**$195,208.20**
Thibaut Spillgate and Ditch								
Cleaning	Power Shovel Operator	40	$52.06	$2,082.40	Excavator	40	$108.80	$4,352.00
	Operator	80	$49.37	$3,949.60	Backhoe and trailer	40	$37.19	$1,487.60
	Truck Driver	80	$45.30	$3,624.00	Loader	40	$37.40	$1,496.00
	MCH	120	$40.16	$4,819.20	3 axel dump truck	80	$48.03	$3,842.40
					3/4 ton 4x4 pick- up	160	$13.60	$2,176.00
Subtotal				**$14,475.20**				**$13,354.00**
Independence Spillgate and Ditch								
Cleaning/Mowing	Power Shovel Operator	80	$52.06	$4,164.80	Excavator	80	$108.80	$8,704.00
	Operator	80	$49.37	$3,949.60	Loader	40	$37.40	$1,496.00
	Truck Driver	40	$45.30	$1,812.00	Side dump	40	$65.66	$2,626.40
	MCH	160	$40.16	$6,425.60	Mower	40	$90.10	$3,604.00
					3/4 ton 4x4 pick- up	200	$13.60	$2,720.00
					Water truck	40	$31.23	$1,249.20
Subtotal				**$16,352.00**				**$20,399.60**
Locust Spillgate and Ditch								
Cleaning	Power Shovel Operator	40	$52.06	$2,082.40	Excavator	40	$108.80	$4,352.00
	Operator	80	$49.37	$3,949.60	Backhoe and trailer	80	$37.19	$2,975.20
	MCH	120	$40.16	$4,819.20	3/4 ton 4x4 pick- up	160	$13.60	$2,176.00
	Truck Driver	40	$45.30	$1,812.00	3 axle dump truck	40	$48.03	$1,921.20
Subtotal				**$12,663.20**				**$11,424.40**
Georges Ditch								
Cleaning/Mowing	Operator	80	$49.37	$3,949.60	Mower	30	$90.10	$2,703.00
	Truck Driver	20	$45.30	$906.00	Backhoe and trailer	30	$37.19	$1,115.70
	Power Shovel Operator	40	$52.06	$2,082.40	Loader	20	$37.40	$748.00
	MCH	120	$40.16	$4,819.20	Excavator	40	$108.80	$4,352.00
					3/4 ton 4x4 pick-up	160	$13.60	$2,176.00
Subtotal				**$11,757.20**				**$11,094.70**
Alabama Spillgate								
Cleaning	Power Shovel Operator	60	$52.06	$3,123.60	Excavator	60	$108.80	$6,528.00
	Operator	40	$49.37	$1,974.80	Bull Dozer	40	$61.65	$2,466.00
	Truck Driver	180	$45.30	$8,154.00	3 axle dump truck	180	$48.03	$8,645.40
					3/4 ton 4x4 pick-up	60	$13.60	$816.00
Subtotal				**$13,252.40**				**$18,455.40**

Labor					Equipment			
Location/Activity	**Labor type**	**Hours**	**Labor Rate**	**Total Labor**	**Equipment/Materials**	**Hours**	**Rate**	**Total Equip**
Delta Spillgate								
	Building Repairman	40	$45.88	$1,835.20	3/4 ton 4x4 pick- up	40	$13.60	$544.00
	MCH	40	$40.16	$1,606.40	3/4 ton 4x4 pick- up	40	$13.60	$544.00
Subtotal				**$3,441.60**				**$1,088.00**
River Subtotal				**$116,185.20**				**$278,469.50**
Blackrock Waterfowl Management Area								
Blackrock Ditch								
Maintenance	Operator	120	$49.37	$5,924.40	Mower	80	$90.10	$7,208.00
	Truck Driver	240	$45.30	$10,872.00	3 axle dump truck	120	$48.03	$5,763.60
	MCH	260	$40.16	$10,441.60	3/4 ton 4x4 pick- up	400	$13.60	$5,440.00
	Power Shovel Operator	140	$52.06	$7,288.40	Excavator	140	$108.80	$15,232.00
					Loader	40	$37.40	$1,496.00
					Water truck	60	$31.23	$1,873.80
					Side dump	60	$65.66	$3,939.60
Subtotal				**$34,526.40**				**$40,953.00**
Thibaut Pond Maintenance								
Discing Maintenance	Operator	20	$49.37	$987.40	Low bed/side dump	6	$65.66	$393.96
	MCH	20	$40.16	$803.20	Quadtrac/excavator	20	$108.80	$2,176.00
	Truck Driver	12	$45.30	$543.60	3/4 ton 4x4 pick- up	40	$13.60	$544.00
					Water truck	6	$31.23	$187.38
Subtotal				**$2,334.20**				**$3,301.34**
Patrol & Flow Changes (River and BWMA)								
A&R data	A&R Keeper (1.5 FTE)	3089	$44.31	$136,873.59	3/4 ton 4x4 pick- up	3089	$13.60	$42,010.40
Subtotal				**$136,873.59**				**$42,010.40**
BWMA Subtotal				**$173,734.19**				**$86,264.74**

TOTALS	
River Total	**$394,654.70**
BWMA Total	**$259,998.93**
Total O and M	**$654,653.63**
CPI Adjusted O & M	**$496,232.83**

Baseline Costs (described in Post -Imp)		River	BWMA
CPI adjustment		$56,863.00	$62,798.00
2006-2007	4.5%	$59,421.84	$65,623.91
2007-2008	3.1%	$61,263.91	$67,658.25
2008-2009	-1.3%	$60,467.48	$66,778.69
2009-2010	0.9%	$61,011.69	$67,379.70
2010-2011	0.7%	$61,438.77	$67,851.36
2011-2012	3.0%	$63,281.93	$69,886.90
2012-2013	2.1 %	$64,610.85	$71,354.53
2013-2014	0.4%	$64,869.30	$71,639.94
2014-2015	1.3%	$65,712.60	$72,571.26
2015-2016	1.6%	$66,764.00	$73,732.40
2016-2017	1.8%	$67,965.75	$75,059.59
2017-2018	3.6%	$70,412.52	$77,761.73
2018-2019	3.6%	$72,947.37	$80,561.15
2019-2020	3.2%	$75,281.69	$83,139.11

Table 3. Hydrologic Monitoring Budget, FY 2020-2021

	Person days	Labor Costs	Equipment Cost	Total Budgeted Cost July 1, 2020 through June 30, 2021
	HYDRO OPERATIONS			
River Stations	28	$ 12,040.00	$ 1,120.00	$ 13,160.00
Seasonal Habitat	7	$ 3,010.00	$ 280.00	$ 3,290.00
Off River Lakes & Ponds	8	$ 3,440.00	$ 320.00	$ 3,760.00
Flow to Delta	2	$ 860.00	$ 80.00	$ 940.00
Blackrock Waterfowl	8	$ 3,440.00	$ 320.00	$ 3,760.00
Reporting Compliance	7	$ 3,010.00	$ 280.00	$ 3,290.00
	HYDRO MAINTENANCE			
River Stations	4	$ 1,720.00	$ 4,960.00	$ 6,680.00
Off River Lakes & Ponds	1	$ 430.00	$ 40.00	$ 470.00
Flow to Delta	2	$ 860.00	$ 3,080.00	$ 3,940.00
Blackrock Waterfowl	2	$ 860.00	$ 3,080.00	$ 3,940.00
	ENGINEERING			
Reporting Compliance	60	$ 27,000.00	$ -	$ 27,000.00
			Total Hydro Budget	**$70,230.00**

Table 4. Biological Monitoring Budget, FY 2020-2021

Biological Monitoring	Days	Inyo Days	LA Days
Blackrock Waterfowl Management Area			
Waterfowl Area Acreage	16	8	8
Total Person Days on Project	**16**	**8**	**8**

Range Monitoring

Range monitoring is related to the tasks described in Section 4.6 of the MAMP. Three types of monitoring will take place that are directly related to the management of livestock grazing: irrigated pasture condition scoring, utilization and range trend monitoring. Range monitoring will be conducted by LADWP and is not a shared cost, and therefore is not budgeted for in this work plan (Table 5).

Table 5. Range Monitoring (LADWP only), FY 2020-2021

Task	People Days
Utilization	45
Irrigated Pasture Condition	5
Range Trend	50
Analysis and Reporting	20
Total	**120**

Mosquito Abatement

For fiscal year 2020-2021, the Owens Valley Mosquito Abatement Program (OVMAP) will continue a comprehensive Integrated Mosquito Management Plan (IMMP) when addressing the new and developing sources within the LORP in accordance with its mission of protecting public health. This IMMP consists of an expansion of currently used materials and methods for the surveillance and control of mosquitoes across the OVMAP boundary as well as contingency planning for late season flushing flows. The $60,000 budget anticipates field surveillance of potential larval habitat for mosquito production, larviciding, pupaciding, adult mosquito surveillance with light traps, mosquito borne disease surveillance, and treatment for adult mosquitoes.

Noxious Species Control

The Inyo/Mono Counties Agricultural Commissioner's Office conducts operations to control and eradicate several different invasive weed species within the LORP boundaries. These invasive weed species include perennial pepperweed (*Lepidium latifolium*), Russian knapweed (*Acroptilon repens*), Canada thistle (*Cirsium arvense*), yellow star thistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea maculosa*), hairy whitetop (*Carderia pubescens*), and heart podded hoary cress (*Carderia draba*). These populations are managed using integrated pest management methods, including mechanical, chemical, and biological controls.

For fiscal year 2020-2021, Inyo County will be responsible for treating weeds in the LORP. The budget for noxious weed control is $50,000. An increase in perennial pepperweed in the LORP in recent years will require additional funding and efforts to contain the existing population and prevent spread. Additional funding for Inyo County will be sought from outside sources.

Saltcedar Control

Due to lack of enhanced funding, Inyo County's saltcedar control program has been scaled back. The effort will focus on surveying and the treatment of saltcedar resprouts along the Owens River in the LORP. Inyo County's LORP saltcedar control activities are funded through the Inyo/Los Angeles Water Agreement. LADWP and Inyo County programs will work cooperatively to treat saltcedar, which may include areas in the LORP as resources are available.

Schedule

Table 6. Schedule of Monitoring and Reporting Activities for FY 2020-2021

Period	Monitoring
July 8 - July 16, 2020	Blackrock Waterfowl Management Area (BWMA) Flooded Extent
September 1- December 1, 2020	Delta Pulse Flow
August 1-August 31, 2020	LORP Noxious Species Survey
August 15-August 30, 2020	Tamarisk Beetle Survey
September 14 - September 22, 2020	BWMA Flooded Extent
September 1 - October 30, 2020	DHA Avian Monitoring
September 1 - October 30, 2020	LADWP/Inyo Prepare Draft LORP Report
October 1 - October 30, 2020	Fiscal Year 2019-2020 Work Plan and Budget Reconciliation
October 31, 2020	Draft LORP Report transmitted to MOU Consultant
October 31, 2020	Transmittal of LORP Accounting Report to Governing Boards
November 1 - November 30, 2020	MOU Consultant review Draft LORP Report and develop Recommendations
November 15-December 15, 2020	DHA Avian Monitoring
December 1, 2020	MOU Consultant transmit Adaptive Management Recommendations to Inyo/LADWP
December 5, 2020	Draft Report transmitted to MOU Parties
December 19, 2020	Public Meeting for Draft LORP Report
December 16, 2020 – February 14, 2021	Fiscal Year 2021-2022 Work Plan and Budget Development
January 1 – January 30, 2021	DHA Avian Monitoring
January 15 – January 20, 2021	BWMA Flooded Extent
March 1 –March 31, 2021	Technical Group Meeting to Adopt LORP Annual Report and 2021-2022 Fiscal Year Work Plan and Budget
March 1 – March 31, 2021	Transmittal of LORP Work Plan, Budget, and Schedule to governing boards for approval
March 1 - May 15, 2021	Delta Pulse Flow
March 15 - April 15, 2021	Noxious Species Survey
April 1 – May 31,2021	DHA Avian Monitoring
April 1 – May 31, 2021	LOR Migratory Bird Surveys
May 8 - May 16, 2021	BWMA Flooded Extent
May 17 – June, 11, 2021	Tamarisk Beetle Survey
May 1 - June 1, 2021	Seasonal Habitat Flow

Section 2. Adaptive Management

In the 2019 LORP Evaluation Report (2019 LORP Annual Report), LADWP and Inyo County identified additional tasks beyond what is defined in the MAMP that will be conducted by staff as Adaptive Management in the 2020-2021 fiscal year. Table 7 shows a total of 308 people-days budgeted for eight adaptive management tasks, with Inyo County contributing 154 people-days and Los Angeles contributing 154 days. Work planned includes:

1. BWMA Interim Management and Monitoring Plan
In FY 2020-2021, LADWP and Inyo County will work jointly to develop a 5-year Interim Management Plan for BWMA that incorporates habitat management recommendations set forth in the 2019 LORP Evaluation Report. The basic concept of the adaptive management recommendations involves transitioning from year-round flooding to seasonal flooding to increase the extent of open water and reduce the extent of cattail and bulrush, which is predicted to improve habitat quality for waterfowl and shorebirds. The plan will detail habitat objectives, the water delivery system and vegetation management. In addition, the current monitoring program will be reevaluated with the following objectives:

1) incorporate use of satellite imagery to document flooded acreage
2) assess the productivity of waterfowl food plants in response to management actions
3) assess habitat quality
4) Improve the efficiency of the avian monitoring

After the fifth year of implementation, the effectiveness of the program will be reevaluated in terms of improvements in habitat quality, ease of implementation, water use, cost, and any other management concerns. It is estimated that development of this plan will require 65 total people days split between LADWP and Inyo County staff in the 2020-2021 fiscal year.

2. Delta Habitat Area (DHA) avian monitoring
LADWP and Inyo County implemented a modified flow regime for the Delta Habitat Area in Spring 2020 to further improve habitat conditions for Habitat Indicator Species. To gauge the success of new water management, LADWP and Inyo County will conduct 9 avian surveys distributed across the fall, winter, and spring during the 2020-2021 fiscal year. The goal is to monitor change in waterbird use associated with the change in the seasonality of flow releases to the DHA. Additional time will be needed for survey planning and coordination in fiscal year 2020-2021; analysis and reporting of this information will be summarized in the 2021 LORP Annual Report. Twenty-two people days split by LADWP and Inyo County staff is budgeted for this task.

3. Delta Habitat Area remote sensing
Satellite imagery (30-m resolution) and low elevation drone imagery (5-cm resolution) will be used in the DHA to evaluate the effectiveness of the revised water release schedule in increasing habitat availability for indicator species. This work will require 12 people-days of effort, with Inyo County contributing 10 people-days and LADWP contributing 2 people-days.

4. Indicator Species & Avian Habitat Model revisions
Inyo County and LADWP will conduct a focal species analysis to evaluate avian community response to restoration and develop a habitat relationship model using existing data to replace the current California Wildlife Habitat Relationships (CWHR) model for the LORP. The new model will be used for predictive

habitat suitability mapping of Habitat Indicator Species in the LORP. This task is expected to take 40 people days (15 Inyo County, 25 LADWP).

5. Tamarisk beetle study

In the 2019 LORP Evaluation Report, Inyo County and LADWP proposed a study to track the spread of the tamarisk beetle (*Diorhabda carinulata*) and document its effectiveness in controlling saltcedar in the LORP area. An early defoliation assessment in known affected areas will be conducted in late May/early June 2020, and a post defoliation season evaluation will be conducted in late August 2020 in 3 macroplots within the LORP. Percent browsed and dead branches will be monitored for saltcedar trees within the plots. This task in the 2020-21 work plan will require 10 people days, including reporting. LADWP will carry out this task.

6. Tree recruitment assessment

One of the purposes of the seasonal habitat flow is to "…fulfill the wetting, seeding, and germination needs of riparian vegetation, particularly willow and cottonwood…" (MOU 1997), and therefore to develop/or maintain riparian forest. Further, the success of the LORP is, in part, gauged by the availability of habitat for MOU Habitat Indicator Species (HIS) some of which require dense woodland canopy for cover, feeding, and nesting. It was estimated that with the return of water, the LORP would develop an additional 854 acres of riparian forest; however the opposite has occurred, with willow and cottonwood coverage decreasing from 449 acres pre-project to 190 acres in 2017. Although woody riparian trees have been recruiting since 2007, the rate of recruitment and growth has not been able to keep pace with the loss of pre-project canopy. Without intervention, some LORP goals related to HIS and riparian woodland development might not be achieved. The loss of acreage is due to mortality of trees that developed in pre-project conditions, combined with insufficient recruitment to replace dead trees in those locations and elsewhere on the LORP.

The particular combination of environmental conditions compatible with recruitment has not been rigorously established. In order to correctly predict potential tree establishment locations for native riparian trees including black willow (*Salix gooddingii*), red willow (*Salix laevigata*), or Fremont cottonwood (*Populus fremontii*) we must first describe: 1) conditions which have permitted historic tree establishment during pre-project conditions on the LORP, 2) conditions which have permitted the limited recruitment since project inception, and 3) concurrent biological processes which may be inhibiting current germination and establishment. First, it is possible, by aging mature trees to correlate the year of establishment with environmental, hydrologic, and physical conditions that existed at that time. Second, we can learn from post-project recruitment events, recorded by years of rapid Assessment Survey, by considering a sample of these sites and assessing conditions such as: landform, surface water elevation, soil substrate, soil salinity, and the presence and extent of biotic competition. Finally, the effects of plant competition on germination, establishment and sapling development would be explored via vegetation removal on the wetted channel edge or wetted floodplain exposing bare soils with adequate soil moisture and high light exposure to local seed, and/or removing neighboring vegetation from established seedlings or saplings and following their growth response. In 2020-2021, these tasks will require 20 field days for sampling and data collection, and 15 office days for analysis and reporting. Inyo County will carry out this task.

7. Migratory bird surveys on river

The value of the LORP as migration stopover habitat has not been explored and may be underappreciated. Point count surveys in 2010 and 2015 that started in mid-May rather than the end of May, detected significant use of the LORP by neotropical songbird migrants. A limited number of surveys

during migration (late April-early May 2021) will provide an approximation on the importance of the LORP as stopover habitat for migrants traveling along the Pacific Flyway. LADWP and ICWD will each contribute 10-15 person days each to this effort between 3-4 qualified staff for a total of 20-30 total person days depending on the final study design.

8. Noxious species survey and treatment

Inyo County staff, surveying the upper reaches of the LOR in August 2018, 2019 and March of 2020, found that the density of perennial pepperweed (*Lepidium latifolium*) and saltcedar in the LORP has increased dramatically since the high water and flooding events in the winter/spring/summer of 2016-2017. This highly invasive species had been primarily located along the riverbank, but has recently infilled areas throughout the floodplain. Resources and funding will need to be increased to control further spread. This task will be completed in a summer/fall survey for both *Lepidium latifolium* and salt cedar that will help eradication and control efforts through the following and winter, spring and summer. A team of six biologists will conduct surveys on foot in the BWMA, LOR, ORL&P, and DHA. This task will require a total of 50 people days, which includes training and analysis/mapping/reporting. ICWD owns all equipment required for this exercise. LADWP will offset this survey effort with 50 people days of pepperweed treatment in the LORP area.

Table 7. Adaptive Management Monitoring

Task #	Biological Monitoring	Days	Inyo Days	LA Days
1	BWMA Interim Management and Monitoring Plan	65	25	40
2	Delta Habitat Area avian monitoring	22	9	13
3	Delta Habitat Area remote sensing	12	10	2
4	Indicator Species/Avian Habitat Model	40	15	25
5	Tamarisk beetle study	10	0	10
6	Tree recruitment assessment	35	35	0
7	Migratory bird surveys river	24	10	14
8	Noxious species survey	100	50	50
	Total Person Days	**308**	**154**	**154**

2020-21 Work Plan and Budget for Mr. Mark Hill, LORP MOU Consultant

The total budget is $15,220

TASK 1. RIVER AND WETLAND SITE VISITS

The MOU Consultant will visit all of the LORP units to familiarize themselves with on-the-ground conditions. This site visit will be made in early November in conjunction with range review. This will allow the Consultant to view the LORP prior to reviewing and evaluating the 2020-21 annual report and making adaptive management recommendations.

Labor:

	HOURS	RATE	COST
Principal (Hill)	20	$130	$2,600
Subtotal			$2,600

Expenses:

Travel (Mileage 1500/trip @ $0.58/mi)	0.5	$840	$420
Lodging	2	$155	$310
Per Diem	2	$95	$190
Expenses Subtotal			$920

TASK 2. ANNUAL REPORT EVALUATION AND ADAPTIVE MANAGEMENT RECOMMENDATIONS (AMR)

In late October, LADWP and ICWD will forward the draft annual report to the consultants. The consultants will review the chapters and verify conclusions. Following review and evaluation of the draft annual report a final chapter for AMR will be written for the final annual report and included in the LORP Annual Report. The deliverables will come in the form of a simple MS Word Document. AMR must be delivered to Inyo and LADWP by the first Monday in December.

Labor:

	HOURS	RATE	COST
Principal (Hill)	60	$130	$7,800
Subtotal			$7,800

TASK 3. BWMA INTERIM MANAGEMENT PLAN REVIEW

LADWP and Inyo County will draft a 5 year interim management plan for the BWMA that incorporates a seasonal flooding regime. This task allows for the MOU Consultant to review and comment on the interim management plan prior to its issuance to the MOU Parties. The deliverable for this task will be a MS Word document containing the MOU Consultant's comments.

	HOURS	RATE	COST
Principal (Hill)	30	$130	$3,900
Subtotal			$3,900

2020-21 Work Plan and Budget for Mr. Bill Platts, LORP MOU Consultant

The total budget is $15,220

TASK 1. RIVER AND WETLAND SITE VISITS

The MOU Consultant will visit all of the LORP units to familiarize themselves with on-the-ground conditions. This site visit will be made in early November in conjunction with range review. This will allow the Consultant to view the LORP prior to reviewing and evaluating the 2020-21 annual report and making adaptive management recommendations.

Labor:

	HOURS	RATE	COST
Principal (Plattes)	20	$130	$2,600
Subtotal			$2,600

Expenses:

Travel (Mileage 1500/trip @ $0.58/mi)	0.5	$840	$420
Lodging	2	$155	$310
Per Diem	2	$95	$190
Expenses Subtotal			$920

TASK 2. ANNUAL REPORT EVALUATION AND ADAPTIVE MANAGEMENT RECOMMENDATIONS (AMR)

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Labor:

	HOURS	RATE	COST
Principal (Plattes)	60	$130	$7,800
Subtotal			$7,800

TASK 3. BWMA INTERIM MANAGEMENT PLAN REVIEW

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	HOURS	RATE	COST
Principal (Hill)	30	$130	$3,900
Subtotal			$3,900

AQUEDUCT BUSINESS GROUP – N. DISTRICT

ENGINEER'S SUMMARY REPORT

January, 2018 Condition Assessment of Langemann Gate at the LORP Intake

ASSESSMENT REPORT

REPORT NO.:	DATE:
1	*Jan. 04 through Jan. 17, 2018*

WEATHER:
Clear and Sunny. Day time temperatures varying from 30 degrees (lows) to 65 degrees (highs) Fahrenheit.

Independence Construction forces completed the dewatering of the Langemann Gate on Tuesday afternoon, 1/16/2018, and Chuck Parkes completed an upstream inspection of the gate on Wednesday morning, 1/17/2018. The Langemann gate was reported damaged by A & R Supervisor Ben Butler on Wednesday evening 1/03/2018. It appears that the gate had been lowered onto trapped sediments below the lower leaf of the gate, and the gate failed in a partially-opened position with a failed gearbox and/or drive train. The vertical side channels of the gate were lifted and displaced upstream and the gate frame seal was compromised. De-watering operations started immediately after the emergency slide gate was opened and court-mandated flows to the Lower Owens River of 42 cfs were bypassed around the Langemann Gate sluiceway.

Once sediments were removed from over top of the upper leaf of the gate and below the lower leaf of the gate, the frame of the Langemann gate quickly returned to its original position inside the sluice channel. N.D. Engineering staff inspected the gate from the downstream side of the gate while early de-watering efforts were being made. Initial assessments were that the gear box failed and the gate automatically tripped to Manual Operation Mode. Independence Pump Shop staff jacked and shored the gate in the failed position, transferred load off of the drive train of the gate and successfully removed the gear box and drive from the Langemann gate cabinet. Pump shop mechanics quickly found sheared parts that were bound internally inside the gear box housing.

There was significant water infiltration coming into the concrete sluiceway from a cold joint in the floor and lowest portions of the sidewalls. Although these cold joints had been sealed with Hydrophyllic tape at the time of construction in 2006, this past year's record-runoff flows as well as high groundwater conditions around the LORP Intake have failed these secondary seals, making total dewatering of the sluiceway very difficult. N.D. Engineering recommends that pressure-grouting of these compromised cold joints be performed both upstream and downstream of the Langemann gate before the gate is placed back in-service. The two existing side plates on the Langemann gate are badly-corroded and have corrosion holes compromising the sealing ability of the side plates to the main gate. New stainless steel SS-316 side plates should be ordered for the existing gate. The perimeter seal between the Langemann gate frame and the invert and sluiceway walls has been 100% breached. N.D. Engineering recommended removing all sealant materials, pressure-washing the substrate, and reapplying SikaFlex 1A polyurethane sealant at both sides of gate over top of ¾" diameter "Oakum" rope as a backing material to support the polyurethane sealant.

Once the new gear box arrives, the Langemann gate shall be tested for normal operation and have a yearly servicing and inspection performed. If found to be fully-operational, N.D. Engineering recommends placing the gate Back-in-Service as soon as possible.

N.D. Engineering will order new stainless steel side plates for the existing gate at an approximate cost of $ 11,000 dollars, but recommends not installing them on the existing gate until a new Langemann Gate can be procured, delivered, and installed in the sluiceway of the LORP Intake. We recommend that a new stainless steel Langemann gate with A304 structural steel frame and A316 stainless steel side plates be ordered immediately. The new gate will be sized to operate from a new storage height of 3.10 Ft. up to a maximum operating height of 11' – 4" within the existing 12' – 8" deep sluice channel. Although this total operating range of 8.25 Ft. matches the existing gate, we can operate it at a greater upstream water level elevation than the previous gate. Since 2008, we have been operating the Langemann gate at upstream river elevations never anticipated during the design of the original gate. We anticipate seasonal pulse flows now requiring upstream water levels from 8'-6" to 10'- 6" can be easily accommodated by this new gate.

With a fabrication lead time of 12 to 15 weeks, and an estimated cost of $160,000 dollars, the new gate could be delivered by mid-summer of 2018. At that time, our Independence Construction forces could dewater the old gate, remove it and haul it back to the Independence Yard for retro-fit of the new side plates, new roller chain installation, and a complete inspection by the manufacturer, Aqua-Systems 2000, Inc. whom would be in the Owens Valley for commissioning of the new gate. The manufacturer suggests rebuilding the 11 year-old existing Langemann Gate for a cost not to exceed $ 40K (25% of the cost of a new gate) and use the original gate as a back-up to the new Langemann gate. With the current court-mandated Stipulation & Order governing the operation of this critical flow control gate, it is critically-important to have a back-up available if the new gate were to ever fail. If this present gate failure had occurred during the summer when LORP flows exceed 80 cfs and higher, the emergency bypass pipe could not meet the river flow demand and we would be subject to fines or penalties from the court, for being out-of-compliance.

Conclusions: This 28' wide by 75' long sand trap should be cleaned a minimum of twice per year, and the quick commissioning of the new Barge-mounted Suction Dredge should be completed as soon as Fleet Services receives the unit. Sediments were allowed to build-up to a depth of over three feet inside the LORP Intake due to the high run-off flows in the Owens River in Run-off Year 2017 that brought in record amounts of sediments into the sand trap in the Owens River upstream of the LORP Intake. These river sands and sediments need to be cleared in front of both intakes to a level several feet below the invert elevation of both sets of Intake gates at-least one time per year. By the Spring of 2017, the level of these sediments in the Owens River sand trap had risen to a level several feet above the invert elevation of the LORP radial gates and this allowed for the transfer of high amounts of sediment to roll into the LORP Intake sand trap. Our construction forces were busy cleaning base of mountain sand traps, and were overwhelmed by the record run-off flows of 780 cfs outflows out of Tinemaha Reservoir. The Barge-mounted Suction Dredge that is currently being purchased by Fleet Services for the N.D. Aqueduct Section has a delivery date estimated for June, 2019. Once received it will greatly reduce the effort required by Independence Construction to keep the sediments in the Owens river at a manageable level, upstream of the LORP Intake gates and the LAA Intake Gates. See photos on page three which document the conditions of the LORP Langemann gate during this report period.

N.D. Engineering strongly recommends the purchase of a new Langemann Gate with additional vertical range of movement and A316 stainless steel corrosion-resistant side plates, and rebuilding of the existing Vintage 2007 gate with a new SCADA-Pack control system, new side plates, and new drive chain for a back-up. Having a back-up gate in the ready is critically-needed as we prepare for the increased run-off potential of our Eastern Sierra-Nevada Mountain watershed due to effects of Climate Change.

Signature: **Chuck Parkes, PE – N.D. Engineering Group**	Title: **Civil Engineering Associate III**

View of the cleaned and pressure-washed Langemann Gate ready for inspection . Note the downstream bulkhead gate and the dirt coffer dam preventing the river from flowing back into the sand trap.

Crews installed concrete barrier blocks and tarp D/S of the three radial gates to prevent inflows from the 3 leaking radial gates tarped, but never sealed.

View from rail car bridge at the downstream coffer dam. The lower 225 LF of tailrace channel below the LG is filled 3 to 4 Ft. deep with sands and river sediments. This needs to be cleaned also.

Typical rust-through holes in both of the original gate side plates. A quote of $ 9,900 dollars was received in 2016 for new side plates constructed of A316 corrosion-resistant Stainless Steel.

Top view of a LG side plate with stand-off bar. Although the LG was constructed of A304 stainless steel, the thin side plate metals were only plated stainless steel which corroded at seams & welds.

The communication pipe is A304 stainless steel, but the Uni-strut wall straps were only galvanized steel. All three wall brackets need to be replaced with A316 Stainless steel uni-strut and bolting.