Los Angeles Department of Water & Power

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April 18, 2014

Dr. Robert Harrington, Director
Inyo County Water Department
P.O. Box 337
Independence, CA 93526-0337

Dear Dr. Harrington;

Subject: Transmittal of Draft 2014 Annual Owens Valley Report

Enclosed is the Los Angeles Department of Water and Power's (LADWP) 2014 Draft Annual Owens Valley Report. The Draft Annual Owens Valley Report includes LADWP's Owens Valley Operations Plan for the 2014-15 runoff year; a summary of Owens Valley Conditions; Enhancement/Mitigation project status; and the status of other mitigation measures, studies, projects, and activities.

Pursuant to Water Agreement Section V.D, LADWP has prepared the Annual Operations Plan for the 2014-15 runoff year and is hereby submitting the enclosed plan to Inyo County's Technical Group representatives for review.

LADWP's groundwater pumping for the first six months of the 2014-15 runoff year is planned to range between 36,920 and 47,930 acre-feet. As in past years, the majority of groundwater pumping is planned for the first six months of the year. While LADWP has not yet developed a specific groundwater pumping plan for the second six months of the 2014-15 runoff year, total groundwater pumping during 2014-15 is anticipated to be in the 65,000 acre-feet range.

Please review the enclosed Draft 2014 Annual Owens Valley Report and respond with Inyo County's comments regarding the proposed Annual Operations Plan within ten days of receipt.

Sincerely,

James G. Yannotta

James G. Yannotta
Manager of Aqueduct

Enclosure
Hand delivered

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This report includes Los Angeles Department of Water and Power's (LADWP) proposed Owens Valley operations plan for the 2014-15 runoff year, an update on Owens Valley conditions, the current status of LADWP's environmental and mitigation projects, and the status of other studies, projects, and activities.

Owens Valley Annual Operations Plan Summary

For the period of April 1, 2014, to March 31, 2015, the forecast Eastern Sierra runoff for the Owens River Basin is 205,900 acre-feet or 50% of normal. For the period between April 1, 2013 and September 30, 2013, Eastern Sierra runoff was measured to be 145,794 acre-feet or 50% of normal. Forecast Eastern Sierra runoff between April 1, 2014, and September 30, 2014, is 128,300 acre-feet or 42% of normal. The average of the actual and forecast runoff for the April through September period is 46% of normal. Pursuant to Water Agreement Section V.D:

> *By April 20th of each year, the Department shall prepare and submit to the Inyo County Technical Group a proposed operations plan and pumping program for the twelve (12) month period beginning on April 1st. (In the event of two consecutive dry years when actual and forecasted Owens Valley runoff for the April to September period is below normal and averages less than 75 percent of normal, the Department shall prepare a proposed plan for the six (6) month period beginning on April 1st and October 1st, and submit such plans by April 20th and October 20th.)*

Accordingly, LADWP has prepared a proposed six month operations plan and pumping program for the period beginning April 1, 2014.

LADWP groundwater pumping in the Owens Valley is governed by the ON/OFF provisions of the *1991 Agreement between the County of Inyo and the City of Los Angeles and its Department of Water and Power on a Long Term Groundwater Management Plan for Owens Valley and Inyo County* (Water Agreement). According to the well ON/OFF provisions of the Water Agreement, approximately 134,411 acre-feet of water is available for groundwater pumping from Owens Valley well fields. In addition to the ON/OFF provisions of the Water Agreement, LADWP considers Owens Valley conditions, projected runoff, and operational practicalities when determining its planned pumping. LADWP's groundwater pumping for the first six months of the 2014-15 runoff year is planned to range between 36,920 and 47,930 acre-feet, contingent on environmental conditions and water needs. The lower end of this range is commensurate with non-discretionary pumping requirements including fish hatchery supply, town supply, irrigation, and other required uses. The upper range is in keeping with dry year conservative pumping plans supported by the Inyo County/Los Angeles Standing Committee during the drought recovery period of the early 1990s.

Owens Valley Conditions

Forecast runoff to the Owens River Basin during the 2014-15 runoff year is 205,900 acre-feet or 50% of normal. The overall Eastern Sierra snow pack in watersheds contributing to the Los Angeles Aqueduct (LAA) was estimated to be 30% of normal as of April 1, 2014. Precipitation on the Owens Valley floor during the 2013-14 runoff year averaged 3.5 inches and was below the long-term average of 5.9 inches. Vegetation cover in the Owens Valley is comparable to the mid-1980s baseline conditions. Owens Valley groundwater levels are relatively high in most areas.

During the 2013-14 runoff year, the Lower Owens River was in full operational status with minimum average flows of 40 cubic feet per second (cfs) or greater as measured at all gauging stations. The total water use by the Lower Owens River, the Delta, Blackrock Waterfowl Management Area, and other Lower Owens River Project (LORP) uses were approximately 18,200 acre-feet for the year. The releases at the Los Angeles Aqueduct (LAA) intake were augmented by additional releases at selected LAA spill gates to maintain an average continuous flow of at least 40 cfs in the river channel.

Construction for the Owens Lake Dust Mitigation Program (OLDMP) continued during the 2013-14 runoff year. Dust mitigation activities on Owens Lake consumed 67,948 acre-feet of water in 2013-14. Contingent on prevailing conditions, OLDMP water use may be as much as 95,000 acre-feet during the 2014-15 runoff year.

Enhancement/Mitigation Project Status

The enhancement/mitigation projects discussed in Section 4 of this report are environmental projects implemented prior to the *1991 Environmental Impact Report on Water From the Owens Valley to Supply the Second Los Angeles Aqueduct* (1991 EIR). Some of these projects were identified in the 1991 EIR as mitigations for impacts due to LADWP's water gathering activities. There are 26 projects identified as enhancement/mitigation measures; 24 of these have been completed or are being implemented, and two are in the final stages of implementation.

Mitigation Project Status

There are 42 mitigation projects identified for thirteen impacts in the 1991 EIR, with 29 of these projects completed or fully implemented. Ten of the mitigation projects are currently partially implemented, as they are in the process of being constructed or are being revegetated. Three projects are in the planning or design phase.

Other Status

The statuses of the Mitigation Monitoring and Reporting Programs for the Laws Irrigation Project, Well W415 in Big Pine, and the LORP have been updated. Implementation status of the Water Agreement and the *1997 Memorandum of Understanding between the City of Los Angeles Department of Water and Power, the County of Inyo, California Department of Fish and Game, the California State Lands Commission, the Sierra Club, and the Owens Valley Committee* (1997 MOU) provisions have also been updated.

Green Book Revision Cooperative Study

Inyo County and LADWP continue to jointly work toward the completion of the Green Book revisions. Status updates of the Green Book revision effort are given at Technical Group and Standing Committee meetings.

1. INTRODUCTION

1. INTRODUCTION

This document is intended to satisfy the Los Angeles Department of Water and Power's (LADWP) annual reporting obligations pursuant to the *Agreement between the County of Inyo and the City of Los Angeles and its Department of Water and Power on a Long Term Groundwater Management Plan for Owens Valley and Inyo County* (Water Agreement); *the 1991 Environmental Impact Report Water from the Owens Valley to Supply the Second Los Angeles Aqueduct, 1970 to 1990, 1990 Onward, Pursuant to a Long Term Groundwater Management Plan* (1991 EIR); the Laws Type E transfer; the *1997 Memorandum of Understanding between the City of Los Angeles Department of Water and Power, County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, and the Owens Valley Committee* (1997 MOU); and the *August 2004 Amended Stipulation and Order in Case No. S1CVCV01-29768* (Stip/Order).

1.1 Water Agreement

The Water Agreement requires periodic evaluations of enhancement/mitigation projects to be made by the Inyo County/Los Angeles Technical Group. As required by the Water Agreement, all existing enhancement/mitigation projects will continue unless the Inyo County Board of Supervisors and LADWP agree to modify or discontinue a project. Section 4 of this report provides an update on LADWP enhancement/mitigation project status.

1.2 Annual Operations Plan

The Water Agreement provides that "By April 20th of each year, the Department shall prepare and submit to the Inyo County Technical Group a proposed operations plan and pumping program for the twelve (12) month period beginning on April 1st. (In the event of two consecutive dry years when actual and forecast Owens Valley runoff for the April to September period is below normal and averages less than 75 percent of normal, the Department shall prepare a proposed plan for the six (6) month period beginning on April 1st and October 1st, and submit such plans by April 20th and October 20th). The proposed plan and pumping program and any subsequent modifications to it shall be consistent with these goals and principles.

1. A proposed plan shall include, but is not limited to, the following:

    - Owens Valley Runoff estimate (annual)

    - Projected groundwater production by well field (monthly)

    - Projected total aqueduct reservoir storage levels (monthly)

    - Projected aqueduct deliveries to Los Angeles (monthly)

    - Projected water uses in the Owens Valley (monthly)

    - Water balance projections at each monitoring site

2. The County through its Technical Group representatives shall review the Department's proposed plan of operations and provide comments to the Department within ten (10) days of receipt of the plan.

3. The Department shall meet with the County's Technical Group representatives within ten (10) days of the receipt of the County's comments, and attempt to resolve concerns of the County relating to the proposed pumping program.

4. The Department shall determine appropriate revisions to the plan, provide the revised plan to the County within ten (10) days after the meeting, and implement the plan.

5. The April 1st pumping program may be modified by the Department during the period covered by the plan to meet changing conditions. The Department shall notify the County's Technical Group representatives in advance of any planned significant modifications. The County shall have the opportunity to comment on any such modifications.

6. Information and records pertaining to the Department's operations and runoff conditions shall be reported to the County's Technical Group representatives throughout the year."

Section 2 of this report is LADWP's revised Operations Plan for Runoff Year 2014-15.

1.3 1997 MOU

In accordance with the 1997 MOU Section III.H, LADWP and Inyo County are required to prepare an annual report describing environmental conditions in the Owens Valley and the associated studies, projects, and activities conducted under the Water Agreement and the 1997 MOU. Sections 3 through 7 of this report are intended to fulfill that requirement.

1.4 1991 EIR Monitoring Program

The 1991 EIR requires that LADWP submit an annual report to the Los Angeles Board of Water and Power Commissioners containing a description of each mitigation effort, its goals, strategies, and actions; its status (completed activities, ongoing activities); the overall effectiveness of each mitigation effort; and status of each mitigation plan for the following year. Section 5 of this report provides the required information.

Mitigation plans for each of the mitigation measures are developed by the Technical Group as set forth in Section I.C.2 of the Green Book, the technical appendix to the Water Agreement. The Green Book states: "as part of each mitigation plan, the Technical Group shall develop a reporting and monitoring program. At least once per year, the Technical Group shall report, in writing to the Standing Committee, on the effectiveness of the mitigation plan in achieving its goal." Section 5 of this report is intended to complete that annual obligation.

1.5 2004 Amended Stipulation and Order

The Stip/Order, Section 11, requires that on or about May 1 of each year LADWP shall complete and release an annual report that is in conformance with Section III.H of the 1997 MOU. This report is intended to fulfill that requirement.

2. OWENS VALLEY OPERATIONS PLAN FOR RUNOFF YEAR 2014-15

2. OWENS VALLEY OPERATIONS PLAN FOR RUNOFF YEAR 2014-15

This year's annual operations plan and pumping program is consistent with the management strategy of the Water Agreement between the County of Inyo (County) and the City of Los Angeles (City) dated October 18, 1991. As stated in the Water Agreement:

> *The overall goal of managing the water resources within Inyo County is to avoid certain described decreases and changes in vegetation and to cause no significant effect on the environment which cannot be acceptably mitigated while providing a reliable supply of water for export to Los Angeles and for use in Inyo County.*

The overall goal of the Water Agreement: environmental protections and a reliable water supply are the basis of the Los Angeles Department of Water and Power's (LADWP) operations plans. Groundwater pumping in the Owens Valley is managed in conformance with the provisions of the Water Agreement. The Water Agreement provides:

> *By April 20th of each year, the Department shall prepare and submit to the Inyo County Technical Group a proposed operations plan and pumping program for the twelve (12) month period beginning on April 1st. (In the event of two consecutive dry years when actual and forecasted Owens Valley runoff for the April to September period is below normal and averages less than 75 percent of normal, the Department shall prepare a proposed plan for the six (6) month period beginning on April 1st and October 1st, and submit such plans by April 20th and October 20th.)*

2.1. Eastern Sierra Runoff Forecast

The Eastern Sierra Runoff Forecast for the 2014-15 runoff year (Table 1) is based on snow surveys of key Eastern Sierra watersheds in Inyo and Mono counties that contribute the majority of runoff water into the Owens Valley. The Eastern Sierra Runoff Forecast is used for planning aqueduct operations. The forecast Eastern Sierra runoff for 2014-15 runoff year is 205,900 acre-feet, or about 50% of the 1961-2010 long-term average annual runoff value of 412,284 acre-feet.

For the period of April 1 through September 30, 2013, Eastern Sierra runoff was approximately 145,794 acre-feet, or 48% of long term average value of 303,903 acre-feet. The forecast runoff for the period between April 1 through September 30, 2014, is 128,300 acre-feet for the Owens River Basin or 42% of the long term average.

Figure 1 summarizes Owens Valley runoff and groundwater pumping by LADWP since the 1971 runoff year.

Table 1. Owens Valley Runoff Forecast for 2014-15 Runoff Year

2014 EASTERN SIERRA RUNOFF FORECAST
April 1, 2014

APRIL THROUGH SEPTEMBER RUNOFF

	MOST PROBABLE VALUE (Acre-feet)	MOST PROBABLE VALUE (% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1961 - 2010) (Acre-feet)
MONO BASIN:	45,000	43%	56%	31%	103,522
OWENS RIVER BASIN:	128,300	42%	55%	29%	303,903

APRIL THROUGH MARCH RUNOFF

	MOST PROBABLE VALUE (Acre-feet)	MOST PROBABLE VALUE (% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1961 - 2010) (Acre-feet)
MONO BASIN:	59,200	48%	62%	35%	122,333
OWENS RIVER BASIN:	205,900	50%	62%	37%	412,284

NOTE - Owens River Basin includes Long, Round and Owens Valleys (not incl Laws Area)

MOST PROBABLE - That runoff which is expected if median precipitation occurs after the forecast date.

REASONABLE MAXIMUM - That runoff which is expected to occur if precipitation subsequent to the forecast is equal to the amount which is exceeded on the average once in 10 years.

REASONABLE MINIMUM - That runoff which is expected to occur if precipitation subsequent to the forecast is equal to the amount which is exceeded on the average 9 out of 10 years.

2014 Forecast.xls forecast 4/8/2014 10:20 AM

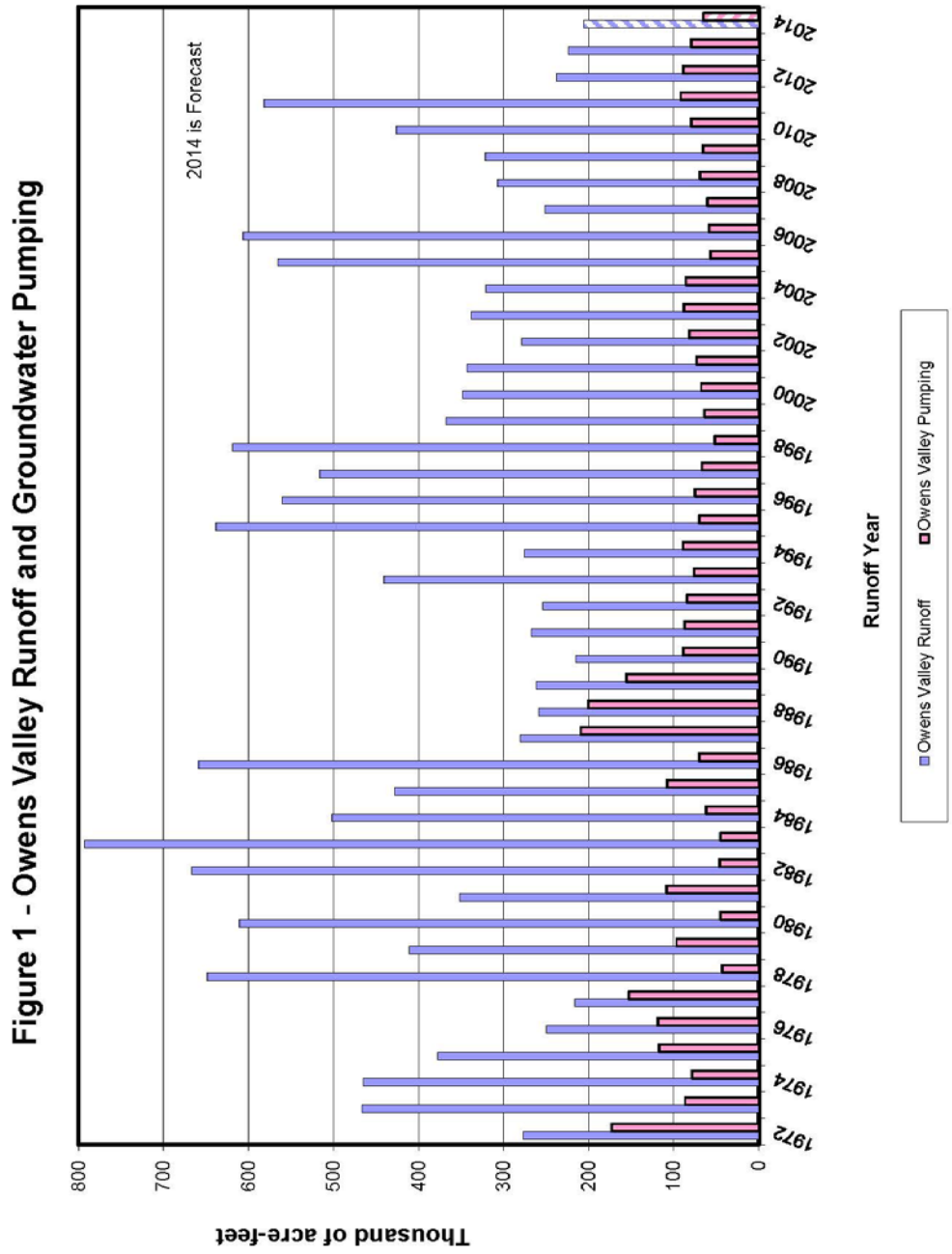


Figure 1. Owens Valley Runoff and Groundwater Pumping

2.2. Owens Valley Groundwater Production

LADWP has prepared its 2014-15 Annual Owens Valley Operations Plan based on the goals and principles of the Water Agreement. The 2014-15 Annual Owens Valley Operations Plan is designed to avoid adverse impacts to the environment while providing a reliable supply of water for in-valley uses and export to Los Angeles for municipal use.

Under the terms of the Water Agreement, the acceptable amount of groundwater pumping from each Owens Valley well field is based on the ON/OFF status of monitoring sites located within each well field and the capacity of the wells linked to those sites (see Water Agreement Sections V.B and V.C). The Water Agreement or Technical Group has designated certain town supply wells, irrigation supply wells, fish hatchery supply wells, enhancement/mitigation (E/M) project supply wells, and other wells determined not to significantly impact areas with groundwater dependent vegetation as exempt from the ON/OFF provisions of the Water Agreement. These exempt wells may be pumped for their intended purpose. Table 2 lists the ON/OFF status of the monitoring sites within the Owens Valley as of April 2014.

Table 3 provides a breakdown of available annual pumping capacity and planned groundwater pumping for the first six months of the 2014-15 runoff year by well field. Pursuant to Water Agreement Section V.D, LADWP shall submit a plan for the second six months of the runoff year on or about October 20, 2014. Table 3 also shows the monitoring sites in ON status as of April 2014, the wells associated with the ON status monitoring sites, and the exempt wells in each well field. Approximately 134,411 acre-feet of water are available for groundwater pumping from Owens Valley well fields under the terms of the Water Agreement during the 2014-15 runoff year. LADWP plans to pump between 36,920 and 47,930 acre-feet during the first six months of the 2014-15 runoff year. Groundwater pumping will provide water for Owens Valley uses and Los Angeles municipal supply. Working both independently and with the Inyo/Los Angeles Technical Group, LADWP will monitor Owens Valley environmental conditions to assess if further changes to the planned pumping are needed. LADWP's 2014-15 groundwater management approach is substantially more conservative than the environmentally conservative pumping plans advocated by the Standing Committee during the dry years of the early 1990s. While LADWP plans to pump considerably less groundwater than made available under Water Agreement Section V, the Inyo/Los Angeles Standing Committee may agree upon additional reductions in groundwater pumping pursuant to Water Agreement Section IV.A.

Figure 2 compares the amount of Owens Valley groundwater pumping provided by the provisions of Water Agreement and the actual groundwater pumping by LADWP for each runoff year since 1992 (available pumping was not calculated prior to 1992). LADWP's anticipated pumping for the 2014-15 runoff year is consistent with its past conservative pumping plans. LADWP is committed to conducting its operations in a conservative, responsible, and environmentally sustainable manner.

In addition to complying with the ON/OFF provisions and the environmental protection goals of the Water Agreement, LADWP's 2014-15 pumping program considers the groundwater mining provisions of the Green Book. Table 4 shows the latest update of

the mining calculations based on the procedures described in Section IV.C of the Green Book. As shown in this table, none of the well fields in the Owens Valley will be in deficit by the end of the first half of the 2014-15 runoff year.

Table 5 is a list of Owens Valley wells exempted under the Water Agreement or by approval of the Technical Group from linkage to vegetation monitoring sites and the ON/OFF provisions. The table includes a list of wells by well number, general location of the exempt well, and the reason the well is exempt.

Table 6 details planned groundwater pumping for the first six months of the 2014-15 runoff year on a month-to-month basis for each well field. Pumping for town water systems, fish hatcheries, and enhancement/mitigation (E/M) projects is included in the pumping distribution. Owens Valley groundwater production for the 2014-15 runoff year is consistent with the provisions of the Water Agreement. No additional testing of wells subject to the Water Agreement is included in this year's planned pumping total and if performed, will be in addition to the planned pumping for 2014-15. Planned pumping may be increased to provide freeze protection for the Los Angeles Aqueduct (LAA).

The following is a discussion of the planned pumping program by well field. Figures 3, 4, and 6 through 10 locate LADWP's Owens Valley pumping wells by well field. These figures show the location of production wells, monitoring wells, and vegetation monitoring sites in each area.

Table 2. Soil/Vegetation Water Balance Calculations for April 2014 According to Section III of the Green Book

Site	Oct 2013 soil AWC	40% Annual Precip.	Proj. soil AWC	October 2013 Veg Water Req./ Water Req. for well turn-on	Oct 2013 Status	April 2014 soil AWC	April 2014 Status	Soil AWC req. for well turn-on
	(cm)	(cm)	(cm)	(cm)		(cm)		(cm)
L1	1.4	NA	1.4	2.9/15.6	OFF	3.3	OFF	15.6, OFF 7-10
L2	13.6	6.3	19.9	6.1/NA	ON	14.3	ON	NA
L3	7.8	NA	7.8	5.6/25.2	OFF	14.1	OFF	25.2, OFF 10-11
BP1	2.7	NA	2.7	4.6/22.9	OFF	3.6	OFF	22.9†, OFF 10-97
BP2	1.1	NA	1.1	8.6/28.4	OFF	3.0	OFF	28.4, OFF 7-98
BP3	2.9	NA	2.9	7.3/10.6	OFF	5.3	OFF	10.6, OFF 7-12
BP4	43.2	6.6	49.8	10.1/NA	ON	45.8	ON	NA
TA3	6.8	NA	6.8	12.9/26.0	OFF	8.5	OFF	26.0, OFF 10-11
TA4	14.0	NA	14.0	7.4/23.3	OFF	18.3	OFF	23.3, OFF 10-11
TA5	20.8	6.6	27.4	1.9/NA	ON	23.4	ON	NA
TA6	9.7	NA	9.7	7.7/17.6	OFF	11.1	OFF	17.6, OFF 10-11
TS1	1.8	NA	1.8	5.3/20.4	OFF	3.1	OFF	20.4†, OFF 10-96
TS2	8.0	5.8	13.8	4.9/NA	ON	10.3	ON	NA
TS3	21.7	NA	21.7	16.0/32.9	OFF	28.1	OFF	32.9, OFF 10-12
TS4	29.2	NA	29.2	37.0/55.9	OFF	39.8	OFF	55.9, OFF 10-11
IO1	21.0	NA	21.0	48.6/42.2	OFF	24.1	OFF	42.2, OFF 10-98
IO2	4.6	NA	4.6	4.0/18.9	OFF	4.1	OFF	18.9, OFF 7-11
SS1	19.3	5.2	24.5	12.4/NA	ON	18.6	ON	NA
SS2	4.1	NA	4.1	5.4/25.6	OFF	3.7	OFF	25.6, OFF 7-11
SS3	20.7	NA	20.7	10.6/33.8	OFF	20.7	OFF	33.8, OFF 10-11
SS4	4.2	NA	4.2	4.9/15.9	OFF	6.7	OFF	15.9, OFF 7-05
BG2	25.3	5.3	30.6	3.7/NA	ON	23.8	ON	NA

†: These values of soil water required for well turn-on were derived using calculations based on %cover that were routinely performed in the past. The values have not been updated to conform to the Green Book equations in Section III.D.2, p. 57-59.

Table 3. Annual Pumping Capacity According to Monitoring Sites with ON Status and Planned Pumping for the First Six Months of Runoff Year 2014-15

Wellfield	Monitoring	Associated Production Wells	Available Capacity (AF/year)	Planned Pumping (AF)
Laws	L2	236, 239, 243, 244	10,426	
	L5*	245, 387, 388	9,122	
	Exempt	236**, 354, 365, 413	3,337	
	Wellfield Pumpage		**22,885**	**5,760-7,200**
Bishop				
	All wells	140, 371, 406, 407, 408, 410, 411, 412	18,000	
	Wellfield Pumpage		**18,000**	**7,200-8,700**
Big Pine				
	BP4	331	7,530	
	Exempt	218, 219, 330, 332, 341, 352, 375, 415	28,750	
	Wellfield Pumpage		**36,280**	**10,200-11,550**
Taboose Aberdeen				
	TA5	349	12,091	
	Exempt	118	2,462	
	Wellfield Pumpage		**14,553**	**1,500-4,500**
Thibaut Sawmill				
	TS2	155	796	
	Exempt	351, 356	13,200	
	Wellfield Pumpage		**13,996**	**4,600**
Indep. - Oak				
	Exempt	59, 60, 61, 65, 357, 383EM, 384EM, 401	13,973	
	Wellfield Pumpage		**13,973**	**5,280-6,600**
Symmes Shepherd				
	SS1	69, 392, 393	8,254	
	Exempt	402EM	1,000	
	Wellfield Pumpage		**9,254**	**720-2,760**
Bairs Georges	BG2	76, 343, 348, 403	4,770	
	Exempt	343	500	
	Wellfield Pumpage		**4,770**	**1,080-1,440**
Lone Pine	Exempt	344, 346, 390	700	
	Wellfield Pumpage		**700**	**580**
	Water Agreement Owens Valley Total		**134,411**	**36,920-47,930**

* Monitoring site has yet to be located.

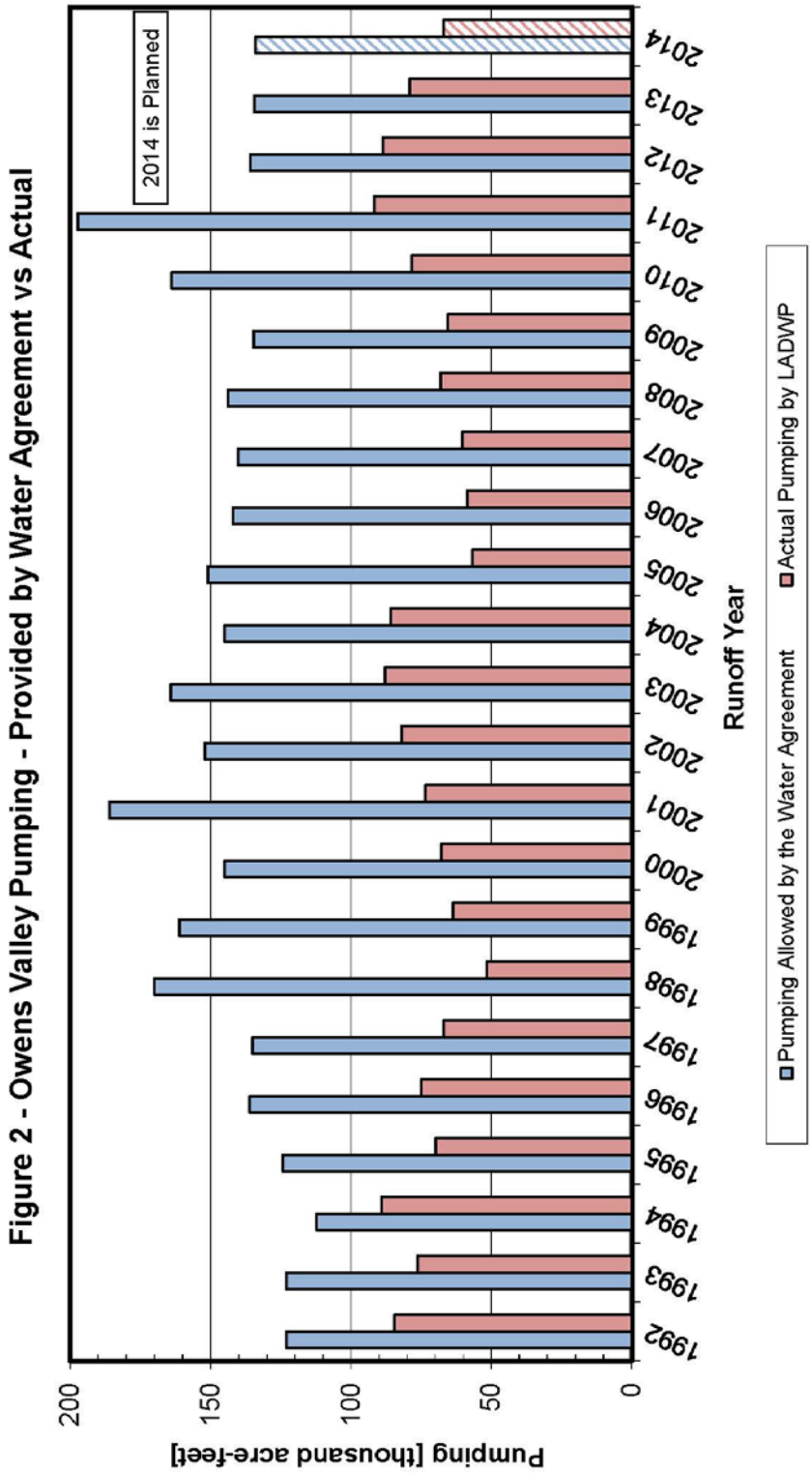


Figure 2. Owens Valley Pumping – Provided by Water Agreement vs Actual

Table 4 - Summary of Recharge and Pumping for Water Year 1994 - 2013 and Estimated Pumping Limit for Apr-Sep 2014 in Acre-Feet

Water	OWENS VALLEY	LAWS		BISHOP		BIG PINE		TABOOSE-THIBAUT		IND-SYM-BAIRS		LONE PINE		OWENS VALLEY	
Year	Runoff Percent	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping
1995	137%	28,115	7,053	55,397	4,799	38,758	21,970	46,375	17,121	55,103	12,631	22,296	1,037	246,044	64,611
1996	123%	12,588	11,535	50,754	9,153	33,228	24,331	42,097	19,906	51,113	12,382	19,757	1,106	209,537	78,413
1997	125%	15,237	8,349	49,949	9,606	33,474	24,002	42,837	21,774	52,100	9,461	19,962	1,128	213,559	74,320
1998	139%	28,195	470	55,309	7,159	40,065	23,729	46,845	16,496	55,605	7,946	20,341	1,365	246,361	57,165
1999	95%	18,546	1,697	42,388	8,672	28,013	21,832	32,426	16,700	41,090	8,424	15,481	2,141	177,944	59,466
2000	80%	11,102	3,974	39,539	10,804	23,213	20,212	27,567	23,143	37,015	8,497	14,344	1,036	152,780	67,666
2001	77%	12,259	2,295	38,772	10,176	22,695	26,785	27,960	17,247	33,469	8,685	13,520	1,942	148,674	67,130
2002	63%	11,184	3,480	35,514	10,839	19,715	26,885	22,495	25,288	28,820	10,599	12,103	1,345	129,831	78,436
2003	75%	11,454	5,786	38,486	11,407	21,883	25,885	26,166	27,387	32,455	14,294	13,088	1,179	143,532	85,938
2004	71%	11,138	7,412	37,149	11,777	21,126	26,149	25,044	25,159	29,771	15,750	11,357	1,119	135,586	87,366
2005	120%	18,389	3,841	47,471	7,093	32,686	19,423	40,500	18,674	46,441	18,585	17,191	1,128	202,678	68,744
2006	138%	35,336	3,013	54,337	5,667	39,650	20,686	47,757	15,707	53,873	9,944	19,956	1,119	250,911	56,136
2007	64%	10,947	7,840	34,470	10,516	19,757	20,525	25,855	14,578	27,624	10,674	10,454	1,100	129,108	65,233
2008	68%	10,855	7,939	35,850	10,228	20,432	20,243	28,619	18,542	27,759	9,219	11,563	858	135,078	67,029
2009	73%	11,049	6,233	37,416	12,123	21,555	22,891	29,385	14,751	29,359	9,603	12,147	775	140,912	66,376
2010	93%	11,154	6,333	41,987	10,509	26,566	22,514	35,541	20,239	36,863	13,031	14,252	626	166,362	73,252
2011	134%	17,375	7,188	52,182	9,889	35,539	27,089	47,562	21,933	50,619	14,527	19,057	998	222,333	81,624
2012	72%	11,058	9,514	37,315	11,134	21,297	27,220	28,369	26,156	28,905	16,570	11,538	1,048	138,482	91,642
2013	62%	10,644	6,642	34,811	11,536	19,408	26,115	24,795	25,225	24,749	17,907	10,364	721	124,771	88,146
2014 (a)	46%	10,945	224	29,070	2,336	13,648	10,850	17,198	8,200	19,437	3,403	8,552	174	98,850	25,187
(b) TOTAL		307,571	110,818	848,164	185,423	532,710	459,336	665,394	394,226	762,170	232,132	297,324	21,945	3,413,333	1,403,880
Estimated Apr-Sep 2014 Pumping Limit			196,753		662,741		73,374		271,168		530,038		275,379		2,009,453

(a) Estimated Recharge for the 2014 Water Year, Approximate Pumping for First Half of Water year 2014 (Oct-Mar).
(b) Estimated 20 Year Total for Recharge; actual 19.5 Year Total for Pumping.

Table 5. Exempt Wells in Owens Valley

LADWP Groundwater Pumping Wells Exempt from Water Agreement ON/OFF Provisions

Revised June 22, 2010

Well Number	Well Field	Duration	Reason
354 p[1]	Laws	Annual	Sole Source-Town Supply
413 b[1]	Laws	Annual	Sole Source-Town Supply and E/M Supply
341 b[1]	Big Pine	Annual	Sole Source-Town Supply
352 b[1]	Big Pine	Annual	Same as above
415 p[1] [6]	Big Pine	Annual	Same as above
357 p[1]	Independence-Oak	Annual	Same as above
384 b[1] [2]	Independence-Oak	Annual	Same as above
344 p[1]	Lone Pine	Annual	Same as above
346 b[1]	Lone Pine	Annual	Same as above
330[3]	Big Pine	Annual	Sole Source-Fish Hatcheries
332[3]	Big Pine	Annual	Same as above
409[3]	Big Pine	Annual	Same as above
351	Thibaut-Sawmill	Annual	Same as above
356	Thibaut-Sawmill	Annual	Same as above
218	Big Pine	Annual	No impact on areas with groundwater dependent vegetation
219	Big Pine	Annual	Same as above
375	Big Pine	Annual	Make-up for Big Pine Regreening
118	Taboose-Aberdeen	Annual	Same as above
401	Independence-Oak	Annual	Same as above
59	Independence-Oak	Annual	Same as above
60	Independence-Oak	Annual	Same as above
65	Independence-Oak	Annual	Same as above
383 E/M	Independence-Oak	Annual	Same as above
384 E/M[2]	Independence-Oak	Annual	Same as above
61	Independence-Oak	Irrigation season	Sole Source-Irrigation; no impact on areas with groundwater dependent vegetation
402 E/M	Symmes-Shepherd	Irrigation season	Same as above
390 E/M	Lone Pine	Irrigation season	Same as above
343	Bairs-Georges	Irrigation season in below average runoff years	Sole Source-Irrigation in below average runoff years
365[4]	Laws	Annual	Sole Source-Irrigation; no impact on areas with groundwater dependent vegetation
236[4]	Laws	Irrigation Season	Sole Source-Irrigation
413 E/M[5]	Laws	Irrigation Season	Sole Source-Irrigation

1. Primary town supply well is designated by p; Backup town supply well is designated by b.
2. Well 384 is a dual purpose well, water to Enhancement/Mitigation (E/M) supply is indicated by 384 and Independence domestic supply is indicated as 384 b.
3. Wells 330, 332, and 409 may only be pumped two at a time, unless pumped for testing or emergencies.
4. Well 365 designated as primary and Well 236 designated as backup irrigation supply.
5. Well 413 is a dual purpose well. Water is supplied to the Laws Museum Irrigation Projects east and west of the museum and Laws domestic supply is indicated as 413b.
6. Currently not pump-equipped.

Table 6. Planned Owens Valley Pumping for the First Six Months of 2014-15 Runoff Year (acre-feet)

Month	Laws	Bishop	Big Pine	Taboose-Aberdeen	Thibaut-Sawmill	Indep.-Oak	Symmes-Shepherd	Bairs-Georges	Lone Pine	TOTAL
April	960-1,200	1,200	1,700	250	1,100	880-1,100	120	180	90	6,480-6,940
May	960-1,200	1,200-1,500	1,700	250	700	880-1,100	120	180	90	6,080-6,840
June	960-1,200	1,200-1,500	1,700	250	700	880-1,100	120	180	100	6,090-6,850
July	960-1,200	1,200-1,500	1,700-2,150	250-1,250	700	880-1,100	120-800	180-300	100	6,090-9,100
August	960-1,200	1,200-1,500	1,700-2,150	250-1,250	700	880-1,100	120-800	180-300	100	6,090-9,100
September	960-1,200	1,200-1,500	1,700-2,150	250-1,250	700	880-1,100	120-800	180-300	100	6,090-9,100
Water Agreement TOTAL	5,760-7,200	7,200-8,700	10,200-11,550	1,500-4,500	4,600	5,280-6,600	720-2,760	1,080-1,440	580	36,920-47,930

Laws Well Field (Figure 3)

Monitoring site L2 is in ON status. Production wells controlled by this monitoring site have an available production capacity of 10,426 acre-feet. Wells linked to monitoring site L5 have a capacity of 9,122 acre-feet. Exempt wells within the Laws Well Field have a capacity of 3,337 acre-feet. The sum total of available pumping capacity in the Laws Well Field is 22,885 acre-feet. Well 365 has had a reduction in production capacity and is in the process of being replaced. Well 236, associated with monitoring site L2, is used as a backup along with Well 365 as an exempt well irrigation water supply.

Planned groundwater pumping for the first half of the runoff year in the Laws Well Field is between approximately 5,760 to 7,200 acre-feet, contingent on water needs and environmental conditions. Groundwater pumping is planned to supply Owens Valley demands including the town water system, E/M projects, and irrigated lands.

Bishop Well Field (Figure 4)

Pumping in the Bishop Well Field is governed by the provisions of the Hillside Decree and the Water Agreement, which limit LADWP's annual groundwater extractions (pumping and flowing wells) from the Bishop Cone to an amount commensurate with the total amount of water used on City-owned lands on the Bishop Cone (including conveyance and other losses). Under the current audit protocols, total water used on City-owned lands within the Bishop Cone area is approximately 29,000 acre-feet per year. The current total available groundwater extraction capacity in the Bishop Well Field is approximately 18,000 acre-feet. The planned groundwater pumping from the Bishop Well Field is between approximately 7,200 to 8,700 acre-feet for the first half of the 2014-15 runoff year, contingent on water needs and environmental conditions.

Figure 5 shows water use on City-owned land on Bishop Cone in comparison to the groundwater extractions (flowing and pumping wells) for runoff years 1996 to present.

The current Bishop Cone Audit does not include a number of known uses and losses, including some uses that are currently being measured. These unaccounted for uses should be added to the total Bishop Cone Audit and the audit protocols should be revised to more accurately reflect actual uses and losses.

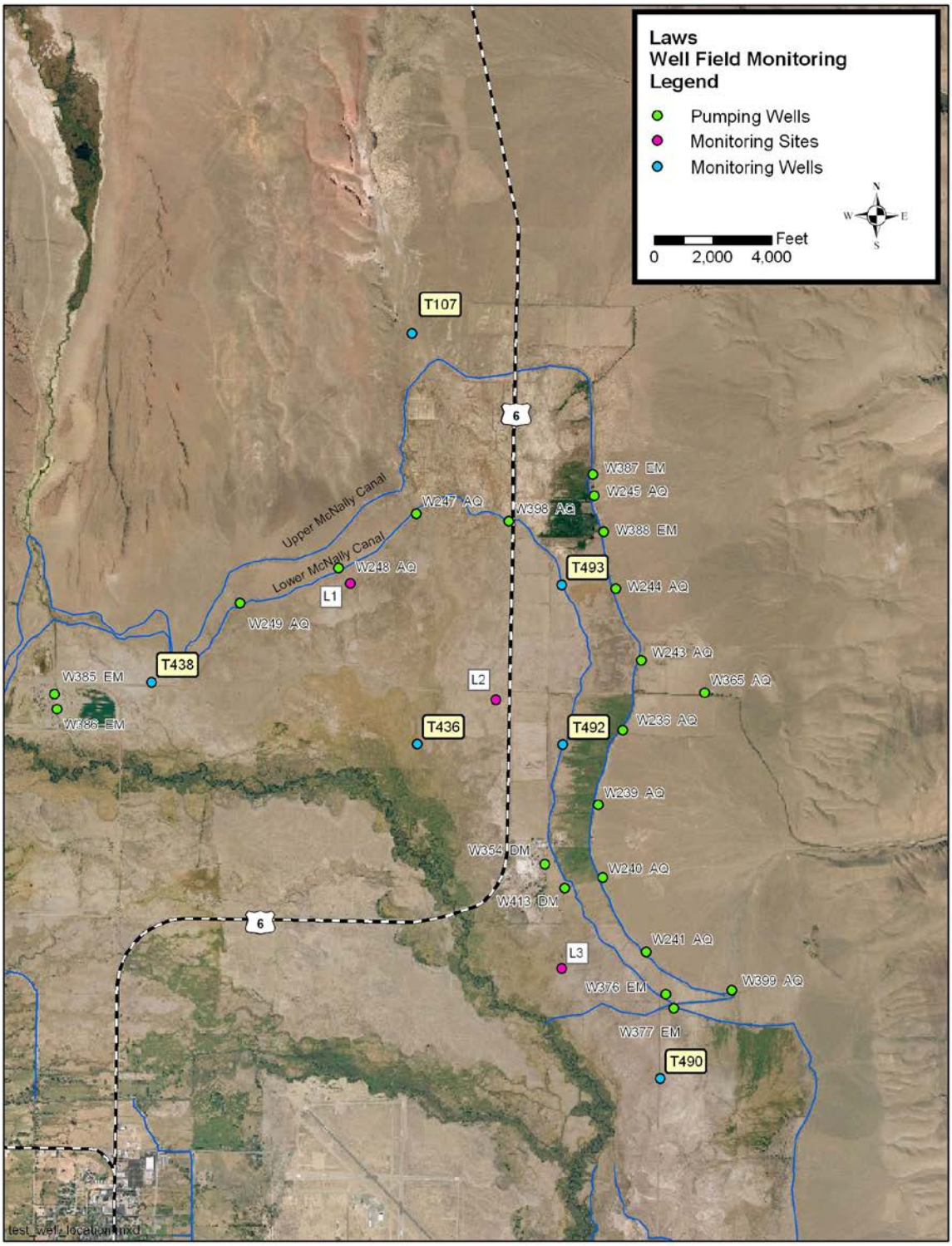


Figure 3. Laws Well Field

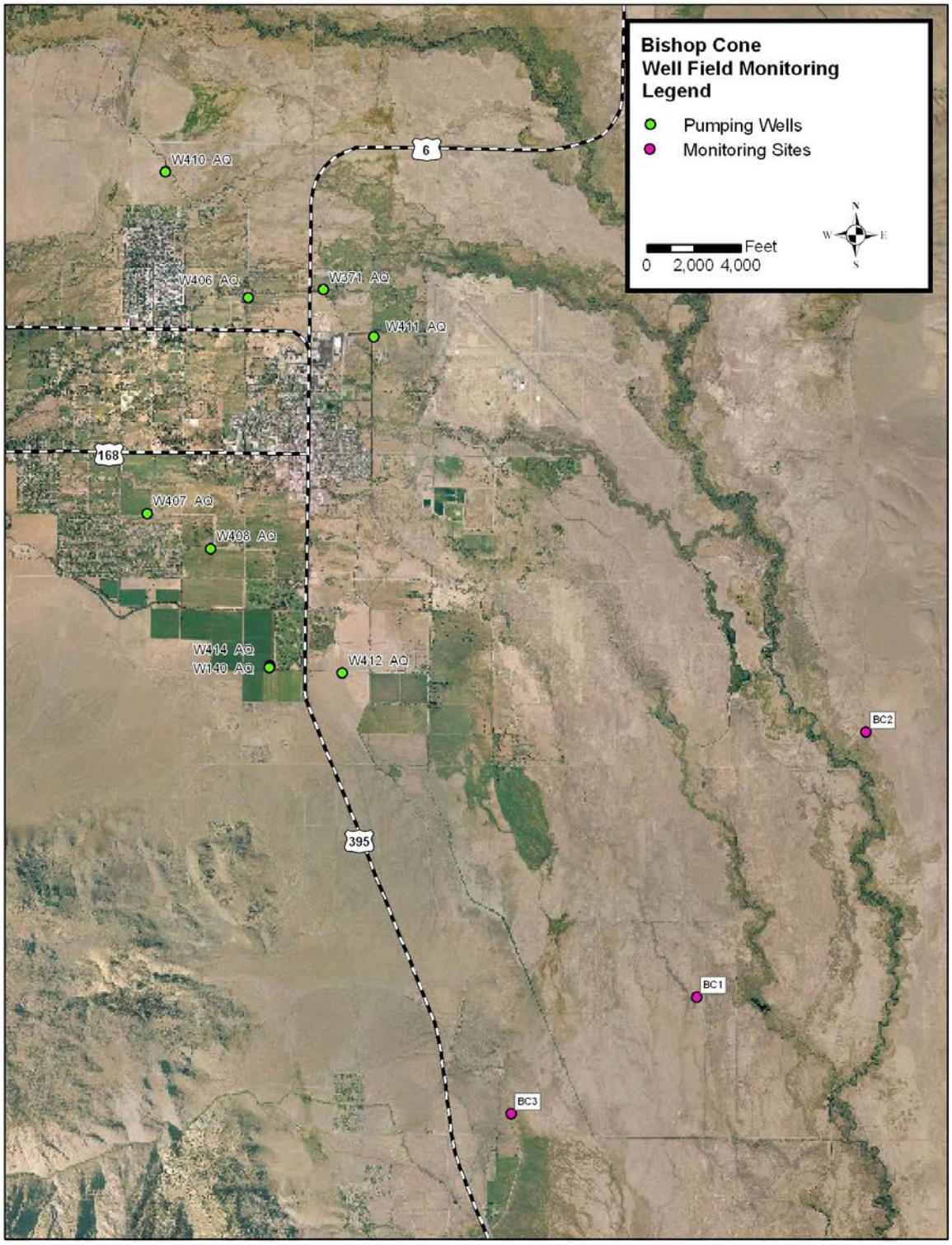


Figure 4. Bishop Well Field

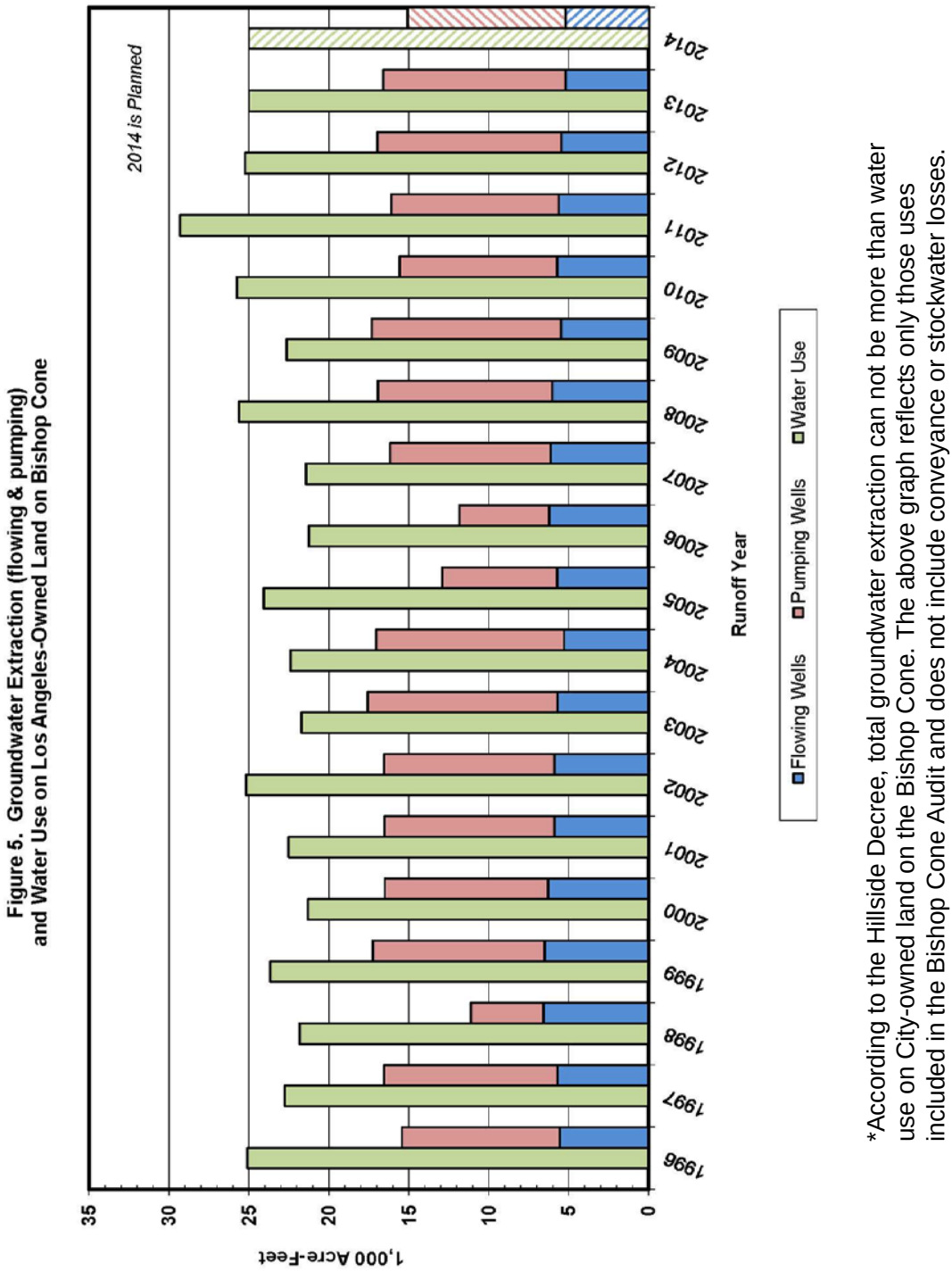


Figure 5. Groundwater Extraction (flowing & pumping) and Water Use on Los Angeles-Owned Land on Bishop Cone

Big Pine Well Field (Figure 6)

Monitoring sites BP4 is in ON status. Production Well 331, managed in conjunction with monitoring site BP4, has a production capacity of 7,530 acre-feet. Exempt wells including Well 218, Well 219, town supply wells, and Fish Springs Fish Hatchery wells in the Big Pine Well Field have a combined capacity of 28,750 acre-feet. The total available capacity in the Big Pine Well Field is 36,280 acre-feet. The total planned pumping in the Big Pine Well Field is for the first six months of the 2014-15 runoff year is between approximately 10,200 acre-feet and 11,550 acre-feet, contingent on water needs and environmental conditions.

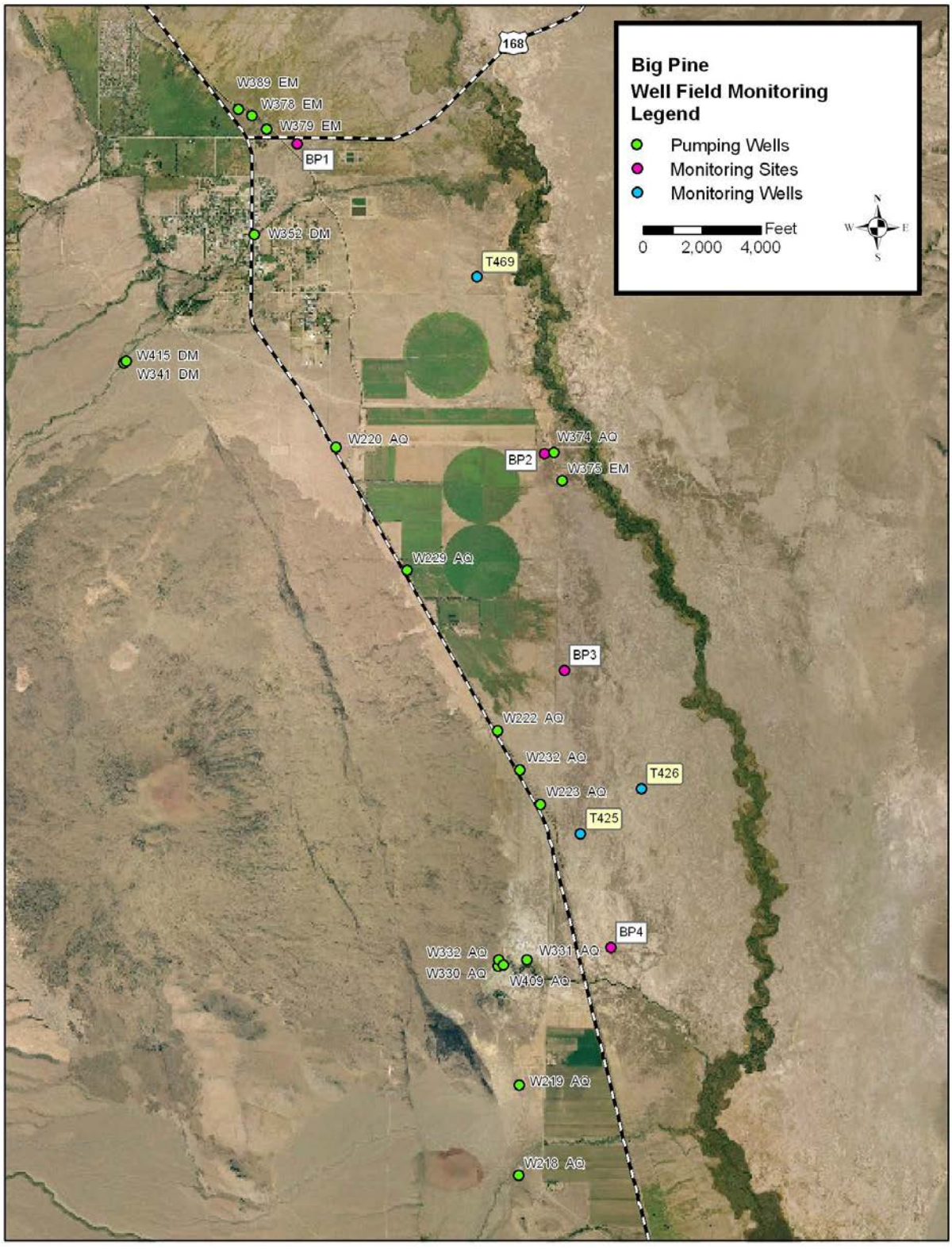


Figure 6. Big Pine Well Field

Taboose-Aberdeen Well Field (Figure 7)

Monitoring site TA5 is in ON status. Production Well 349 is controlled by monitoring site TA5 and has an available pumping capacity of approximately 12,091 acre-feet. Exempt Well 118 in the Taboose-Aberdeen Well Field has a capacity of 2,462 acre-feet. The total available groundwater pumping capacity in the Taboose-Aberdeen Well Field is 14,553 acre-feet. The planned groundwater pumping in the Taboose-Aberdeen Well Field for the first half of the 2014-15 runoff year is contingent on water needs and prevailing environmental conditions and will range between 1,500 acre-feet and approximately 4,500 acre-feet.

Thibaut-Sawmill Well Field (Figure 8)

Monitoring sites TS2 is in ON status. Production well W155, controlled by monitoring site TS2 has a production capacity of 796 acre-feet. Exempt Blackrock Fish Hatchery supply wells W351 and W356 have capacities of 13,200 acre-feet and 8,110 acre-feet respectively. Blackrock Fish Hatchery demand for the 2014-15 runoff year is expected to be approximately 8,500 acre-feet. The total available pumping capacity in the Thibaut-Sawmill Well Field for the 2014-15 runoff year is about 13,996 acre-feet. Total planned pumping in the Thibaut-Sawmill Well Field for the first half of the 2014-15 runoff year is planned to be 4,600 acre-feet, subject to hatchery demands, water needs, and environmental conditions.

Independence-Oak Well Field (Figure 8)

No monitoring sites in the Independence-Oak Well Field are in ON status. Independence-Oak exempt wells have a combined capacity of 13,973 acre-feet. The total available pumping capacity in the Independence-Oak Well Field is 13,973 acre-feet. The anticipated range of groundwater pumping in the Independence-Oak Well Field for the first six months of the 2014-15 runoff year is between 5,280 and 6,600 acre-feet, which includes water for municipal, irrigation, town, and E/M project supply.

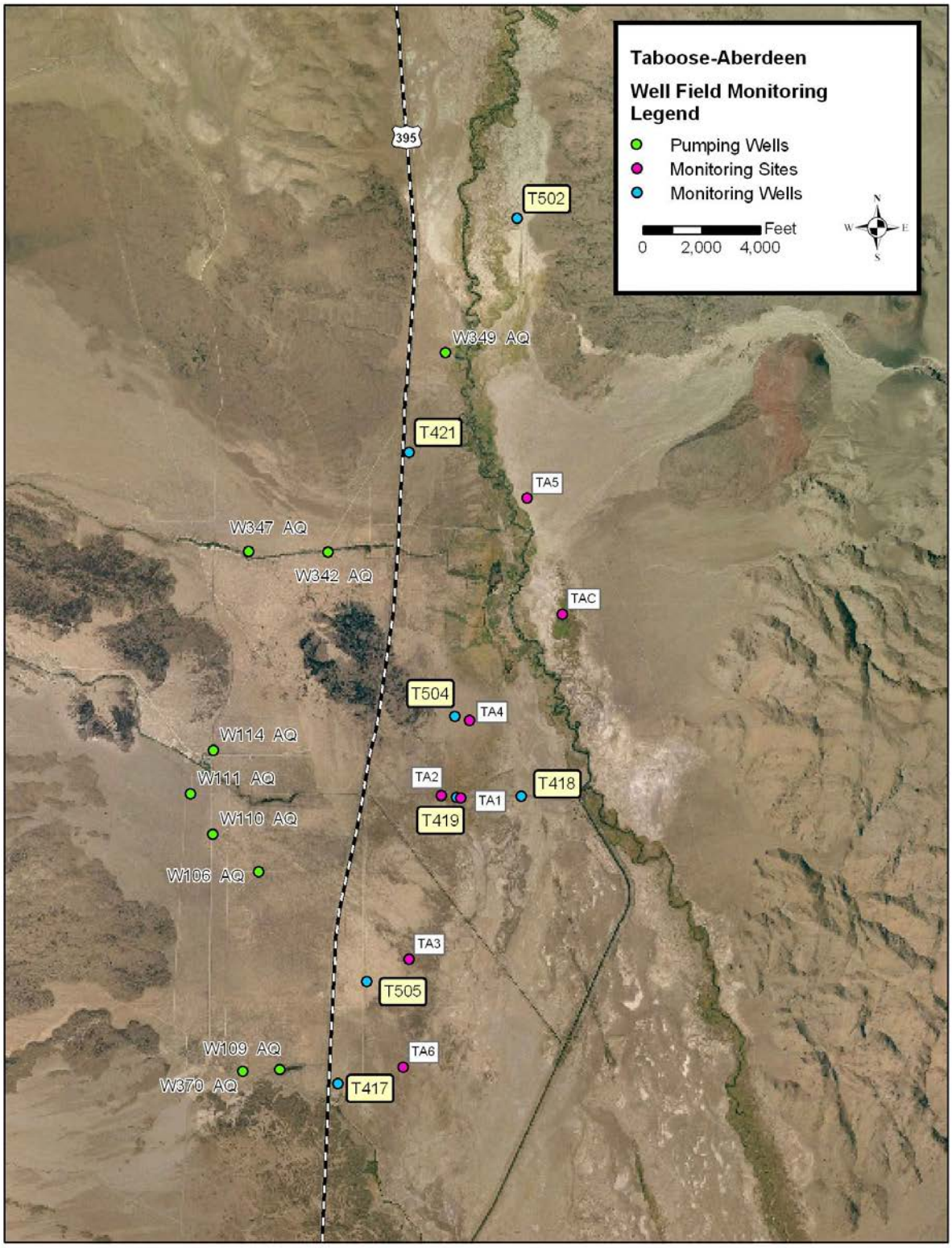


Figure 7. Taboose-Aberdeen Well Field

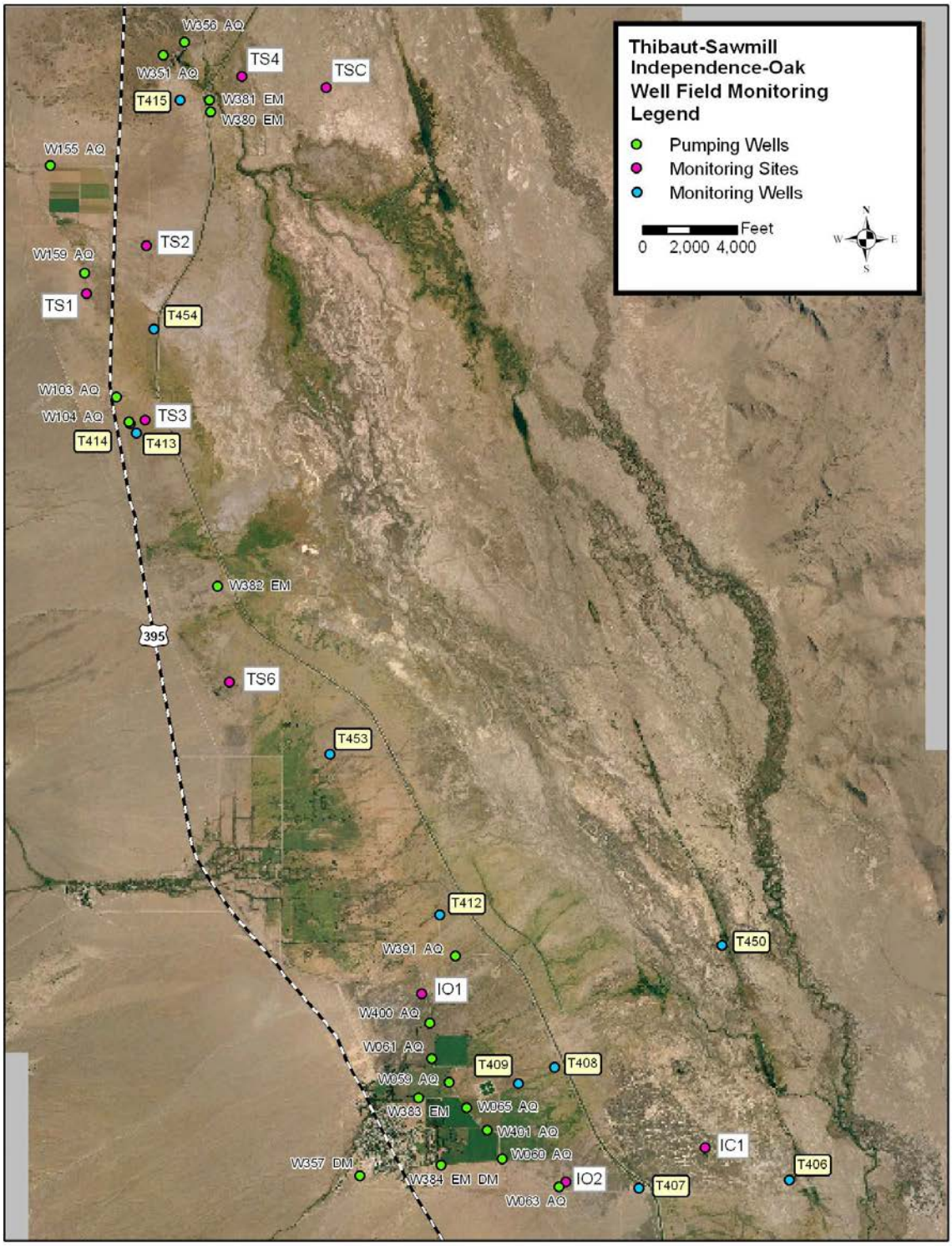


Figure 8. Thibaut-Sawmill and Independence-Oak Well Fields

Symmes-Shepherd Well Field (Figure 9)

Monitoring sites SS1 is in ON status. Monitoring site SS1 has an annual capacity of 8,254 acre-feet. Exempt Well 402 has a capacity of about 1,000 acre-feet. Total available capacity in the Symmes-Shepherd Well Field for the 2014-15 runoff year is approximately 9,254 acre-feet. The total pumping in the Symmes-Shepherd Well Field for the first six months of the 2014-15 runoff year is planned to be between approximately 720 and 2,760 acre-feet, contingent on water needs and environmental conditions.

Bairs-Georges Well Field (Figure 9)

Vegetation monitoring site BG2 is in ON status. The wells managed under this site have a combined annual capacity of 4,770 acre-feet. Exempt Well 343 has an available capacity of 500 acre-feet (based upon a six month exemption period). The total available capacity in the Bairs-Georges Well Field for the 2014-15 runoff year is 4,770 acre-feet. Groundwater pumping in the Bairs-Georges Well Field for the first six months of the runoff year is planned to be between approximately 1,080 and 1,440 acre-feet, contingent on water needs and environmental conditions.

Lone Pine Well Field (Figure 10)

Lone Pine exempt wells are Well 344 and Well 346, and E/M project supply Well 390. These three wells have an annual capacity of approximately 700 acre-feet. Well 390 has degraded in recent years and is being replaced with Well 425, which has an annual capacity of 1448 acre-feet.

Well 416 is a production well in the Lone Pine Well Field drilled in 2002. Hydrologic testing was conducted on Well 416 during the 2009-10 runoff year. The Technical Group has been requested to designate a monitoring site for this well.

The planned groundwater pumping from the Lone Pine Well Field during the first six months of the 2014-15 runoff year is 580 acre-feet, contingent on water needs and environmental conditions.

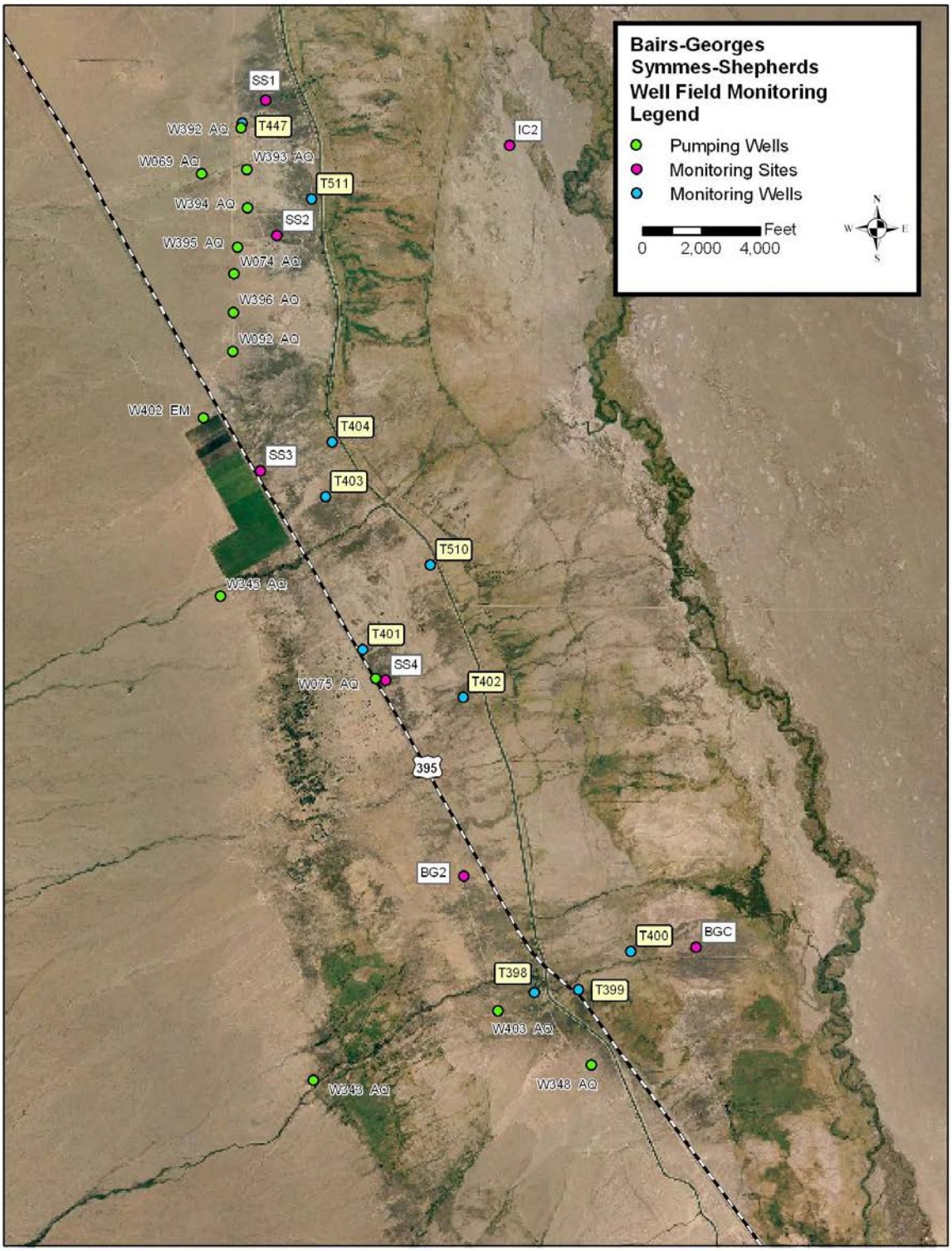


Figure 9. Bairs-Georges and Symmes-Sheperds Well Fields

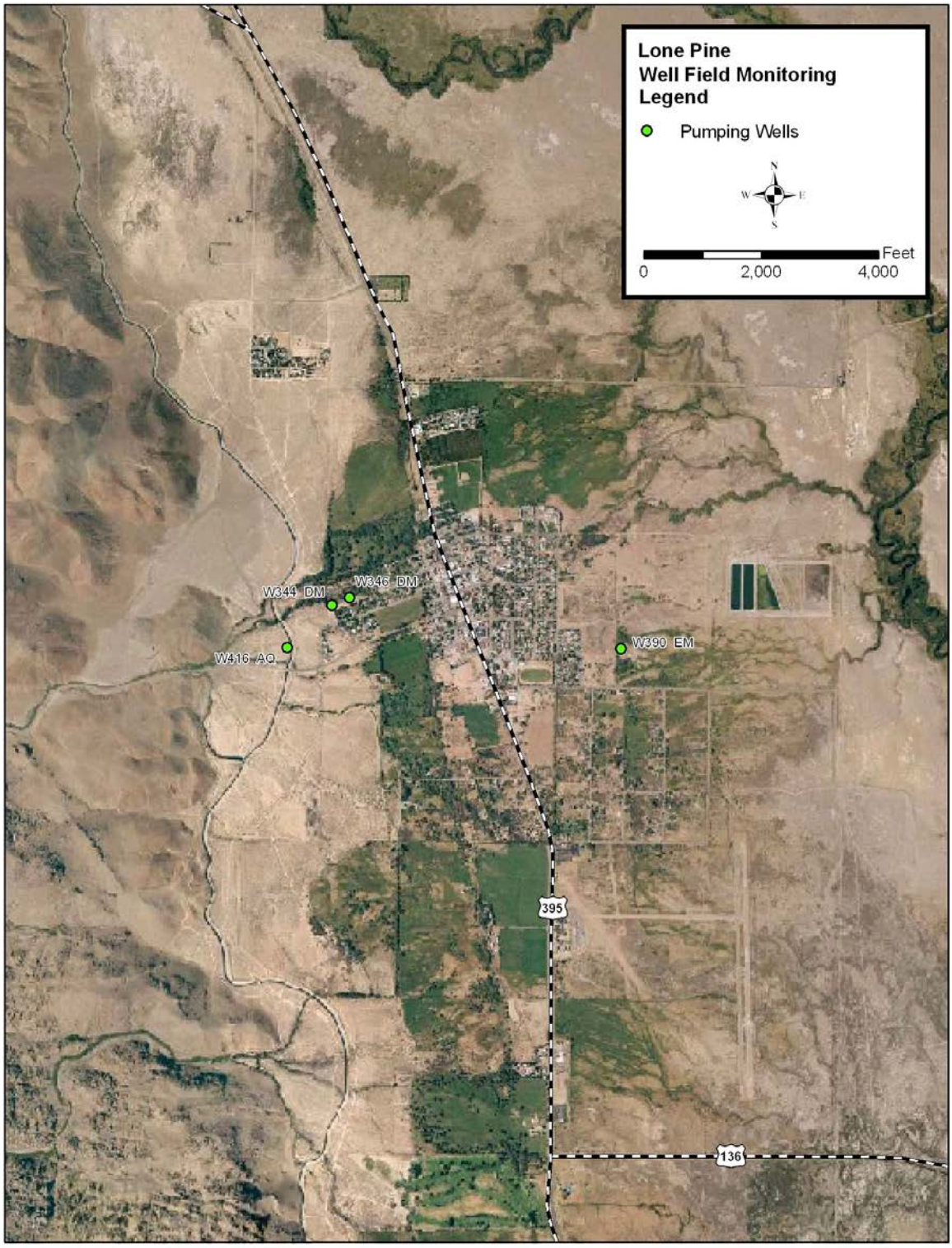


Figure 10. Lone Pine Well Field

2.3. Owens Valley Uses (Including Enhancement/Mitigation Projects)

Table 7 shows the historic (1981-82) uses and the planned monthly uses within the Owens Valley for 2014-15. The in-valley uses shown on Table 7 consist of irrigation, stockwater, recreation, and wildlife projects, E/M supply, Lower Owens River Project (LORP) usage, 1600 Acre-Feet Projects, and usage pursuant to California Health and Safety Code Section 42316 for dust abatement projects on Owens Lake. As shown in Table 7 and Figure 11, LADWP plans to provide approximately 186,900 acre-feet for in-valley uses this runoff year, not including water supplied to the Owens Valley reservations.

The primary consumptive use of water in the Owens Valley is the Owens Lake Dust Mitigation Program (OLDMP). Water use in the 2013-14 runoff year by the OLDMP was 72,700 acre-feet. Depending on prevailing conditions, water use by the OLDMP in 2014-15 may be as much as 95,000 acre-feet.

Releases to the LORP from the LAA Intake facility began on December 6, 2006. An average flow of over 40 cubic feet per second (cfs) is now maintained throughout the entire 62 mile stretch of the Lower Owens River, south of the Intake structure. When needed, the releases at the Intake are augmented through additional releases at the Independence, Blackrock, Georges, Locust, and Alabama Spill Gates to maintain a continuous flow of at least 40 cfs in the river channel. Table 7 shows estimated 2014-15 water use by the Lower Owens River on a monthly basis. Water use by the project during 2013-14 was approximately 18,200 acre-feet. Total LORP uses include the Lower Owens River, Owens Delta, Blackrock Waterfowl Management Area, and project associated losses.

The Water Agreement provides that "... *enhancement/mitigation projects shall continue to be supplied by enhancement/mitigation wells as necessary*." Due to the monitoring sites controlling some of the production wells supplying E/M projects being in OFF status, the amount of water supplied to E/M projects has often exceeded the amount of water provided by E/M project supply wells. LADWP has chosen to supply certain E/M projects from surface water sources in the past. Future E/M allotments may be influenced by the availability of E/M wells and operational demands. Table 8 shows the planned water supply to E/M projects and the forecast imbalance between the E/M project water use and the E/M project groundwater supply through the end of the 2014-15 runoff year. E/M project water demands during the 2014-15 runoff year are expected to be approximately 3,100 acre-feet greater than E/M groundwater pumping. The cumulative E/M water supply shortfall is estimated to be approximately 191,164 acre-feet by the end of the runoff year.

The Technical Group is currently evaluating the water supply issues associated with the E/M projects and will provide its findings to the Inyo/Los Angeles Standing Committee. It is expected that the Standing Committee will be requested to take appropriate action necessary to ensure water supplied to E/M projects is in conformance with the provisions of the Water Agreement.

Table 7. Historic (1981-82) and Projected (2014-15) Water Uses on City-Owned Land in Owens Valley (acre-feet)

Use	April		May		June		July		August		September		TOTAL Apr-Sep	
	1981	2014	1981	2014	1981	2014	1981	2014	1981	2014	1981	2014	1981	2014
Irrigation	3,980	5,300	7,958	8,300	10,373	9,000	9,476	8,500	8,295	8,200	6,321	4,200	46,403	43,500
Stockwater	1,141	1,000	1,319	1,000	1,244	1,000	1,245	1,050	1,219	1,050	1,319	900	7,487	6,000
E / M	0	900	0	1,100	0	1,200	0	1,500	0	1,500	0	1,100	0	7,300
LORP	0	700	0	1,500	0	3,900	0	4,300	0	2,700	0	2,600	0	15,700
Owens Lake	0	13,200	0	13,200	0	12,700	0	3,000	0	8,600	0	12,700	0	63,400
Rec. & Wildlife	379	500	804	700	1,160	900	1,455	1,000	1,381	1,000	1,406	700	6,585	4,800
1600 ACFT Proj.	0	100	0	210	0	90	0	140	0	90	0	100	0	730
Total	*5,500*	*21,700*	*10,081*	*26,010*	*12,777*	*28,790*	*12,176*	*19,490*	*10,895*	*23,140*	*9,046*	*22,300*	*60,475*	*141,430*

Use	October		November		December		January		February		March		TOTAL Oct-Mar		TOTAL Apr-Mar	
	1981	2014	1981	2014	1981	2014	1982	2014	1982	2014	1982	2014	81-82	14-15	81-82	14-15
Irrigation	263	400	0	0	0	0	0	0	0	0	14	100	277	500	46,680	44,000
Stockwater	1,065	900	1,045	800	1,050	800	1,007	800	1,010	800	1,098	900	6,275	5,000	13,762	11,000
E / M	0	300	0	100	0	100	0	100	0	100	0	100	0	800	0	8,100
LORP	0	900	0	300	0	600	0	300	0	300	0	900	0	3,300	0	19,000
Owens Lake	0	10,800	0	3,900	0	2,000	0	2,000	0	3,900	0	9,000	0	31,600	0	95,000
Rec. & Wildlife	781	700	713	600	585	600	478	600	342	500	447	400	3,326	3,400	9,911	8,200
1600 ACFT Proj.	0	200	0	200	0	90	0	80	0	170	0	130	0	870	0	1,600
Total	*2,109*	*14,200*	*1,758*	*5,900*	*1,615*	*4,190*	*1,485*	*3,880*	*1,352*	*5,770*	*1,559*	*11,530*	*9,878*	*45,470*	*70,353*	*186,900*

NOTE: REC & WILDLIFE INCLUDES LORP OFF-RIVER LAKE & PONDS WATER USE

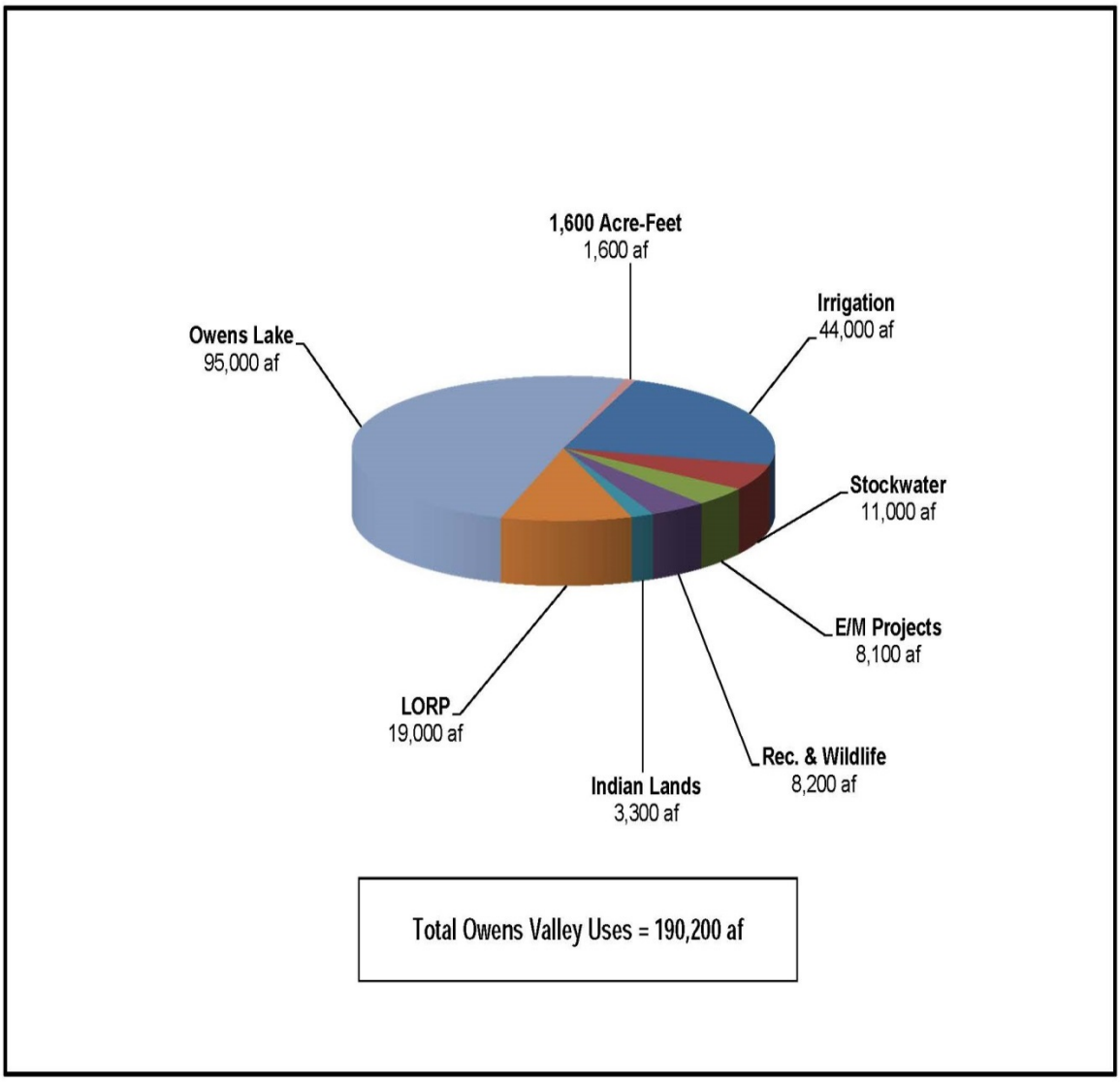


Figure 11. Distribution of Planned Owens Valley Water Use for 2014-15 Runoff Year

Table 8. Owens Valley Groundwater Pumping for Production and E/M Water Use (1984-85 through 2013-14 Runoff Year (acre-feet))

Runoff Year	Owens Valley Runoff (1)	Total Pumping	Non-E/M Pumping	E/M Pumping	E/M Water Uses	E/M Pumping & Use Imbalance	Cumulative E/M Pumping & Use Imbalance
1984-85	121	61,981	61,981	0	0		0
1985-86	103	107,718	107,718	0	109		0
1986-87	158	69,887	69,887	0	12,696	(3)	0
1987-88	68	209,394	179,884	29,510	29,360		0
1988-89	62	200,443	171,012	29,431	30,872		0
1989-90	63	155,972	133,409	22,563	23,330		0
1990-91	52	88,904	70,817	18,087	17,949		0
1991-92	64	87,310	71,520	15,790	20,517	-4,727	-4,727
1992-93	61	84,453	70,688	13,765	18,357	-4,592	-9,319
1993-94	106	76,329	67,338	8,991	19,310	-10,319	-19,638
1994-95	66	89,219	78,209	11,010	20,812	-9,802	-29,440
1995-96	153	69,752	57,180	12,572	22,914	-10,342	-39,782
1996-97	135	74,904	57,981	16,923	23,949	-7,026	-46,808
1997-98	124	66,914	52,760	14,154	21,500	-7,346	-54,154
1998-99	149	51,574	47,353	4,221	19,672	(3)	-54,154
1999-00	89	63,675	59,342	4,333	24,450	-20,117	-74,271
2000-01	84	67,795	61,456	6,339	20,611	-14,272	-88,543
2001-02	83	73,349	70,055	3,294	21,815	-18,521	-107,064
2002-03	66	81,979	76,059	5,920	21,394	-15,474	-122,538
2003-04	81	87,732	80,734	6,998	21,116	-14,118	-136,656
2004-05	77	85,820	78,110	7,710	18,327	-10,617	-147,273
2005-06	136	56,766	51,695	5,071	19,356	-14,285	-161,558
2006-07	146	58,621	53,925	4,696	17,357	(3)	-161,558
2007-08	61	60,338	53,413	6,925	11,312	-4,387	-165,945
2008-09	74	68,971	61,053	7,918	10,646	-2,728	-168,673
2009-10	77	64,138	57,946	6,192	10,695	-4,503	-173,176
2010-11	104	78,248	71,233	7,015	10,807	-3,792	-176,968
2011-12	142	91,699	84,365	7,334	11,993	-4,659	-181,627
2012-13	57	*88,689*	*83,034*	*5,655*	*8,914*	*-3,259*	*-184,886*
2013-14	*54*	*78,880*	*73,888*	*4,992*	*8,170*	*-3,178*	*-188,064*
2014-15 (2)	*50*	*47,930*	*42,930*	*5,000*	*8,100*	*-3,100*	*-191,164*

(1) Based on 1961-2010 average: 415,974 acre-feet. Includes some runoff contribution to the Laws Wellfield from the White Mountains.
(2) this is only Apr-Sep pumping/uses. Forecast for planned pumping of 47,930 acre-feet (planned pumping ranges 36,920-47,930 acre-feet)
(3) surface water was available

4/15/2014

2.4. Aqueduct Operations

Table 9 shows planned LAA reservoir storage levels and monthly deliveries to Los Angeles. Based on this plan, approximately 37,546 acre-feet will be exported from Inyo and Mono Counties to the City during the 2014-15 runoff year.

2.5. Water Exports to Los Angeles

Figure 12 provides a record of water exports from the Eastern Sierra to Los Angeles, averaging approximately 337,000 acre-feet per year since 1970. Figure 13 shows the LAA contribution to the City water supply relative to other sources and the total annual water supplied to Los Angeles since 1970. LADWP estimates that Los Angeles will require about 570,284 acre-feet of water during the 2014-15 runoff year. It is anticipated that water from the Eastern Sierra will make up about 7% of the 2014-15 supply. Water purchases from the Metropolitan Water District of Southern California will provide about 71% of the City's supply, groundwater from Los Angeles area aquifers will provide about 21%, and recycled water will supply about 1% of the City's water needs.

Table 9. Planned Los Angeles Aqueduct Operations for 2014-15 Runoff Year

Month	Owens Valley-Bouquet Reservoir Storage 1st of month Storage (acre-feet)	Aqueduct Delivery to Los Angeles (acre-feet)
April	165,436	1,488
May	170,436	0
June	169,353	0
July	158,417	4,612
August	146,735	6,149
September	130,335	2,975
October	114,654	0
November	114,212	0
December	128,521	6,793
January	140,668	7,003
February	153,383	6,311
March	163,237	2,216
TOTAL		***37,546***

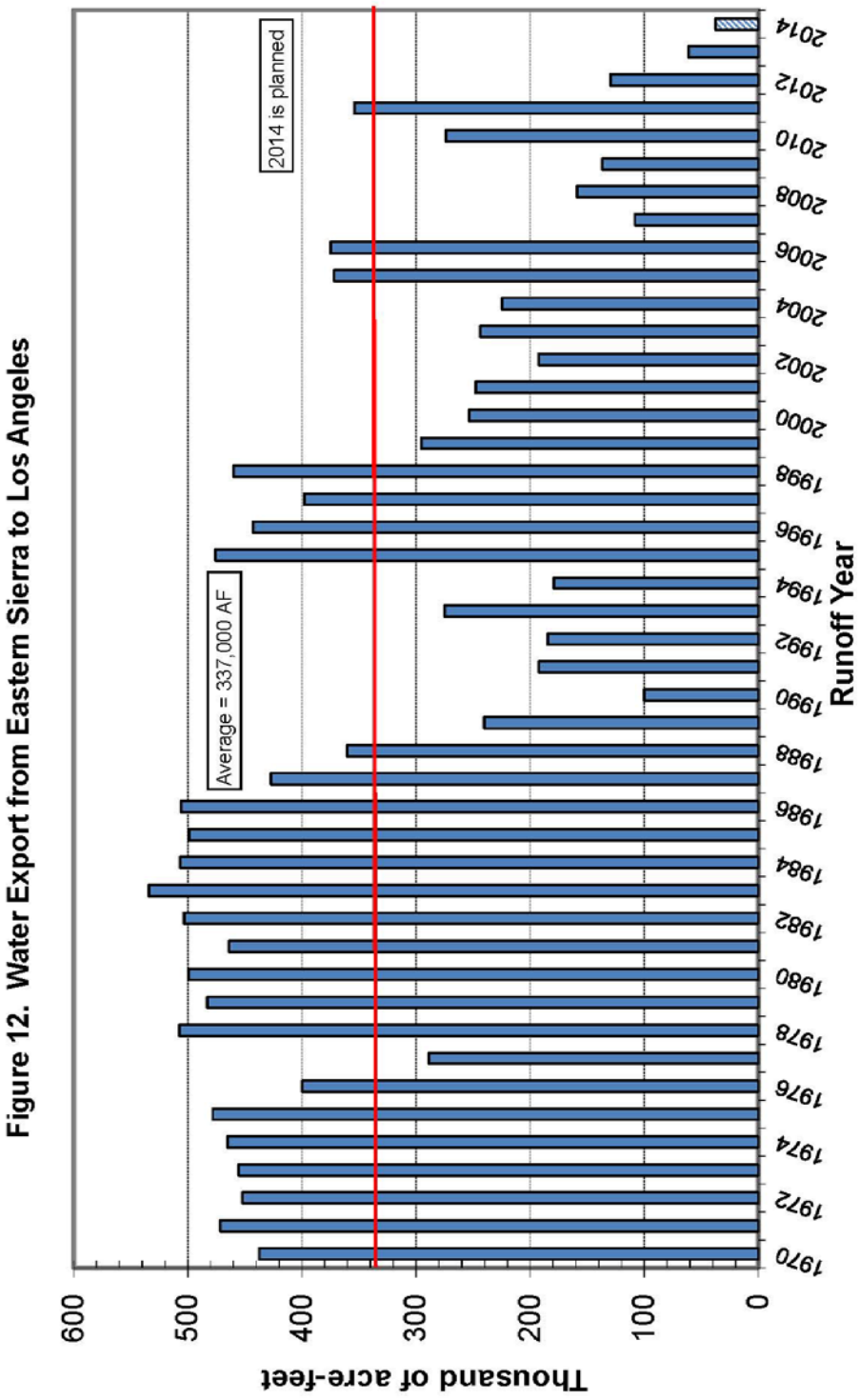


Figure 12. Water Export from Eastern Sierra to Los Angeles

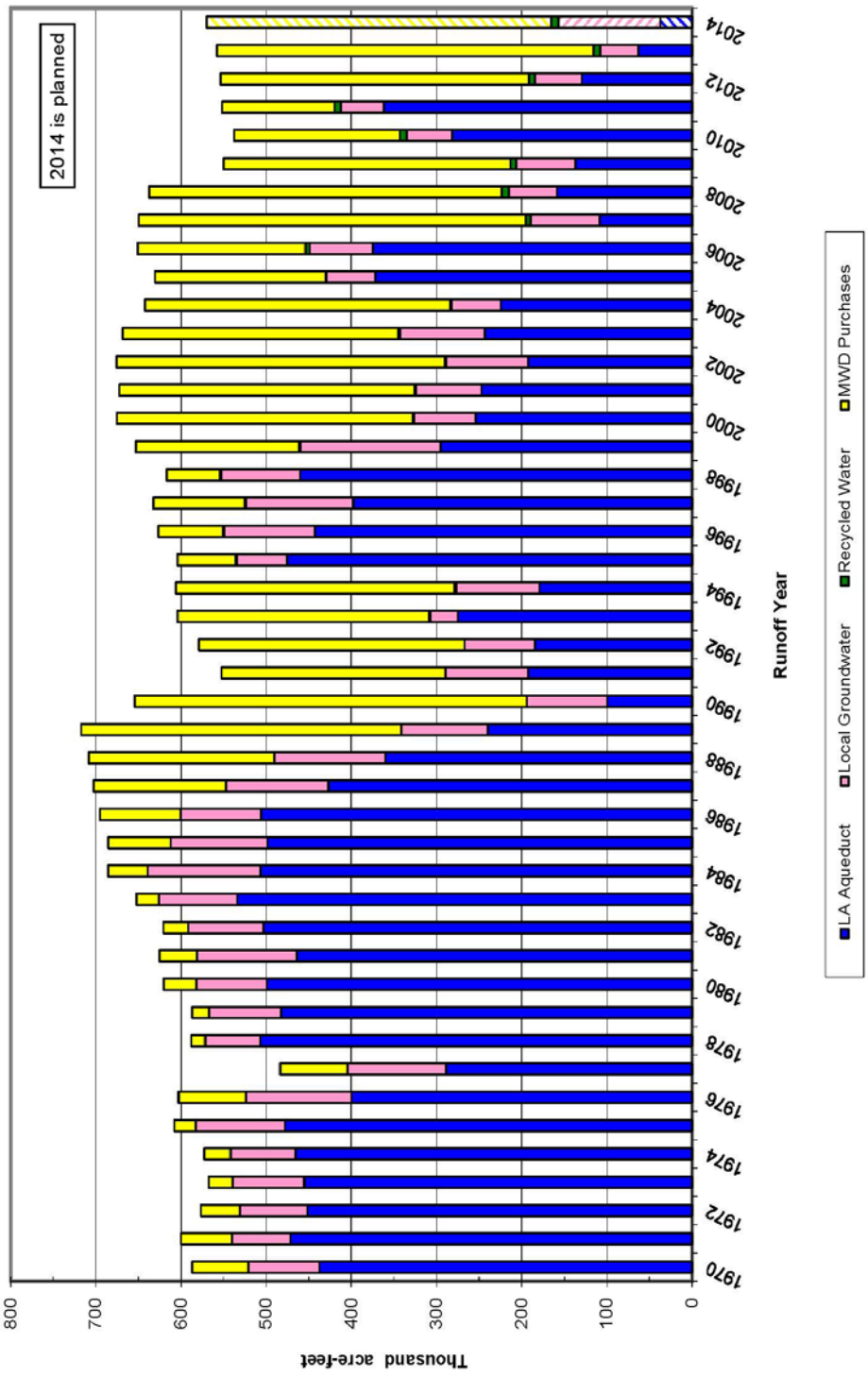


Figure 13. Sources of Water for the City of Los Angeles

3. CONDITIONS IN THE OWENS VALLEY

3. CONDITIONS IN THE OWENS VALLEY

As of April 1, 2014, the Eastern Sierra overall snowpack was measured to be 30% of normal and Owens Valley floor precipitation over the 2013-14 year was about 59% of average (Tables 11 and 12). Owens Valley runoff during the 2014-15 runoff year is forecast to be 205,900 acre-feet or approximately 50% of normal (Table 1). Overall vegetation cover in the Owens Valley is comparable to 1980s baseline conditions. A graphical summary of Owens Valley conditions is provided in Figure 14. Groundwater levels are generally high in most areas of the valley.

3.1. Well ON/OFF Status

The Water Agreement includes the vegetation protection provisions of linking pumping wells to specific monitoring sites. If the available soil moisture measured at a vegetation monitoring site is not sufficient to meet the estimated demands of the vegetation associated with that monitoring site, the wells linked to that site are designated as being in the OFF status and may not be operated. The wells linked to a monitoring site may be operated if the available soil water is determined to be sufficient to have met the estimated water requirements of the vegetation at the time that the associated wells were designated as being in the OFF status. The Green Book includes the complete well ON/OFF procedures. Table 10 provides a listing of Owens Valley monitoring site ON/OFF status as of April 2014, the monitoring wells associated with each monitoring site, and the linked pumping wells.

Some pumping wells are designated as being exempt from linkage to vegetation sites and the ON/OFF provisions of the Water Agreement because these wells are in areas that cannot cause significant adverse impacts to the vegetation or because these wells have been determined by Inyo County and the Los Angeles Department of Water and Power (LADWP) to be a necessary source of water. A list of exempt wells and the reasons for exemption are included in Table 5.

3.2. Groundwater Level Hydrographs

LADWP hydrographers monitor groundwater levels in over 700 monitoring wells throughout the Owens Valley. Groundwater levels are considered when evaluating the overall condition of the basin and are utilized for calibrating groundwater models. Hydrographs are used to observe the changes in groundwater levels over time. Figures 15a through 15g illustrate hydrographs of selected monitoring wells in Owens Valley well fields. As shown in Figures 15a-15g, groundwater levels are generally high in most areas of the valley.

LADWP uses regression models to forecast change in depth to water. Groundwater pumping for the first six months of the 2014-15 runoff year will be contingent on environmental conditions and water needs assessed during the year. The range of planned pumping by well field is included in Table 3 (Section 2). Based upon the first six

months of planned groundwater pumping in each well field during the 2014-15 runoff year, the forecast depth to water changes between April 1, 2014, and April 1, 2015, in selected Owens Valley well fields are as follows:

- Groundwater levels in the Laws Well Field are forecast to decrease between approximately 0.9 to 1.3 feet.
- Groundwater levels in the Big Pine Well Field are forecast to decrease between 0.7 and 1.1 feet.
- Groundwater levels in the Taboose-Aberdeen Well Field are forecast to decrease between 0.6 and 1.2 feet.
- Groundwater levels in the Thibaut-Sawmill Well Field are forecast to decrease by 0.1 feet.
- The forecast change in depth to water in the Independence-Oak Well Field ranges between a 0.5 foot increase and a 0.8 foot decrease.
- Groundwater levels in the Symmes-Shepherd Well Field are forecast to change from an increase of 1.1 feet and a decrease of 0.6 feet.
- Groundwater levels in the Bairs-Georges Well Field are forecast to decrease between 0.8 and 1.1 feet.

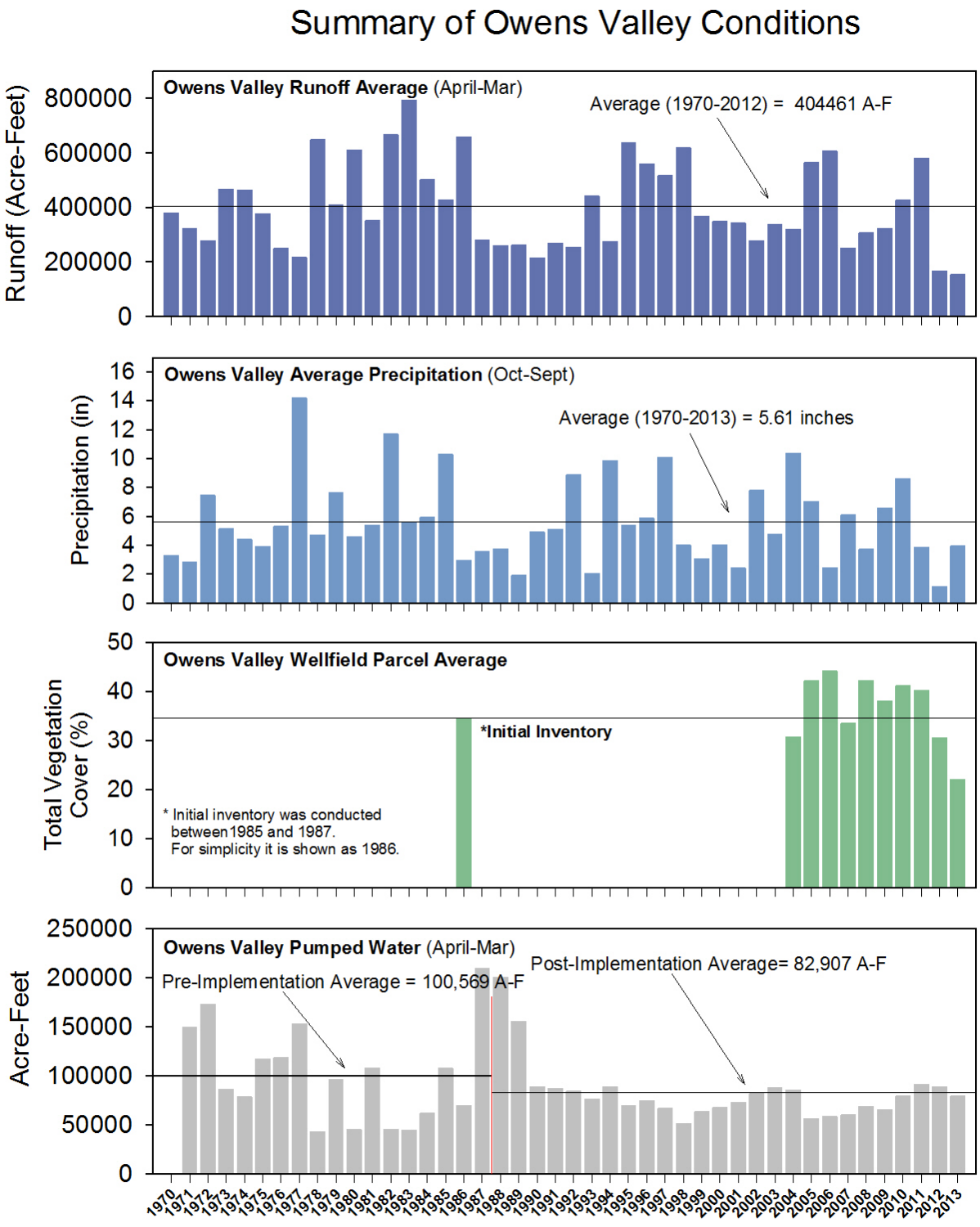


FIGURE 14. Summary of Owens Valley Conditions

Table 10. Owens Valley Monitoring Site Status (ON/OFF) as of April 2014

Wellfield	Monitoring Site	Monitoring Well	Pumping Wells	E/M Wells	ON/OFF Status
Laws	L1	795T	247, 248, 249, 398		OFF
	L2	USGS 1	236*, 239, 243, 244		ON
	L3		240, 241, 242	376, 377	OFF
	L4a, L4b			385, 386	na
	L5**		245	387, 388	na
	Exempt		236*, 354, 365, 413		Exempt
Bishop	All wells		140, 411, 410, 371		na
			406, 407, 408, 412		na
Big Pine	BP1	798T	210, 352	378, 379, 389	OFF
	BP2	799T	220, 229, 374	375	OFF
	BP3	567T	222, 223, 231, 232		OFF
	BP4	800T	331		ON
	Exempt		218, 219, 330, 332, 341, 352, 415		Exempt
Taboose-Aberdeen	TA3	505T	106, 110, 111, 114		OFF
	TA4	586T	342, 347		OFF
	TA5	801T	349		ON
	TA6	803T	109, 370		OFF
	Exempt		118		Exempt
Thibaut-Sawmill	TS1	807T	159		OFF
	TS2	T806	155		ON
	TS3	454T	103, 104	382	OFF
	TS4	804T		380, 381	OFF
	Exempt		351, 356		Exempt
Independence-Oak	IO1	809T	391, 400		OFF
	IO2	548T	63		OFF
	Exempt		59, 60, 61, 65, 401, 357, 384*	383, 384	Exempt
Symmes-Shepherd	SS1	USGS 9G	69, 392, 393		ON
	SS2	646T	74, 394, 395		OFF
	SS3	561T	92, 396		OFF
	SS4	811T	75, 345		OFF
	Exempt			402	Exempt
Bairs-Georges	BG2	812T	76, 343*, 348, 403		ON
	Exempt		343*		na
Lone Pine	Exempt		344, 346	390	Exempt
	Other		416		na

*dual use

** Monitoring site has not yet been located.

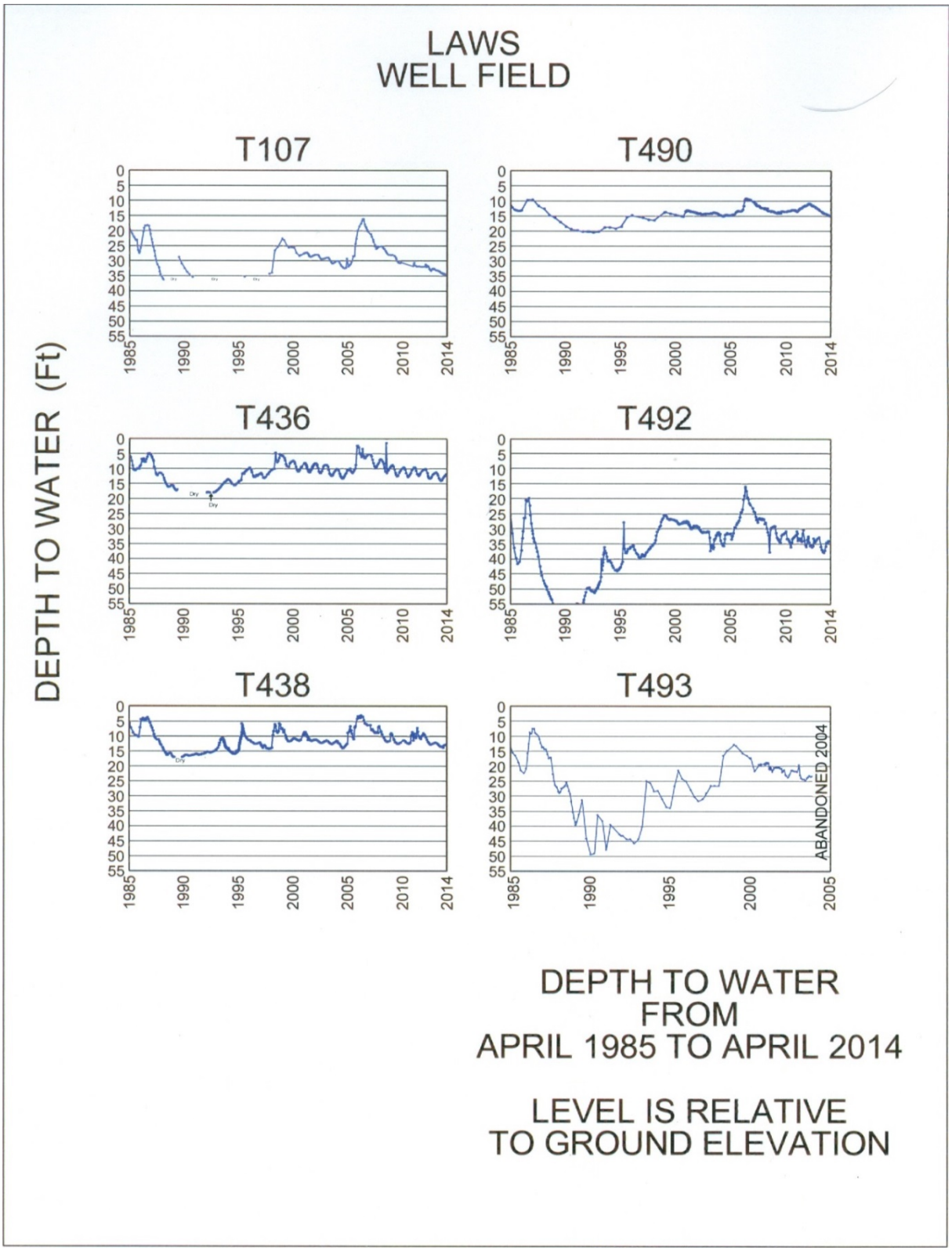


FIGURE 15a. Depth to Water Hydrographs for Laws Well Field

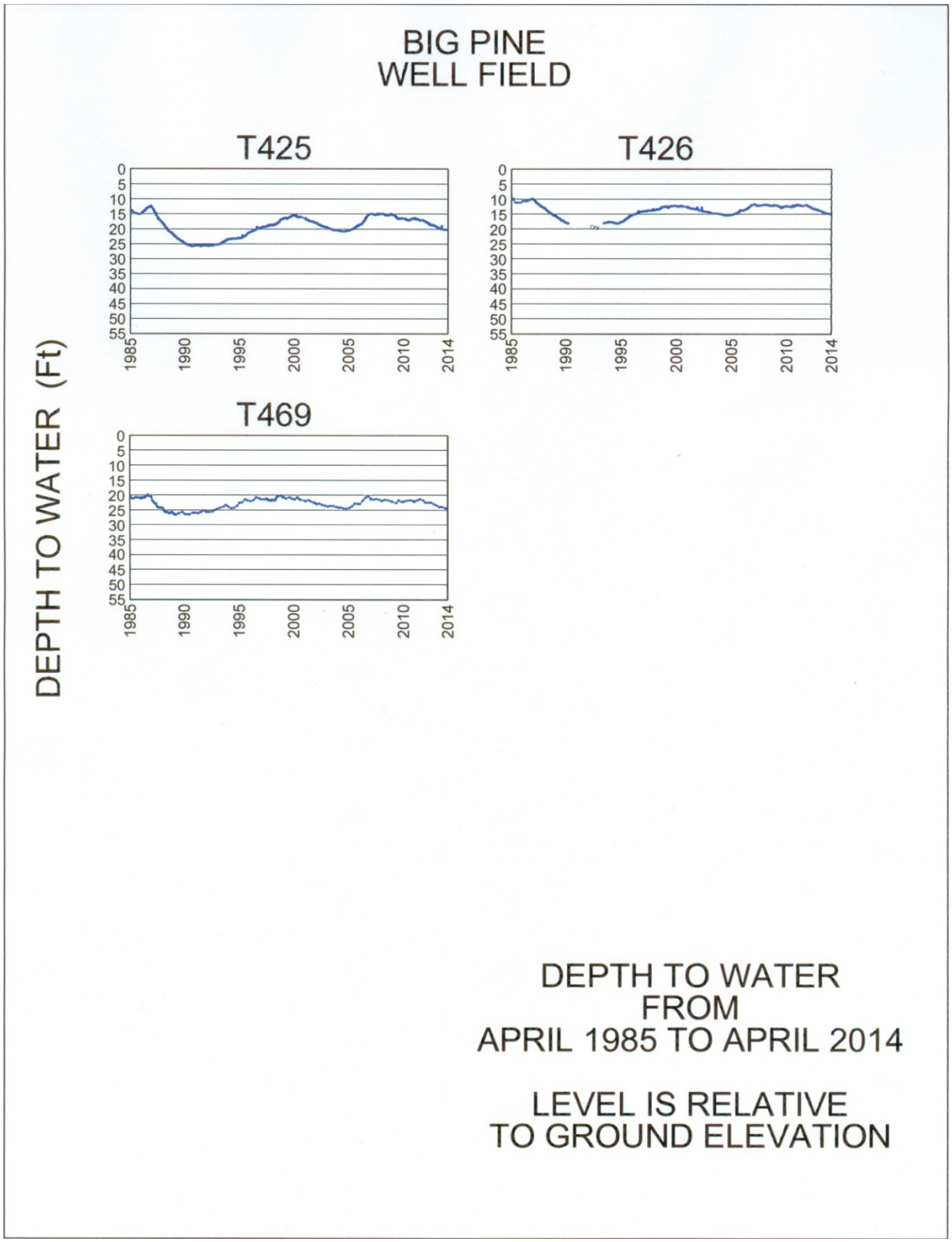


FIGURE 15b. Depth to Water Hydrographs for Big Pine Well Field

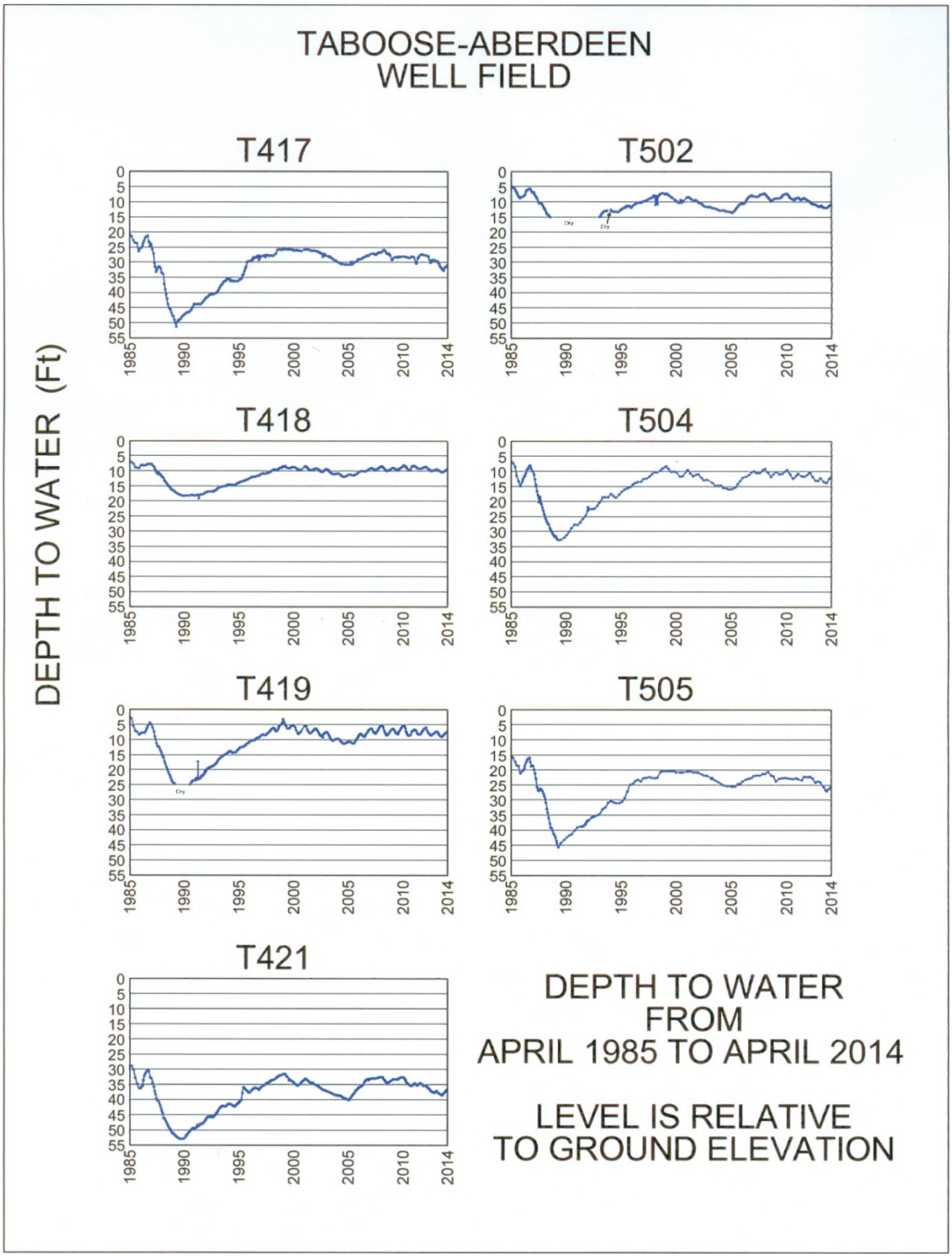


FIGURE 15c. Depth to Water Hydrographs for Taboose-Aberdeen Well Field

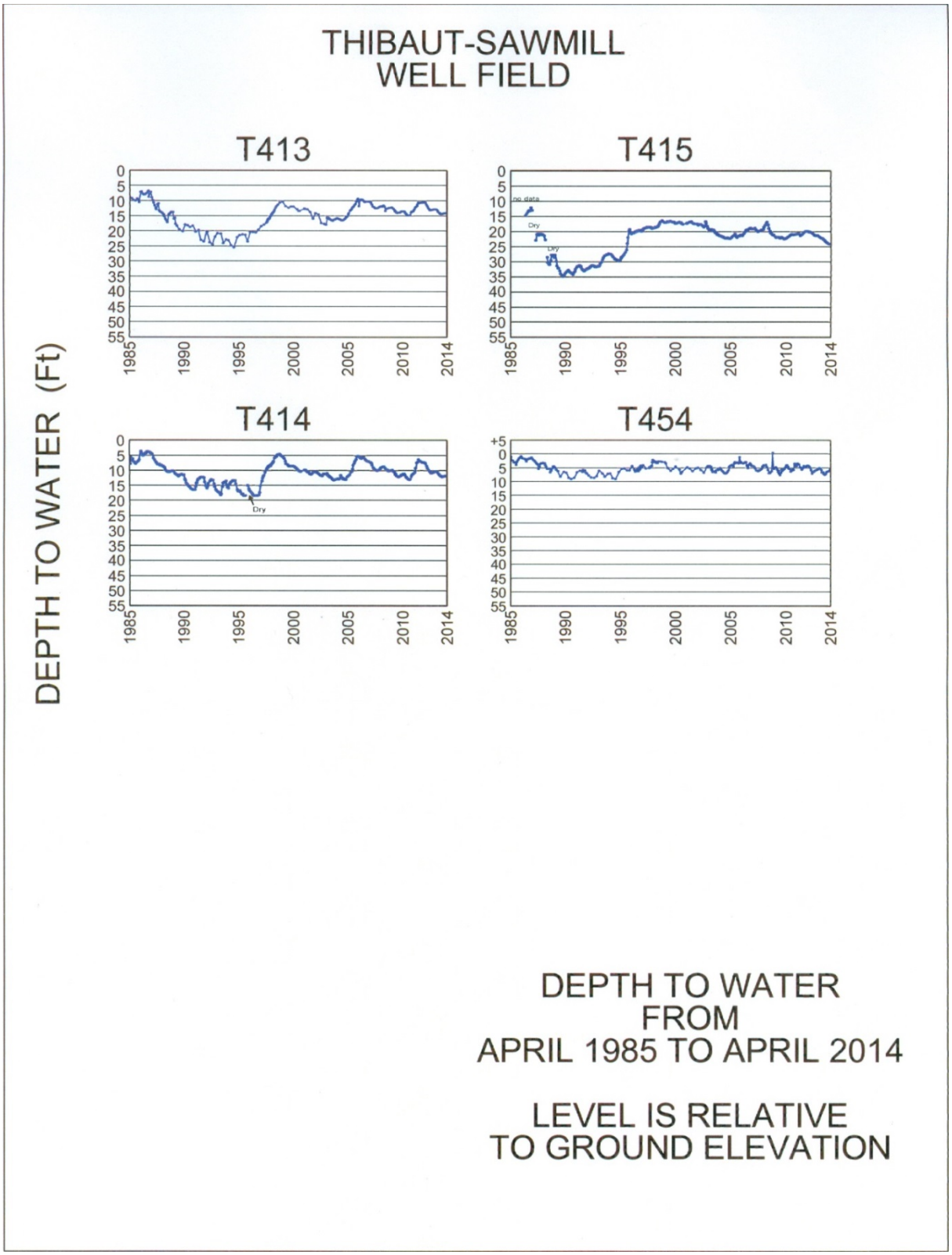


FIGURE 15d. Depth to Water Hydrographs for Thibaut-Sawmill Well Field

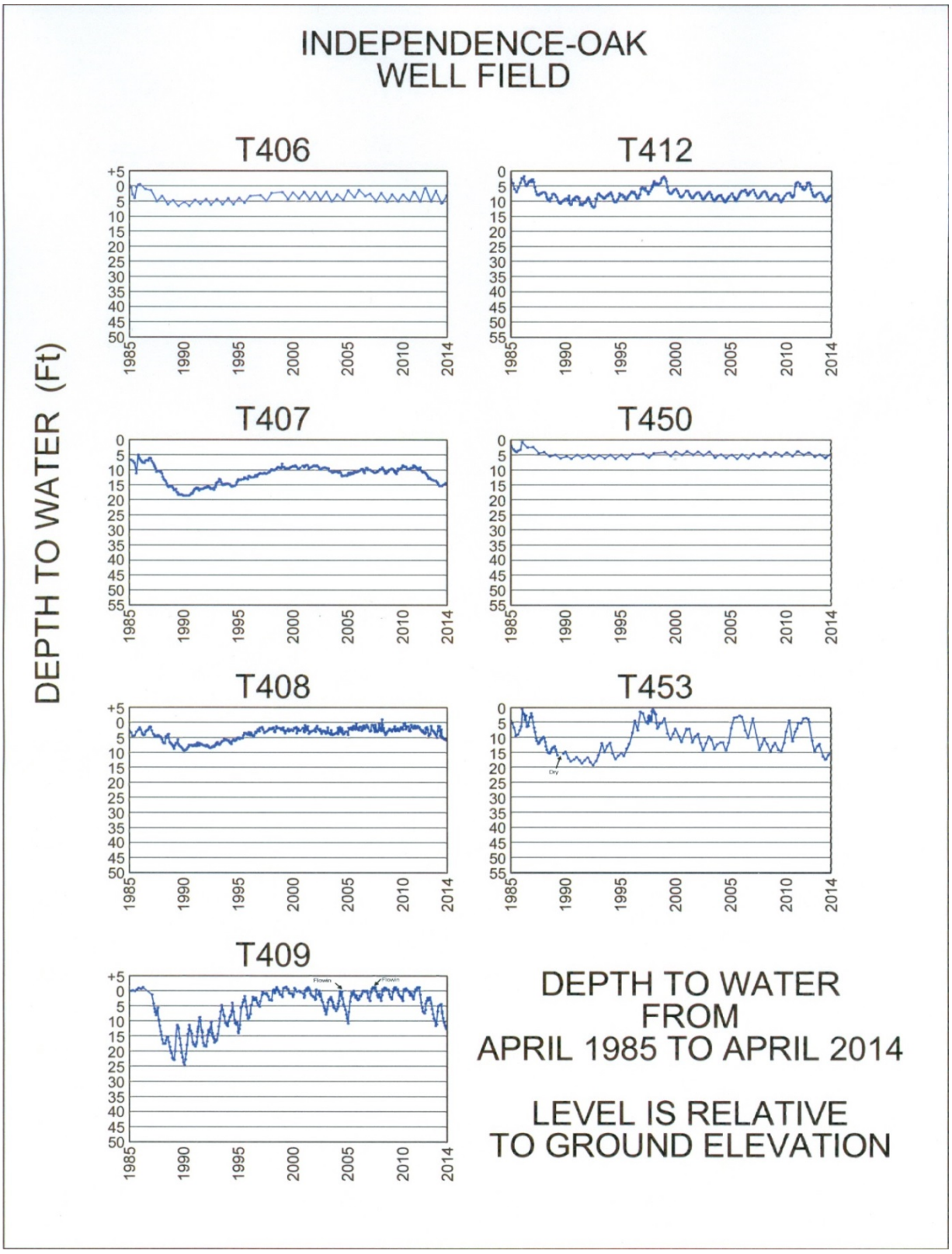


FIGURE 15e. Depth to Water Hydrographs for Independence-Oak Well Field

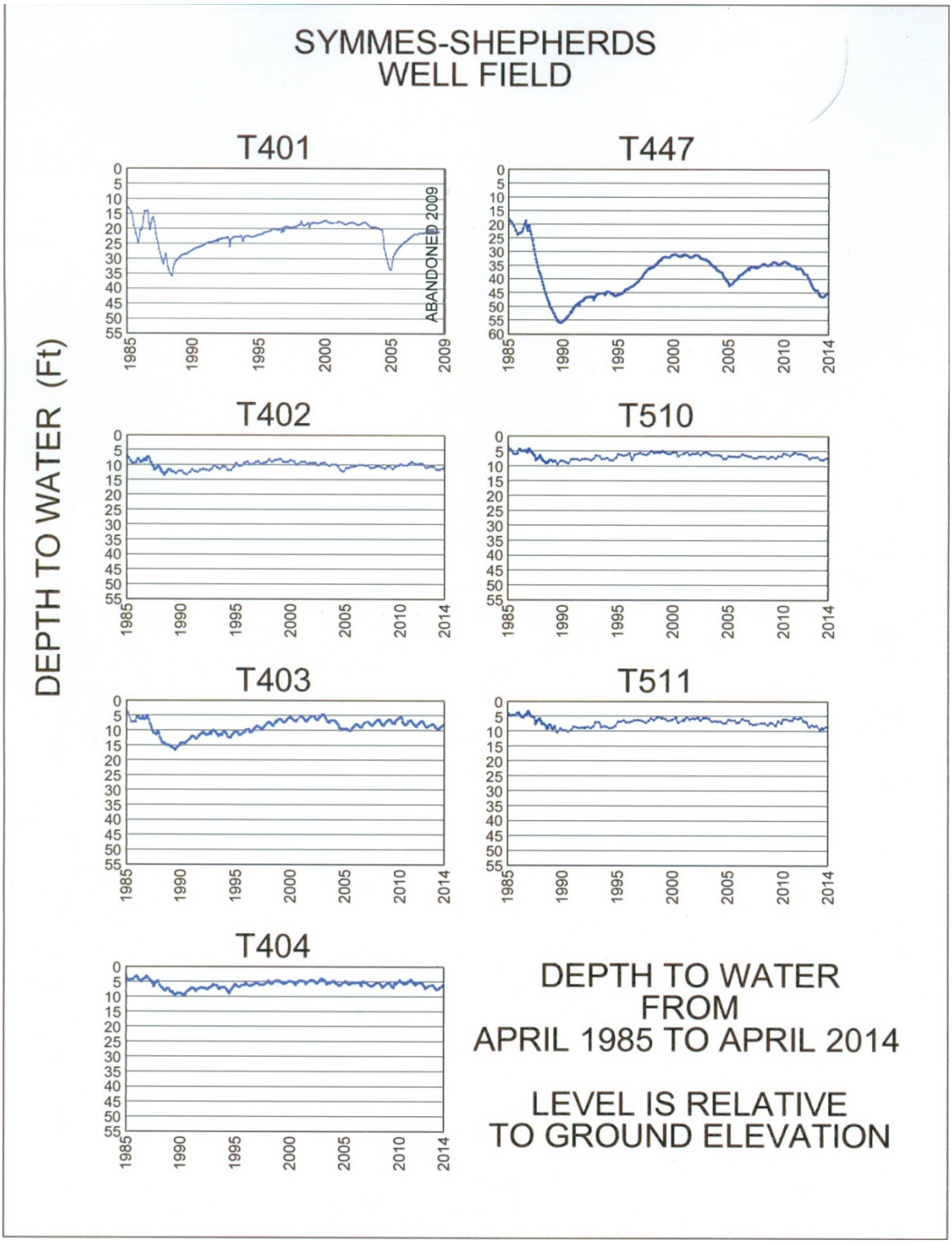


FIGURE 15f. Depth to Water Hydrographs for Symmes-Shepard Well Field

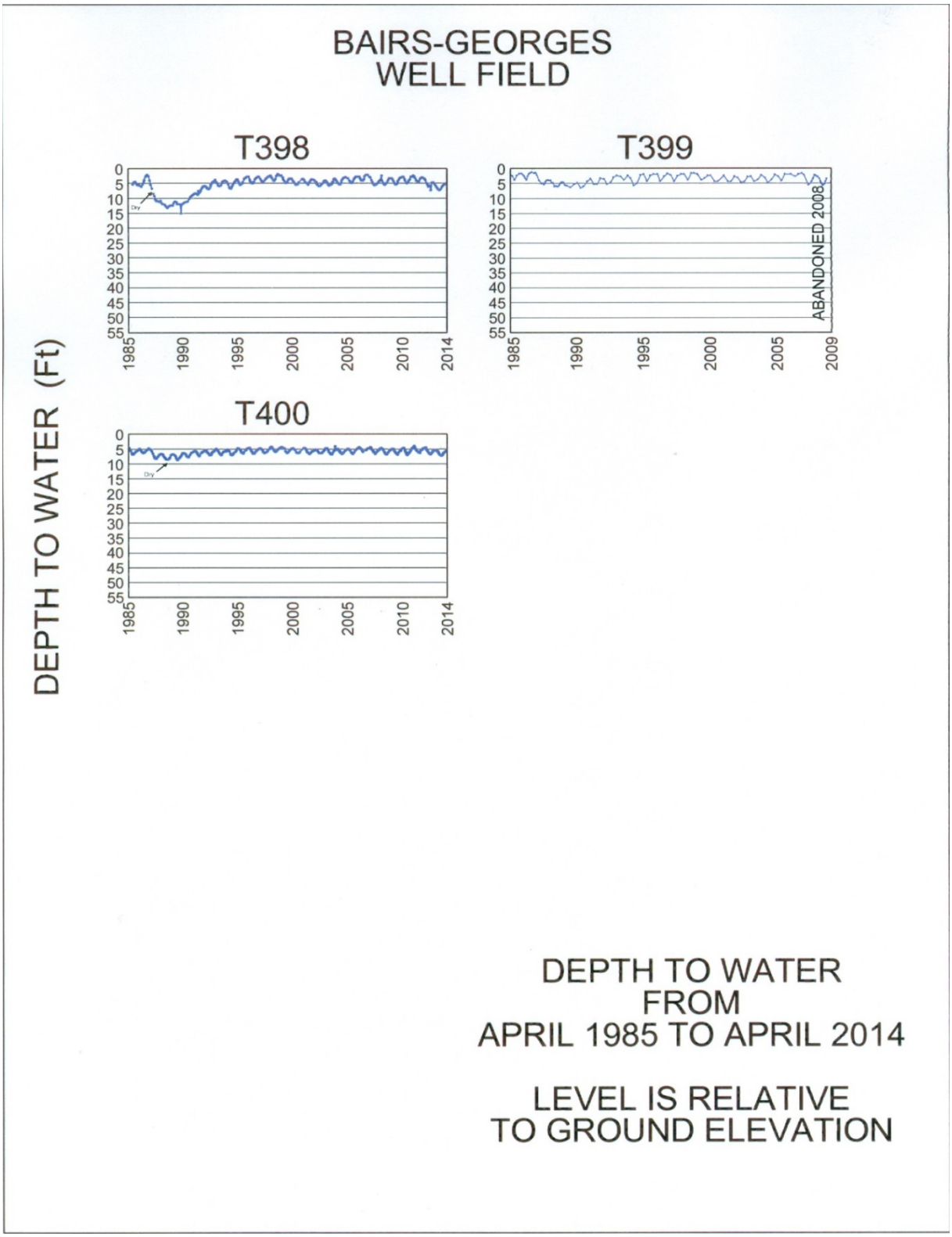


Figure 15g. Depth to Water Hydrographs for Bairs-Georges Well Field

3.3. Precipitation Record and Runoff Forecast

The Eastern Sierra snowpack as of April 1 was 35% of normal in the Mammoth Lakes area, 24% of normal in the Rock Creek area, 38% of normal in the Bishop area, 25% of normal in the Big Pine area, and 17% of normal in the Cottonwood Lakes area. The Eastern Sierra overall snowpack, weighted by contribution to Owens River runoff was calculated to be 30% of the normal snowpack as of April 1, 2014, (Table 11).

The Eastern Sierra runoff forecast for the 2014-15 runoff year is 205,900 acre-feet or 50% of normal (Table 1). Figure 16 compares the forecast runoff for the 2014-15 year to previous runoff years.

Average precipitation on the valley floor for the 2013-14 year was 3.48 inches, which is below the fifty-year average of 5.9 inches. Table 12 details monthly annual precipitation totals for the 2013-14 runoff year as well as the long-term averages throughout the Owens Valley.

Table 11. Eastern Sierra April 1, 2014 Snow Survey Results

EASTERN SIERRA SNOW SURVEY RESULTS
April 1, 2014

MAMMOTH LAKES AREA (Contributes 25% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	Percent of Normal
Mammoth Pass	18.6	43.5	43%
Mammoth Lakes	4.6	21.1	22%
Minarets 2	9.7	30.1	32%
Mammoth Lakes Area Average:	**11.0**	**31.5**	**35%**

ROCK CREEK AREA (Contributes 16% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	Percent of Normal
Rock Creek 1	0.4	7.4	6%
Rock Creek 2	3.3	10.5	31%
Rock Creek 3	4.0	14.4	28%
Rock Creek Area Average:	**2.6**	**10.8**	**24%**

BISHOP AREA (Contributes 20% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	Percent of Normal
Sawmill*	7.5	19.7	38%
Bishop Area Average:	**7.5**	**19.7**	**38%**

BIG PINE AREA (Contributes 13% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	Percent of Normal
Big Pine Creek 2	1.7	13.9	12%
Big Pine Creek 3	6.5	18.6	35%
Big Pine Creek Area Average:	**4.1**	**16.3**	**25%**

COTTONWOOD AREA (Contributes 25% of Owens Basin River runoff)

Course	Water Content	April 1 Normal	Percent of Normal
Cottonwood Lakes 1	2.4	13.0	19%
Trailhead**	2.0	13.7	15%
Cottonwood Area Average:	**2.2**	**13.3**	**17%**

EASTERN SIERRA OVERALL SNOW PACK (Weighted by contribution to Owens River Basin runoff)

Average of all Snow Courses	Water Content	April 1 Normal	Percent of Normal
	5.8	**19.2**	**30%**

Normals are based on the 1961-2010 period.
* Measured by Dept of Water Resources
** Trailhead has only been measured since 1982, so the normal is estimated.

PSS 4/3/2014

Table 12. Owens Valley Precipitation During Runoff Year 2013-14 in Inches

Month	Bishop	Big Pine	Tinemaha Reservoir	LAA Intake	Indep. Yard	Alabama Gates	Lone Pine	Cotton-wood	South Haiwee	Average Owens Valley
April, 2012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
May	0.42	0.00	0.72	0.20	0.14	0.10	0.12	0.07	0.05	0.20
June	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
July	0.43	0.53	1.17	1.08	1.63	1.47	0.71	0.84	1.31	1.02
August	0.08	0.10	0.28	0.15	1.64	0.31	0.44	0.04	0.01	0.34
September	0.02	0.01	0.07	0.00	0.07	0.06	0.00	0.00	0.02	0.03
October	0.18	0.00	0.49	0.01	0.95	0.30	0.11	0.09	0.04	0.24
November	0.08	0.19	0.04	0.09	0.04	0.16	0.07	0.25	0.18	0.12
December	0.03	0.02	0.17	0.14	0.04	0.07	0.03	0.07	0.23	0.09
January, 2013	0.18	0.00	0.10	0.03	0.20	0.03	0.00	0.09	0.00	0.07
February	1.60	0.17	0.95	1.61	1.22	0.80	0.59	1.30	1.60	1.09
March	0.02	*1.44*	0.07	0.04	0.08	0.00	*0.70*	0.03	0.00	0.26
2012-13 Total	*3.04*	2.52	*4.06*	3.35	*6.01*	*3.30*	2.77	*2.78*	*3.45*	*3.48*
Average*	6.37	6.46	6.76	5.76	5.48	4.03	4.01	6.89	7.31	5.90
% of Average	48%	39%	60%	58%	110%	82%	69%	40%	47%	59%

* Average for 1960 to 2010 runoff year

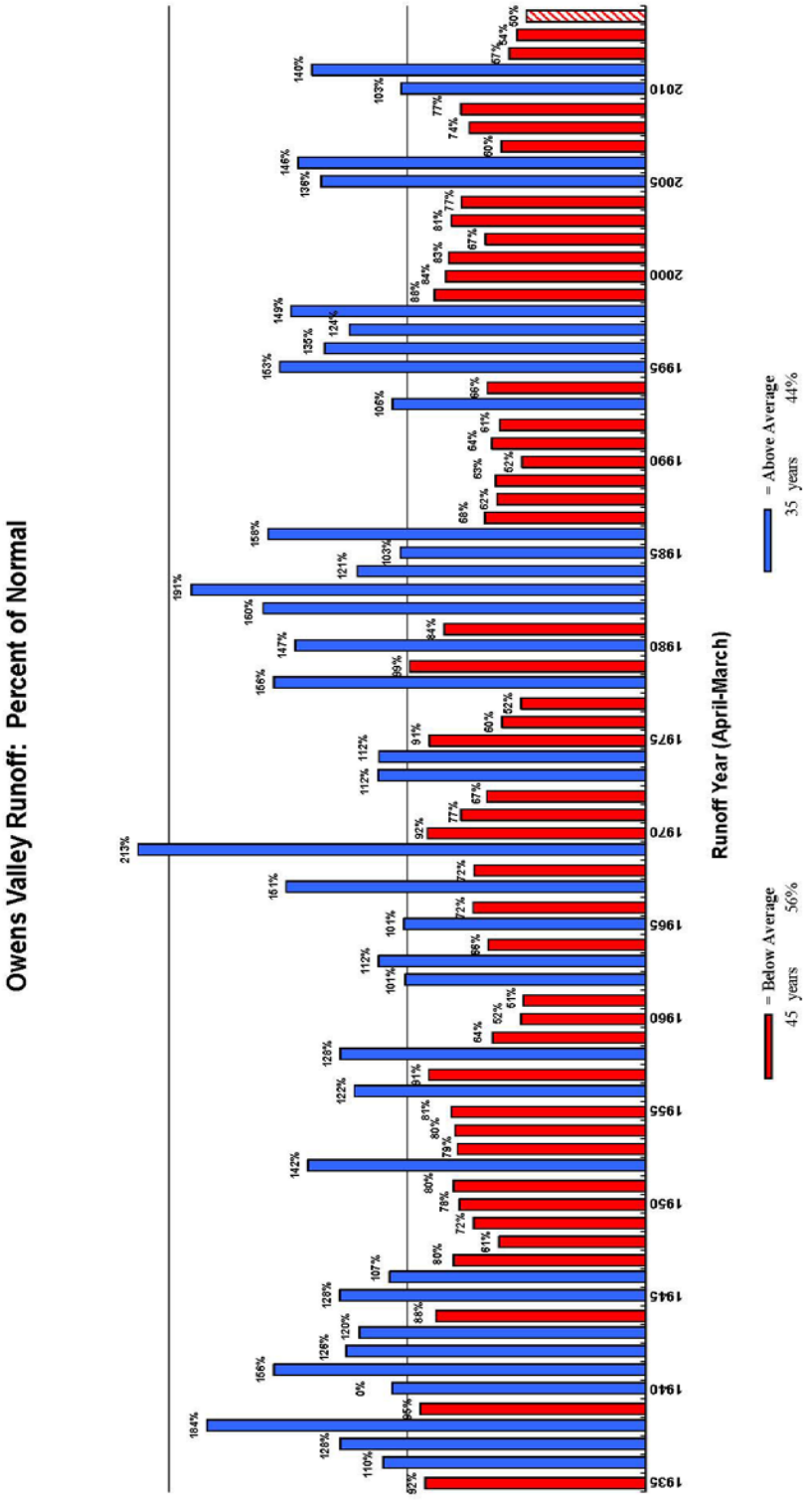


Figure 16. Owens Valley Runoff – Percent of Normal

3.4. Owens Valley Water Supply and Use

Table 13 provides an overview of the Owens Valley water supply, in-valley uses and losses, and Los Angeles Aqueduct (LAA) exports for the post-Water Agreement period (1992-93 through 2013-14 runoff years) as compared to the pre-project average (pre-Second Los Angeles Aqueduct) and projected water supply and uses (based on the Water Agreement, 1991 EIR, and 1997 MOU). Actual water uses in the Owens Valley are generally consistent with the projected values under the 1991 EIR and 1997 MOU with the notable exception of significant diversions to the OLDMP. While the average Owens Valley water supply (surface water flow, flowing wells, and pumped groundwater) has remained about the same over time, exports are considerably less than anticipated under the 1991 EIR and 1997 MOU. The fundamental reasons for this reduction in the municipal water supply are increased uses within Owens Valley for dust abatement, mandated decreases in water exported from the Mono Basin, and less groundwater pumping than anticipated under the Water Agreement.

Current Owens Valley water uses are compared to pre-Water Agreement uses as well as those uses projected under the Water Agreement and 1997 MOU in Figure 17. The components of LADWP's water exports from the Eastern Sierra are compared to pre-Water Agreement exports as wells as those projected under the Water Agreement and 1997 MOU in Figure 18.

Table 14 provides a breakdown of Owens Valley water uses from 1985 to the present and planned water uses for the 2014-15 runoff year. While much of Table 14 is self-explanatory, the following items bear additional explanation:

- Enhancement/mitigation (E/M) water supply is the water supplied to E/M projects referenced in the 1991 EIR,
- LORP is water supplied to the Lower Owens River Project,
- Owens Lake Release tracks water supplied to the Owens Lake Dust Mitigation Program,
- Operations is water used for operational reasons.

Table 15 lists a breakdown of water supplied to E/M projects during the 2013-14 runoff year.

Table 13. Owens Valley Water Supply and Uses

(Amounts in Thousands of Acre-Feet/Year)

	Pre-Project (Pre Water Agreement)	Projected per MOU/ Agreement	Actual Data for Runoff Year 2013-2014	Actual Post Water Agreement Averages (1992-2014)
Owens Valley Water Supply				
Runoff (Owens Valley & Round Valley)	319[1]	310	153	293
Flowing Wells	44	15	33	33
Pumped Groundwater	10	110[2]	80	74
Total	373	435	266	400
In-Valley Uses & Losses				
City Water Used in O.V.				
Irrigated Lands [3]	62	46	44	49
Stockwater, Wildlife, and Rec. Uses [4]	20	23	19	22
Post 1985 E/M Projects [5]	0	12	8	10
Lower Owens River [6]	0	36[7]	18	19[8]
Additional Mitigation (1,600 af from MOU)	0	2	2	2[8]
Owens Lake	0	0	68	70[8]
Sub-Total	82	119	159	172
Other O.V. Uses and Losses [9]	134	122	151	107
Total	216	241	310	279
Components of Aqueduct Export				
Owens Valley Contribution to Export	103	210	-(44)	121
Long Valley Contribution to Export	149	149	90	141
Mono Basin Contribution to Export [10]	95	30	15	16[8]
Total	347	389	61	278

1. Average runoff for period 1935 to 1988 (Runoff Year)
2. Assumed based on 1991 O.V. Groundwater Pumping EIR
3. Does not include areas receiving water supplies non-tributary to the Owens River/Aqueduct (approx. 7,000 AFY).
4. Includes projects such as the Tule Elk Field, Farmers Ponds implemented after 1970 and before 1985 when E/M projects commenced. Also includes the LORP Off-River Lakes and Ponds uses.
5. Except Lower Owens River Rewatering E/M Project
6. Includes river losses, and releases to the Blackrock Waterfowl Habitat Area and the Delta
7. Assumes: 6,500 AF year-round flow to delta, 3,000 AF to Blackrock, and 26,500 AF for other losses.
8. Represents recent history.
9. Includes uses on private lands, conveyance losses, recharge, evaporation, and operation releases.
10. 1993 Court decision allows approximately 30,000 AFY when lake reaches elevation 6392. Prior to Court decision Mono Basin export averaged 95,000/yr.

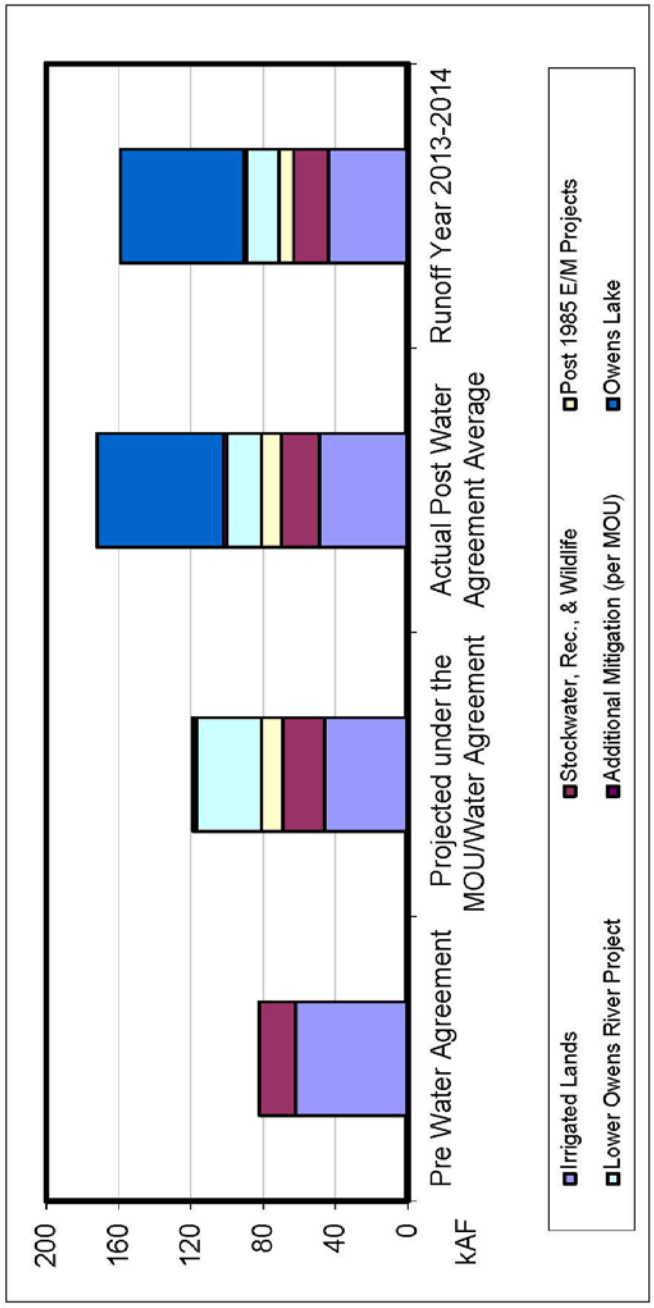


Figure 17. Owens Valley Water Uses

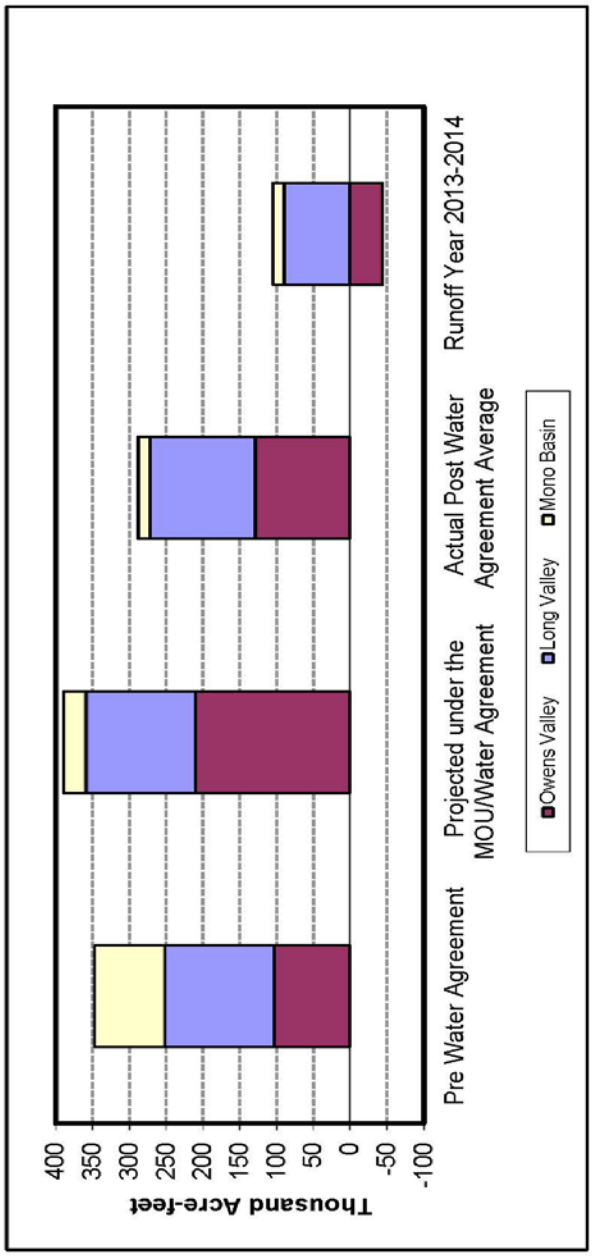


Figure 18. Components of the Eastern Sierra Water Exports

Table 14. Owens Valley Water Uses for 1985-86 through 2013-14 and Planned Uses for the 2014-15 Runoff Year (acre-feet)

(1) Runoff Year	(2) Owens Valley Runoff %	(3) Owens Valley Pumping (1000 af)	(4) Irrigation	(5) Stock Water	(6) E/M	(7) Rec. & Wildlife	(8) Indian Land Uses	(9) LORP	(10) 1600 AF Projects	(11) Owens Lake Release	(12) In-Valley Uses (sum of 4+5+6+7+8+9+10+11)	Groundwater Recharge (13a) Big Pine & Independence Spreading	Groundwater Recharge (13b) Laws Spreading	(14) Operations	(15) All Uses (sum of 12+13+14)
1985-86	103	108	47,390	15,394	109	9,205	4,248	4,191			80,537	4,822	4,068	13,712	103,139
1986-87	158	70	47,884	15,125	1,610	9,735	3,873	12,551			90,778	67,251	20,429	72,387	250,845
1987-88	68	209	48,679	15,443	13,818	6,420	3,902	15,542			103,804	0	0	7,499	111,303
1988-89	62	200	46,463	14,381	17,102	8,429	5,299	13,856			105,530	0	0	6,705	112,235
1989-90	63	156	48,232	13,922	15,261	8,669	5,460	8,069			99,613	0	0	8,935	108,548
1990-91	52	89	46,424	14,360	9,242	9,983	5,445	8,657			94,111	0	0	5,312	99,423
1991-92	64	87	42,112	14,662	8,301	9,143	5,938	10,251			90,407	0	0	9,923	100,330
1992-93	61	84	37,131	17,828	9,088	7,725	5,211	9,269			86,252	0	0	12,179	98,431
1993-94	105	76	47,798	17,230	13,443	8,676	5,270	5,867			98,284	14,512	10,640	12,433	135,869
1994-95	66	89	37,790	17,178	9,132	8,116	5,641	11,680			89,537	0	56	12,102	101,695
1995-96	153	70	57,748	20,919	11,162	12,479	5,170	11,752			119,230	30,126	21,148	13,561	184,065
1996-97	135	75	46,171	19,757	10,989	9,438	5,540	12,960			104,855	4,606	0	21,125	130,586
1997-98	124	67	47,114	16,422	8,114	8,022	5,548	13,494			98,714	4,113	4,106	13,874	120,807
1998-99	149	52	45,445	13,654	9,075	8,691	4,589	10,597			92,051	24,970	31,077	23,016	171,114
1999-00	89	64	49,529	14,461	8,836	7,470	4,232	15,616			100,144	0	0	11,263	111,407
2000-01	84	68	49,327	13,442	7,989	7,263	5,792	12,793			96,606	0	790	12,517	109,913
2001-02	83	73	43,296	12,759	9,401	7,487	4,931	12,414			90,288	0	230	12,973	103,491
2002-03	66	82	43,929	12,291	11,442	7,377	4,922	9,952		22,983	112,896	0	0	8,431	121,327
2003-04	81	88	45,974	11,620	10,926	6,853	5,293	10,190		27,049	117,905	0	0	8,787	126,692
2004-05	77	86	50,311	11,546	9,915	6,866	4,739	9,003		28,981	121,361	243	695	9,536	131,835
2005-06	136	57	53,832	11,355	11,587	7,807	3,281	7,769		31,643	127,274	16,212	24,187	14,814	182,487
2006-07	146	59	50,968	12,041	11,551	7,849	3,315	11,700		42,542	139,966	29,457	16,855	38,937	225,215
2007-08	61	60	47,699	12,161	11,565	10,122	2,931	22,501		66,580	173,559	0	0	5,631	179,190
2008-09	74	69	56,130	11,435	10,646	8,479	3,527	20,957		61,326	172,500	1,342	0	7,651	181,493
2009-10	77	65	52,933	11,450	10,695	10,398	4,142	15,708		66,940	172,266	0	0	8,453	180,719
2010-11	103	80	52,983	12,275	10,807	12,106	3,703	17,020		75,267	184,161	2,993	1,973	14,280	203,407
2011-12	140	92	62,391	11,566	11,847	9,702	3,156	19,556		74,031	192,249	13,231	4,119	8,785	218,384
2012-13	57	89	48,763	10,961	9,257	9,254	2,690	20,927	*1,636*	75,450	178,938	0	0	4,081	183,019
2013-14	*54*	79	*44,000*	*11,100*	*8,170*	*8,370*	*3,300*	*18,200*	*1,625*	*67,900*	*162,665*	0	0	*2,170*	*164,835*
2014-15	*50*	*65*	*44,000*	*11,000*	*8,100*	*8,200*	*3,300*	*19,000*	*1,600*	*95,000*	*190,200*	0	0	*2,170*	*192,370*
AVG.	91	87	48,082	13,925	9,973	8,678	4,480	13,068	1,636	72,812	122,889	7,129	4,679	13,441	148,139

NOTES:
2014 PUMPING IS ESTIMATED FOR THE YEAR. PLANNED PUMPING FOR THE FIRST SIX MONTHS OF THE 2014-15 RUNOFF YEAR IS ON TABLE 3 IN SECTION 2.
PUMPING 1987 TO PRESENT INCLUDES E/M PUMPING
2014-15 REFLECTS CURRENT YEAR OPERATIONS FORECAST
E/M EXCLUDES RELEASES TO THE LORP
LORP IS RECORD OF THE REWATERING E/M (1985-2006) AND THE MITIGATION PROJECTS (STARTED IN DECEMBER 2006)
LORP RECORD INCLUDES RIVERINE LOSS, RELEASES TO BLACKROCK WATERFOWL, AND RELEASES TO DELTA
LORP OFF-RIVER LAKES & PONDS USE OF 2,500 AF IS INCLUDED IN REC.& WILDLIFE
TOTAL INDIAN LAND USES ARE THE SUM OF LADWP-SUPPLIED SURFACE WATER AND TRIBAL SURFACE WATER DIVERSIONS AND PUMPING FOR THE BISHOP, BIG PINE, AND LONE PINE RESERVATIONS. HOWEVER, COLUMN (8) REPRESENTS ONLY LADWP SUPPLIED SURFACE WATER.

Table 15. Water Supplied to Enhancement/Mitigation Projects During 2013-14

Project	Water Supplied (acre-feet)
McNally Canals Conveyance Losses	350
McNally/Laws/Poleta Native Pasture Lands	1,149
McNally Ponds	0
Laws Historical Museum	112
Klondike Lake	1,515
Lower Owens River Rewatering	0
Independence Pasture Lands	1,852
Independence Springfield	958
Independence Ditch System	129
Independence Woodlot	150
Shepherd Creek Alfalfa Lands	884
Lone Pine Park/Richards Field	416
Lone Pine Woodlot	70
Lone Pine Van Norman Field	79
Lone Pine Regreening	216
Total E/M Uses	7,880

3.5. Owens Valley Vegetation Conditions

Vegetation conditions within the Owens Valley are monitored using vegetation transects as well as other methods. The Green Book describes the methodology and purposes of vegetation transects. As stated in the Green Book: “Vegetation transects are included within the Green Book to serve two purposes: 1) to estimate transpiration from a monitoring site, and 2) for use in determining whether vegetation has decreased or changed significantly from the previous cover.” A reference for comparison of vegetation changes is the 1984-87 vegetation inventory data.

The Green Book requires the 1984-87 vegetation inventory to be used as a baseline when determining whether vegetation cover and/or species composition has changed. The 1984-1987 inventory transects were chosen using aerial photos to aid in determining transect locations. Transects were located visually by choosing lines that appeared to cover the representative units of vegetation within the parcel being measured. Transects were generally run toward the center of the parcels in order to avoid transitional areas at parcel edges. A minimum of five transects were run on each parcel. If the vegetation cover was particularly heterogeneous, a qualitative method was employed in selecting additional transects. The transect data were checked visually and additional transects were run to lessen the degree of variability as necessary.

The Green Book directs that future transects should be performed in a similar manner as the initial inventory to determine whether vegetation has changed, but allows the technique to be modified by the Technical Group to permit statistical comparison by randomly selected transects. The procedures for modifying the Green Book procedures are included under Water Agreement Section XXV. In any case, the Green Book requires the Technical Group to perform a statistical analysis in order to determine the statistical significance of any suspected vegetation changes from the 1984-87 inventory maps.

In 2004, LADWP began running transects annually within parcels located both inside and outside well fields. Some parcels are evaluated annually, while others are not. Percent total cover is calculated and compared to data collected within parcels during the period of baseline inventory.

Figure 19 includes vegetation transect data collected by LADWP and presented in a series of graphs documenting Owens Valley vegetation conditions. LADWP monitors vegetation using established vegetation transects that enable the Technical Group to reliably assess annual changes in vegetation cover and composition.

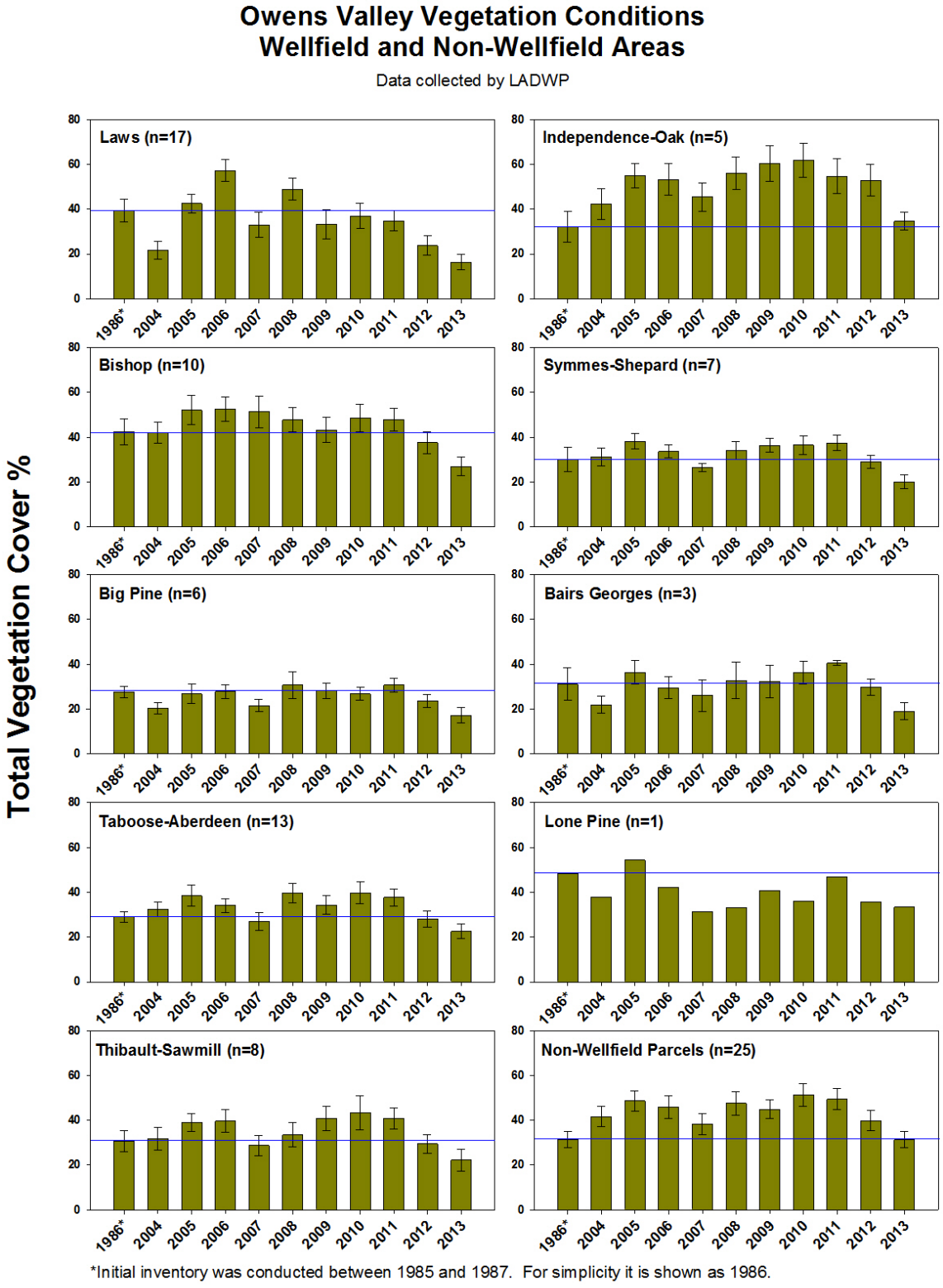


Figure 19 – Owens Valley Vegetation Condition Wellfield and Non-Wellfield

3.6. Bishop Cone Audit

LADWP's groundwater pumping on the Bishop Cone is governed by the provisions of the Stipulation and Order filed on August 26, 1940, in Inyo County Superior Court in the case of Hillside Water Company, a corporation et al. vs. the City of Los Angeles, a Municipal Corporation et al., (Hillside Decree) as well as the Water Agreement. Annual groundwater extractions from the Bishop Cone are limited to an amount not greater than the total amount of water used on City of Los Angeles (City) lands on the Bishop Cone during that year. Annual groundwater extractions by LADWP on the Bishop Cone are the sum of all groundwater pumped plus the amount of artesian water that has flowed from wells on the Bishop Cone during the year. Water used on City lands on the Bishop Cone are the quantity of water supplied to such lands, including conveyance losses, less any return flow to the aqueduct system.

The Inyo County Water Department (ICWD) performs an annual audit of LADWP water uses and groundwater extractions by LADWP on the Bishop Cone. The Appendices contain a draft copy of the most recent audit dated July 30, 2013. As shown in Figure 5, LADWP has historically pumped much less than allowed under the terms of the Hillside Decree. In the 2013-14 runoff year LADWP pumped about 11,433 acre-feet of water from the Bishop Cone area, less than half of that identified as being allowed using the current audit procedures.

The current Bishop Cone audits do not provide an accurate accounting of ditch losses and stockwater uses on the Bishop Cone and existing audit protocols should be revised to better reflect a true accounting of water supplied.

3.7. Reinhackle Spring Monitoring

As required by the 1991 EIR, Owens Valley groundwater pumping is managed to avoid reductions in spring flows that would cause significant decreases or changes in spring-associated vegetation. Groundwater pumping from wells that may affect flow from Reinhackle Spring are managed so that flows from the spring are not significantly reduced compared to flows under prevailing natural conditions. Table 16 shows daily flow values for Reinhackle Spring. Over the 2013-14 runoff year, Reinhackle Spring had an average daily flow of about 1.3 cfs.

Analysis of Reinhackle Spring was included in a 2004 cooperative study by LADWP and ICWD on the Owens Valley groundwater geochemistry. During the study, water samples from Reinhackle Spring were chemically analyzed and compared to water samples from the LAA, nearby pumping wells, samples from the deep aquifer, and samples from shallow monitoring wells. The 2004 study concluded that the water flowing from Reinhackle Spring is similar in composition to aqueduct water and not similar to the deep aquifer samples or up-gradient shallow aquifer wells. Testing to determine the effects of groundwater pumping and LAA seepage on Reinhackle Spring flow was conducted between May 2010 and April 2011. Data and analysis from the 2004 cooperative study and 2010-11 testing have been included in a draft monitoring and operations plan for the Bairs-Georges Wellfield known as the draft Reinhackle Spring Flow Characterization Report and Operations Plan. The draft Reinhackle Spring Flow Characterization Report and Operations Plan was sent to the Inyo County Water Department for review in November 2012.

Table 16. Reinhackle Spring Flow in cfs During 2013-14 Runoff Year

Day of Month	April	May	June	July	August	September	October	November	December	January	February	March	Annual
1	1.35	1.12	1.29	1.39	1.46	1.39	1.41	1.27	1.11	1.14	1.31	1.23	
2	1.35	1.12	1.29	1.35	1.48	1.4	1.39	1.27	1.11	1.14	1.33	1.23	
3	1.38	1.09	1.28	1.33	1.45	1.42	1.39	1.27	1.11	1.15	1.34	1.23	
4	1.38	1.11	1.27	1.4	1.43	1.43	1.39	1.27	1.11	1.15	1.32	1.35	
5	1.31	1.14	1.27	1.39	1.41	1.43	1.39	1.27	1.11	1.15	1.25	1.172	
6	1.27	1.15	1.27	1.39	1.41	1.43	1.39	1.27	1.11	1.15	1.19	1.185	
7	1.26	1.19	1.28	1.39	1.39	1.43	1.39	1.27	1.1	1.15	1.19	1.185	
8	1.24	1.19	1.31	1.36	1.39	1.43	1.39	1.27	1.11	1.15	1.19	1.185	
9	1.26	1.19	1.31	1.37	1.39	1.43	1.4	1.27	1.13	1.15	1.19	1.185	
10	1.22	1.2	1.31	1.36	1.37	1.43	1.39	1.26	1.13	1.15	1.19	1.185	
11	1.2	1.2	1.31	1.35	1.36	1.43	1.39	1.23	1.11	1.14	1.19	1.206	
12	1.19	1.23	1.31	1.35	1.35	1.43	1.39	1.23	1.11	1.13	1.19	1.224	
13	1.15	1.23	1.37	1.35	1.35	1.43	1.36	1.23	1.11	1.12	1.19	1.226	
14	1.19	1.23	1.39	1.35	1.35	1.43	1.35	1.23	1.11	1.12	1.19	1.226	
15	1.19	1.23	1.39	1.38	1.35	1.43	1.35	1.23	1.11	1.12	1.19	1.226	
16	1.19	1.23	1.39	1.39	1.35	1.43	1.35	1.2	1.11	1.15	1.19	1.226	
17	1.19	1.23	1.39	1.39	1.35	1.44	1.35	1.19	1.11	1.18	1.19	1.226	
18	1.19	1.23	1.39	1.39	1.37	1.45	1.35	1.19	1.11	1.17	1.21	1.226	
19	1.19	1.24	1.39	1.42	1.38	1.43	1.35	1.19	1.11	1.19	1.23	1.226	
20	1.19	1.25	1.39	1.43	1.37	1.42	1.35	1.19	1.11	1.22	1.23	1.226	
21	1.19	1.25	1.39	1.44	1.39	1.43	1.32	1.19	1.11	1.23	1.2	1.226	
22	1.19	1.27	1.39	1.48	1.39	1.43	1.31	1.19	1.11	1.23	1.19	1.226	
23	1.17	1.27	1.39	1.51	1.39	1.43	1.31	1.19	1.11	1.24	1.19	1.226	
24	1.15	1.27	1.39	1.52	1.39	1.43	1.31	1.15	1.11	1.22	1.19	1.226	
25	1.15	1.27	1.39	1.51	1.39	1.43	1.31	1.15	1.13	1.23	1.19	1.226	
26	1.15	1.27	1.4	1.52	1.39	1.43	1.31	1.15	1.14	1.24	1.19	1.226	
27	1.13	1.27	1.39	1.5	1.39	1.43	1.3	1.15	1.13	1.26	1.2	1.21	
28	1.12	1.3	1.39	1.49	1.39	1.43	1.27	1.14	1.13	1.27	1.43	1.185	
29	1.15	1.31	1.4	1.48	1.39	1.43	1.27	1.11	1.15	1.28		1.186	
30	1.01	1.31	1.17	1.48	1.39	1.39	1.27	1.08	1.15	1.29		1.187	
31		1.22		1.36	1.15		1.31		1.31	1.3		1.185	
Average	1.21	1.22	1.34	1.41	1.38	1.43	1.35	1.21	1.12	1.19	1.22	1.22	1.28

3.8. Water Spreading in the Owens Valley

The April 1, 2013, Eastern Sierra overall snowpack was estimated to be 47% of normal and Owens Valley runoff was about 54% of normal during the 2013-14 runoff year. In years with much greater than normal snowmelt, the volume of runoff may at times exceed the capacity of the LAA system. During periods of high snowpack runoff, LADWP may spread runoff water for operational reasons. No water was spread from water spreading diversions during the 2013-14 runoff year.

Overall estimated snowpack as of April 1, 2014, is about 30% of normal and forecast runoff in the Owens River Basin is about 205,900 acre-feet or 50% of average. Extensive water spreading is not anticipated during the 2014-15 runoff year; however, based upon the prevailing temperature, precipitation, and available LAA capacity in the upcoming year, some limited water spreading may occur for operational reasons.

3.9. Owens Lake Dust Mitigation

In accordance with the Great Basin Unified Air Pollution Control District's (GBUAPCD) *2003 and 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plans*, LADWP has mitigated dust emissions from just over 42 square miles of the Owens Lakebed to date. A total of 67,948 acre-feet of water was released for dust control on Owens Lake during the 2013-14 runoff year.

Shallow flooding, managed vegetation, and gravel dust control measures have been used to mitigate dust emissions from the lakebed and are recognized as the approved Best Available Control Methods by GBUAPCD.

Currently, Phase 7a of the Owens Lake Dust Control Project is under construction, which would bring an additional 3.1 square miles of new dust control into operation in areas formerly designated for Moat and Row under Phase 7. In addition, Phase 7a will convert 3.4 square miles currently operated as shallow flood to managed vegetation, gravel, or a hybrid of the approved control methods to use water more efficiently and to enhance wildlife habitat value on the Owens Lakebed.

Furthermore, LADWP is working with the stakeholders on determining the suitable approach(es) for addressing dust emissions from up to 363 acres of cultural resources sensitive areas on Owens Lake playa as part of the Phase 7b. The stakeholders are anticipated to outline their recommendation(s) for addressing dust emissions from these cultural resources sensitive areas by December 31, 2014.

LADWP is preparing environmental documents in response to the GBUAPCD's 2011 Supplemental Control Requirements Determination which requires mitigating dust emissions from an additional 2.9 square miles of Owens Lakebed. The environmental documents will be completed by December 12, 2015.

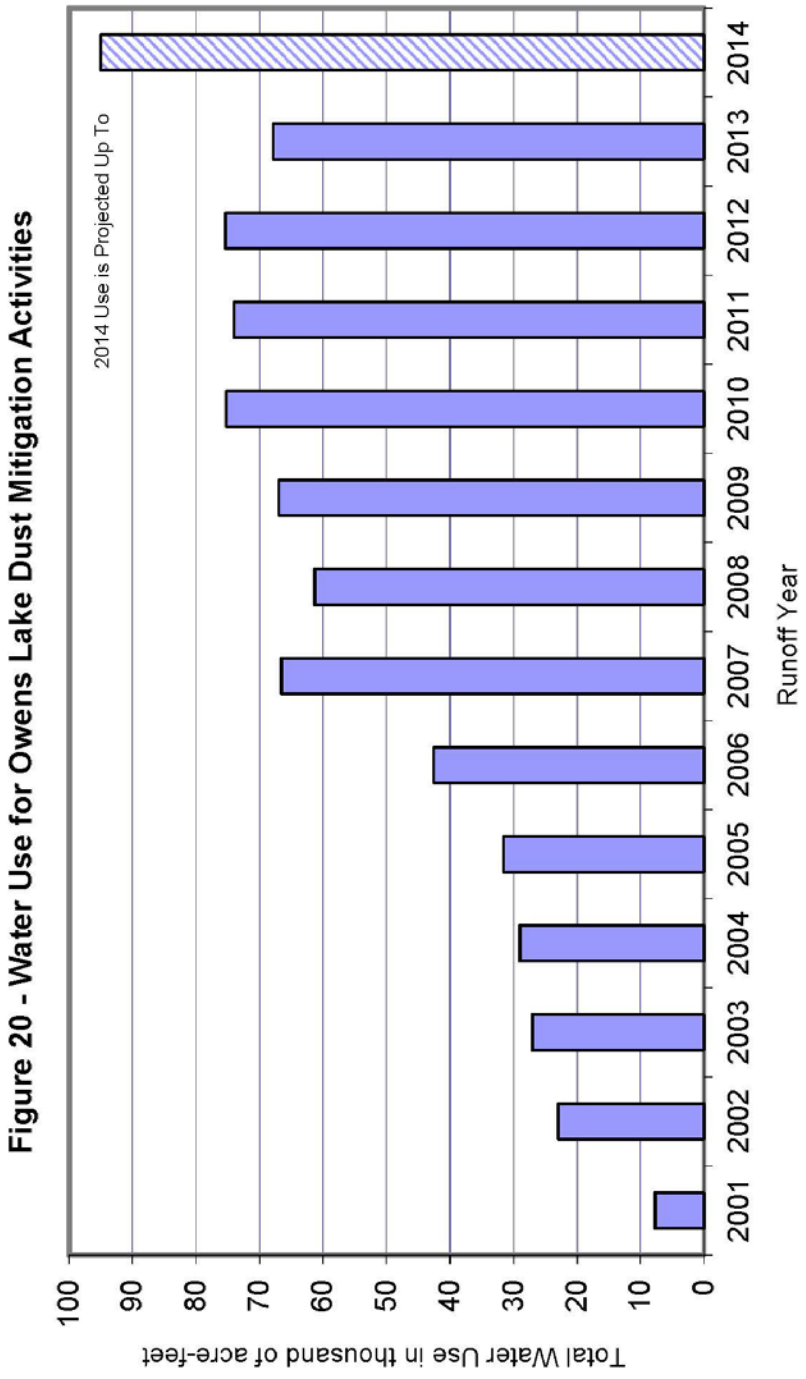


Figure 20. Water Use by Owens Lake Dust Mitigation Activities

4. ENHANCEMENT/MITIGATION PROJECT STATUS

4. ENHANCEMENT/MITIGATION (E/M) PROJECT STATUS

Table 17 provides the current status of Owens Valley Enhancement/Mitigation Projects.

TABLE 17. E/M Project Status

Project/Item Description	Project Status, Strategies/ Actions/ Plans and overall effectiveness of Mitigation effort and Plan in reaching its goal	1991 Owens Valley EIR Impact No.
Independence Springfield (283 acres)	The Independence Springfield has achieved its goal by irrigating over 280 acres. The E/M Project is currently under evaluation by the Technical Group.	10-11
Independence Woodlot (21 acres)	The Independence Woodlot has achieved its goals. California Department of Forestry assists with harvesting and cleanup. The Lone Pine Future Farmers of America irrigates the woodlot and distributes the wood according to the operations plan and management guidelines that were developed by the Technical Group.	10-11
Independence East Side Regreening Project (30 acres)	Mitigation plans were submitted to Inyo County Water Department (ICWD) for this project on August 13, 2004. LADWP circulated a Mitigated Negative Declaration (MND) for the Independence Eastside Regreening Project and Town Water System September 23-October 29, 2004. The Board of Water and Power Commission approved the project in May 2005. Following approval, Inyo County requested that three minor modifications to the project be made: (1) the project well to be located approximately 100 yards to the east of the originally proposed location, (2) that sprinkler irrigation be considered in place of flood irrigation, and (3) that a portion of the project area include stables and/or corrals. An amendment to the project scoping document that incorporates these changes was approved by the Inyo/Los Angeles Standing Committee on April 23, 2009. The well for this project was drilled in September 2012. Construction of the irrigation system for this project occurred during the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.	10-11

Project/Item Description	Project Status, Strategies/ Actions/ Plans and overall effectiveness of Mitigation effort and Plan in reaching its goal	1991 Owens Valley EIR Impact No.
Big Pine Northeast Regreening (30 acres)	Mitigation Plans for the project were transmitted to the County in 2004. Comments were received from the County in 2005. LADWP identified issues making the project unfeasible as originally scoped. In order to facilitate implementation of the project LADWP recommended the following changes: (1) change the water source for the project to include the Big Pine Canal (Well W375 remained scoped as project make-up water well), (2) change irrigation method from flood irrigation to the option of flood or sprinkler irrigation, (3) move the project area closer to Highway 395, and (4) change the lessee identified for the project to an unspecified lessee. These changes were discussed publicly at the September 9, 2009, Inyo County Water Commission meeting and the November 5, 2009, Inyo/Los Angeles Standing Committee meeting. At the November 4, 2010, Inyo/Los Angeles Standing Committee meeting, modifications to the Final Scoping Document were approved. Key modifications include: changing the lessee designation, revising the boundaries of the project, and amending the water supply source and method of application identified for the project. The ICWD and Technical Group analyzed the operation of Well W375 and concluded that an exemption for up to 150 AF per year would likely have no significant impact on the environment or other well owners. LADWP circulated Negative Declaration (ND) for the project August 3-September 1, 2011. New information was provided and the ND was recirculated November 10-December 12, 2011. A Notice of Determination was filed with Inyo County on March 7, 2012. The adequacy of the ND was legally challenged by the Big Pine Paiute Tribe and Sierra Club in Inyo County Superior Court Case SICVPT12-53541 based on the fair argument standard that substantial evidence supports the issuance of an Environmental Impact Report (EIR) rather than a ND. A decision was issued by Inyo County Superior Court November 26, 2012 denying the parties' Petition for Writ of Mandate and in favor of issuing the LADWP's ND rather than an EIR. The Technical Group exempted Well W375 November 6, 2013, for project make-up water in order to make this project feasible. Installation of the irrigation system for this project occurred in the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.	10-11
Shepherd Creek Alfalfa Field (198 acres)	The Shepherd Creek project is 100% complete and has achieved its goals.	10-11
Shepherd Creek Potential (60 acres)	The Shepherd Creek Potential Project was evaluated and natural increases in the density of native cover have occurred that are comparable to baseline conditions in adjacent undisturbed parcels. Therefore, the goals for this potential project, as stated in the EIR, have been met.	10-11
Lower Owens River Rewatering Project (18,000 AFY)	This project was to provide a continuous flow of water in a 62-mile, previously dry (1913-1986) portion of the river channel and maintain five small lakes, creating a warm water fishery and wildlife habitat in the southern Owens Valley. Inyo County and LADWP decided to reduce the water supply to the Lower Owens River Project in 1991 because of a lack of E/M well supply. The portion of the river between Blackrock Spillgate and Independence was dry until the Lower Owens River Project was implemented in December 2006.	10-14

Project/Item Description	Project Status, Strategies/ Actions/ Plans and overall effectiveness of Mitigation effort and Plan in reaching its goal	1991 Owens Valley EIR Impact No.
Independence Pasture Lands and Native Pasture Lands (610 acres)	Currently, approximately 520 acres are incorporated into the project. The project was evaluated in 2008 to determine if additional acreage should be irrigated. Figure 12-2 for the project (1991 EIR) was scanned and rubber sheeted onto a quad sheet for acreage calculations in GIS. The Independence pasturelands acreage in this image was actually 522 acres. Therefore, LADWP has implemented the acreage designated in the figure presented in the 1991 EIR.	10-16
Van Norman Fields (171 acres)	A portion of the project cannot be irrigated because of the area's topography. This area was evaluated jointly by LADWP and Inyo County and a decision was made that this high area could not be modified to increase irrigation efficiency and that the project goals were being fulfilled. Additionally the project supply well designated for this project, Well 390, has reached the end of its service life and water is currently being supplied to the project from a submersible pump installed in the Well 390 casing. A replacement well was drilled in October 2012.	10-16
Richards Fields (160 acres)	This project is complete and the goals for this project are being met.	10-16
Lone Pine Woodlot (12 acres)	The Woodlot has achieved its goals. The California Department of Forestry helps with harvesting and cleanup and the Lone Pine Future Farmers of America irrigate the woodlot and distributes the wood according to the operations plan and management guidelines that were developed by the Technical Group.	10-16
Lone Pine East Side Regreening (11 acres)	This project is complete and the goals for this project are being met.	10-16
Lone Pine West Side Regreening (7 acres)	This project is complete and the goals for this project are being met.	10-16
Laws/Poleta Native Pasture (216 acres)	This project is complete and the goals for this project are being met.	10-18
Laws Historical Museum Pasturelands (21+15 acres)	This project is complete and the goals for this project are being met.	10-18
McNally Ponds and Native Pasturelands (348 acres)	The Inyo/Los Angeles Standing Committee agreed in 1991 to reduce the water commitment to the McNally Ponds Project for that year because of dry conditions. In many normal and below normal runoff years since that time, the Inyo/Los Angeles Standing Committee has reduced water releases to this project. In years of abundant runoff the project receives its full allotment of water. In 2012-13 the Inyo/Los Angeles Standing Committee agreed to not provide a full allotment of water to the project. Under the current operating procedures, in years when the McNally Canals are operating or the McNally Ponds supply wells are in ON status, the ponds receive a full water allotment. The E/M projects are currently under evaluation by the Technical Group.	10-18

Project/Item Description	Project Status, Strategies/ Actions/ Plans and overall effectiveness of Mitigation effort and Plan in reaching its goal	1991 Owens Valley EIR Impact No.
Klondike Lake Aquatic Habitat (160 acres)	The Klondike Lake Project is being implemented. The estimated water usage for the project was reduced from 2,200 AF to 1,700 AF, with 1,500 AF allocated for conveyance and lake level maintenance and up to 200 AF allocated for waterfowl habitat south of the lake. A new diversion was installed and implementation of the releases for waterfowl habitat south of the lake began in May 2005. Delivery of the total allocation of up to 200 AF to the south was initially problematic because of the low hydraulic gradient between the lake and the waterfowl habitat areas. The low hydraulic gradient also made accurate flow measurement difficult. Sand accumulations have periodically been cleared from the conveyance pipe inlet and vegetation removed from the pipe outflow area to facilitate flow. A different water release location was utilized in 2012 and 2013 and the project received its full allotment of 200 AF. The goals for this project were met in 2013.	11-1
Millpond Recreation Area (18 acres irrigated, pond, pay portion of power bill).	This project is being implemented.	n/a
Independence Ditch	Complete.	n/a
Independence Roadside Rest Area (0.5 acres)	Complete.	n/a
Eastern California Museum	Complete.	n/a
Manzanar Tree Pruning	Complete.	n/a
Lone Pine North Clean-Up	Complete.	n/a
Lone Pine Sports Complex	Complete.	n/a
Lone Pine Riparian Park (320 acres)	Complete.	n/a
Tree Planting Along Public Roads	Complete.	n/a

5. 1991 ENVIRONMENTAL IMPACT REPORT (1991 EIR) MITIGATION MEASURE STATUS

5. 1991 OWENS VALLEY ENVIRONMENTAL IMPACT REPORT (1991 EIR) MITIGATION MEASURE STATUS

Table 18 provides status of mitigations required by the 1991 Owens Valley EIR.

TABLE 18. 1991 EIR Mitigation Measures

9 - WATER RESOURCES

Steward Ranch

1991 EIR Impact No. 9-14

Impacts:	Los Angeles Department of Water and Power (LADWP) pumping between 1970 and 1990 in the Big Pine area contributed to lowered water levels in the wells of Steward Ranch and resulted in an adverse economic effect. It is expected that LADWP will continue to pump from this area in the future. The proposed mitigation measure would reduce this impact to less-than significant.
Project Description/ Mitigation Measure:	Because groundwater pumping in the Big Pine well field was contributing to a lowering of groundwater levels at Steward Ranch, one of two wells became inoperable. LADWP reached agreement with the ranch owners to permanently mitigate the lowered groundwater levels that have existed since 1972.
Mitigation Goals/ Strategies/Actions:	To compensate the ranch owners for lowered groundwater levels on the ranch.
Project Status/ Effectiveness:	The mitigation efforts are complete. LADWP continues to compensate the ranch owners for added power costs of pumping water from a greater depth.
Mitigation Plan Required/Status:	No.

10 - VEGETATION

Saltcedar Eradication Control Program

1991 EIR Impact No. 10-6

Impacts:	Between 1970 and 1990, LADWP continued to spread surplus water in wet years in the spreading areas created by the dikes east of Independence between the aqueduct and the river. This activity increased soil moisture and water tables, but also fostered conditions favorable to the spread of saltcedar, which was established prior to 1970.
Project Description/ Mitigation Measure:	A saltcedar eradication and control program has been implemented as described in Chapter 5 of the 1991 EIR.
Mitigation Goals/ Strategies/Actions:	To control saltcedar in the Owens Valley.
Project Status/ Effectiveness:	The control efforts are continuing with payments from LADWP to the Inyo County Water Department (ICWD) and with outside funding. Control of Owens River saltcedar populations from Tinemaha Reservoir into the Delta has occurred along the main channel of the Owens River. Control efforts are continuing.
Mitigation Plan Required/Status:	No.

Independence Springfield (297 acres), Independence Woodlot (20 acres), Revegetation project East of Independence (part of Independence Springfield, 40 acres)

1991 EIR Impact No. 10-11

Impacts:	Fluctuations in water tables due to groundwater pumping have caused approximately 655 acres of groundwater dependent vegetation to die-off. Loss of vegetation cover has occurred on these lands.
Project Description/ Mitigation Measure:	As part of the Independence Springfield and Woodlot enhancement/mitigation projects, approximately 317 acres of barren or near-barren ground have been revegetated with either native pasture or alfalfa. This area was affected by groundwater pumping and surface diversions of water.
Mitigation Goals/	

Strategies/Actions: Independence Woodlot - to supply fuel wood to needy individuals and to mitigate blowing dust. Independence Springfield - to establish native perennial vegetation where none existed, reduce blowing dust and enhance grazing.

Project Status/ Effectiveness: Independence Woodlot has achieved its goals. California Department of Forestry helps with harvesting and cleanup and the Lone Pine Future Farmers of America irrigate the woodlot and distributes the wood according to the operations plan and the management guidelines that were developed by the Technical Group. Independence Springfield has achieved its goal over approximately 280 acres. LADWP is currently planning to irrigate an additional 40 acres.

Mitigation Plan Required/Status: No.

Independence East Side Regreening Project (30 acres), Big Pine Northeast Regreening (30 acres)

1991 EIR Impact No. 10-11

Impacts: Continued from above.

Project Description/ Mitigation Measure: In the near future, two enhancement/mitigation projects will be initiated to mitigate areas affected by groundwater pumping adjacent to the towns of Independence (east side regreening project) and Big Pine (northeast regreening project). Each project was originally planned to be approximately 30 acres of irrigated pasture.

Mitigation Goals Strategies/Actions: To enhance the aesthetics of the areas that lie adjacent to Independence and Big Pine.

Project Status/ Effectiveness: Mitigation plans were submitted to ICWD for these projects on August 13, 2004:

Independence East Side Regreening Project and Town Water System – LADWP circulated a Mitigated Negative Declaration (MND) for the Independence Eastside Regreening Project and Town Water System September 23-October 29, 2004. The Board of Water and Power Commission approved the project in May 2005. Following approval, Inyo County requested that three minor

modifications to the project be made: 1) the project well to be located approximately 100 yards to the east of the originally proposed location, 2) that sprinkler irrigation be considered in place of flood irrigation, and 3) that a portion of the project area include stables and/or corrals. An amendment to the project scoping document that incorporates these changes was approved by the Standing Committee on April 23, 2009.

The well for this project was drilled in September 2012. Construction of the irrigation system for this project occurred during the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.

Big Pine Northeast Regreening – Mitigation Plans for the project were transmitted to the County in 2004. Comments were received from the County in 2005. LADWP identified issues making the project unfeasible as originally scoped. In order to facilitate implementation of the project LADWP recommended the following changes: 1) change the water source for the project to include the Big Pine Canal (Well W375 remained scoped as project make-up water well), 2) change irrigation method from flood irrigation to the option of flood or sprinkler irrigation, 3) move the project area closer to Highway 395, 4) change the lessee identified for the project to an unspecified lessee. These changes were discussed publicly at the September 9, 2009 Inyo County Water Commission meeting and the November 5, 2009 Inyo/LA Standing Committee meeting. At the November 4, 2010 Inyo/LA Standing Committee meeting, modifications to the Final Scoping Document were approved. Key modifications include: changing the lessee designation, revising the boundaries of the project, and amending the water supply source and method of application identified for the project. The ICWD and Technical Group analyzed the operation of Well W375 and concluded that an exemption for up to 150 AF per year would likely have no significant impact on the environment or other well owners.

LADWP circulated Negative Declaration (ND) for the project August 3-September 1, 2011. New information was provided and the ND was recirculated November 10-December 12, 2011. A Notice of Determination was filed with Inyo County on March 7, 2012. The adequacy of the ND was legally challenged by the Big Pine Paiute Tribe and Sierra Club in Inyo County Superior Court Case SICVPT12-53541 based on the fair argument standard that substantial evidence supports the issuance of an Environmental Impact Report (EIR) rather than a ND. A decision was issued by Inyo County Superior Court November 26, 2012 denying the

parties' Petition for Writ of Mandate and in favor of issuing the LADWP's ND rather than an EIR.

The Technical Group exempted Well W375 November 6, 2013 for project make-up water in order to make this project feasible. Installation of the irrigation system for this project occurred in the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.

Mitigation Plan Required/Status: Implemented. Both projects will be seeded by the lessee in Spring 2014.

Shepherd Creek Alfalfa Field (198 acres), Shepherd Creek Potential (60 acres).

1991 EIR Impact No. 10-11

Impacts: Continued from above.

Project Description/ Mitigation Measure: Under the Shepherd Creek enhancement/mitigation project, approximately 198 acres of poorly vegetated land has been converted to alfalfa. This area was affected by groundwater pumping and abandonment of irrigation. In addition, an area of approximately 60 acres to the east of the existing project area on the opposite side of U.S. Highway 395 is poorly vegetated. If the density of the native cover in this area does not naturally increase, the existing enhancement/mitigation project may be expanded to include this additional area.

Mitigation Goals Strategies/Actions: Shepherd Creek Project - To revegetate abandoned farm land with alfalfa to mitigate blowing dust.

Shepherd Creek Potential Project - To naturally increase the density of native cover or expand the existing project into this area.

Project Status/ Effectiveness: The Shepherd Creek Project is 100% complete and has achieved its goals.

The Shepherd Creek Potential Project was evaluated and natural increases in the density of native cover have occurred making the site comparable to baseline conditions in adjacent undisturbed

parcels. Therefore, the goals for this potential project, as stated in the EIR, have been met.

Mitigation Plan Required/Status: No.

Taboose/Hines Springs/Blackrock Areas Revegetation Project (80 acres)
(The 80 acres is comprised of Tinemaha 54, Hines Spring S, and Blackrock 16E)

1991 EIR Impact No. 10-11

Impacts: Continued from above.

Project Description/ Mitigation Measure: Approximately 80 acres of land that lost a significant amount of its native vegetation cover as a result of increased groundwater pumping will be revegetated. The techniques that will be employed to revegetate these lands will be determined through studies that will be conducted by LADWP and Inyo County. These lands will not be permanently irrigated, but will be revegetated with native Owens Valley vegetation not requiring irrigation except perhaps during its initial establishment. Depending on the amount of rainfall and runoff, successful revegetation of these lands could take a decade or longer. The goal will be to restore as full a native vegetation cover as is feasible, but at a minimum, vegetation cover sufficient to avoid blowing dust will be achieved in that area.

Mitigation Goals/ Strategies/Actions: Tinemaha 54 - To restore vegetation to the conditions that existed prior to the impact. Hines Spring S - Dependent upon the Hines Spring mitigation project presented below.

Blackrock 16E - To rehabilitate the site to alkali meadow conditions.

Project Status/ Effectiveness: Tinemaha 54 - The 0.3-acre area has been fenced, planted with 108 grass plants and drip irrigated between 1999 and 2004 to get the plants established. Transects were run by LADWP and ICWD in August of 2012. The parcel has achieved 2.14% total perennial cover. Hines Spring S - the Additional Mitigation Projects developed by the MOU Ad Hoc Group were implemented by March 2012. Hines Spring S may be affected by the implementation of on-site mitigation (Hines Spring Well 355 and Hines Spring Aberdeen Ditch projects), and a revegetation plan will be developed within three years after the work at Hines

Spring is completed. Blackrock 16E - the area has been fenced and weeds have been treated by controlled burn. Cover of native species has increased from 5% in 1999 to 12% in 2002. Weed cover decreased from 9% in 1999 to less than 1% in 2002. Permanent transects were run in 2010 and the parcel has attained the cover and composition goals delineated in the revegetation plan.

Mitigation Plan Required/Status: Yes – complete.

Five Bridges Area Revegetation Project (300 acres)

1991 EIR Impact No. 10-12

Impacts: Vegetation in an area of approximately 300 acres near Five Bridges Road north of Bishop was significantly adversely affected during 1988 because of the operation of the two wells, to supply water to enhancement/mitigation projects.

Project Description/ Mitigation Measure: Water has been spread over the affected area since 1988. By the summer of 1990, revegetation of native species had begun on approximately 80% of the affected area. LADWP and Inyo County are developing a plan to revegetate the entire affected area with riparian and meadow vegetation. This plan will be implemented when it has been completed.

Mitigation Goals Strategies/Actions: To restore the vegetation community complex with similar species composition and cover that exists at local similar sites. The goal will be attained when alkali meadows attain live cover of 60%, composed of four perennial species and riparian areas attain live cover of 90%, composed of four perennial species.

Project Status/ Effectiveness: Riparian areas have been fenced, water releases are conducted three times during the growing season, several controlled burns have been conducted, and the area is treated annually for weed problems. Monitoring was conducted throughout the growing season. In 2013, water releases were conducted three times during the growing season. At transect L4 in 2013, perennial cover was 13%, composed of five native species. Perennial cover at transect L5 in 2013 was 34%, composed of six native species. Both of these transects are located in alkali meadow areas.

Declines are likely due to pepperweed eradication efforts and persistent drought conditions.

Mitigation Plan Required/Status: Yes – complete.

Symmes-Shepherd Well field Area Revegetation Project (60 acres) (The area is comprised of Independence 105, Independence 131, and Independence 123)

1991 EIR Impact No. 10-13

Impacts: Increased groundwater pumping has significantly adversely affected approximately 60 acres of vegetation in the Symmes-Shepherd well field area.

Project Description/ Mitigation Measure: A revegetation program will be implemented for these affected areas utilizing native vegetation of the type that has died. Water may be spread as necessary in these areas to accomplish the revegetation.

Mitigation Goals Strategies/Actions: To revegetate the parcels with species mapped in the surrounding areas.

Project Status/ Effectiveness: While 60 acres was identified in the EIR, 115 acres were fenced for these three projects.

Independence 105 (14 acres) - The area has been fenced and native vegetation cover has increased naturally. Transects were run by ICWD in 2006 and native perennial cover had increased to 25%. The site has attained the cover and composition goals delineated in the revegetation plan.

Independence 131 (73 acres) - The area has been fenced. Revegetation trials have been completed by two consulting firms. In areas not disturbed by the revegetation trials, vegetation cover is starting to increase naturally. Transects were run in 2006. Perennial cover was 8% composed of eight native perennial species. The goal for the site is to attain 17% perennial cover composed of four native perennial species. Approximately 25 acres were drill seeded with locally collected seeds in the spring of 2011. Transects were run by LADWP and ICWD in August of 2012. IND131S currently contains 6.15 % perennial

cover, and IND131N has achieved the revegetation goals with 15.7% live cover composed of 5 perennial species. The site will be considered rehabilitated when cover is 90% and composition is 75% of the site specific stated goal.

Independence 123 (28 acres) - The area has been fenced and native perennial vegetation cover has increased naturally. Transects were run in 2006. The site has attained the goals delineated in the revegetation plan of 17% perennial cover composed of four native perennial species.

Mitigation Plan Required/Status: Yes – complete.

Fish Springs Hatchery, Blackrock Spring Hatchery

1991 EIR Impact No. 10-14

Impacts: Increased groundwater pumping has reduced or eliminated flows from Fish Springs, Big and Little Seely Springs, Hines Spring, Big and Little Blackrock Springs, and Reinhackle Spring. This has caused significant adverse impacts to vegetation at several of these spring areas.

Project Description/ Mitigation Measure: No on-site mitigation will be implemented at Fish Springs and Big Blackrock Springs; however, the CDFW fish hatcheries at these locations serve as mitigation of a compensatory nature by producing fish that are stocked throughout Inyo County. The Lower Owens River Project provides compensatory mitigation.

Mitigation Goals/ Strategies/Actions: To allow CDFW to continue fish hatchery operations at Big Blackrock and Fish Springs.

Project Status/ Effectiveness: Hatchery operations are continuing. The Lower Owens River Project has been implemented.

Mitigation Plan Required/Status: No.

Big and Little Seely Springs (1 acre pond adjacent to Well W349)

1991 EIR Impact No. 10-14

Impacts: See description above.

Project Description/ Mitigation Measure:	In the area of Big and Little Seely Springs, LADWP Well 349 discharges water into a pond approximately one acre in size. This pond provides a temporary resting place for waterfowl and shorebirds when the pump is operating or Big Seely Spring is flowing. This water passes through the pond to the Owens River. Riparian vegetation has become established around this pond.
Mitigation Goals/ Strategies/Actions:	To manage groundwater pumping in accordance with the goals of the Water Agreement, replace the previous water resource with surface water and/or groundwater, and allow the affected area to naturally revegetate.
Project Status/ Effectiveness:	Project implementation is complete and the project functions as described.
Mitigation Plan Required/Status:	No.

Hines Spring (1 to 2 acres)

1991 EIR Impact No. 10-14

Impacts:	See description above.
Project Description/ Mitigation Measure:	The Hines Spring vent and its surroundings will receive on-site mitigation. Water will be supplied to the area from an existing, but unused, LADWP well at the site. As a result, approximately one to two acres will either have ponded water or riparian vegetation. Hines Spring will serve as a research project on how to re-establish a damaged aquatic habitat and surrounding marshland. Riparian trees and a selection of riparian herbaceous species will be planted on the banks. The area will be fenced.
Mitigation Goals/ Strategies/Actions:	To provide water from an existing, but unused, LADWP well to create 1-2 acres of ponded water or riparian vegetation at Hines Springs.
Project Status/	

Effectiveness: This project was also identified in the 1997 MOU and the subject of a 2004 and 2010 Stipulation and Order. Consultants developed draft plans for this project. The Parties to the 1997 MOU decided to enter into an ad hoc process to analyze the project at Hines Springs and other potential project areas. *The Additional Mitigation Projects Developed by the MOU Ad Hoc Group* document describes a series of eight mitigation projects to satisfy this mitigation of the 1600 AF commitment of the 1997 MOU and was completed and agreed to by the Parties. CEQA analysis was conducted in the spring of 2010 and the projects were adopted by the Board of Water and Power Commissioners in June 2010. Implementation of the projects began shortly thereafter and were fully implemented by March 2012. Refer to Section 7 for more information on the status of each project.

Mitigation Plan Required/Status: Yes – complete.

Reinhackle Spring, Little Blackrock Springs

1991 EIR Impact No. 10-14

Impacts: See description above.

Project Description/ Mitigation Measure: LADWP will continue to supply water from Division Creek to the site of the former pond at Little Blackrock Springs. The marsh vegetation at this site will thus be maintained. When it was determined in the late 1980s that groundwater pumping was affecting the flow from Reinhackle Spring, pumping from certain wells in the area was discontinued and the spring flow increased No significant adverse impacts on vegetation in this area have resulted from the reduced flow. At Reinhackle Spring, groundwater pumping from wells that affect the spring flow will be managed so that flows from the spring will not be significantly reduced compared to flows under prevailing natural conditions. In addition, all of the provisions for protecting springs, described in impact 10-15 (see below) and contained in the Water Agreement and the Green Book, will be applied equally to Reinhackle Spring.

Mitigation Goals/ Strategies/Actions: Little Blackrock Spring - To maintain marsh vegetation through the use of the Division Creek Diversion.

Reinhackle Spring - Groundwater pumping will be managed so that flows from the spring will not be significantly reduced compared to flows under prevailing natural conditions.

Project Status/ Effectiveness: Little Blackrock Spring - This project is complete and the project functions as described.

Reinhackle Spring - Spring flows are being monitored continually and are shown in Table 16 (Section 3). The flow followed the typical seasonal pattern of reaching a peak flow in winter and a low flow in the spring.

A geochemistry study of flow in Reinhackle Spring was conducted in 2003 as a cooperative study by LADWP, MWH Americas, Inc., and ICWD. This study concluded that water from Reinhackle Spring is similar in origin to the Los Angeles Aqueduct and dissimilar to the deep aquifer samples and up gradient shallow aquifer wells. An operational test was conducted in Bairs-Georges Wellfield to study the response of the spring flow to groundwater pumping by active wells in the wellfield and the flow in the Los Angeles Aqueduct and was completed in March 2011. The analysis of the data from these operational tests is completed and is being reviewed. The preliminary results show that the flow in Reinhackle Spring is affected mainly by the water levels in the shallow aquifer west of the spring. The groundwater pumping in the Bairs-Georges Wellfield could affect the flow in the spring only to the extent that it affects water levels in the shallow aquifer west of the spring. Based on the results of these operation tests, LADWP has developed a monitoring and operational plan for Bairs-Georges Wellfield that has been submitted to ICWD for comment in 2012.

Mitigation Plan Required/Status: No.

LORP Project (60 miles, perhaps more than 1,000 acres)

1991 EIR Impact No. 10-14

Impacts: See description above.

Project Description/ Mitigation Measure: Although not all springs and associated riparian and meadow vegetation will receive on-site mitigation, the Lower Owens River Project will provide mitigation of a compensatory nature. This project will rewater 60+ miles of the river channel allowing for restoration of riparian vegetation along the river. This project also will result in the creation of several new ponds along the river and

will provide the continuation of existing lakes associated with the project. The project will restore large areas of wetland and meadow vegetation, perhaps exceeding 1,000 acres adjacent to the river and its delta. In comparison, the area of riparian and meadow vegetation that has been lost and will not be restored because of the elimination of spring flow due to groundwater pumping is estimated to be less than 100 acres.

Mitigation Goals/ Strategies/Actions: To rewater the Lower Owens River below the Los Angeles Aqueduct Intake and the enhancement of several environmental features along or near the river including the Delta, the Blackrock Waterfowl Management Area and Off-River Lakes and Ponds. The goal of the Lower Owens River Project is the establishment of a healthy, functioning ecosystem for the benefit of biodiversity and Threatened and Endangered Species, while providing for the continuation of sustainable uses including recreation, livestock grazing, agriculture and other activities.

Project Status/ Effectiveness: Flows were initiated in the Lower Owens River Project in December 2006. Phase 1 flows were met and exceeded. Project baseflows were achieved in February 2007. The specified Seasonal Habitat Flow was initiated on May 29, 2012, and completed on schedule. Specified flows were released to the Delta in 2012. The Blackrock Waterfowl Management Area achieved the 2012 - specified flooded acreage through water releases. Off-River Lakes and Ponds have been managed as specified for 2012. Training, monitoring, and reporting are being conducted as specified in the various permits.

Mitigation Plan Required/Status: Yes – complete.

Lower Owens River Rewatering Project (18,000 Acre-Feet Per Year)

1991 EIR Impact No. 10-14

Impacts: See description above.

Project Description/ Mitigation Measure: This project provided up to 18,000 acre-feet (AF) per year of continuous flow of water in a 50-mile, previously dry (1913-1986) portion of the river channel creating a warm water fishery and wildlife habitat in the southern Owens Valley. The project also supplied water to five small lakes along the river route providing improved waterfowl habitat in the region.

Mitigation Goals Strategies/Actions: The goal of the enhancement/mitigation project was to create a warm watery fishery and wildlife habitat in the southern Owens Valley. In addition, five small lakes were provided water for waterfowl habitat.

Project Status/ Effectiveness: This project has been overlaid by the Lower Owens River Project described above.

Mitigation Plan Required/Status: No.

Springs Vegetation (general)

1991 EIR Impact No. 10-14

Impacts: See description above.

Project Description/ Mitigation Measure: In addition, vegetation dependent upon a supply of water from a spring (primarily management type D) will be maintained in order to avoid a significant change or decrease as provided in the Water Agreement and the Green Book.

Mitigation Goals Strategies/Actions: Per description.

Project Status/ Effectiveness: On-going.

Mitigation Plan Required/Status: No.

Springs and Seeps

1991 EIR Impact No. 10-15

Impacts: Under the provisions of the Water Agreement and the Green Book, spring flows and vegetation dependent upon such flows will be carefully monitored by the Technical Group.

Project Description/

Mitigation Measure: The Green Book contains procedures for determining the effects of groundwater pumping and surface water management practices on spring flow. Groundwater pumping from existing and new wells will be managed to avoid reductions in spring flows that would cause significant decreases or changes in spring-associated vegetation. If despite such management, significant decreases in spring flows occur due to groundwater pumping that could cause significant decreases or changes in vegetation dependent upon such flows, management of groundwater pumping from wells affecting flow from the spring will be modified so that adequate spring flow resumes to supply the vegetation. Also, the Technical Group may determine additional appropriate actions that could include: (a) temporarily supplying surface water or groundwater that could restore and sustain the vegetation until adequate spring flow resumes; and/or (b) revegetating the affected area if necessary.

Mitigation Goals/ Strategies/Actions: Per description.

Project Status/ Effectiveness: On-going.

Mitigation Plan Required/Status: No.

Independence Pasturelands and Native Pasturelands (610 acres), Van Norman Fields (171 acres), Richards Fields (160 acres), and Lone Pine Woodlot (12 acres)

1991 EIR Impact No. 10-16

Impacts: Approximately 1,080 acres of formerly irrigated lands had not successfully revegetated following the abandonment of agriculture. This was a significant adverse impact because these lands had a loss of vegetation and were the source of blowing dust.

Project Description/ Mitigation Measure: As part of the enhancement/mitigation projects implemented by LADWP and Inyo County since 1985, approximately 942 acres of these abandoned agricultural lands have been revegetated with irrigated pasture or alfalfa. These areas are the Independence Pasture and Native Pasturelands, the Van Norman and Richards Fields, and the Lone Pine Woodlot adjacent to Lone Pine.

Mitigation Goals/ Strategies/Actions: Independence Pasturelands/Native Pastures - To revegetate abandoned cropland that was removed from irrigation. Van Norman Field and Richards Field - To revegetate abandoned agricultural lands and native vegetation stands that were revegetating slowly. Lone Pine Woodlot - To supply fuel wood to needy individuals and to mitigate blowing dust.

Project Status/ Effectiveness: Currently, at the Independence Pasturelands/Native Pastures approximately 520 acres are incorporated into the project. Figure (12-2) for this project, in the 1991 EIR, was scanned and rubber sheeted onto a quad sheet for acreage calculations in GIS. The Independence Pasturelands acreage in this image was 522 acres. Therefore, LADWP has implemented the acreage designated in the figure presented in the 1991 EIR. The other projects noted above are complete and the goals for the projects have been met. At the Lone Pine Woodlot, the California Department of Forestry helps with harvesting and cleanup and the Lone Pine Future Farmers of America irrigate the woodlot and distributes the wood in accordance with the operation plans and management guidelines that were developed by the Technical Group. At the Van Norman Field, a portion of the project cannot be irrigated because of topography. This area was evaluated jointly by LADWP and Inyo County and a decision was made that this high area should not be modified to increase irrigation efficiency but that the project was fulfilling its stated goals. Well W390, the well designated to supply water to this project has reached the end of its service life and is planned for replacement. In the interim a submersible pump is supplying water to the project from the well W390 casing. A replacement well was drilled in October of 2012.

Mitigation Plan Required/Status: No.

Lone Pine East Side Regreening (11 acres),
Lone Pine West Side Regreening (7 acres)

1991 EIR Impact No. 10-16

Impacts: Continued from above.

Project Description/

Mitigation Measure:	A field of approximately seven acres along the Whitney Portal Road in Lone Pine, and a field of approximately 11 acres, located north of Lone Pine and east of U.S. Highway 395, have been converted to irrigated pasture as part of the Lone Pine Regreening enhancement/mitigation projects.
Mitigation Goals/ Strategies/Actions:	To enhance the aesthetics and to regreen abandoned agricultural lands in the Lone Pine area.
Project Status/ Effectiveness:	Project implementation is complete and the goals for these projects have been met.
Mitigation Plan Required/Status:	No.

Bishop Area Revegetation Project (120 acres)

1991 EIR Impact No. 10-16

Impacts:	Continued from above.
Project Description/ Mitigation Measure:	In addition, 120 acres of formerly irrigated land near Bishop with a loss of vegetation cover will be revegetated. The process to successfully revegetate these lands will be determined through studies to be conducted by LADWP and Inyo County. These lands will not be permanently irrigated, but will be revegetated with Owens Valley vegetation not requiring irrigation except perhaps during its initial establishment.
Mitigation Goals/ Strategies/Actions:	To revegetate the parcel with species found in the surrounding area. The goal will be to achieve as full a vegetation cover as is feasible, but at a minimum, a vegetation cover sufficient to avoid blowing dust.
Project Status/ Effectiveness:	The area has been fenced and a consulting firm has conducted revegetation studies on the site. Monitoring of the site was completed in 2003. A seed farm has been initiated for seed harvest. The seed farm will aid in the implementation of all revegetation projects in the Owens Valley. LADWP has begun growing plants for the seed farm and revegetation efforts in two purchased greenhouses.

Depending on the amount of rainfall and runoff, successful revegetation of these lands could take a decade or longer. Approximately 35 acres of the Bishop revegetation site were drill seeded with locally collected seeds in the spring of 2011. A buried drip system was installed on approximately 16 acres within the area that was drill seeded. The recently installed emitters were planted during the spring of 2012. Transects were run with ICWD in August 2012. The parcel has achieved 4.8% native perennial cover. Some natural recruitment of native species is occurring at this site.

Mitigation Plan Required/Status: Yes – complete.

Irrigated Lands in the Owens Valley Since 1981-82

1991 EIR Impact No. 10-16

Impacts: Continued from above.

Project Description/ Mitigation Measure: Irrigated lands in Owens Valley (including the Olancha-Cartago area) in existence during the 1981-82 runoff year or that have been irrigated in the future, except perhaps in very dry years. (Reductions in very dry years must be agreed upon in advance by LADWP and the Inyo County Board of Supervisors).

Mitigation Goals/ Strategies/Actions: To maintain existing irrigated lands.

Project Status/ Effectiveness: Irrigation is ongoing.

Mitigation Plan Required/Status: No.

Meadow/Riparian Vegetation Dependent upon Agricultural Tailwater, LORP Project (60 miles of river, perhaps more than 1,000 acres)

1991 EIR Impact No. 10-17

Impacts: Meadow and riparian vegetation that were supplied by tailwater from formerly irrigated lands has been impacted.

Project Description/

Mitigation Measure:	The loss of meadow or riparian vegetation that was dependent upon tailwater from formerly irrigated fields will be mitigated in the form of compensation by the restoration of meadow and riparian vegetation by the LORP.
Mitigation Goals/ Strategies/Actions:	See LORP (Impact 10-14).
Project Status/ Effectiveness:	See LORP (Impact 10-14).
Mitigation Plan Required/Status:	No.

Laws Area Revegetation Project (140 acres)

1991 EIR Impact No. 10-18

Impacts:	Significant adverse vegetation decrease and change have occurred in the Laws area due to a combination of factors, including abandoned agriculture, groundwater pumping, water spreading in wet years, livestock grazing, and drought.
Project Description/ Mitigation Measure:	Approximately 140 acres will be revegetated within the Laws area, which has lost all or part of its vegetation cover due to increased groundwater pumping or to abandonment of irrigation operations to supply the second aqueduct.
Mitigation Goals/ Strategies/Actions:	To revegetate the site with native species found in the surrounding area.
Project Status/ Effectiveness:	The area has been fenced and two consulting firms have conducted revegetation studies on the site. Final monitoring was conducted in 2004. The results of these studies were utilized to move forward with larger scale revegetation efforts at this site. The drip irrigation system installed during one of the studies was expanded and seed was planted at all emitters. In 2005, the drip irrigation system located in areas with well established plants was moved to the interspaces between rows. Permanent transects were run in 2006. In 2009, the irrigation system was run from April to October, as in previous years. Maintenance was performed as needed on the irrigation system. A seed farm has been initiated for seed harvest. The seed farm will aid in the implementation of all revegetation projects in the Owens Valley.

LADWP has begun growing plants for the seed farm and revegetation efforts in two purchased greenhouses.

In the spring of 2011 approximately 18 acres were seeded with locally collected seeds. Transects were run with the ICWD in August 2012 and the parcel has achieved 2% native cover. A buried drip system was installed during the winter of 2012. In January 2013 a new fence was installed between the western portion of LAWS118 and the Cashbaugh Lease (RLI-411). Planting at this parcel will begin upon the completion of planting at LAWS 90, LAWS 94/95, and LAWS 129.

Mitigation Plan Required/Status: Yes – complete.

Laws/Poleta Native Pasture (216 acres), Laws Historical Museum Pasturelands (21+15 acres), and McNally Ponds and Native Pasturelands (348 acres)

1991 EIR Impact No. 10-18

Impacts: See description above.

Project Description/ Mitigation Measure: In the mid-1980s, LADWP and Inyo County implemented the Laws-Poleta Pastureland, Laws Museum, and McNally Ponds enhancement/mitigation projects in the Laws area totaling approximately 541 acres of pastureland.

Mitigation Goals/ Strategies/Actions: Laws/Poleta Pasturelands - To revegetate the project site with native pasture. Laws Museum - To improve native vegetated areas adjacent to the Museum and to provide windbreak trees. McNally Ponds and Native Pasturelands - To provide a seasonal water supply to ephemeral ponds, create waterfowl habitat, enhance vegetation, and increase grazing capabilities.

Project Status/ Effectiveness: Fully implemented. Laws Historical Museum Pasture. The project is complete and the goals for the project are being met. The Standing Committee agreed in 1991 to reduce the water commitment to the McNally Ponds Project because of dry conditions. In most normal and below-normal runoff years since that time, the Standing Committee has reduced water releases to

this project. During the 2012-13 runoff year, the Standing Committee agreed to reduce water supplied to the project.

Mitigation Plan Required/Status: No.

Farmers Pond

1991 EIR Impact No. 10-18

Impacts: See description above.

Project Description/ Mitigation Measure: In the 1970s, LADWP started the Farmer's Pond environmental project.

Mitigation Goals/ Strategies/Actions: To provide water to fill the ponds each fall for use by wildlife.

Project Status/ Effectiveness: Being implemented.

Mitigation Plan Required/Status: No.

Groundwater Monitoring/Pumping Reductions in the Laws Area

1991 EIR Impact No. 10-18

Impacts: See description above.

Project Description/ Mitigation Measure: The area where it is suspected that groundwater pumping during the recent drought has caused decreases or changes in vegetation is being monitored by LADWP and Inyo County. Groundwater pumping has been reduced in the area. Should it be determined that any significant decreases or changes have occurred, the area will be mitigated under the Water Agreement.

Mitigation Goals/ Strategies/Actions: No project at this time.

Project Status/ Effectiveness: Being implemented.

Mitigation Plan

Required Status: No.

Laws 640-Acre Potential

1991 EIR Impact No. 10-18

Impacts: Approximately 640 acres in the Laws area have a very low density of vegetation cover. The primary cause of the loss or reduction of vegetation is not a result of the project.

Project Description/ Mitigation Measure: These lands will be considered by the Standing Committee for selective mitigation, which would be compatible with water spreading and groundwater recharge activities during wet years.

Mitigation Goals/ Strategies/Actions: To increase vegetation density.

Project Status/ Effectiveness: A determination has not been made by the Standing Committee for selective mitigation.

Mitigation Plan Required/Status: Yes, if implemented.

Big Pine Area Revegetation Project (160 acres)

1991 EIR Impact No. 10-19

Impacts: Water management practices in a portion of the Big Pine Well Field have resulted in significant adverse change and decrease of plant cover.

Project Description/ Mitigation Measure: A revegetation program will be implemented for approximately 160 acres within the Big Pine area, which have lost all or part of its vegetation cover due to increased groundwater pumping or to abandonment of irrigation as part of operations to supply the second aqueduct, will be revegetated.

Mitigation Goals/ Strategies/Actions: To revegetate the area with species found in the surrounding area.

Project Status/ Effectiveness: The site has been fenced. Permanent transects were run in 2006. A seed farm has been initiated for seed harvest. The seed farm will aid in the implementation of all revegetation projects in the Owens Valley. LADWP has begun growing plants for the seed farm and revegetation efforts in two purchased greenhouses.

In the spring of 2011 approximately 20 acres were drill seeded with locally collected seed. Transects were run by LADWP and ICWD in August 2012. The parcel currently contains 3% native perennial vegetation. In February 2014, LADWP crews seeded approximately 28 acres of this parcel with a native seed mix. The seeding was scheduled during a storm event and the areas seeded received around 1.35" of rain during and directly after seeding.

Mitigation Plan Required/Status: Yes – complete.

Big Pine Northeast Regreening (30 acres)

1991 EIR Impact No. 10-19

Impacts: See description above.

Project Description/ Mitigation Measure: LADWP and Inyo County will implement the Big Pine Regreening enhancement/mitigation project by establishing irrigated pasture on approximately 30 acres to the north and east of Big Pine.

Mitigation Goals/ Strategies/Actions: North Regreening - See Impact 10-11.

Project Status/ Effectiveness: Mitigation Plans for the project were transmitted to the County in 2004. Comments were received from the County in 2005. LADWP identified issues making the project unfeasible as originally scoped. In order to facilitate implementation of the project LADWP recommended the following changes: 1) change the water source for the project to include the Big Pine Canal (Well W375 remained scoped as project make-up water well), 2) change irrigation method from flood irrigation to the option of flood or sprinkler irrigation, 3) move the project area closer to Highway 395, 4) change the lessee identified for the project to an unspecified lessee. These changes were discussed publicly at the September 9, 2009 Inyo County Water Commission meeting

and the November 5, 2009 Inyo/LA Standing Committee meeting. At the November 4, 2010 Inyo/LA Standing Committee meeting, modifications to the Final Scoping Document were approved. Key modifications include: changing the lessee designation, revising the boundaries of the project, and amending the water supply source and method of application identified for the project. The ICWD and Technical Group analyzed the operation of Well W375 and concluded that an exemption for up to 150 AF per year would likely have no significant impact on the environment or other well owners.

LADWP circulated Negative Declaration (ND) for the project August 3-September 1, 2011. New information was provided and the ND was recirculated November 10-December 12, 2011. A Notice of Determination was filed with Inyo County on March 7, 2012. The adequacy of the ND was legally challenged by the Big Pine Paiute Tribe and Sierra Club in Inyo County Superior Court Case SICVPT12-53541 based on the fair argument standard that substantial evidence supports the issuance of an Environmental Impact Report (EIR) rather than a ND. A decision was issued by Inyo County Superior Court November 26, 2012 denying the parties' Petition for Writ of Mandate and in favor of issuing the LADWP's ND rather than an EIR.

The Technical Group exempted Well W375 November 6, 2013 for project make-up water in order to make this project feasible. Installation of the irrigation system for this project occurred in the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.

Mitigation Plan Required/Status: Yes – complete.

Big Pine Area Revegetation Project (20 acres)

1991 EIR Impact No. 10-19

Impacts: See description above.

Project Description/ Mitigation Measure: An area of approximately 20 acres directly to the east of Big Pine that is poorly vegetated as a result of pre-project activities and activities which are not a part of the project will be evaluated as a potential enhancement/mitigation project. If, in planning this project, it is determined that it is not feasible to permanently irrigate this area, a revegetation program will be implemented.

Mitigation Goals/ Strategies/Actions:	To establish a cultivated crop. If irrigation is not feasible, the goal will be to revegetate the site with species found in the surrounding area.
Project Status/ Effectiveness:	The site was fenced in 2007 to eliminate disturbances and encourage natural revegetation. If this area does not revegetate naturally, it will be included with LADWP's ongoing revegetation efforts. In February 2014 LADWP crews seeded approximately 3.2 acres of this area with a native seed mix, in conjunction with the adjacent BGP160 parcel. The seeding was scheduled during a storm event and the areas seeded received around 1.35" of rain during and directly after seeding.
Mitigation Plan Required/Status:	Yes, if implemented.

Big Pine Ditch or Alternate Project

1991 EIR Impact No. 10-19

Impacts:	See description above.
Project Description/ Mitigation Measure:	The Big Pine Ditch project is planned to be implemented as provided in the Water Agreement. This area will also be mitigated by the Valley-wide mitigation under the Water Agreement.
Mitigation Goals/ Strategies/Actions:	Big Pine Ditch - To re-establish a ditch system within the town of Big Pine so that residents in the town could have a surface supply through their properties if desired.
Project Status/ Effectiveness:	The Standing Committee approved procedures and guidelines for implementing the project in 1998. A Mitigated Negative Declaration has been completed. The Inyo/Los Angeles Water Agreement has been modified to provide a reliable water supply of 300 AF for the project. The Big Pine Irrigation and Improvement Association has implemented all Phases of the project. LADWP has provided $99,745 of the $100,000 committed to the project. The Improved Big Pine Ditch System has been in operation since 2005. After test pumping and identification of a monitoring site for Well 415 to supply supplemental water and make up water for the ditch system, a contract will be considered for the installation of another well in

Bell Canyon to provide additional water for the project. In 2013 the Big Pine Ditch System consumed 604 AF of water.

Mitigation Plan Required/Status: No.

Thibaut/Sawmill Marsh Habitat, LORP Project (60 miles of river, perhaps more than 1,000 acres)

1991 EIR Impact No. 10-20

Impacts: A significant loss and reduction of marsh vegetation has occurred in the Thibaut-Sawmill area primarily due to surface water diversion, but also due to lowered groundwater from increased groundwater pumping.

Project Description/ Mitigation Measure: Portions of the Lower Owens River Project, including Thibaut Ponds, are in this area. Thus, portions of the impacted area will be mitigated directly; however, for much of the impacted area, mitigation will be in the form of compensation through the Lower Owens River Project's restoration of wetland, meadow, and riparian vegetation. Any significant decreases in vegetation cover or changes in vegetation composition due to groundwater pumping during the recent drought period will be mitigated under the Water Agreement.

Mitigation Goals Strategies/Actions: See LORP (Impact 10-14).

Project Status/ Effectiveness: See LORP (Impact 10-14).

Mitigation Plan Required/Status: No.

11 – WILDLIFE

Aquatic Habitat

1991 EIR Impact No. 11-1

Impacts: Changes of surface water management practices and increased groundwater pumping have altered the habitats on which wildlife depends. Vegetation changes have been significant in many locations throughout the Owens Valley. Therefore, impacts to

certain species of wildlife, which were entirely dependent upon the impacted habitat, can be presumed to be significant.

Project Description/ Mitigation Measure: The importance of riparian, marsh, and aquatic habitats is recognized for mitigation of the impacts to wildlife that occurred during the 1970 to 1990 period. Wetter habitats support many more species and greater populations of wildlife; therefore, water management to create wet habitats will be used to mitigate the significant adverse impacts of the project.

Aquatic Habitat (LORP Project, Klondike, Farmers, Buckley, Billy, Lone Pine Pond, etc.)

1991 EIR Impact No. 11-1

Impacts: Continued from above.

Project Description/ Mitigation Measure: See above.

Mitigation Goals/ Strategies/Actions: See LORP (Impact 10-14). See Farmers (Impact 10-18), Buckley Ponds - To provide for a warm-water fishery and waterfowl area. Billy Lake - To provide waterfowl habitat in the region. Lone Pine Pond - To create habitat for a warm-water fishery.

Project Status/ Effectiveness: See LORP (Impact 10-14). Klondike Lake, Farmers Ponds, Buckley Ponds, Billy Lake, and Lone Pine Pond are fully implemented and functioning as specified in the goals.

Mitigation Plan Required/Status: No.

12 – AIR QUALITY

Independence Springfield (approximately 297 acres),
Independence East Side Regreening (approximately 30 acres),
Shepherds Creek Alfalfa Field (approximately 198 acres), and
Revegetation Project East of Independence (part of Independence Springfield, approximately 40 acres)

1991 EIR Impact No. 12-1

Impacts:	Significant impacts on air quality resulting from groundwater pumping during the period of 1970 to 1990 have occurred due to vegetation losses.
Project Description/ Mitigation Measure:	As part of the Independence Pasturelands and Springfield enhancement/mitigation projects, approximately 730 acres of barren or near-barren ground have been revegetated with either native pasture or alfalfa. This area was affected by groundwater pumping and surface diversions of water. Approximately 40 acres remain barren and will be revegetated with native pasture. Under the Shepherd Creek enhancement/mitigation project, approximately 200 acres of poorly vegetated land has been converted to alfalfa. In addition, other areas that have the potential to cause significant adverse impacts to air quality have been identified in Section 10 (above) and will be mitigated as set forth in that section.
Mitigation Goals/ Strategies/Actions:	See Impact 10-11.
Project Status/ Effectiveness:	See Impact 10-11.
Mitigation Plan Required/Status:	No.

Elevated PM-10 Levels

1991 EIR Impact No. 12-2

Impacts:	Increased groundwater pumping could result in elevated PM_{10} levels due to vegetation losses.
Project Description/ Mitigation Measure:	See mitigation measure for item 12-1, above.
Mitigation Goals/ Strategies/Actions:	Minimize impact to less than significant.
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

Air Quality Impacts from Loss of Vegetation

1991 EIR Impact No. 12-3

Impacts:	Significant impacts to air quality have resulted from the abandonment of irrigated lands to supply the second Los Angeles Aqueduct.
Project Description/ Mitigation Measure:	Approximately 1,240 acres of formerly irrigated agricultural lands that had not successfully revegetated have been planted with pasture or alfalfa (see mitigation measure 10-11, above). In addition, other areas that have the potential to cause significant adverse impacts on air quality have been identified in Section 10, Vegetation, and will be mitigated as set forth in that section.
Mitigation Goals/ Strategies/Actions:	Minimize impact to less than significant.
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

16 – ANCILLARY FACILITIES

Vegetation Loss from Construction Activities

1991 EIR Impact No. 16-1 - Vegetation

Impacts:	The construction phase of the addition of new recharge facilities could result in vegetation decrease or change.
Project Description/ Mitigation Measure:	Provisions of the Water Agreement will be met. No further mitigation measures are required.
Mitigation Goals/ Strategies/Actions:	No significant vegetation decrease or change.
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

Air Quality Effects from Construction Activities

1991 EIR Impact No. 16-3 – Air Quality

Impacts:	Air quality could be adversely affected by the construction of recharge facilities.
Project Description/ Mitigation Measure:	All disturbed areas would be wetted during construction to minimize fugitive dust.
Mitigation Goals/ Strategies/Actions:	Minimize impact to less than significant.
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

Archaeological Disturbance from Construction Activities

1991 EIR Impact No. 16-5 – Cultural Resources

Impacts:	Construction of proposed recharge projects could disturb subsurface archaeological resources, with possible significant impact.
Project Description/ Mitigation Measure:	16-5(a) The proposed recharge facility project locations would be surveyed for cultural resources prior to the initiation of any ground-disturbing project activities associated with the construction of any culverts, ditches, or trenches, once the exact locations of these features are determined. The significance of any site recorded during the survey would be determined through the use of subsurface testing, as appropriate.
Mitigation Goals/ Strategies/Actions:	N/A
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

Compliance with Archaeological and Preservation Act of 1974

1991 EIR Impact No. 16-5 – Cultural Resources

Impacts:	Continued from above.
Project Description/ Mitigation Measure:	16-5(b) In accordance with the requirements of 36 CFR 800.11, should a previously unidentified National Register or eligible property be discovered during construction on any and all parts of the project, LADWP will comply with the provisions of the Archaeological and Historic Preservation Act of 1974 by evaluating the resources and implementing mitigation measure as warranted.
Mitigation Goals/ Strategies/Actions:	Minimize impact to less than significant.
Project Status/ Effectiveness:	N/A
Mitigation Plan	

Required/Status: No.

Water Quantity Impacts from New Wells in Big Pine Area

1991 EIR Impact No. 16-7 – Water Resources

Impacts: New wells in the Big Pine area would lower groundwater levels, and could result in significant impacts to local private wells.

Project Description/ Mitigation Measure: Monitoring will be conducted as provided in the Water Agreement and the Green Book. If pumping of the new production well is shown to cause a significant adverse impact to any private well, the impact will be mitigated as described in the Water Agreement and in Section 4 of the Green Book.

Mitigation Goals/ Strategies/Actions: Minimize to less than significant impacts to private wells.

Project Status/ Effectiveness: N/A

Mitigation Plan Required/Status: No.

Water Quantity Impacts to Artesian Wells in Laws Area from Operation of Two New Wells

1991 EIR Impact No. 16-9 – Vegetation

Impacts: Operation of the two new wells in the Laws area could cause flow in artesian wells to stop or diminish to a degree that impacts the vegetation up on such flow would result.

Project Description/ Mitigation Measure: Existing and new monitoring wells will be used to monitor water levels and vegetation as provided in the Water Agreement and the Green Book. Groundwater pumping will be managed to avoid causing reductions in the amount of water flowing from these wells such that significant decreases and changes to vegetation would result. If it is projected that such decreases and changes could occur, water will be supplied to avoid such vegetation decreases or changes.

Mitigation Goals/ Strategies/Actions: Avoidance of impact.

Project Status/ Effectiveness: N/A

Mitigation Plan Required/Status: No.

Type D Vegetation Impacts Along Fault Zone West of Big Pine from Pumping Big Pine Well BP-1

1991 EIR Impact No. 16-10 – Vegetation

Impacts:	Pumping of the Big Pine well BP-1 may impact Type D vegetation along the fault zone west of Big Pine.
Project Description/ Mitigation Measure:	As provided in the Water Agreement and the Green Book, existing and new monitoring sites would be utilized to monitor vegetation, water levels, and soil water. Groundwater pumping would be managed to avoid significant decreases and changes in vegetation.
Mitigation Goals/ Strategies/Actions:	Avoidance of impact.
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

Reduction or Elimination of Flow from Reinhackle Spring and Subsequent Loss of Vegetation from New Wells in the Independence-Symmes-Bairs Area

1991 EIR Impact No. 16-11 – Vegetation

Impacts:	New wells in the Independence-Symmes-Bairs area may reduce or eliminate the flow from Reinhackle Spring and impact vegetation dependent upon flow from the spring.
Project Description/ Mitigation Measure:	At Reinhackle Spring groundwater pumping from wells that affect the spring flow will be managed so that flows from the spring will not be significantly reduced compared to flows under prevailing natural conditions. In addition, all of the provisions for protecting springs, described in Impact 10-15 (above) and contained in the Water Agreement and the Green Book, will be applied equally to Reinhackle Spring.
Mitigation Goals/ Strategies/Actions:	Avoidance of impact.
Project Status/	

Effectiveness: N/A

Mitigation Plan Required/Status: No.

Air Quality Impacts from Construction and Maintenance of New Wells

1991 EIR Impact No. 16-13 – Air Quality

Impacts: Air quality could be affected by the construction and maintenance of new wells.

Project Description/ Mitigation Measure: All areas disturbed during construction of the new wells would be wetted during construction to minimize generation of fugitive dust.

Mitigation Goals/ Strategies/Actions: Minimize impact to less than significant.

Project Status/ Effectiveness: N/A

Mitigation Plan Required/Status: No.

Archaeological Disturbance from Construction of 15 New Wells

1991 EIR Impact No. 16-16 – Cultural Resources

Impacts: Construction of 15 new wells could disturb subsurface archaeological resources, with possible significant impact.

Project Description/ Mitigation Measure: 16-16(a) Construction activity at the LP-1, BP-1, and BP-2 sites will be monitored. If subsurface prehistoric archaeological resource evidence is found, excavation or other construction activity in the area will cease and an archaeological consultant would be retained to evaluate findings in accordance with standard practice and applicable regulations. Data/artifact recovery, if deemed appropriate, would be conducted during the period when construction activities are on hold.

Mitigation Goals/ Strategies/Actions: Minimize impact to less than significant.

Project Status/

Effectiveness: N/A

Mitigation Plan Required/Status: No.

Notification of Proper Authorities (Native American Representatives, Coroner) if Remains are Discovered

1991 EIR Impact No. 16-16 – Cultural Resources

Impacts: Continued from above.

Project Description/ Mitigation Measure: 16-16(b) An appropriate representative of Native American Indian tribes and the County Coroner would be informed and consulted if remains are discovered, as required by State law.

Mitigation Goals/ Strategies/Actions: Minimize impact to less than significant.

Project Status/ Effectiveness: N/A

Mitigation Plan Required/Status: No.

Discharge Rates Could Be Affected in Flowing Wells on Bishop Cone from Increased Pumping

1991 EIR Impact No. 16-18 – Water Resources

Impacts: Increased pumping on the Bishop Cone could affect the rate of discharge of flowing wells.

Project Description/ Mitigation Measure: Changes in flow rates from flowing wells will be monitored along with vegetation dependent upon flows from such wells. Groundwater pumping will be managed to avoid significant decreases or changes in vegetation dependent upon water from flowing wells. Water will be provided if necessary to avoid such decreases and changes in vegetation if flows from such wells are diminished due to groundwater pumping.

Mitigation Goals/ Strategies/Actions: Avoidance of impact.

Project Status/

Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

Bishop Cone Pumping Effects on Vegetation

1991 EIR Impact No. 16-19 – Vegetation

Impacts:	Increased pumping on the Bishop Cone could adversely affect vegetation due to lowered water levels or reduced flows from flowing wells.
Project Description/ Mitigation Measure:	As provided in the Water Agreement, existing and new monitoring sites would be utilized to monitor vegetation, water levels, and soil water. Groundwater pumping would be managed to avoid significant decrease and change to vegetation and other significant effects on the environment.
Mitigation Goals/ Strategies/Actions:	Avoidance of impact.
Project Status/ Effectiveness:	N/A
Mitigation Plan Required/Status:	No.

6. STATUS OF OTHER STUDIES, PROJECTS, AND ACTIVITIES

6.0. STATUS OF OTHER STUDIES, PROJECTS, AND ACTIVITIES

The following describes the status of studies, projects, and activities conducted under the 1991 *Agreement between the County of Inyo and the City of Los Angeles and its Department of Water and Power on a Long Term Groundwater Management Plan for Owens Valley and Inyo County* (Water Agreement).

Tables 19 and 20 detail mitigation and monitoring of the irrigation projects in the Laws and Big Pine areas, respectively. Table 21 lists the Water Agreement provisions and their respective status. Table 22 lists the Cooperative Studies that have been approved by the Inyo/Los Angeles Standing Committee (Standing Committee) and their respective status. Table 23 lists the 1991 EIR revegetation projects, progress to date, and proposed future work. This document provides an update for activities that occurred in 2012. The history of activities at these sites may be found in Owens Valley Annual Reports from previous years.

6.1 Irrigation Project in the Laws Area

Laws 2003 Revegetation Plan

Introduction

The Revegetation Plans for Lands Removed from Irrigation Laws Parcels 90, 95, and 129 and Abandoned Agricultural Land Parcel 94 (Laws 2003 Plan) (January 2003) established goals to restore native vegetation in each of these parcels that is similar in cover and species composition to nearby sites. In this Plan, conditions, goals, schedules, and monitoring protocols were prescribed. Goals and species lists in the Plan were developed from National Resources Conservation Service Ecological Site Descriptions and a subset of nearby parcels extracted from LADWP's 1984-1987 vegetation inventory data. Under this Plan, all 253 acres of these parcels were to be successfully revegetated by 2013 and persist for an additional two years with no onsite revegetation activities.

Early years spent on the Laws revegetation effort were focused on studies of approaches that could be applied on a more comprehensive scale (LADWP and MWH 2004, SAIC 2003) given the extensive scope of the project. Most treatments in these early studies failed, including drill seeding with no additional treatments or irrigation, mulch and manure application in seeded areas, canal spoils treatment, polymer treatments, furrowing, wind breaks, water harvesting, and hand watering.

Broadcast and drill seeding were attempted in some sections of the parcels but have been met with little success. LADWP also purchased and planted greenhouse-propagated plants from third party vendors to assist in reaching mitigation goals, but received many plants without well-established root systems that could not persist once placed in the natural elements. As a consequence, LADWP has since purchased and operates two greenhouses that are capable of producing up to 18,000

native plants twice a year for summer and fall plantings. Generating the plants from seed in-house has resulted in a much more robust product that can withstand the harsh environmental elements at Laws and has proven to be the most successful method of dryland revegetation used to date at this location.

Since 2003, LADWP has explored different forms of irrigation to aid in revegetation and jumpstart natural recruitment within these parcels (e.g., above ground drip irrigation, hand watering, buried driplines, water cannons, etc.). Buried drip has proven to be the most effective watering technique used thus far. Since 2008, LADWP has installed over 230 miles of drip lines with approximately 122,000 emitters at Laws 90, 94, 95, 129, 118, and the Laws Native Seed Farm (Laws 27). Timing and frequency of watering has varied in response to plant needs and climatic conditions.

Rodent herbivory has continued to be a challenge across all parcels, and LADWP now installs protective cages around plantings to promote early establishment. Other challenges include the management of and competition from tumbleweeds (*Salsola tragus*), and ongoing soil movement, dunal formation, and dust emissivity from high valley winds.

Despite these challenges, LADWP has acted in good faith and has planted approximately 115 acres of the 253 acres across Laws 90, 94, 95, 118, and 129, as well as 92 acres at the Laws Native Seed Farm to date. These efforts totaled approximately 42,500 greenhouse-propagated plants and hundreds of pounds of seed. Additionally, LADWP has all 253 total acres in the Laws 2003 Plan plumbed with irrigation systems supplying water to existing plants (or ready to supply future plantings) within these parcels. However, success criteria specified in the 2003 Plan are not being met and likely won't be for some time due to many factors. These include the extensive scope of the project, volume limitations of the two existing greenhouses, ongoing operation and maintenance of an expansive irrigation system, rodent herbivory, consecutive drought years, and shear from strong seasonal winds.

Planting Schedule

LADWP originally outplanted dispersed sections in each parcel to encourage natural recruitment to fill in adjacent open areas. This unassisted recruitment has not occurred at a rate that will meet the 2003 Plan's goals. As a consequence, LADWP has proceeded in recent years with planting out each parcel entirely one time before returning to replant areas within the same parcel (e.g., continue with efforts at Laws 94/95 until complete, move to Laws 90 until complete, etc.).

Below is the tentative schedule for planting in the next three years. After all parcels have been initially planted, parcels will be reassessed to evaluate if success criteria has been met. If not, some areas may be replanted as necessary or treated with alternative methods as they become available.

Parcels	Acres	% Currently Planted	Proposed Completion of Initial Plantings
Laws 94/95	86	100%	Fall 2013
Laws 90	101	50%	Fall 2014
Laws 129	47	25%	Fall 2015
Portion of Laws 118	19	0%	Fall 2016

Additionally, LADWP will continue with planting the remainder of the Laws Native Seed Farm (Laws 27) following Laws 118, or sooner if possible within the next five years. Portions of the Native Seed Farm are currently well established and are producing viable seeds for LADWP's revegetation projects in Laws and throughout the Owens Valley as originally planned.

This proposed schedule is based on a maximum number of plants successfully propagated in both greenhouses, twice a year and does not account for unforeseen circumstances (e.g., pests, unviable seed, etc.).

Operations

Laws 90 and 129 have fully installed buried drip irrigation systems. LAWS 94/95 currently have a combination of buried and aboveground drip across both parcels; the above ground drip will be converted to buried drip at a later date but has been initially planted. The 19 acre portion of Laws 118 covered in the Laws 2003 Plan has a complete irrigation system installed. The Laws Native Seed Farm has a combination of sprinkler irrigation, buried driplines, and above ground drip irrigation.

The current irrigation schedule being utilized within the planted portions of the parcels includes:

- Fall/Winter: once a month for 7-8 hours for established sections; new plants may get additional water if they appear dry

- Spring/Summer: twice a month for 7-8 hours for established sections; new plants may get additional water if they appear dry

Water cannons, water trucks, and irrigation systems also provide supplemental water as necessary for dust control.

Maintenance

Current maintenance of existing irrigation systems includes: monitoring system for leaks or other obvious problems such as broken lines or piping, broken risers to sprinkler lines, automatic valves not operating correctly, and filters getting clogged. Additionally, mowing and clearing of tumbleweeds occur as equipment and manpower is available.

Demonstration Projects

Based on collaborative input with the ICWD technical staff, LADWP is currently in the process of implementing a series of demonstration projects at Laws 90. They include: pre-emergent weed control, sand fencing, hay bale placement, exclusionary fencing, and mulch application. These treatments could be used individually in any of the parcels as needed, or in combination with other techniques. These techniques have not been attempted at Laws, in combination with other treatments, or were attempted at a different scale. Effectiveness of these demonstration projects will be discussed in future Owens Valley Annual Reports.

6.1.1 Mitigation Monitoring Report for the Irrigation Project in the Laws Area

See Table 19 for the Mitigation Monitoring Program for the Irrigation Project in the Laws Area.

Mitigation Measure M-1

Impact: Creation of dust during pipeline installation and ground preparation for planting.

Measure: Ground surfaces will be thoroughly wet prior to and during work to minimize dust.

All seeding work during 2006 was conducted utilizing the Trux No-till drill seeder and water was applied before initiating seeding and as soon as seeding was complete to control dust emissions.

Mitigation Measure M-2 and M-3

Impact: Groundwater pumping to supply water to the project could adversely affect groundwater-dependent vegetation in the vicinity of the project and cause blowing dust.

Measure: 1991 *Agreement between the County of Inyo and the City of Los Angeles and its Department of Water and Power on a Long Term Groundwater Management Plan for Owens Valley and Inyo County* (Water Agreement).

Table A illustrates the vegetation cover in vegetation parcels within the Laws Well Field as determined by ICWD. Data from 2002 and 2003 indicates estimates of vegetation cover in the parcels prior to implementation of the irrigation project in the Laws area. Data since 2004 are estimates of vegetation cover after implementation of the irrigation project in the Laws area.

Table B illustrates the depth to water in the Laws area test holes prior to, and after implementation of the irrigation project in the Laws area.

Table A. Vegetation Cover in Selected Parcels within the Laws Well Field

Parcel	Percent Perennial Cover										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
LAW030	nd	20.5	24.2	32.4	36.6	32.7	28.1	24.8	24.9	22	24
LAW035	3.1	1.6	4.7	17.9	6.4	6.3	1.1	1.4	4.9	4	2
LAW043	3	2.4	nd	40.8	7.4	7.2	1.5	2.8	4.8	7	3
LAW052	2.9	3.9	5.4	12.5	10.1	7.6	3.4	3.1	6.7	8	4
LAW062	4.7	3.3	7.2	12.8	10.9	10.8	5.6	7.8	6.6	10	5
LAW063	6.3	5.4	9.6	24.0	16.7	15.9	6.2	11.1	12.0	12	6
LAW065	2.9	2.1	5.1	13.9	10.7	12.3	3.8	4.0	4.7	7	5
LAW070	1	1.6	nd	nd	nd	11.1	8.0	3.8	20.6	10	6
LAW078	31.8	27.1	39.0	49.7	50.1	53.7	30.8	26.3	32.0	35	27
LAW082	3	4.4	4.2	12.7	7.1	12.6	6.5	7.6	8.7	8	6
LAW085	9.8	7.7	14.8	28.5	22.3	30.2	21.9	26.1	16.8	15	6
LAW107	43.9	38.2	65.1	59.8	67.2	78.2	56.3	53.8	31.4	54	45
LAW112	25.1	15.8	32.9	33.3	45.0	47.3	32.3	33.7	30.5	33	14
LAW120	24.3	21	27.6	28.8	36.2	38.5	26.4	26.5	31.2	35	39
LAW122	54.8	47.8	56.6	54.6	62.8	52.7	57.9	53.7	50.2	60	45
LAW137	20.3	13	19.1	32.3	17.0	21.3	19.3	20.1	16.3	21	17

**nd is no data*

Table B. Depth to Water (in feet) for Test Holes in the Laws Well Field

WELL	April 2004	April 2005	April 2006	April 2007	April 2008	April 2009	April 2010	April 2011	April 2012	April 2013	April 2014
T107	30.1	31.9	18.6	21.1	25.2	28.0	31.0	31.8	32.75	33.12	35.29
T436	10.1	10.2	4.8	5.3	7.1	8.8	9.5	9.5	11.26	11.14	12.99
T438	11.6	8.9	3.8	6.3	8.2	9.1	11.4	8.6	12.61	12.03	15.75
T490	14.6	14.7	13.3	10.2	12.6	13.8	13.5	13.3	12.49	13.17	16.64
T492	32.1	31.5	24.4	23.0	26.8	29.1	30.8	31.7	34.14	32.75	35.61

Mitigation Measure M-4

Impact: Reducing the irrigation duty from 5 AF per-acre to 3 AF per-acre and of changing from flood irrigation to sprinkler irrigation.

Measure: Water Agreement

LADWP and the Laws Ranch lease jointly determined irrigated field, pasture, or area vegetation condition using the Natural Resource Conservation Service Pasture Condition Assessment. This protocol, once followed, is designed to optimize plant and livestock productivity while minimizing detrimental effects to soil or water resources.

Pasture condition scoring involves the visual evaluation of 10 indicators each having five environmental conditions (Cosgrove et al. 1991). Each indicator is rated separately and the scores are combined into an overall score for the pasture. The overall score for a pasture can then be divided by the total possible score to give a percent rating ({overall score ÷ total possible score} × 100 = percent rating). Not all 10 indicators may

be appropriate for use in every pasture. In this case, using less than 10 indicators will reduce the possible score, but the percent rating will still be comparable. Irrigated pastures on the Laws Ranch lease will be evaluated after the area has been seeded and irrigated for at least three growing seasons in order to allow the seeded pasture mix to become fully established. The average pasture score for the Laws Ranch lease during the 2013 growing season was 95%. The next scheduled evaluation is in 2016.

Mitigation Measure M-5

Impact: Altering the flow in a ditch that carries water diverted from Coldwater Canyon.

Measure: Water Agreement

Diversions from Coldwater Canyon Ditch are utilized for irrigation of the Seed Farm. During operation, approximately one-quarter of the total flow remains in the ditch.

Periodic examinations were conducted along the ditch throughout the growing season. These examinations did not indicate any signs of vegetation stress. Photo points have been established along the ditch.

Diversions for irrigation from Coldwater Canyon Ditch for the Laws Seed Farm continued in 2012. Periodic examinations were conducted along the ditch throughout the growing season. These examinations did not indicate any signs of vegetation stress. Photos points were replicated during the 2010 growing season and will be replicated during the 2015 growing season.

Mitigation Measure M-6

Impact: Altering the flow in Silver Canyon Ditch.

Measure: Water Agreement

Diversions from Silver Canyon Ditch are utilized for irrigation of Parcels LAWS 90, 94, and 95. During operation, approximately one-quarter of the total flow remains in the ditch.

Diversions for irrigation from Silver Canyon Ditch for the Laws Parcels 90, 94, and 95, continued in 2012. Periodic examinations were conducted along the ditch throughout the growing season. These examinations did not indicate any signs of vegetation stress. Photo points have been established along the ditch and were replicated during the 2010 growing season and will be replicated during the 2015 growing season.

Mitigation Measure M-7

Impact: Growth of state listed A or B noxious weeds in the project area.

Measure: LADWP or its lessee or lessees, in conjunction with Inyo County's weed abatement program, will promptly treat or remove the weed.

Surveys were conducted on the irrigation project in the Laws area for noxious weeds during the 2012 growing season. No A or B listed noxious weeds were found. Weed control was conducted in the 2011 season for other weedy species. The lessee treated weeds through a combination of grazing and burning.

Mitigation Measure M-8

Impact: Archaeological investigations identified six previously unrecorded archaeological sites and 11 isolates within the project area.

Measure: Pipeline placement was to avoid identified sites; if new sites are encountered during implementation, work will be halted until an archeologist can be consulted.

No cultural resources were encountered during construction or operation of the irrigation project in the Laws area in 2006.

TABLE 19. Mitigation and Monitoring Program for Irrigation Project in the Laws Area

POT. IMPACT		MITIGATION			MONITORING			
Summary of Impact	**MM No.**	**Measure**	**Timing**	**Responsibility**	**Method**	**Period**	**Frequency**	**Responsibility**
Air Quality								
Creation of dust during pipeline installation and ground preparation for planting.	M-1	Ground surfaces will be thoroughly wet prior to and during work to minimize dust.	To be implemented throughout the project as needed.	LADWP construction staff and/or LADWP lessee.	Water trucks will pre-wet construction areas and water as necessary throughout construction. Ground will be pre-irrigated prior to planting.	As needed throughout construction and/ or prior to planting.	Throughout the construction or agricultural period.	LADWP construction staff and/or LADWP lessee.
Groundwater pumping to supply water to the project could adversely affect groundwater dependent vegetation in the vicinity of the project and cause blowing dust.	M-2	Section III and Section IV of the Agreement between the County of Inyo and the City of Los Angeles and its Department of Water and Power on a Long Term Groundwater Management Plan for Owens Valley and Inyo County	To be implemented throughout the project as needed.	Inyo/Los Angeles Technical Group	Annual monitoring of the vegetation in the vicinity is being conducted.	During the period when groundwater pumping and water management practices could affect vegetation.	Annually during the growing season.	Inyo/Los Angeles Technical Group
Hydrology and Water Quality								
Groundwater pumping	M-3	Water Agreement	To be implemented throughout the project as needed.	Inyo/Los Angeles Technical Group	Monitoring at each identified site will consist of one or more field visits during the period when groundwater pumping and water management practices could affect such vegetation.	During the period when groundwater pumping and water management practices could affect vegetation.	Annually during the growing season.	Inyo/Los Angeles Technical Group

POT. IMPACT		MITIGATION			MONITORING			
Summary of Impact	**MM No.**	**Measure**	**Timing**	**Responsibility**	**Method**	**Period**	**Frequency**	**Responsibility**
Reducing the irrigation duty from 5 AF per acre to 3 AF per acre and of changing from flood irrigation to sprinkler irrigation.	M-4	Water Agreement	To be implemented throughout the work as needed.	Inyo/Los Angeles Technical Group	Monitoring at each identified site will consist of one or more field visits during the period when groundwater pumping and surface water management practices could affect such vegetation.	During irrigation season	Annually during the growing season.	Inyo/Los Angeles Technical Group
Biological Resources								
Altering the flow in a ditch that carries water diverted from Coldwater Canyon.	M-5	Water Agreement	To be implemented throughout the work as needed.	Inyo/Los Angeles Technical Group	Monitoring at each identified site will consist of one or more field visits during the period when surface water management practices could affect such vegetation.	During the period of changes in surface water management practices could affect vegetation.	Annually during the growing season.	Inyo/Los Angeles Technical Group
Altering the flow in Silver Canyon Ditch.	M-6	Water Agreement	To be implemented throughout the work as needed.	Inyo/Los Angeles Technical Group	Monitoring at each identified site will consist of one or more field visits during the period when surface water management practices could affect such vegetation.	During the period of changes in surface water management practices could affect vegetation.	Annually during the growing season.	Inyo/Los Angeles Technical Group
Growth of noxious weeds	M-7	LADWP or its lessee or lessees, in conjunction with Inyo County's weed abatement program, will promptly treat or remove the weed.	To be implemented throughout the work as needed.	LADWP Watershed Resources Staff; LADWP Lessee; and/or Inyo County Agricultural Department.	Monitoring consists of field visits during the growing season.	Annually during the growing season.	Annually during the growing season.	LADWP Watershed Resources Staff; LADWP Lessee; and/or Inyo County Agricultural Department.

POT. IMPACT		MITIGATION			MONITORING			
Summary of Impact	**MM No.**	**Measure**	**Timing**	**Responsibility**	**Method**	**Period**	**Frequency**	**Responsibility**
Cultural Resources								
Archaeological investigations identified six previously unrecorded archaeological sites and 11 isolates within the project area.	M-8	Pipeline placement was to avoid identified sites; if new sites are encountered during implementation, work will be halted until an archaeologist can be consulted.	To be implemented throughout the work as needed.	LADWP Construction Manager	Construction personnel will monitor for unidentified sites during the progression of construction.	During construction activities.	Throughout the construction period.	LADWP Construction Manager

Mitigation Monitoring Report for the Irrigation Project in the Big Pine Area

See Table 20 for the Mitigation Monitoring Program for the Irrigation Project in the Big Pine Area.

TABLE 20. Mitigation and Monitoring Program for the Irrigation Project in the Big Pine Area

POT. IMPACT		MITIGATION			MONITORING			
Summary of Impact	**MM No.**	**Measure**	**Timing**	**Responsibility**	**Method**	**Period**	**Frequency**	**Responsibility**
Hydrology and Water Quality								
The cumulative effect of groundwater pumping from Well W415, the new Bell Canyon well, as proposed in the project, in combination with the operation of other wells in the Big Pine area could cause significant adverse impacts to groundwater dependent vegetation, other vegetation, or non-LADWP wells in the area.	M-1	Water Agreement	To be implemented throughout the project as needed.	Inyo/Los Angeles Technical Group	A monitoring site will be developed by the Inyo/Los Angeles Technical Group as called for in the Inyo/Los Angeles Water Agreement to manage operation of each well.	During the period when groundwater pumping is needed for the project.	As decided by the Inyo/Los Angeles Technical Group, consistent with the Water Agreement.	Inyo/Los Angeles Technical Group

6.2 Water Agreement Provisions

See Table 21 for the Water Agreement Provisions.

TABLE 21. Water Agreement Provisions

Title	Provision	Status
Groundwater Management	LADWP and Inyo County are to manage water resources within Inyo County to avoid certain described decreases and changes in vegetation and to cause no significant effect on the environment which cannot be acceptably mitigated while providing a reliable supply of water for export to Los Angeles and for use in Inyo County.	By agreement of the Standing Committee, implementation of groundwater management, pursuant to the Water Agreement, commenced in 1987.
New Wells and Production Capacity	In order to provide for increased operational flexibility and to facilitate rotational pumping, LADWP may replace existing wells and construct new wells in areas where hydrogeologic conditions are favorable and where operation of such wells will not cause a change in vegetation that would be inconsistent with the agreement. The Water Agreement and 1991 EIR describe 15 new wells that LADWP proposes to construct in the Owens Valley.	LADWP has constructed 6 replacement wells on Bishop Cone and one of the 15 new wells allowed under the Water Agreement. The new well is located in Lone Pine. The Technical Group must establish management for the well before it can be operated. Currently, LADWP is planning to construct 2 new wells on the Bishop Cone. LADWP has abandoned or converted to monitoring wells 13 previously replaced wells.
Groundwater Pumping on the Bishop Cone	Before LADWP may increase groundwater pumping on the Bishop Cone, or construct new wells on the Cone, Inyo County and LADWP are to develop an audit procedure for determining the exact amount of water used annually on City-owned land on the Cone. LADWP pumping on the Cone must be in strict adherence to the provisions of the "Hillside Decree."	The Standing Committee has adopted the Bishop Cone audit procedure. The audit has been conducted since 1996. In 1998, the Superior Court entered a "Memorandum of Judgment" in Matlick versus City of Los Angeles which reaffirmed LADWP's pumping practices on the Bishop Cone. Current audits do not account for stockwater use and ditch losses on the Bishop Cone. Audit protocols should be updated to properly reflect these sources of water supplied to the Bishop Cone.
Groundwater Recharge Facilities	LADWP may construct groundwater banking and groundwater recharge facilities in Inyo County. The 1991 EIR describes certain groundwater recharge facilities in Laws, Big Pine, and Rose Valley.	LADWP has not proposed re-construction of groundwater recharge facilities in Laws, or Big Pine, or new facilities in Rose Valley.
Cooperative Studies	LADWP may provide funding for the costs of conducting studies related to the effects of groundwater pumping on the environment of the Owens Valley.	Studies approved by the Standing Committee are underway. See Table 22, "Cooperative Studies."

Title	Provision	Status
Enhancement/ Mitigation Projects	All existing E/M projects will be maintained, unless the Standing Committee agrees to modify or discontinue a project, and new projects may be implemented if approved by the Standing Committee. The Water Agreement provides that E/M projects will continue to be supplied by E/M wells unless otherwise agreed.	All E/M projects that have been implemented are being maintained. It is planned to supply approximately 8,100 acre-feet of water to these projects in 2014-2015. Now that the Lower Owens River Project (LORP) is fully implemented, the water supplied to the project is no longer included within the E/M project account of water uses. Therefore, the amount of water supplied to E/M Projects annually is much less then it was when the LORP was included in the water supply value. The Standing Committee eliminated the water commitment to the McNally Ponds Project for the 1991 year because of dry conditions. For most years since then, the Standing Committee has decided annually on water releases to this project. In 2009, the project did not receive water because project supply wells could not be pumped under the Interim Management Plan. During the 2012-13 runoff years, the project did not receive water. The Laws Museum Project is fully implemented. Mitigation plans were submitted to Inyo County Water Department (ICWD) for Independence East Side Regreening on August 13, 2004. LADWP circulated a Mitigated Negative Declaration (MND) for this project September 23-October 29, 2004. The Board of Water and Power Commission approved the project in May 2005. Following approval, Inyo County requested that three minor modifications to the project be made: 1) the project well to be located approximately 100 yards to the east of the originally proposed location, 2) that sprinkler irrigation be considered in place of flood irrigation, and 3) that a portion of the project area include stables and/or corrals. An amendment to the project scoping document that incorporates these changes was approved by the Standing Committee on April 23, 2009. The well for this project was drilled in September 2012. Construction of the irrigation system for this project occurred during the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee. Mitigation Plans for Big Pine Northeast Regreening were transmitted to the County in 2004. Comments were received from the County in 2005. LADWP identified issues making the project unfeasible as originally scoped. In order to facilitate implementation of the project LADWP recommended the following changes: (1) change the water source for the project to include the Big Pine Canal (Well W375 remained scoped as project make-up water well), (2) change irrigation method from flood irrigation to the option of flood or sprinkler irrigation, (3) move the project area closer to Highway 395, and (4) change the lessee identified for the project to an unspecified lessee. These changes were discussed publicly at the September 9, 2009, Inyo County Water Commission meeting and the November 5, 2009, Standing Committee meeting. At the November 4, 2010, Standing Committee

Title	Provision	Status
		meeting, modifications to the Final Scoping Document were approved. Key modifications include: changing the lessee designation, revising the boundaries of the project, and amending the water supply source and method of application identified for the project. The ICWD and Technical Group analyzed the operation of Well W375 and concluded that an exemption for up to 150 AF per year would likely have no significant impact on the environment or other well owners. LADWP circulated Negative Declaration (ND) for the project August 3 through September 1, 2011. New information was provided and the ND was recirculated November 10 through December 12, 2011. A Notice of Determination was filed with Inyo County on March 7, 2012. The adequacy of the ND was legally challenged by the Big Pine Paiute Tribe and Sierra Club in Inyo County Superior Court Case SICVPT12-53541 based on the fair argument standard that substantial evidence supports the issuance of an Environmental Impact Report (EIR) rather than a ND. A decision was issued by Inyo County Superior Court November 26, 2012, denying the parties' Petition for Writ of Mandate and in favor of issuing the LADWP's ND rather than an EIR. The Technical Group exempted Well W375 November 6, 2013, for project make-up water in order to make this project feasible. Installation of the irrigation system for this project occurred in the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.
Town Water Systems	LADWP will transfer to Inyo County, or another Owens Valley public entity or entities, ownership of the water systems in the communities of Lone Pine, Independence, and Laws. Prior to transferring the systems, evaluations of each system will be performed by a mutually agreed upon consultant, and if necessary, work will be done to upgrade the systems. LADWP will provide free water, up to specified amounts for each town.	Inyo County contracted with a private company to assume the operation, maintenance and billing for the systems in July 1999. Pursuant to an agreement with LADWP, Inyo County completed upgrades of the systems in December 2002, using $2.6 million in funds provided by LADWP. LADWP completed the transfer of ownership to Inyo County in January 2005.
Lower Owens River	See Table 24, "1997 MOU Provisions."	See Table 24, "1997 MOU Provisions."
Lower Owens River Project (LORP)	Los Angeles will pay the costs of implementing the project. Inyo County will repay Los Angeles one half of the project costs up to maximum of $3.75 million. Any funds provided for the project from sources other than Los Angeles will be an off-set against Inyo County's repayment obligation. Los Angeles will pay the annual costs of operating the pumpback system. Inyo County and Los Angeles will each pay one half of the other costs of the project.	As part of a negotiated agreement with Inyo County to not pursue funding from the USEPA, LADWP has credited Inyo County $5.1 million to cover Inyo County's $3.75 million obligation for LORP implementation with the remaining $1.35 million to be used by Inyo County towards post implementation costs.

Title	Provision	Status
Haiwee Reservoir	Inyo County and Los Angeles will develop a recreational plan for South Haiwee. The recreation plan will be implemented and operated by Inyo County or a concessionaire. Any plan must take into account Los Angeles' operating and security needs.	A recreational plan has not been developed. A security audit was performed following the September 11, 2001, incident. This audit concluded that due to a potential security threat to a municipal water source, Haiwee Reservoir should be closed to the public. California Environmental Quality Act (CEQA) documentation (Negative Declaration) was filed to close Haiwee Reservoir on December 16, 2004. The facility was officially closed to the public in 2005.
Saltcedar Control	LADWP is to provide funding to Inyo County to implement a Saltcedar Control Program: $750,000 during the first three years of the program; thereafter, $50,000 per year (adjusted upward or downward in accordance with the consumers' price index).	LADWP initiated payments and ICWD initiated the Saltcedar Control Program in 1997. In 2013, LADWP paid ICWD $70,106 for this work. LADWP has paid Inyo County $1,536,048 since 1997 under this provision of the Water Agreement. In 2004, as part of a Wildlife Conservation Board (WCB) grant, LADWP provided $56,000 for saltcedar control, and the balance of the program was funded from a WCB grant for $490,000 obtained by Inyo County working in cooperation with LADWP. Approval for a second grant from the WCB for $560,000 was received in February 2004. In addition to the monies provided under the Water Agreement for saltcedar control, LADWP committed, as part of the 2004 Stipulation and Order, to match the amount of grant monies the ICWD received up to $1.5 million for additional saltcedar control in the LORP area. Under Item 6 of the Stipulation and Order, LADWP has paid Inyo County a total of $1,131,444 as of February 2011, leaving a balance of $368,555 available to Inyo County per the Stipulation and Order. A third grant for $600,000 from the WCB was received by ICWD in November 2007.
Park Rehabilitation, Development, and Maintenance	During the 10-year period following entry of the Stipulation and Order, LADWP is to provide up to $2 million to Inyo County to rehabilitate existing Inyo County parks and campgrounds and to develop new recreational facilities. LADWP is to make an annual payment of $100,000 (Adjusted upward or downward in accordance with the consumer's price index) to Inyo County to maintain existing and new recreational facilities.	The remainder of the money available for parks rehabilitation and maintenance is $21,954. In addition, LADWP has provided annual payments to Inyo County for parks operation and maintenance activities including a payment in 2013 of $149,659 for a total of $2,141,795. LADWP has paid Inyo County a over $3,973,709 since 1997 under this provision of the Agreement.
Owens River Recreational Use Plan	As part of the parks rehabilitation program, Inyo County may develop a plan for recreational use and management of the Owens River from Pleasant Valley Reservoir to the Owens River delta as one of the programs to be funded by LADWP under the provisions of the Agreement concerning Park Rehabilitation, Development, and Maintenance.	In 2007, ICWD formed a collaborative group to gather preliminary information for a Recreational Use Plan for the LORP. This group met twice in 2007 and received grant funding from the Sierra Nevada Conservancy for plan development. These grant funds were returned when time constraints were not met by the group, but were reinstated in 2010 to fund a consultant to write the plan. ICWD selected MIG Consultants to write the LORP Recreational Use Plan in October 2010 and stakeholder interviews were held in December 2010 and May 2011. A draft LORP Recreation Use Plan was released in November 2011 and a final draft plan was released in February 2012. ICWD and MIG Consultants presented this plan to both the Standing Committee and the public in February 2012.

		Additional public meetings were held in August 2012 and a revised draft plans were released in October 2012 and February 2013. Next steps include further review of the draft plan, CEQA evaluation and obtaining necessary permits prior to implementation of the project.
Title	**Provision**	**Status**
Financial Assistance for Water-Related Activities	LADWP is to make an annual payment to Inyo County to assist Inyo County in funding water and environmentally-related activities. The annual payment is to be adjusted upward or downward each year in accordance with the consumer's price index	Los Angeles has provided annual payments to Inyo County, and provided $1,395,007 in July 2013. Funds provided by Los Angeles have been expended to fund Inyo County Water Department. LADWP has paid Inyo County over $27 million since 1988 for this purpose.
General Financial Assistance to Inyo County	LADWP is to make an annual payment to Inyo County to assist Inyo County in providing services to its citizens. The annual payment is to be adjusted upward or downward each year in accordance with a formula in the State Constitution for an assessment of Los Angeles-owned property in Inyo County.	Los Angeles has provided annual payments to Inyo County, and provided $3,198,104 in 2013. Funds provided by Los Angeles have been deposited into Inyo County's General Fund and expended on Inyo County services as directed by the Board of Supervisors. LADWP has paid Inyo County more than $49 million since 1991 for this purpose.
Big Pine Ditch System	LADWP is to provide up to $100,000 for reconstruction and upgrading of the Big Pine ditch system. LADWP is to supply up to 6 cfs to the ditch system from a new well to be constructed west of Big Pine.	The Standing Committee approved procedures and guidelines for implementing the project in 1998. A Mitigated Negative Declaration has been completed. The Inyo/Los Angeles Water Agreement has been modified to provide a reliable water supply of 300 AF for the project. The Big Pine Irrigation and Improvement Association has implemented all Phases of the project. LADWP has provided $99,745 of the $100,000 committed to the project. The Improved Big Pine Ditch System has been in operation since 2005. After test pumping and identification of a monitoring site for Well 415 to supply supplemental water and make up water for the ditch system, a contract will be considered for the installation of another well in Bell Canyon to provide additional water for the project. In 2013 the Big Pine Ditch System consumed 604 AF of water.
Park and Environmental Assistance to City of Bishop	LADWP is to make an annual payment to the City of Bishop to assist the City in maintaining its park and for other environmentally-related activities. The payment of $125,000 is to be adjusted upward or downward each year in accordance with the consumer price index. Inyo County shall make an annual payment to the City of Bishop in an amount equal to the payment made by LADWP.	Los Angeles has provided annual payments to the City of Bishop, and provided $187,075 in 2013. LADWP has paid the City of Bishop $2,751,101 since 1997 for this purpose. Inyo County has made its required payment under this section of the agreement.
Release of City-Owned Lands	(1) LADWP is to sell 26 acres of surplus City-owned land within the Bishop city limits; (2) (2) LADWP is to offer for sale 75 acres of City-owned land, in areas noted on Exhibit B of the Water Agreement, for public or private development	(1) LADWP sold 26 acres within Bishop city limits in 1995. (2) LADWP sold 5.54 acres of property prior to 2002 that counts toward the 75 acre commitment. (3) In 2002 Inyo County approached LADWP to request additional lands to be offered for sale. (4) In 2008 LADWP offered 24.38 acres for sale at public auction. One parcel, 0.16 acres, sold. (5) On March 23, 2011, LADWP offered 56.63 acres for sale at public auction. Five parcels totaling 10.51 acres sold.

Title	Provision	Status
Additional Sales of City Lands	LADWP will negotiate in good faith for the sales of additional surplus City land in or near valley towns for specific identified needs. Any such sales are to occur subsequent to those described above.	• 2011 LADWP sold to Caltrans a land parcel located in the town of Independence for expansion of their maintenance yard. LADWP granted to the City of Bishop two right of way easements for road projects. • 2012 there were no sales. • 2013 LADWP sold into private ownership 2.82 acres located at 789 Home Street, Bishop. Escrow will close in 2014.
Lands for Pubic Purposes	Los Angeles will negotiate in good faith for the sale or lease to Inyo County of any City land requested by Inyo County for use as a public park or for other public purposes.	2013 LADWP entered into the following leases with Inyo County: • BL-1468 – A borrow material site for $500/year • LA-821 – Inyo County Sheriff Mazourka Canyon Telecommunication Site - $500/year • BL-1520 – Independence Little League Field $500/year LADWP is negotiating the following agreements with Inyo County: • BL-813 – Schober Lane Campground • BL-1377 – Glacier View Campground • BL-814 – Millpond Recreation Facility • BL-1387 – Lone Pine Landfill • BL-1284 – Sunland Landfill • BL-1385 – Independence Landfill LADWP is negotiating the following projects with Inyo County: • Sale of an easement for the extension of See Vee Lane • Sale of an easement for Butcher Lane in Big Pine • Bike Lane path along Ed Powers Road • Sunland Drive Road shoulder widening and bike path • Sale of an easement for the Independence Water Reservoir
Withdrawn Lands	Inyo County will support passage of withdrawn land legislation pertaining to federally-owned lands in Inyo County.	There is a 2010 proposal from Bureau of Land Management to remove the water withdrawal status on the Olancha Mill Site, status unknown.
Legislative Coordination	Except under certain circumstances, LADWP and Inyo County are to refrain from seeking or supporting any legislation, administrative regulation, or litigation that would weaken or strengthen local or state authority to regulate groundwater or that would affect any provision of the agreement.	The legislative coordination policy has somewhat been followed.
Dispute Resolution	The agreement provides a process for resolving disputes between LADWP and Inyo County regarding issues related to the Water Agreement or the Green Book.	Issues concerning annual pumping programs and operation of the McNally Canals have been addressed utilizing the dispute resolution procedures. Inyo County has agreed to not initiate a dispute over groundwater pumping during the term of the Interim Management Plan provided the pumping provisions of the plan are observed.

6.3 Cooperative Studies

See the 2010 Annual Owens Valley Report for a complete listing of Cooperative Studies.

Table 22 includes the details of the on-going Cooperative Studies approved by the Standing Committee.

TABLE 22. Cooperative Studies

Green Book Revision	ICWD and LADWP have been working on cooperative studies intended to facilitate improvements to the Green Book since 2007. Work on the Green Book revision cooperative study is being conducted under the *Framework and Procedures for Developing Revisions to the Green Book* document as approved by the Standing Committee on November 27, 2006. An outline of the cooperative studies being addressed for the Green Book revision effort are included in the *Working Document, Outline of Issues and Tasks for Revising the Green Book and Related Issues* (Working Document), November 2007.	Efforts to date have focused on procedures for developing new operational triggers for pumping wells and improving the procedures for installing new wells and replacing existing wells. The task to cooperatively address vegetation monitoring also began in early 2010. Little progress has been made.
Owens Lake Groundwater Development Program (OLGDP)	The LADWP conducted an evaluation of groundwater under Owens Lake between 2009 and 2012 to determine feasibility of using local groundwater for dust mitigation at Owens Lake. The tasks of Owens Lake Groundwater Evaluation Project (OLGEP) included: compiling existing geologic, hydrologic, and ecologic information; developing a preliminary conceptual model of the Owens Lake, and identify data gaps; collecting field data to resolve data gaps; updating conceptual model of Owens Lake groundwater system; developing a numerical groundwater model of the Owens Lake; using the numerical model to simulate and analyze alternative pumping scenarios; developing an implementation plan; and preparing a final report. Based on the recommendations of OLGEP, LADWP proposed implementation of groundwater program at Owens Lake in three Phases. Phase I implementation of OLGDP started in 2013.	The OLGEP recommended implementation of OLGDP in three phases, Phase I is baseline data collection of related studies; Phase II is initial implementation; and Phase III is full implementation of groundwater at Owens Lake. As part of the three year plan for the Phase I, 14 new monitoring wells are installed around Owens Lake and water level measurements have started. Spring flow measuring gauges will be improved to provide more accurate measurements. New base-of-mountain gauges will be installed to measure recharge to groundwater from creeks flowing from Eastern Sierra to Owens Lake. Two testing wells will be installed and aquifer tests will be conducted to evaluate the role of faults as groundwater flow barriers. Conceptual and computer models of Owens Lake will be updated and used to simulate alternative pumping scenarios as part and operation plan developments. LADWP has requested ICWD, Great Basin Unified Air Pollution Control District, California State Lands Commission, and California Department of Fish and Wildlife to participate in an Advisory Committee for the Owens Lake Groundwater Development Program.

6.4 Revegetation/Regreening Project, Progress, and Proposed Future Work

See Table 23 for the details of the Revegetation/Regreening Projects, Progress, and Proposed Future Work.

TABLE 23. Revegetation/Regreening Projects, Progress, and Proposed Future Work

Title	Provision	Status
LAWS 90	The site has been fenced.	In 2013, approximately 2500 plants were placed during the fall planting. Additional plantings are planned for 2014.
LAWS 94	The site has been fenced.	In 2013, approximately 9,000 plants were placed at LAWS 94/95. The initial planting for the entire parcel was completed in Fall 2013.
LAWS 95	The site has been fenced.	In 2013, approximately 9,000 plants were placed at LAWS 94/95. The initial planting for the entire parcel was completed in Fall 2013.
LAWS 118	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted. Revegetation studies have been implemented by SAIC using seed with sprinklers and plants with drip irrigation. In addition, MWH Americas, Inc. conducted studies on dryland revegetation techniques using native seed and various treatments.	Transects were run with ICWD in August 2012 and the parcel has achieved 2% native cover. A buried drip system was installed during the winter of 2012. In January of 2013 a new fence was installed between the western portion of LAWS 118 and the Cashbaugh Lease. Planting at this parcel will begin upon the completion of planting at LAWS 90, LAWS 94/95, and LAWS 129.
LAWS 129	This site has been fenced.	In the Spring of 2012, approximately 2,000 plants were placed at buried drip emitters. Additional plantings are scheduled for 2014-2015.
Five Bridges	Water releases to this area were initiated in 1987. Permanent photo points and transects have been monitored annually. Fences were installed to eliminate grazing in the riparian and meadow areas that water releases flow through. Initial water releases were from Bishop Creek Canal to C-Drain. The Mitigation Plan stated that releases should be conducted by high flows in the Owens River. These high flows were very difficult to implement. As a consequence, a change was made and water releases originated from Bishop Creek Canal to C-Drain. Water has been released three times a year during the growing season. All water releases are monitored. Weed control is conducted annually. Controlled burns have been conducted to help with weed control. Monitoring data indicates that the area is responding well to the water releases.	In 2013, releases from the Bishop Creek Canal via C-Drain were conducted three times during the growing season. Permanent photo points and transects were monitored. Weed control continued.
Bishop 97	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted. Permanent transects were run in	Approximately 35 acres were drill seeded with locally collected seeds in the spring of 2011. A buried drip system was installed on approximately 16 acres within the area that was drill seeded. The

Title	Provision	Status
	2003 to document any changes from baseline conditions. MWH Americas, Inc. conducted studies on dryland revegetation techniques using native seed and various treatments.	recently installed emitters were planted during the spring of 2012. Transects were run with ICWD in August 2012. The parcel has achieved 4.8% native perennial cover.
Big Pine NE Regreening	A revised scope of work was sent to ICWD that reflected the interests of the citizens of the community of Big Pine. ICWD did not provide comments on this revised scope of work. On August 13, 2004 LADWP submitted a Mitigation Plan that reflected the project as described in the Final Scoping Document that was approved by the Standing Committee in 1988. Comments were received from Inyo County in 2005.	Big Pine Northeast Regreening Project - Mitigation Plans for the project were transmitted to the County in 2004. Comments were received from the County in 2005. LADWP identified issues making the project unfeasible as originally scoped. In order to facilitate implementation of the project LADWP recommended the following changes: (1) change the water source for the project to include the Big Pine Canal (Well W375 remained scoped as project make-up water well), (2) change irrigation method from flood irrigation to the option of flood or sprinkler irrigation, (3) move the project area closer to Highway 395, and (4) change the lessee identified for the project to an unspecified lessee. These changes were discussed publicly at the September 9, 2009, Inyo County Water Commission meeting and the November 5, 2009, Standing Committee meeting. At the November 4, 2010 Standing Committee meeting, modifications to the Final Scoping Document were approved. Key modifications include: changing the lessee designation, revising the boundaries of the project, and amending the water supply source and method of application identified for the project. The ICWD and Technical Group analyzed the operation of Well W375 and concluded that an exemption for up to 150 AF per year would likely have no significant impact on the environment or other well owners. LADWP circulated Negative Declaration (ND) for the project August 3-September 1, 2011. New information was provided and the ND was recirculated November 10-December 12, 2011. A Notice of Determination was filed with Inyo County on March 7, 2012. The adequacy of the ND was legally challenged by the Big Pine Paiute Tribe and Sierra Club in Inyo County Superior Court Case SICVPT12-53541 based on the fair argument standard that substantial evidence supports the issuance of an Environmental Impact Report (EIR) rather than a ND. A decision was issued by Inyo County Superior Court November 26, 2012, denying the parties' Petition for Writ of Mandate and in favor of issuing the LADWP's ND rather than an EIR.

Title	Provision	Status
		The Technical Group exempted Well W375 on November 6, 2013, for project make-up water in order to make this project feasible. Installation of the irrigation system for this project occurred in the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.
Big Pine 160	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted. MWH Americas, Inc. conducted studies on dryland revegetation techniques using native seed and various treatments.	Potential water sources are being evaluated and a drip irrigation system is being designed for this site. In the spring of 2011 approximately 20 acres were drill seeded with locally collected seed. Transects were run by LADWP and ICWD in August 2012. The parcel currently contains 3% native perennial vegetation. In February 2014, LADWP crews seeded approximately 28 acres of this parcel with a native seed mix. The seeding was scheduled during a storm event and the areas seeded received around 1.35" of rain during and directly after seeding.
East Big Pine	"An area of approximately 20 acres directly to the east of Big Pine that is poorly vegetated as a result of pre-project activities and activities which are not a part of the project will be evaluated as a potential enhancement/mitigation project. If, in planning this project, it is determined that it is not feasible to permanently irrigate this area, a revegetation program will be implemented" (1991 EIR Impact 10-19). The "Revegetation Plan for Impacts Identified in the LADWP, Inyo County EIR for Groundwater Management" that was submitted to the MOU Parties in 1999 states that this area is within the same parcel as Big Pine 160 and, therefore, the mitigation will be the same for both sites.	A survey was completed in 2006 for a fence for this site. The site was fenced in 2007 to eliminate disturbances and encourage natural revegetation. If this area does not revegetate naturally, it will be included with LADWP's ongoing revegetation efforts. In February 2014 LADWP crews seeded approximately 3.2 acres of this area with a native seed mix, in conjunction with the adjacent BGP160 parcel. The seeding was scheduled during a storm event and the areas seeded received around 1.35" of rain during and directly after seeding.
Tinemaha 54	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted. Grass plants were planted in 1999. A drip irrigation system was installed in 2001. The grass plants were irrigated during the growing season from the time the system was installed through 2004.	Transects were run by LADWP and ICWD in August of 2012. The parcel has achieved 2.14% total perennial cover.
Blackrock 16E	The site has been fenced. Permanent transects have been installed and baseline monitoring has	Transects were run in 2010 to assess cover at the site. This site has attained the cover and composition goals delineated in the

Title	Provision	Status
	been conducted. A controlled burn was conducted by LADWP in conjunction with California Department of Forestry to remove weed litter. Permanent transects were run in 2002 to document any changes from baseline conditions. Site native perennial cover has increased, so no active revegetation plans will be developed at this time.	Revegetation Plan.
Hines Springs S	This site will likely be affected by the Hines Springs on-site mitigation. The site goal and revegetation plan for this area will be developed within three years after the work at Hines Springs is completed.	The Additional Mitigation Projects Developed by the MOU Ad Hoc Group (including the Hines Spring Well 355 Project) were implemented by March 8, 2012, in compliance with Stipulation and Order S1CVCV01-29768. A revegetation plan will be developed within three years of this date for Hines Springs S.
Independence East Side Regreening	A revised scope of work has been submitted to ICWD that reflects the interests of the citizens of the community of Independence	Mitigation plans were submitted to Inyo County Water Department (ICWD) for this project on August 13, 2004. LADWP circulated a Mitigated Negative Declaration (MND) for the Independence Eastside Regreening Project and Town Water System September 23-October 29, 2004. The Board of Water and Power Commission approved the project in May 2005. Following approval, Inyo County requested that three minor modifications to the project be made: (1) the project well to be located approximately 100 yards to the east of the originally proposed location, (2) that sprinkler irrigation be considered in place of flood irrigation, and (3) that a portion of the project area include stables and/or corrals. An amendment to the project scoping document that incorporates these changes was approved by the Standing Committee on April 23, 2009. The well for this project was drilled in September 2012. Construction of the irrigation system for this project occurred during the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.
Independence 105	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted. Permanent transects were run in 2001 to document any changes from baseline conditions. Site native perennial cover has increased, so no active revegetation plans will be developed at this time.	Transects were run in 2006 to assess cover at the site. The site has attained the goals for cover and composition delineated in the revegetation plan.

Title	Provision	Status
Independence 123	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted.	Transects were run in 2006 to assess cover at the site. The site has attained the goals for cover and composition delineated in the revegetation plan.
Independence 131	The site has been fenced. Permanent transects have been installed and baseline monitoring has been conducted. Revegetation studies have been implemented by SAIC using seed with sprinklers and plants with drip irrigation. In addition, MWH Americas, Inc. conducted studies on dryland revegetation techniques using native seed and various treatments.	Monitoring of the SAIC study was conducted during the 2004 growing season. Data indicates that placing seed at emitters produced positive results. Therefore, seed will be used for this portion of the revegetation project. Precipitation conditions in the last few years have resulted in recruitment of native species and an increase in vegetation cover in areas not disturbed by the revegetation trials. Permanent transects were run in 2006. Approximately 25 acres were drill seeded with locally collected seeds in the spring of 2011. Transects were run by LADWP and ICWD in August of 2012. IND131S currently contains 6.15% perennial cover, and IND131N has achieved the revegetation goals with 15.7% live cover composed of five perennial species. The site will be considered rehabilitated when cover is 90% and composition is 75% of the site specific stated goal.

6.5 Green Book Revision Cooperative Study Status

ICWD and LADWP have been working on cooperative studies intended to facilitate improvements to the Green Book since 2007. Work on the Green Book revision cooperative study is being conducted under the *Framework and Procedures for Developing Revisions to the Green Book* document as approved by the Standing Committee on November 27, 2006. An outline of the cooperative studies being addressed for the Green Book revision effort are included in the *Working Document, Outline of Issues and Tasks for Revising the Green Book and Related Issues* (Working Document), November 2007.

The Working Document is divided into four general sections and 11 tasks. A description of the tasks included in the Working Document follows:

- Hydrologic Management Issues
    - Development of new or improved operational triggers for pumping wells
    - Re-evaluate groundwater mining provisions
    - Procedures for new wells
    - Surface water management
- Monitoring Issues
    - Vegetation monitoring
    - Hydrologic Monitoring (groundwater, surface water, and precipitation)
- Goal Attainment
    - Compliance monitoring
    - Attributability
    - Significance
- Revise Draft Green Book
    - Draft Green Book revisions
    - Seek approval of Draft Green Book revisions

Efforts to date have focused on procedures for developing new operational triggers for pumping wells and improving the procedures for installing new wells and replacing existing wells. The task to cooperatively address vegetation monitoring also began in early 2010.

Efforts to include a facilitator and assistance from the Ecological Society of America for the Green Book revision effort are in progress.

6.6 Invasive Species Treatment and Removal

Background

The Los Angeles Department of Water and Power noxious weed treatment program began in 1995 when the first pepperweed (*Lepidium latifolium*) site was found in the Owens Valley. LADWP along with many other agencies formed the Eastern Sierra Weed Management Group in 1999. Since that time, LADWP has had an extensive weed control program which utilizes LADWP personnel and contractors. The primary goal of LADWP's ongoing weed control efforts are to treat rated noxious weeds on LADWP lands in Inyo and Mono Counties.

Additional weed treatments on LADWP lands were provided by Inyo County personnel. Between 2006 and 2012 LADWP provided $200,000 to Inyo County for weed control. Often this money was used as matching funds for grants that significantly increased the funds that could be used to treat weeds in Inyo and Mono Counties.

On June 30, 2012, the $200,000 funding came to an end and LADWP took over complete control for weed treatments on its lands in Inyo and Mono Counties. The one exception is within the Lower Owens River Project where a combination of funds from LADWP and Inyo County fund a program that is administered by the Inyo and Mono Counties Agricultural Commissioner's Office.

Treatment Efforts

During the spring of 2012, LADWP began preparing for the transition of responsibilities. A total of five LADWP personnel were assigned to weed management beginning in July 2013.

In addition to personnel LADWP also acquired a number of pieces of equipment that were dedicated to the weed control program.

- Two 4-wheel drive pick-up trucks equipped with weed spaying equipment
- Three quad all-terrain vehicles each equipped with and associated weed sprayers equipment.
- One side by side all-terrain vehicle equipped with and associated weed sprayers equipment.
- $41,416 in pesticide materials for noxious weed control.

LADWP staff began the process of modifying the restricted Materials Permit 140339-2012 so that is would cover the additional sites LADWP would be treating. The new permit was received in August 2012. Between July and August 2013 LADWP treatment efforts were restricted to those areas previously treated by LADWP.

In August LADWP received the weed site maps from Inyo County then toured weed locations with Inyo County staff in October.

Since August 2013, LADWP staff has been treating all sites previously treated by LADWP as well as those previously treated by Inyo County. These sites include the Owens River from

Pleasant Valley to the Los Angeles Aqueduct (46 miles) and the unlined section of the Los Angeles Aqueduct (26 miles). Along these areas LADWP utilized a contractor with a boat to treat weed locations that were inaccessible by land.

In 2013, six hundred acres were treated in the Five Bridges area, all of the Hines Spring/1600 Project locations, LADWP water spreading basins, and operational facilities from Los Angeles to the Owens Valley. LADWP staff also treated 1920 acres of both salt cedar and Russian olive sites that were not being treated by Inyo County. Additionally, 400 acres of slash was burned.

At Owens Lake, LADWP staff have surveyed and treated 45 square miles which included hand removal of salt cedar seedlings where appropriate.

In the 2013-14 fiscal year, LADWP worked 4200 worker hours treating weeds throughout the Owens Valley. Every known weed site was treated at least once and many sites were treated multiple times during the growing season. LADWP staff continues to utilize a five (5) person crew that treats rated herbaceous weeds from April through October. Additionally, staff treats salt cedar and Russian Olive from October through March. Because of the drought conditions and the area-wide ban on burning, no slash piles that were created from these treatments in 2013-14 were burned.

7. STATUS OF PROJECTS DEFINED IN THE 1997 MOU

7. STATUS OF PROJECTS DEFINED IN THE 1997 MOU

The following describes the status of projects and activities conducted under the *1997 Memorandum of Understanding between the City of Los Angeles Department of Water and Power, County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, and the Owens Valley Committee* (1997 MOU). This section provides updates on the Lower Owens River Project, Yellow-billed Cuckoo Habitat Enhancement Plan, the Additional Mitigation Projects Developed by the MOU Ad Hoc Group (Additional Mitigation Projects), Inventory of Plants and Animals at springs and seeps, and the Owens Valley Land Management Plan (OVLMP). Table 24 describes the 1997 MOU project commitments and current status. Sections 7.1-7.3 contain additional reporting requirements for projects that were implemented in recent years.

TABLE 24. 1997 MOU Provisions

Title	Provision	Status
Lower Owens River Project (LORP)	A project to rewater approximately 60 miles of the Owens River channel below the aqueduct intake, the enhancement of several environmental features along and near the river, and the return of water to the aqueduct by means of a pumpback facility near the Owens River delta. The LORP is also identified in the 1991 EIR as compensatory mitigation for impacts that occurred between 1970 and 1990 that were considered difficult to quantify or mitigate directly. The LORP, as described in the Water Agreement and the 1991 EIR, is augmented by the provisions of the MOU. The four physical features of the LORP are listed below:	See Section 5, Table 18, "1991 EIR Mitigation Measures" (Impact #10-14)." Project base flows of 40 cfs continued in 2013. On May 22, 2013, the Seasonal Habitat Flow was initiated. Drew Slough received water as provided in the MOU.
LORP, Item 1	1. The Lower Owens River Riverine-Riparian System. A continuous flow will be established and maintained in the river channel from at or near the intake structure which diverts the Owens River into the Los Angeles Aqueduct to a pumpback system located near the river delta that will return water to the LAA. The baseflow in the river channel will be approximately 40 cfs. In average and above runoff years, there will be "seasonal habitat flows" of approximately 200 cfs, with reductions of the habitat flows in years when runoff is forecast to be less than average.	This component of the project was achieved in February 2007. Work is completed on installing necessary facilities to implement the 40 cfs baseflow and seasonal habitat flow.
LORP, Item 2	2. The Owens River Delta Habitat Area. This feature provides for the enhancement and maintenance of approximately 325 acres of existing habitat and the establishment and maintenance of new habitat consisting of riparian areas and ponds suitable for shorebirds, waterfowl, and other animals. An annual average of approximately 6 to 9 cfs will be released below the pumpback system to supply this area.	Releases for the delta occur simultaneously with the 40 cfs baseflow. No construction was necessary for this component of the project other than the completion of the Pumpback Station. This component of the project is on-going.
LORP, Item 3	3. Off-River Lakes and Ponds. Off-river lakes and ponds in the LORP area will be maintained and/or established through flow and land management to provide habitat for fisheries, waterfowl, shorebirds, and other animals. These habitats will be as self-sustaining as possible.	This component of the project is on-going.
LORP, Item 4	4. The 1500-Acre Blackrock Waterfowl Habitat Area. In average and above runoff years, approximately 500 acres within an overall project area of 1500 acres will be flooded to provide habitat for resident and migratory waterfowl and other native species. In years when the runoff is forecasted to be less than average, the water supply to the area will be reduced in general proportion to the forecasted runoff in the watershed.	All preliminary construction work identified for implementation of the Blackrock Waterfowl component has been completed. The forecast runoff for 2011-2012 was 150%. Per Ecosystems Sciences recommendation and consistent with the Blackrock Waterfowl Management Area (BWMA) flooding strategies for drier years, as well as the Standing Committee's BWMA policy approved this year, 270 acres in Drew Unit of the BWMA was flooded this year. CDFW consultation occurred prior to Standing Committee approval.

Title	Provision	Status
LORP (cont.)	See Table 21, Agreement Provisions."	

Title	Provision	Status
LORP (cont.)	LADWP and the County will direct and assist Ecosystem Sciences in the preparation and implementation of a management plan for the LORP area that addresses each of the four physical features of the LORP. The parties to the 1997 MOU, government agencies, LADWP ranch lessees, and the public will be consulted as the plan is developed.	Ecosystem Sciences (ES) has prepared a draft management plan for the project. These plans are listed as draft as the project is based on adaptive management and adjustments may be made in the future. Thus the term "final plan" is not used.
LORP (cont.)	LADWP as the lead agency and the County as responsible agency will jointly prepare an EIR on the LORP. A draft EIR was to be released by June of 2000, but the deadline has been extended by the 1997 MOU Parties. A final EIR will be completed as soon as possible following release of the draft.	This project required an EIR. The Draft EIR was released November 1, 2002. The public comment period concluded January 14, 2003. The Final EIR was approved by the Board of Water and Power Commissioners in July 2004. The Inyo County Board of Supervisors approved the EIR in November 2005. LADWP received all the necessary permits for implementation by January 9, 2006 and construction began immediately.
LORP (cont.)	The baseflow in the river channel will be commenced not later than June 2003 unless circumstances beyond LADWP's control prevent the completion of the pumpback system and/or the commencement of baseflow. Implementation of the other features of the LORP will commence upon certification of the LORP EIR.	The Draft EIR stated that the baseflow would not commence on June 13, 2003. The Final EIR was completed in June 2004 per the February 13, 2004, Stipulation and Order. Phase I releases started December 6, 2006. Phase II releases of 40 cfs were physically achieved in February 2007 and were certified by the court in July 2007. Additional punitive conditions involving maintaining flows and recording of flows were added to the 2007 Stipulation and Order following certification of the 40 cfs base flows.
Yellow-Billed Cuckoo Habitat	Under the direction of LADWP and the County, Ecosystem Sciences will evaluate Yellow-billed Cuckoo habitat in riparian woodland areas of Hogback and Baker Creeks. Based on the evaluation, if deemed warranted, habitat enhancement plans for these areas will be developed by Ecosystem Sciences, in consultation with LADWP, the lessee for the area and the parties to the 1997 MOU. The evaluations were to be completed within 36 months of the discharge of the writ, but the deadline has been extended by the 1997 MOU Parties. Actions or projects recommended by this evaluation will be presented to the Board of Water and Power Commissioners for approval and implementation. If approved by the Board of Water and Power Commissioners, habitat enhancement plans will be implemented as expeditiously as feasible.	Ecosystem Sciences completed a Yellow-billed Cuckoo (YBC) Habitat Plan in April 2005. LADWP released a Draft EIR in January 2006. The 1997 MOU Parties and others expressed displeasure with the Consultant's project. The MOU Parties and the lessees for the Baker Creek and Hogback Creek areas entered into negotiations with LADWP staff to develop another alternative for the YBC Habitat Plan. The *Ad Hoc Yellow-billed Cuckoo Habitat Enhancement Plan* was completed and a Mitigated Negative Declaration was released for public review. The Board of Water and Power Commissioners approved the project on January 19, 2010. Initial planting of all areas is complete. Replanting will occur where necessary and feasible to aid in reaching project goals. Please refer to Section 7.2 for more information on this project.
Inventories of Plants and Animals at Springs	Within 36 months of the discharge of the writ, an inventory of plants and animals at wetlands associated with springs and seeps was to be	The deadline for completion of the inventories was extended to December 2000 and then to July 2001 by the MOU Parties. No

and Seeps (within the LORP Planning Area)	conducted by ES. The deadline has been extended by the 1997 MOU Parties.	further extensions have been granted. ES completed and submitted results of its inventory to the MOU Parties in June 2001. ES has completed this work.

Title	Provision	Status
Additional Mitigation	A total of 1600-AF of water per year will be supplied by LADWP for the implementation of on-site mitigation measure at Hines Springs identified in the 1991 EIR and on-site or off-site mitigation that is in addition to the mitigation measures identified in the 1991 EIR for impacts at Fish Springs, Big and Little Seely Springs and Big and Little Blackrock Springs. Under the direction of LADWP and the County, ES, will recommend reasonable and feasible on-site and/or off-site mitigation measures, including the implementation of mitigation at Hines Springs. Projects recommended by these studies and evaluations will be presented to the Board of Water and Power Commissioners for approval and implementation. The mitigation measures are to be implemented by LADWP and maintained by LADWP and/or the County. The measures were to be implemented within 36 months of the discharge of the writ, but the deadline has been extended by the MOU Parties.	The Second Amendment of Amended Stipulation and Order (Case No. S1CVCV01- 29768) regarding the Additional Mitigation Projects Developed by the MOU Ad Hoc Group was executed on March 8, 2010 by Inyo County Superior Court. This Amendment accepts the Additional Mitigation Projects as mitigation for the 1600 AF provision and establishes a two year timeline for implementation of the projects. The Additional Mitigation Projects were approved by the Board of Water and Power Commissioners following CEQA evaluation in June 2010. LADWP began implementing the eight projects shortly thereafter and all projects were implemented by the March 8, 2012 court deadline. Please refer to Section 7.3 for more information on each project.
Owens Valley Management Plan	LADWP, in consultation with the parties to the 1997 MOU and others, is to identify areas of City-owned land, which are not included in the LORP planning area, and develop plans for the identified areas to remedy problems caused by livestock grazing and other uses of the land. Priority will be given to riparian areas, irrigated meadows and sensitive plant and animal habitats. The plans will provide for the continuation of sustainable uses (including recreation, livestock grazing, agriculture, and other activities) will promote biodiversity and a healthy ecosystem, and will consider the enhancement of threatened and endangered species habitats. LADWP, working with ES. Will commence the planning effort within 5 years, and plans are to be completed within approximately 10 years. Each plan will contain an implementation schedule and will be implemented in compliance with CEQA. As plans become final, they will be presented to the Board of Water and Power Commissioners for approval and implementation.	LADWP has completed the OVLMP which describes management actions for City-owned lands in Inyo County. CEQA was completed and adopted by the Board of Water and Power Commissioners in June 2010. Implementation of fencing and recreational management measures were completed in early 2011. Please refer to Section 7.4 for more information.
Inventories of Plants and Animals at Springs and Seeps (outside the LORP Planning Area)	Within 36 months of the discharge of the writ, an inventory of plants and animals at wetlands associated with springs and seeps was to be conducted jointly by LADWP and the County on lands owned by the City of Los Angeles within the portion of the Owens River watershed located in Inyo County that is not included in the LORP Planning Area.	LADWP has completed data collection for spring and seep discharge. LADWP had ES complete the inventory of plants and animals.

Title	Provision	Status
Type E Vegetation	By December 1999, LADWP and the County are to develop baseline conditions for management of vegetation classified as Type E in the long-term agreement. These conditions will be adopted by the Standing Committee.	The inventory of Type E Vegetation was conducted by Resource Concepts, Inc. (RCI) under a contract administered by Inyo County and funded by LADWP. The final report on the inventory was completed in December 1999.
Aerial Photo Analysis	By June 2000, LADWP, the County, and experts in aerial photography interpretation were to conduct a study analyzing existing air photos of the Owens Valley to evaluate the merits of using air photos in monitoring vegetation in the valley, to determine the feasibility of using air photos to analyze and refine the vegetation map data base, and to provide recommendations on how aerial photography, or other remote sensing techniques, could be used to monitor vegetation conditions and changes. If feasible and cost-effective relative to other field monitoring techniques, recommendations will be implemented.	The deadline was extended by the 1997 MOU Parties. In January 2002, Ecosat Geobotanical Surveys, Inc., the consultant conducting the study, completed reports addressing the 1997 MOU requirements.
Mitigation Plans for Impacts Identified in the 1991 EIR and the Water Agreement	The Technical Group will prepare mitigation plans and implementation schedules for all area for which on-site mitigation measures have been adopted in the 1991 EIR. The plans will be completed by June 1998. In accordance with the EIR, on-site mitigation will be accomplished through revegetation with native Owens Valley species and through establishment of irrigation.	In August 1999, following the receipt of comments from the MOU Parties, the Inyo/Los Angeles Technical Group approved the mitigation plans. In January 2002, the County identified four on-site mitigation measures for which plans were inadvertently omitted from the mitigation plans. The County prepared draft plans and schedules for these measures. Mitigation plans were submitted by LADWP to ICWD for the Independence Eastside Regreening and Big Pine Northeast Regreening projects and evaluations of East of Shepherd Creek Alfalfa Potential E/M and East of Big Pine Potential E/M projects on August 13, 2004. LADWP circulated a Mitigated Negative Declaration (MND) for the Independence Eastside Regreening Project and Town Water System from September 23-October 29, 2004. The Board of Water and Power Commission approved the project in May 2005. Following approval, Inyo County requested that three minor modifications to the project be made: 1) the project well to be located approximately 100 yards to the east of the originally proposed location, 2) that sprinkler irrigation be considered in place of flood irrigation, and 3) that a portion of the project area include stables and/or corrals. An amendment to the project scoping document that incorporates these changes was approved by the Standing Committee on April 23, 2009. The well for this project was drilled in September 2012. Construction of the irrigation system for this project occurred during the Winter of 2013-2014. As of April 2014, implementation of this project by LADWP is complete and the parcel is ready for planting by the lessee.

Title	Provision	Status
Mitigation Plans for Impacts Identified in the 1991 EIR and the Water Agreement	The Technical Group will prepare mitigation plans and implementation schedules for all area for which on-site mitigation measures have been adopted in the 1991 EIR. The plans will be completed by June 1998. In accordance with the EIR, on-site mitigation will be accomplished through revegetation with native Owens Valley species and through establishment of irrigation.	Big Pine Northeast Regreening Project- Mitigation Plans for the project were transmitted to the County in 2004. Comments were received from the County in 2005. LADWP identified issues making the project unfeasible as originally scoped. In order to facilitate implementation of the project LADWP recommended the following changes: 1) change the water source for the project to include the Big Pine Canal (Well W375 remained scoped as project make-up water well), 2) change irrigation method from flood irrigation to the option of flood or sprinkler irrigation, 3) move the project area closer to Highway 395, 4) change the lessee identified for the project to an unspecified lessee. These changes were discussed publicly at the September 9, 2009 Inyo County Water Commission meeting and the November 5, 2009 Inyo/LA Standing Committee meeting. At the November 4, 2010 Inyo/LA Standing Committee meeting, modifications to the Final Scoping Document were approved. Key modifications include: changing the lessee designation, revising the boundaries of the project, and amending the water supply source and method of application identified for the project. The ICWD and Technical Group analyzed the operation of Well W375 and concluded that an exemption for up to 150 AF per year would likely have no significant impact on the environment or other well owners. LADWP circulated Negative Declaration (ND) for the project August 3-September 1, 2011. New information was provided and the ND was recirculated November 10-December 12, 2011. A Notice of Determination was filed with Inyo County on March 7, 2012. The adequacy of the ND was legally challenged by the Big Pine Paiute Tribe and Sierra Club in Inyo County Superior Court Case SICVPT12-53541 based on the fair argument standard that substantial evidence supports the issuance of an Environmental Impact Report (EIR) rather than a ND. A decision was issued by Inyo County Superior Court November 26, 2012 denying the parties' Petition for Writ of Mandate and in favor of issuing the LADWP's ND rather than an EIR. The Technical Group exempted Well W375 November 6, 2013 for project make-up water in order to make this project feasible. Installation of the irrigation system for this project occurred in the Winter of 2013-2014. As of April 2014, implementation of this

		project by LADWP is complete and the parcel is ready for planting by the lessee.
Technical Group Meetings	Technical Group meetings are to be open to the public.	Scheduled Technical Group meetings were opened to the public beginning October 15, 1997.
Annual Reports	LADWP and the County are to prepare annual reports describing environmental conditions in the Owens Valley, and describing studies, projects and activities conducted under the long-term agreement and the MOU. The report will be released on or about May 1 of each year.	Inyo County has prepared annual reports since 1991. LADWP released annual reports for 2001 through 2011. This report is intended to fulfill the obligation for 2012.
Fish Slough	The 1997 MOU acknowledges that LADWP and CDFG have reached agreement concerning threatened and endangered species that involves land management and other activities in the Fish Slough area of Mono County. The agreement is to be memorialized in a letter from LADWP to CDFG.	A letter agreement was never memorialized; however, LADWP has worked closely with CDFG on the Fish Slough Area of Critical Environmental Concern (ACEC).
	Provision	**Status**
Dispute Resolution and Litigation	The parties to the 1997 MOU will maintain frequent, informal communications to minimize disagreements. In the event of a dispute among the parties over the 1997 MOU the parties will meet and confer before any litigation concerning the dispute may be commenced. The parties may elect to retain the services of a mutually acceptable impartial mediator/facilitator to assist in dispute resolution. Any litigation arising out of the 1997 MOU is to be commenced in the Inyo County Superior Court.	The parties to the 1997 MOU, called the "MOU Signatory Group," have met regularly on an as needed basis. In addition, the Parties and their attorneys met several times during the fall/winter of 2003-04 to develop the 2004 Stipulation and Order. Due to conditions beyond LADWP's control, the 2004 Stipulation and Order schedule for putting water in the LORP could not be met. The MOU Parties filed suit in the Inyo County Superior Court on July 25, 2005. The Court ordered limited pumping, required groundwater recharge, no reduction of in-valley uses, a fine, and implementation of LORP base flows by July 25, 2007 The Court also stayed an injunction against the use of the second aqueduct if base flows were not achieved in the LORP. Upon achieving base flows prior to July 25, 2007 the injunction and daily fines were dismissed.
Financial Assistance	The County will pay the sum of $53,000 to the Sierra Club and the sum of $30,000 to the Owens Valley Committee for professional services in the development and preparation of the 1997 MOU.	The specified amounts have been paid by the County to the identified parties.

7.1 Mitigation Monitoring and Reporting Program for the LORP

This Mitigation Monitoring and Reporting Program (MMRP) was developed to ensure implementation of the mitigation measures outlined in the Final Environmental Impact Report and Environmental Impact Statement (EIR/EIS) for the LORP (State Clearinghouse No. 2000011075). The MMRP was prepared by the City of Los Angeles Department of Water and Power (LADWP), the lead agency for the LORP under the California Environmental Quality Act (CEQA), in conformance with Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097.

Project Description Summary

The LORP is a large-scale habitat restoration project in Inyo County, California, that is being implemented through a joint effort by LADWP and Inyo County. The LORP was identified in a 1991 Environmental Impact Report as mitigation for impacts related to groundwater pumping by LADWP from 1970 to 1990. The description of the project was augmented in a Memorandum of Understanding (MOU), signed by LADWP, Inyo County, California Department of Fish and Game (CDFG) (*currently California Fish and Wildlife)*, California State Lands Commission (SLC), Sierra Club, and the Owens Valley Committee. The 1997 MOU specifies the goal of the LORP, timeframe for development and implementation, and specific actions. It also provides certain minimum requirements for the LORP related to flows, locations of facilities, and habitat and species to be addressed.

The overall goal of the LORP, as stated in the MOU, is as follows:

> *"The goal of the LORP is the establishment of a healthy, functioning Lower Owens River riverine-riparian ecosystem, and the establishment of healthy functioning ecosystems in the other elements of the LORP, for the benefit of biodiversity and threatened and endangered species, while providing for the continuation of sustainable uses including recreation, livestock grazing, agriculture, and other activities."*

LORP implementation includes release of water from the Los Angeles Aqueduct to the Lower Owens River, flooding of approximately 500 acres in the Blackrock Waterfowl Management Area, maintenance of several off-river lakes and ponds, modifications to grazing practices, construction of minor new facilities (to facilitate the release, monitoring, etc.), and installation of a pump station to capture a portion of the water released to the river.

Mitigation Monitoring and Reporting Plan (MMRP) Responsibility

Implementation and monitoring of most of the identified mitigation measures are post-implementation costs to be shared equally between LADWP and Inyo County. Operation and maintenance related to the pump station and monitoring for grazing management is solely the responsibility of LADWP. For other elements of the LORP, LADWP and Inyo County staff shares the responsibility for implementation and monitoring.

Organization of the MMRP

The LORP MMRP presents the mitigation measures by geographic area (Riverine-Riparian System, Blackrock Waterfowl Management Area, Pumpback Station and Associated Facilities, Land Management Plan, and other mitigation measures associated with the LORP as a whole). (Note: Some mitigation measures apply to more than one area.) The timing of the measure, the party responsible for implementing the measure, the agency responsible for mitigation monitoring, and the monitoring method are identified for each mitigation. A line for documentation of compliance is also provided.

Riverine-Riparian System

Air Quality

Mitigation Measure AQ-1 PM10 (fugitive dust) emissions from ground disturbance during construction of the pump station.

To minimize dust/ PM_{10} emissions during construction activity, as necessary, one or more of the following measures have been implemented:

- After clearing, grading, earth moving, or excavation has been completed, the disturbed areas have been treated by watering, or revegetated.
- During construction, water trucks were used to keep areas of vehicle movement, temporary soil stockpiles, and construction disturbance damp enough to prevent dust from leaving the site.
- The amount of disturbed area was minimized and on site vehicle speeds were reduced to 15 miles per hour or less.

Biological Resources

Mitigation Measure F-1 Impacts on game fishery associated with potential water quality degradation during initial flow releases to the river.

No work has been conducted that would require action for this mitigation measure.

Mitigation Measure RW-1 Impacts on breeding birds during mechanical removal of tules.

Removal of cattail and bulrush obstructions, mechanical removal of cattail and bulrush stands occurred in winter to avoid conflicts with breeding birds. Work after March 15 was conducted after field surveys determined there would be no affect to nesting birds.

Mitigation Measure R-1 Short-term disturbance of desert sink scrub associated with the establishment of temporary access roads during initial channel clearing.

Temporary access roads used to clear the river channel were seeded with native or naturalized grasses and shrubs common to the valley after completion of the de-silting operation to facilitate restoration of vegetative cover and species compatible with the

surrounding vegetation. The colonization by non-native aggressive or noxious weeds will be inhibited by weed control for three years after construction.

Mitigation Measure RW-2 Impacts on wetland and riparian vegetation during mechanical removal of tules.

Impacts to wetland and riparian habitats adjacent to the work area were minimized by making use of existing barren areas for staging, operations, and stockpiling; crushing vegetation in the work area rather than clearing or grading it; and mulching areas denuded during operations with vegetative debris to encourage natural revegetation and discourage noxious weeds.

Cultural Resources

Mitigation Measure CRR-1 Potential disturbance of known archaeological and historic sites during establishment and use of construction-related roads and/or use of construction equipment for the channel clearing work.

LADWP implemented the following management actions to avoid impacts on cultural resources during the channel clearing work:

- LADWP worked with qualified archaeologists to locate the temporary access road for the channel clearing work to avoid the two historic sites identified in the field survey by Far Western (2003).
- Temporary construction fencing was installed along the perimeter of the area where these two historic sites are located to avoid construction equipment, vehicles, or personnel from accidentally entering and disturbing the site.
- Temporary construction fencing was installed between the sediment stockpile area and the adjacent prehistoric site to avoid heavy equipment and or sediment spoil from accidentally entering and disturbing the site.
- Installation of temporary fencing referenced above was conducted under the supervision of a qualified archaeologist.
- LADWP notified representatives of regional Native American Tribes prior to beginning earthwork for the channel clearing work.
- No previously unknown prehistoric or historic cultural material was encountered.

Mitigation Measure CRR-2, Potential impacts on unknown archeological sites or cultural deposits that could be affected by the new flows or earthwork.

No previously unknown prehistoric or historic cultural material was encountered.

Hydrology

Mitigation Measure H-1 Localized overbank flooding that could affect public roads and lease roads that cross the river if floating debris clogs the culverts and bridges, primarily under the seasonal habitat flows.

No work has been conducted that would require action for this mitigation measure.

Pumpback Station and Associated Facilities

Air Quality

Mitigation Measure AQ-1 PM10 (fugitive dust) emissions from ground disturbance during construction of the Pumpback Station.

To minimize dust/ PM_{10} emissions during construction activity, as necessary, one or more of the following measures have been implemented:

- After clearing, grading, earth moving, or excavation has been completed, the disturbed areas have been treated by watering, or revegetated.
- During construction, water trucks were used to keep areas of vehicle movement, temporary soil stockpiles, and construction disturbance damp enough to prevent dust from leaving the site.
- The amount of disturbed area was minimized and on site vehicle speeds were reduced to 15 miles per hour or less.

Mitigation Measure AQ-2 PM10 (fugitive dust) emissions from sediment stockpile at the Pumpback Station site.

LADWP stabilized the sediment stockpile at the Pumpback Station site as necessary to minimize wind-blown dust from the stockpile. The method to reduce fugitive dust emissions was water application.

Biological Resources

Mitigation Measure P-1 Disturbance to upland vegetation from construction of the pump station and associated facilities.

Upland areas disturbed during construction at the Pumpback Station site were regraded to create natural contours that match adjacent topography. These areas were then seeded with native plant species in mid-February 2007. The species included were based on the species removed, and the availability of seeds or plant materials.

Mitigation Measure P-3 Disturbance of upland vegetation during construction of the power line.

The area of temporary disturbance associated with construction of the power line was minimized to the extent feasible by using overland travel to reach pole sites, prohibiting construction of new roads, and minimizing soil disturbance such as scraping or excavation, except where necessary to ensure safe passage or to complete construction.

Mitigation Measure P-4 Potential inadvertent disturbance of a freshwater seep that is located within 100 feet of the proposed power line alignment, about 2000 feet north of U.S. Highway 395 on the margins of Owens Lake.

The small freshwater seep along the power line was avoided during construction by marking its boundary on construction drawings and flagging them in the field prior to construction activities to indicate an environmentally sensitive area to be avoided.

Mitigation Measure P-5 The potential for increase in predation on plovers and other shorebirds from the increase in power poles.

Power poles installed for the LORP Pumpback Station that are located within 0.25 mile of Owens Lake were equipped with anti-predator perches (aluminum combs or other appropriate devices placed on top of poles or other potential perching sites).

Cultural Resources

Mitigation Measure CRP-1 Potential disturbance of unknown cultural resources during construction of the Pumpback Station.

LADWP implemented the following management actions to avoid impacts on cultural resources during construction of the Pumpback Station:

- LADWP notified representatives of regional Native American Tribes prior to beginning earthwork for the Pumpback Station. Interested Tribal representatives shall be invited to participate (on a volunteer basis) in the monitoring of the earthwork.
- A qualified archaeologist has been present during earthwork for the pump station to monitor for and avoid cultural resources. Human remains were encountered during work at the Pumpback Station in June 2006. Representatives from Far Western Archeological and from the local tribe reinterred the remains at a nearby location.

Mitigation Measure CRP-2 Potential disturbance of unknown cultural resources during construction of the power line.

LADWP notified representatives of regional Native American Tribes prior to beginning construction of the power line.

Water Quality

Mitigation Measure P-2 Temporary water quality impacts associated with site disturbance and equipment use during construction of the Pumpback Station.

The Storm Water Pollution Prevention Plan (SWPPP) was prepared under the provisions of the required Construction General Storm Water NPDES Permit and specifically included measures to: (1) prevent erosion from the construction site and from the post-construction site that could cause sedimentation into the river, with a focus on stabilizing the river banks

to prevent sloughing and erosion during the initial river flows and due to water level fluctuations in the forebay; and (2) prevent discharge of construction materials, contaminants, washings, concrete, fuels, and oils into the river from construction equipment and vehicles. These measures included, at a minimum, physical devices to prevent sedimentation and discharges (e.g., silt fencing, hay bales), and routine monitoring of these devices and the conditions of the river downstream of the pump station site.

Blackrock Waterfowl Management Area

Air Quality

Mitigation Measure AQ-1 PM10 (fugitive dust) emissions from ground disturbance during construction of the berms and ditches in Blackrock Waterfowl Management Area.

To minimize dust/ PM_{10} emissions during construction activity, as necessary, one or more of the following measures have been implemented:

- After clearing, grading, earth moving, or excavation has been completed, the disturbed areas have been treated by watering, or revegetated.
- During construction, water trucks were used to keep areas of vehicle movement, temporary soil stockpiles, and construction disturbances damp enough to prevent dust from leaving the site.
- The amount of disturbed area was minimized and on site vehicle speeds were reduced to 15 miles per hour or less.
- Roads throughout the LORP area have been improved and covered with shale to help reduce dust emission.

Biological Resources

Mitigation Measure B-1 Disturbance of upland vegetation during construction of berms and ditches in the Blackrock Waterfowl Management Area.

Temporarily disturbed upland habitats in the Blackrock Waterfowl Management Area have been seeded with native grasses and shrubs common to the valley to facilitate restoration of vegetative cover utilizing species compatible with the surrounding vegetation. The colonization by non-native weeds will be inhibited by weed control for 3 years after construction. During the 2008 growing season tamarisk seedlings were treated and removed.

Cultural Resources

Mitigation Measure B-2 Potential disturbance of known archaeological sites during construction of a ditch in the Blackrock Waterfowl Management Area.

LADWP implemented the following management actions to avoid impacts on cultural resources during construction of the proposed ditch to be located in proximity of the two known prehistoric sites:

- LADWP notified representatives of regional Native American Tribes prior to beginning construction of the proposed ditch to be located in proximity of the two known prehistoric sites. Interested Tribal representatives have been invited to be present (on a volunteer basis) during the construction of the ditch.
- LADWP worked with a qualified archaeologist to locate the proposed ditch to avoid the two known prehistoric sites identified in the field survey by Far Western (2001).
- Temporary protective fencing has been placed between the known prehistoric sites and proposed ditch areas. A qualified archaeologist supervised the placement of temporary protective barriers.
- All vehicles have remained on the road in the vicinity of the known prehistoric sites.
- If construction must occur within 25 feet of these sites, an archaeologist will monitor construction activities.

Land Management Plan

Rangelands

Mitigation Measure LM-1 Potential increase in livestock drift onto public lands.

The work associated with this measure is complete. There has not been an increase in livestock drift onto public lands.

Other Mitigation Measures Associated with the LORP as a Whole

Deleterious Species

Mitigation Measure V-1 Potential increase in the distribution and abundance of perennial pepperweed, Russian knapweed, saltcedar, and other noxious non-native weeds.

LADWP has implemented the following actions to minimize infestations of noxious weeds:

- Construction and other disturbance of substrates have been minimized.
- The use of fire for vegetation management has been minimized.
- Construction equipment was maintained “weed free” by washing and inspecting equipment used in weed-infested areas prior to moving to another site.

- On-site fill materials for construction were used to the extent possible. Off-site fill materials were taken from borrow pits located in areas that are free of noxious weeds.

Mitigation Measure V-2 Potential increase in the distribution and abundance of perennial pepperweed, Russian knapweed, and other noxious non-native weeds (excluding saltcedar).

LADWP is providing $50,000 per year to the Inyo/Mono Agricultural Commissioner (Agricultural Commissioner) to fund the monitoring and control of new infestations of perennial pepperweed and other noxious weeds (excluding saltcedar) in the LORP project area for the first seven years of LORP implementation. In addition, LADWP is providing $150,000 per year for the first seven years to the Agricultural Commissioner to fund the control of existing perennial pepperweed and other noxious weed populations outside of the LORP area that could serve as seed sources for the LORP area. The commitment by LADWP in this effort over the seven-year period is a total of $1,400,000. As of August 28, 2012, LADWP has provided $1,400,000 to the Agricultural Commissioner for this provision, and fulfilled its obligation.

The Agricultural Commissioner has developed protocols for monitoring and controlling infestations based upon past experience and current literature. Based on the protocols, the Agricultural Commissioner will use the funds to identify and treat new infestations of noxious weeds within the LORP area in a timely manner, with priority given to the riparian areas. Existing infestations outside of the LORP area that could serve as seed sources for the LORP area will also be monitored and treated. A Memorandum of Understanding between the Agricultural Commissioner and LADWP will be entered into, and will outline the responsibilities of each agency under the protocols.

Mitigation Measure V-3 Potential increase in the distribution and abundance of saltcedar.

In addition to LADWP's contribution to the existing Inyo County Saltcedar Control Program (Saltcedar Control Program), LADWP will provide funding to Inyo County in order for its Saltcedar Control Program to implement the following measures.

Monitoring and Treatment of New Saltcedar Infestations

Protocols for monitoring and treating new saltcedar infestations in the project area will be developed and implemented by the Saltcedar Control Program in cooperation with LADWP. Several joint meetings were held in 2007-08 to discuss this issue. The protocols will include, but not be limited to, the following:

- Prioritization for monitoring and treatment of areas that are to undergo a change in hydrologic status and that do not have an established cover of native plants.

- Provisions for treating new saltcedar infestations, including protocols for treating saltcedar near rare plant populations.
- Provisions for annual pedestrian monitoring of project areas potentially subject to saltcedar infestations.
- Provisions for annual follow-up treatments of previously treated saltcedar infestations.

Treatment of Saltcedar Seed Sources

If the ongoing Saltcedar Control Program is not able to achieve the priorities for the control of existing saltcedar populations in the LORP area identified in Section 10.4.1.6 of the LORP EIR, the control of existing saltcedar populations will be completed as part of this mitigation measure.

Coordination

In addition to the above, the program will include:

- LADWP will provide to the Saltcedar Control Program reports and data compiled through the LORP monitoring program concerning flows and water levels related to the river baseflow and seasonal habitat flows, releases to the Delta, and water levels at the Off-River Lakes and Ponds and in the Blackrock area.
- LADWP will notify the Saltcedar Control Program of the timing and extent of annual seasonal habitat flows, increased flow releases to Blackrock units, pulse flows to the Delta, and other changes in land management that could cause a new infestation of saltcedar.
- LADWP will provide to the Saltcedar Control Program work products relevant to saltcedar control that are prepared through the LORP monitoring program, such as maps, imagery, etc.

Funding

LADWP will provide matching funds for LORP saltcedar control equal to the amount obtained by Inyo County up to a total of $1.5 million. The intent of this mitigation measure is to suppress increases in saltcedar resulting from LORP implementation. If continuation of the LORP-focused saltcedar control program is required and the matching funds described above are exhausted, funding for the program will be an ongoing post-implementation cost (EIR/EIS Section 2.2.2.2).

Mitigation Measure V-4 Potential increase in the distribution and abundance of noxious weeds and New Zealand mud snails.

LADWP conducted a training program for LADWP and Inyo County personnel, lessees, and their employees working within the LORP area on identification and reporting of noxious weeds, including saltcedar, and New Zealand mud snails. The training was

conducted at all LADWP maintenance facilities in the Owens Valley. The Eastern Sierra Weed Management Area Noxious Weed Identification Handbook was provided to program participants. The instruction detailed how to accurately describe their locations to aid in verification and timely response and identify the agencies to which sightings of the species should be reported. As new personnel are hired or when training is updated, a refresher course will continue to be provided. In addition, photos of relevant deleterious species have been posted in the assembly rooms of appropriate LADWP and Inyo County facilities.

Mitigation Measure V-5 Potential increase in the distribution and abundance of New Zealand mud snails.

Informational materials have been prepared regarding how to identify New Zealand mud snails and notifying recreational users to take precautionary measures to prevent the spread of New Zealand mud snails. Signs have been posted at key access points to the LORP area, such as Mazourka Canyon Road, Manzanar Reward Road, the Pumpback station, and the Delta. Precautionary measures that are described on the signs include: scrubbing and rinsing waders, boots, watercraft, and equipment before leaving the water (using hot water or drying will enhance this measure); disposing of fish entrails in proper trash receptacles; and reporting to the Non-indigenous Aquatic Species Toll Free Hotline if this species is observed.

Mitigation Measure V-6 Potential increase in the distribution and abundance of New Zealand mud snails.

During project construction and maintenance, LADWP has either completely dried construction equipment between use in water infested with New Zealand mud snails and non-infested water or steam cleaned the equipment before use in non-infested water.

Public Health and Safety

Mitigation Measure PS-1 Potential increase in mosquito breeding habitat.

LADWP has entered into an agreement with Owens Valley Mosquito Abatement Program (OVMAP) to abate the potential increase in mosquitoes resulting from the LORP. This mitigation measure is considered an ongoing post-implementation cost which is to be shared equally by the County of Inyo and the LADWP. Mitigation Measure PS-1 has three components:

- Pre-project and post-implementation surveillance, monitoring, and control (to be performed by OVMAP).
- Agency coordination and LORP management adjustments (to be performed by LADWP).
- Public education, program administration, and reporting (to be performed by OVMAP).

OVMAP estimates that the annual cost to fully implement Mitigation Measure PS-1 could be approximately $109,000, depending on the severity of the impact (L. Kirk, pers. comm., December 2003). This is considered an ongoing post-implementation cost that will continue for the life of the project. Post-implementation costs are to be shared equally by LADWP and Inyo County as described in EIR/EIS Section 2.2.2.2. In June 2012, LADWP paid OVMAP $2,211.50 which represents one half of the cost of monitoring and control of mosquitoes resulting from the LORP between the dates of October 1, 2011 and December 31, 2011.

Recreation-Related Impacts

Mitigation Measure RC-1 Impacts on biological resources, grazing operations, cultural resources, existing recreational uses, and roadways from future increase in recreational activities.

LADWP personnel observed and received a complaint regarding access through new LORP related fencing. A field review was conducted on February 22, 2007, by LADWP personnel and concerned citizens. In addition, a public meeting was held on April 4, 2007, in Independence, California to document public concerns about recreation access. Another field review with LADWP and concerned citizens was conducted on April 19, 2007. Walkthrough access was improved as a result of these concerns. Additionally, LADWP staff utilized the information from these meetings to improve recreation access to alleviate the public's concerns.

Mitigation Measure RC-2 Impacts on cultural resources from future increase in recreational activities.

Although no work has been conducted that would require action for this mitigation measure, LADWP has conducted a training program for LADWP and Inyo County personnel working within the LORP on identifying and reporting of cultural resources or potential cultural resources at LADWP or Inyo County facilities in the Owens Valley. Training is offered and provided to new employees on an ongoing basis

7.2 Yellow-billed Cuckoo Annual Report: Progress of Habitat Enhancement at Baker and Hogback Creeks

The *Final Ad Hoc Yellow-billed Cuckoo Habitat Enhancement Plan* (Enhancement Plan) states in Section 2.1.8.3:

> *"Annual reports will be prepared each year by LADWP to summarize the progress of the willow and cottonwood planting and black locust control. The annual reports will include a brief introduction to include the performance standards, monitoring methodologies, monitoring results for the year, and discussion of any adjustments required to achieve the overall goal to improve the habitat."*

Fences
All fencing required by the Enhancement Plan has been completed as of 2011.

Baker Creek Planting
All planting areas within Baker Creek have received their initial plantings and replacement pole plantings based on the first growing season monitoring.

Monitoring by Species
Section 2.1.5.2. of the Enhancement Plan discusses anticipated mortality for cottonwood and willow pole plantings in the first season. This section states:

> "*Replacement of pole cuttings will be implemented when mortality within individual planting areas in the first season for cottonwoods and willow is greater than the following:*
>
> - *Cottonwoods >50 percent*
> - *Willows >20 percent*

Based on the above criteria, 132 of the original 252 Fremont cottonwood (*Populus fremontii,* POFR) and 90 of the original 379 arroyo willow (*Salix lasiolepis,* SALA6) pole plantings were replaced in planting area E in 2013.

Replanting at Baker Creek
Planting areas A, B, C, and F & G, while not required by the plan, were replanted in April 2013. They were replanted to try and achieve the target canopy cover goals by the sixth year following the initial planting. Some pole plantings were planted outside of the Planting Areas A, B, and C and will not be included in the total cover values. If they survive, they will add to the suitable habitat for the Yellow-billed Cuckoo.

- A total of 468 pole plantings were planted in Area A, of which, 120 of the poles were cottonwoods and 348 of the poles were willows.
- A total of 485 pole plantings were planted in Area B. Willows accounted for 334 of the pole plantings and cottonwoods accounted for 151 pole plantings.
- In Area C a total of 73 pole plantings were planted. Seven willow pole plantings and 66 cottonwoods were planted in 2013.
- A total of 55 pole plantings were planted in Area F & G, of which, 44 were cottonwoods and 11 were willows.

As-Built Plans
All new pole plantings in 2013 were noted by species and given an individual identifying number. The pole planting location was recorded with a GPS and downloaded into GIS. As-built plans were displayed over an aerial photo. The as-built plans were provided to the MOU Parties and the lessee in August 2013.

Black Locust Control

This year black locust control was conducted throughout the Baker Creek planting areas E, F & G, and H. Locust control this year consisted only of retreating re-sprouts from previous treatments. Locust control occurred April 1-4, 2013. Cal Fire and LADWP crews used chainsaws and loppers to remove the locust re-sprouts and the cut stumps were immediately sprayed with herbicide.

Planting Area Monitoring

Section 2.1.8.1. of the Enhancement Plan states:

> *"Quantitative monitoring will assess the attainment of final success criteria and identify the need to implement contingency measures in the event of failure. Monitoring will begin in late summer after the second growing season since initial planting to capture the fullest extent of the growing season and after the majority of avian species have finished breeding. Monitoring will continue annually through Year 6 within each planting area or until the success criteria are met."*

Planting criteria as stated in section 2.1.7.1 of the Enhancement Plan reads:

- *Planting areas A, B, C, D, E, and F – Cover of target upper and mid canopy species is at least 50 percent.*
- *Planting areas G and H - Cover of target upper and mid canopy species is equal to 65 percent.*
- *Native species understory cover will be at least 50 percent in all planting areas.*
- *Black locust cover will be no more than five percent in all the planting areas.*
- *Cover of other non-native species in the understory will be less than 25 percent in all planting areas.*

Transects and bearings were randomly located using GIS for each of the planting areas. A total of six transects were generated for area A, eight transects for area B, three transects for area C, 10 transects for area D, 28 transects for area E, 10 transects for area F & G, and 12 transects for area H. Transects within these areas were sampled from August 22-28, 2013. 2013 was the third year that line point sampling was conducted for planting areas A, B, F & G, the second year for planting areas C, D, and H, and the first year for planting area E. Using line point data, absolute cover values were then calculated for each planting area and are summarized in Table 1.

Table 1. Percent Absolute Cover Values for 2011-2013 within Planting Areas A, B, C, D, E, F & G, and H.

		Planting Area A	Planting Area B	Planting Area C	Planting Area D	Planting Area E	Criteria for Areas A,B,C,D	Planting Area F&G	Planting Area H	Criteria for Area F&G, H
Upper Canopy Native	2011	T	1	-	-	-		4	-	
	2012	T	T	3	T	-		3	7	
	2013	0	T	10	3	7		9	8	
Upper Canopy Non-Native	2011	0*	0*	-	-	-	<5	1*	-	<5
	2012	0*	0*	0*	0*	-		3*	1*	
	2013	0*	0*	0*	0*	6		1*	T*	
Mid Canopy	2011	51	25	-	-	-		23	-	
	2012	62	17	10	45	-		30	35	
	2013	48	27	16	49	8		34	37	
Upper & Mid Canopy	2011	51*	27	-	-	-	≥50	26	-	≥65
	2012	62*	17	13	45	-		33	42	
	2013	48	27	26	52*	15		43	45	
Understory Native	2011	37	64*	-	-	-	≥50	53*	-	≥50
	2012	30	67*	69*	35	-		39	42	
	2013	27	52*	37	22	21		33	34	
Understory Non-Native	2011	1*	7*	-	-	-	<25	12*	-	<25
	2012	T*	10*	13*	3*	-		7*	6*	
	2013	3*	9*	32	T*	7*		8*	9*	

** Has met criteria as stated above.*
T = Trace <1%

In 2013, upper and mid canopy cover in planting area A was 48%, which was 14% lower than 2012 cover value of 62% and 3% lower than the 2011 cover value of 51%. Area A met the enhancement plan criterion in both 2011 and 2012. Native understory cover values also decreased for the third year in a row from 37% in 2011, to 30% in 2012, to 27% in 2013. Both the non-native canopy cover and understory values were below the criteria stated in the enhancement plan.

The decrease in upper and mid canopy cover in area A in 2013 is most likely attributable to two factors. The first factor, mainly affecting the mid canopy cover value, but ultimately the total upper and mid cover value was the mowing of lines through two thickets of *Salix exigua* to open up areas to replant with willows and cottonwoods. Using the same methods as 2010, lines were mowed in early April 2013 and have not fully regrown by the time line point was run in late August. The second factor explaining the decrease in canopy cover as well as understory cover is the area is experiencing two consecutive dry years starting in 2011-2012 and continuing with 2012-2013. This two year drought is likely causing the depth to groundwater to increase and potentially stressing/killing the pole planting, the existing willows, and the understory. As of March 2014, a third consecutive dry year is anticipated.

Planting area B had an increase in upper and mid canopy cover from the 2012 cover value of 17% to 27% in 2013 (same as the 2011 cover value). Native understory cover values decreased from 67% in 2012 to 52% in 2013. However, both values meet the 50% criterion stated in the enhancement plan. Like area A, both the non-native canopy cover and understory values have also met the criteria stated in the enhancement plan.

Area B is located just upslope from a fault that runs through the area. Area B has less than one percent upper canopy cover and only 27% mid canopy cover. The mid canopy cover component is mainly made up of SAEX thickets that have not grown in size since the implementation of the project and have only had minimal understory cover.

Upper and mid canopy cover increased in Area C from the 2012's value of 13% to the 2013's cover value of 26%. Native understory decreased from 69% in 2012 which was above enhancement plan criteria to 37% in 2013. While non-native canopy cover remained at 0% in 2013, the non-native understory cover jumped from 13% in 2012 to 32% in 2013.

The increase in non-native understory cover is due to Canada thistle taking over roughly half of the western planting polygon, which contains two of the three line point transects (Figures 1 & 2). This increase in the non-native understory explains the decrease in the native understory values. The thistle will be sprayed with herbicide in 2014 to try and control the spread and hopefully eradicate this non-native species from the planting area.

Figure 1. Area C, transect number one, Canada thistle dominates understory.

Figure 2. Area C, transect number two, Canada thistle dominates understory.

Area D increased from 45% upper and mid canopy cover in 2012 to 52% in 2013. At 52% upper and mid canopy cover in area D met the criterion stated in the enhancement plan. Area D has also met the criterion of non-native canopy cover with 0% cover. This year the native understory decreased by 13% to a total cover value of 22%. Non-native understory cover values in 2013 decreased from 3% in 2012 to less than 1%, which is well below the 25% criterion value stated in the plan.

As stated in last year's report and above, it was discussed that the shading by the upper and mid canopy could lead to a decrease in understory cover values. Area D is a prime example of the canopy shading the understory as the canopy matures (Figure 3).

Figure 3. Area D, transect number four, mid to upper canopy shading the understory.

Area E had an upper and mid canopy cover value of 15% in 2013. Non-native canopy cover values in 2013 exceeded the criterion stated in the plan with a cover value of 6%. The native understory cover values in 2013 was 21% which is 29% below the target cover value specified in the plan. The non-native understory cover in 2013 was 7%, well below the 25% criterion.

While locust re-sprouts were treated in the winter/spring of 2014, there are still stands of mature locust that will not be removed. In last year's annual report it was recommended that LADWP should wait another year before removing mature black locust located in dryer areas of area E so that they could be replaced with pole plantings. LADWP determined that due to the drought and the depth to groundwater, removal of the locust cover was not advised under the current conditions because they may not be able to successfully be replaced with willows and cottonwoods.

In 2013, Area F & G had an upper and mid canopy cover value of 43%, an increase of 10% from 2012 and a 17% increase from the 2011 cover value. Non-native canopy cover value in 2013 was 1% and was a decrease from the 2012 cover value of 3%. Native understory cover has decreased every year since 2011. The 2013 cover value was 33%, a 6% decrease from the 2012 value and a 20% decrease from the 2011 value. Like area D, planting area F & G's decrease in understory cover is most likely due to shading from the increasing canopy cover. Non-native understory in 2013 increased 1% from the 2012 cover value of 7%, yet is still lower than the 2011 value of 12%.

Area H had a 3% increase in upper and mid canopy cover in 2013 from the 2012 value of 42%. Non-native canopy cover decreased from 1% in 2012 to less that 1% in 2013. Native understory decreased from 42% in 2012 to 34% in 2013. Again, shading is the most likely cause for this reduction in understory cover and should continue to decrease as the canopy matures. Non-native understory cover has increased from the 6% in 2012 to 9% in 2013

Activities Scheduled for 2014

Non-native Species Control

Black locust control will continue in planting areas E, F & G, and H during the winter of 2014-2015 to control re-sprouts if needed. Thistle control in and around planting area C will begin using herbicide.

Planting of Pole Cuttings

Besides replanting area E, all other planting areas will be reevaluated for further replacement plantings to help achieve cover goals. A source of Black cottonwood (*Populus balsamifera trichocarpa*) was discovered in 2012 and will be used to supply cuttings for Area A.

Pole cuttings will be harvested during the winter planted when conditions permit in the spring.

7.3 Mitigation Monitoring and Reporting Program - Final Ad Hoc Yellow-Billed Cuckoo Habitat Enhancement Plan Initial Environmental Study

Final Ad Hoc Yellow-Billed Cuckoo Habitat Enhancement Plan
Initial Environmental Study/Mitigated Negative Declaration
SCH# 2009101098

Introduction

This Mitigation Monitoring and Reporting Program (MMRP) has been developed to ensure implementation of the mitigation measures outlined in the Initial Environmental Study/Mitigated Negative Declaration (IES/MND) for the Final Ad Hoc Yellow-Billed Cuckoo (YBC) Habitat Enhancement Plan (State Clearinghouse No. 2009101098). The MMRP has been prepared by the City of Los Angeles Department of Water and Power (LADWP), the lead agency for the Final Ad Hoc YBC Habitat Enhancement Plan under the California Environmental Quality Act (CEQA), in conformance with Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097. Adoption of a MMRP is required for projects in which the Lead Agency has required changes or adopted mitigation to avoid significant environmental effects.

Project Description Summary

The 1997 Memorandum of Understanding (MOU) among LADWP, Inyo County, the Owens Valley Committee (OVC), Carla Scheidlinger, the Sierra Club, the California Department of Fish and Game (CDFG), and the California State Lands Commission (SLC) outlines the requirement for an evaluation of YBC habitat at Baker and Hogback Creeks. The Final Ad Hoc YBC Habitat Enhancement Plan was developed to maintain and/or improve conditions for YBC at Baker and Hogback Creeks. Under the proposed Project, habitat conditions would be maintained and/or improved at each site through the implementation of project actions such as planting of native riparian vegetation, alteration of grazing practices, amended recreation policies, and altered trails.

Mitigation Monitoring and Reporting Responsibility

LADWP shall have primary responsibility for administrating the MMRP activities to staff, consultants, or contractors. LADWP has the responsibility of ensuring that monitoring is documented through periodic reports and that deficiencies are promptly corrected. LADWP's designated environmental monitor will track and document compliance with mitigation measures, note any problems that may result, and take appropriate action to remedy problems. Specific responsibilities of LADWP include:

- Coordination of all mitigation monitoring activities
- Management of the preparation, approval, and filing of monitoring or permit compliance reports
- Maintenance of records concerning the status of all approved mitigation measures
- Coordination with MOU Parties and other agencies

Resolution of Non-compliance Complaints

LADWP will act as the contact for interested parties who wish to register comments or complaints. Any person or agency may file a complaint that states non-compliance with the mitigation measures that were adopted as part of the approval process for the Final Ad Hoc YBC Habitat Enhancement Plan. The complaint shall be directed to the LADWP (111 North Hope Street, Room 1044, Los Angeles, California 90012) in written form providing detailed information on the purported violation. The LADWP shall conduct an investigation and determine the validity of the complaint. If non-compliance with a mitigation measure is verified, the LADWP shall take the necessary action(s) to remedy the violation. The complaint shall receive written confirmation indicating the results of the investigation or the final corrective action that was implemented to respond to the specific non-compliance issue.

Mitigation Monitoring and Reporting Plan Matrix

The MMRP is organized in a matrix format and includes: mitigation measure by number, text of the mitigation measures, time frame for monitoring, agency responsible (in this case, LADWP), and space to indicate verification the measures were implemented. This last column will be used by LADWP to document the person who verified the implementation of the mitigation measure, the date on which this verification occurred, and any other notable remarks.

Table 28. Mitigation Monitoring and Reporting Program for the YBC Enhancement Plan

Biological Resources						
No.	**Impact**	**Mitigation Measure**	**Time Frame**	**Responsible Monitoring Agency**	**Verification of Compliance**	
BIO-1	Fence installation, plantings, and exotics removal could disturb sensitive plant species, if any are present in the specific locations to be disturbed for project implementation.	• Areas of Owens Valley checkerbloom, Inyo County star-tulip, or other sensitive plant species will be flagged and access restricted during earth disturbing activities (vehicle travel, mowing, fence post installation, planting, herbicide use, and/or tree removal) to prevent impacts to rare plant species. • Work within areas known for sensitive plants will be done by hand, including pounding fence posts by hand. Vehicles and larger construction equipment will be excluded from areas containing rare plant populations.	Prior to and during construction During construction	LADWP	2011	Areas with sensitive plants were avoided during project implementation in 2011.
BIO-2	Vehicle travel outside of established roads, fence installation, pole plantings, and tree removal could disturb riparian plant communities.	• Installation of fencing, plantings, and exotics removal will be done under the supervision of LADWP biologists.	During construction	LADWP	2011	Access maps were developed by a LADWP biologist that designated access on established roads and parking areas outside the project area to protect riparian areas
Cultural Resources						
CUL-1	Fence installation, brush mowing, planting, and tree removal have the potential to disturb surface and subsurface archaeological materials at the project sites.	• If ground disturbances are proposed within the boundaries of, or in close proximity to, any of the previously recorded archaeological sites (BC-1 through BC-22 and HB-1 through HB-11; as described in Bevill and Nilsson, 2006), or newly recorded archaeological sites (BC-09-01 through BC -09-05 and HB 09-01 through HB-09-03; as described in Reid and	Prior to construction During construction	LADWP	2011	All implementation areas were surveyed by an archaeologist and buffer areas were flagged around resources prior to any work. All buffer areas were avoided during project implementation. All employees received training specified in this

		Denardo, 2009) a qualified archaeologist shall delineate a 50-foot buffer, using flagging tape, around each archaeological site where ground disturbances are proposed prior to the start of Project construction.	During construction			
		• Mowing, minor vegetation removal, planting, and fence installation within the flagged buffer zones shall be monitored by an archaeologist.	During construction			
		• Black locust trees located within the flagged buffer zone areas shall be treated with herbicide and left in place.	Prior to construction			
		• If more extensive ground disturbances (including, but not limited to, tree removal or grading) become necessary within the flagged buffer zones, further archaeological investigations, which may include evaluation, testing and data recovery, will be required prior to implementation of those actions.				
		• If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist.				
		• Prior to the start of construction, construction personnel shall be trained regarding the possibility of				

		encountering previously unidentified or buried cultural materials, including both prehistoric and historic resources, during construction. Prior to the initiation of construction or ground-disturbing activities, the project proponent should complete training by a qualified archaeologist for construction personnel. Worker education will focus on the rationale for cultural resources monitoring; regulatory policies protecting resources - a discussion of applicable laws and penalties under the law; a basic identification of cultural resources; and the protocol to follow in case of discovery, including Native American burials.				
Cul-2	Fence installation, tree removal, and plantings have the potential to disturb fossiliferous older dissected alluvial fan and lakebed deposits and younger alluvial fan deposits.	• Prior to the start of construction, a qualified paleontologist will conduct training for construction personnel to review the procedures to be followed upon the discovery of paleontological materials. Worker education will focus on the rationale for paleontological resources monitoring; regulatory policies protecting resources - a discussion of applicable laws and penalties under the law; a basic identification of fossils; and the protocol to follow in case of discovery.	Prior to construction	LADWP	Jan.-2011	All employees received training specified in this mitigation measure.
CUL-3	Fence installation, tree removal and plantings have the potential (unlikely) to disturb human remains.	• In the unexpected event that human remains are discovered, the Inyo County Coroner would be contacted, the area of the find would be protected, and provisions of State CEQA Guidelines Section 15064.5 would be followed.	During construction	LADWP	2011	No human remains were discovered.

7.4 Additional Mitigation Projects Developed by the MOU Ad Hoc Group

Introduction

Section III.A.3. Additional Mitigation of the 1997 MOU describes LADWP's commitment to supply 1,600 acre feet (AF) of water per year for (1) the implementation of the on-site mitigation measure at Hines Spring identified in the 1991 EIR, and (2) the implementation of on and/or off-site mitigation in addition to that identified in the1991 EIR for impacts that occurred at Fish Springs, Big and Little Blackrock Springs, and Big and Little Seely Springs. The Second Amendment of Amended Stipulation and Order Case No. S1CVCV01-29768 was executed on March 8, 2010, by the Superior Court of California, Inyo County. This order accepts the eight projects described in the *Additional Mitigation Projects Developed by the MOU Ad Hoc Group* (Additional Mitigation Projects) document as mitigation for impacts identified above and establishes a two year timeline for their implementation. The projects are named according to their locations: Freeman Creek, Warren Lake, Hines Spring Well 355, Hines Spring Aberdeen Ditch, North of Mazourka Canyon Road, Homestead, Well 368, and Diaz Lake.

CEQA Process for the Additional Mitigation Projects

In accordance with CEQA, LADWP completed an Initial Study for the Additional Mitigation Projects and prepared a Mitigated Negative Declaration (MND). The document was released on March 23, 2010, to 52 public agencies and other interested parties for a 30-day review period; the review period ended April 26, 2010. After review of the comments received and based on the information in the Initial Study, LADWP determined that with adoption of mitigation measures, implementation of the Additional Mitigation Projects would not have a significant impact on the environment. The final MND, Mitigation Monitoring and Reporting Program (Section 7.2.3), and proposed implementation schedule were approved by the City of Los Angeles Board of Water and Power Commissioners (Board) on June 1, 2010. A Notice of Determination was filed with the Inyo County Clerk on June 2, 2010. LADWP began implementing the projects shortly thereafter and implemented all eight Additional Mitigation Projects by March 8, 2012 as specified in the Stipulation and Order.

Monitoring and Reporting per the Additional Mitigation Projects Document

The Additional Mitigation Projects document defines a five year monitoring framework for the projects that includes flow monitoring, rapid assessment surveys, photo point monitoring, and mapping requirements. Table XX shows flow data recorded for each of the Additional Mitigation Projects from April 1, 2013, through March 31, 2014. Additionally, from July 22-24, 2013 LADWP conducted photo point monitoring, woody recruitment surveys and assessment of fence condition (where applicable) and has generated recommendations for the projects where necessary. Inyo County Water Department (ICWD) mapped the flooded and vegetated extent of each project in July 2013. The Diaz Lake project has a continued water supply for an existing project and

no changes in vegetation were expected. Therefore, no map was completed for that project.

ICWD mapped the wetted extent for each project by walking 1 meter outside of the wetted perimeter using a Garmin GPSmap 76CSx GPS unit in NAD83. Field work for wetted extent was completed on March 13, 2014 (Warren Lake) and July 8-10, 2013 (remaining projects). After downloading raw line files, polygons of the wetted areas were digitized in ArcGIS, and a one meter buffer was added. Vegetation was mapped within a liberal area surrounding the wetted perimeter because there are no fixed boundaries for each Mitigation Project. Polygons of similar vegetation cover and composition were delineated based on visible boundaries between vegetation types identified in the field. General habitat types were mapped as: wetland (based on vegetation community only; not necessarily jurisdictional), meadow, shrub meadow, phreatophytic shrub, xeric scrub, and miscellaneous areas noted as barren and disturbed. Each general habitat type was subdivided into vegetation types where differences in composition could be delineated in the field. This additional detail may be beneficial for tracking the evolution of specific plant populations following project implementation. However, for the purpose of this report, only general habitat types have been mapped for the vegetated extent of each project. Therefore, some polygons depicted within each of the general habitat types are representative of sub-habitat types. The species lists and composition for each of these sub-habitat types for each project are listed in Appendix 1.

Species for each project in Appendix 1 are listed by sub-habitat types in order of dominance. Meadow vegetation types ranged from areas dominated by grasses with few shrubs or woody species to shrub meadows with a relatively high proportion of shrub or woody species, similar to units defined in the Green Book. Scrub habitats were composed of more than 80% of shrub species. The woodland habitats are dominated by woody riparian species. Wetland habitats include open water, standing vegetation in ponded areas, and areas dominated by a variety of marsh species.

Meadow:

- Alkali Meadow - meadow with a low proportion of shrub species and a mixture of meadow species. No particular grass or forb species was predominant. This category was subdivided where possible into the categories below.
    - Alkali Meadow, flooded – seasonally wet meadow with no shrubs and a mixture of meadow species
    - Alkali Meadow, sparse - open meadow with a low proportion of shrub species and a mixture of meadow species. Cover below approximately 20%
    - Alkali Meadow with dead shrubs - meadow with diverse mix of standing dead shrubs
    - Saltgrass Meadow - nearly a monoculture of saltgrass along with minor amounts of other meadow species
        - Saltgrass Meadow with dead shrubs - nearly a monoculture of saltgrass with dead standing shrubs

        - Saltgrass/Rush Meadow - meadow with a high proportion of saltgrass and rushes
    - Alkali Sacaton Meadow, sparse - nearly a monoculture of sparse alkali sacaton
    - Anemopsis Meadow - meadow with a high proportion of *Anemopsis californica*,
    - Weedy Alkali Meadow - meadow with a high proportion of weedy species
    - Glycyrhiza Meadow - meadow with a high proportion of *Glycyrhiza*
- Rush/Sedge Meadow - meadow with a high proportion of rushes & sedges
- Wild Rye Meadow - meadow with a high proportion of creeping wild rye and some weedy species

Shrub Meadow: areas of shrubs with a grass understory

- Alkali Meadow with shrubs - alkali meadow with equal proportions of grasses and a mixture of greasewood, rabbitbrush, and Nevada saltbush
- Rabbitbrush Meadow - meadow with a high proportion of rabbitbrush
    - Dead Rabbitbrush Meadow - meadow with a high proportion of dead standing rabbitbrush
    - Dry Rabbitbrush Meadow - open meadow with a high proportion of rabbitbrush (Warren Lake only)
- Greasewood Meadow - meadow with a high proportion of greasewood
- Nevada Saltbush Meadow - meadow with a high proportion of Nevada saltbush
- Sagebrush Meadow - meadow with a high proportion of sagebrush
- Willow/Saltgrass/Alkali Sacaton - meadow consisting of coyote willow, saltgrass & alkali sacaton with few other species

Xeric Scrub: areas of shrubs with little grass

- Blackbrush Scrub - shrub habitat with a high proportion of blackbrush
- Dalea Scrub - Nearly a monoculture of dotted dalea
- Four-winged Saltbush Scrub - Shrub habitat with a high proportion of four-winged saltbush
- Greasewood Scrub - Shrub habitat with a high proportion of greasewood
    - Greasewood/Shadscale Scrub - shrub habitat with an equal proportion of greasewood and shadscale
- Shadscale Scrub - shrub habitat with a high proportion of Shadscale
- Mojave Mixed Scrub - Mojave shrub habitat with approximately equal proportions of species
- Cottonwood/Sagebrush - open habitat with equal proportions of cottonwood & sagebrush interspersed with other species
- Sagebrush Scrub - shrub habitat with a high proportion of sagebrush along with other xeric adapted species and few annual species where water has been spread
- Sagebrush & Weeds - disturbed sagebrush scrub with many exotic and native weeds

- Mixed Xeric Scrub - shrub habitat with several species of shrubs adapted to very deep water tables, few grasses

Phreatophytic Shrub Habitat:

- Allenrolfia Scrub - shrub habitat with a high proportion of *Allenrolfia*
- Cottonwood Tree – patch or individual *Populus fremontii*
- Cottonwood, Willow & Mesquite - woodland of mixed tree species
- Desert Olive - patch or individual *Forestiera pubescens*
- Greasewood Scrub - Shrub habitat with a high proportion of greasewood
    - Greasewood/Parry Saltbush Scrub - shrub habitat with an equal proportion of greasewood and Parry saltbush
- Nevada Saltbush Scrub - shrub habitat with a high proportion of Nevada saltbush. Other groundwater dependent shrubs also present.
- Parry Saltbush Scrub - shrub dominated habitat with a high proportion of Parry saltbush
- Rabbitbrush Scrub - shrub dominated habitat with a high proportion of rabbitbrush. Other groundwater dependent shrubs also present.
- Riparian Woodland - woodland habitat adjacent to creek with a high proportion of woody riparian species along with riparian forbs and graminoides
- Rose Patch - stand of *Rosa woodsii*
- Screwbean Mesquite – stand of *Prosopis pubescens*
- Willow Tree - individuals or patch of tree willows
- Willow Tree & Desert Olive - mix of tree willow species and desert olive
- Willow Scrub – stand of willow
- Wash – variety of groundwater dependent species ranging from woody riparian to annuals

Wetland Habitat:

- Pond - open water
- Dried Pond - pond bottom with species from adjacent habitats
- Bullrush - wetland habitat with a dominant proportion of Bullrush
- Phragmites - wetland habitat with a dominant proportion of *Phragmites*
- Cattail - wetland habitat with a high proportion of cattail species
    - Cattail, dry - wetland habitat with a high proportion of cattail species without ponded water
- Ditch - wet conveyance with various wetland adapted species
    - Dry Ditch - formerly used conveyance with species similar to adjacent habitats and some wetland species
- Tule/Cattail - wetland habitat with a mix of tule and cattail species
    - Tule/Cattail, dry - wetland habitat with mix of tule and cattail species, but with no ponded water
- Tule/Cattail/Saltgrass – transition between wetland and saltgrass meadow

Miscellaneous areas: Disturbed or Barren where noted

- Alkali Heliotrope Stand - previously disturbed area dominated by alkali heliotrope
- Barren - previously impacted area with little or no perennial vegetation, few species and in very low numbers
- Berm – previously constructed berm with sparse vegetation
- Cleared – unvegetated. Vegetation removed apparently for slash disposal in the Freeman creek project.
- Dead - dead standing vegetation on flooded edge of south ponds at the Homestead project
- Dead Bassia – stand of dead bassia, unvegetated
- Disturbed – construction disturbance that has sparse vegetation
- Feed Supplement Site - unvegetated
- Fence Clearing - disturbed area cleared for installation of fences; species composition similar to adjacent habitat
- Old saltcedar, cut – areas of cut tamarisk with a mixture of species at the Homestead project.
- Playa – unvegetated
- Pullout/Staging Area – unvegetated vehicle parking area
- Road - unvegetated
- Slash Pile - unvegetated
- Weeds – patch of live exotic and native weeds in a disturbed area.

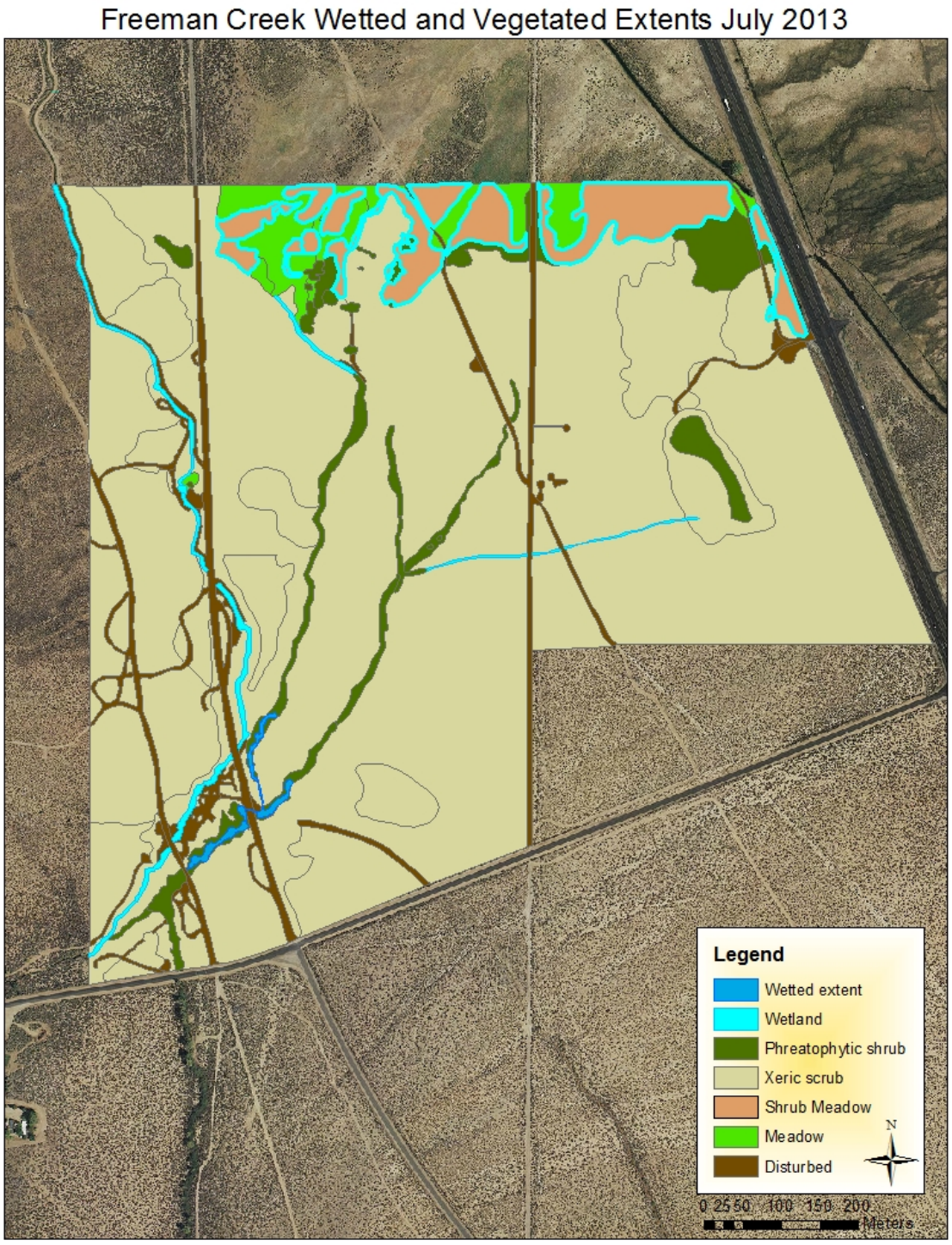
Table XX. Additional Mitigation Projects Developed by the MOU Ad Hoc Group, Annual Accounting in Acre Feet (April 1, 2013-March 31, 2014)

Additional Mitigation Projects Developed by the MOU Ad Hoc Group
Annual Accounting in Acre Feet (April 1, 2013-March 31, 2014)

2013-2014	Freeman Creek (*Average**) (2054)	Warren Lake (2173)	Hines Well 355 (W355)	Aberdeen Ditch (400)	North of Mazourka (F418)	North of Mazourka (404)	Homestead T775 (F421)	Homestead Well (F419)	Well 368 (F420)	Diaz Lake (86)	Total
April	20	0	21	12	9	2	6	18	11	0	99
May	19	0	21	11	8	7	6	17	10	116	215
June	14	0	18	11	8	6	7	16	10	0	90
July	13	0	21	10	8	6	7	17	10	50	142
August	10	0	21	12	9	7	6	18	10	0	93
September	13	12	20	11	8	6	7	17	10	0	104
October	22	93	20	13	8	7	6	18	10	0	197
November	22	22	20	11	8	6	6	18	10	74	197
December	23	0	20	8	10	5	5	11	11	0	93
January	23	0	20	6	11	8	6	0	11	0	85
February	18	93	17	0	10	7	6	15	10	0	176
March	18	45	16	0	11	8	6	19	11	0	134
Total					*108*	*75*	*74*	*184*			*1625*
Project Total	*215*	*265*	*235*	*105*	*183*		*258*		*124*	*240*	

**Freeman Creek will be recorded as 215 AF/year based on long term average regardless of varying flow reads.*

Freeman Creek



Flow Monitoring: The annual water allotment for this project is 215 AF/year, which was based on long term averages for Freeman Creek. This year, LADWP recorded 213 AF of water being used for the project during the 2013-2014 water year.

Photo Point Monitoring: Photo points were established in April 2011 and were recaptured at the peak of the growing season in 2012 and 2013. These photos can be made available upon request.

Woody Recruitment: Three new saltcedar plants (*Tamarix ramosissima)* were observed along the upper reach of dry wash two. Eradication methods will be implemented and monitoring for resprouts will continue. Healthy narrowleaf willow (*Salix exigua)* seedlings are emerging at the culvert along powerline road. Along dry wash one, 4 Fremont cottonwood (*Populus fremontii*) and 13 narrowleaf willow seedlings were observed. The Fremont cottonwood seedlings observed in dry wash two in 2012 are alive and healthy. Additional seedling recruitment was noted along dry wash two including 18 Fremont cottonwoods and a combination of 43 red and narrowleaf willows. Some of these seedlings were captured in new photo points so that survivability can continue to be assessed in the future.

Freeman Creek Dry Wash Two depicting willow and cottonwood recruitment, July 2013

Some narrowleaf willows along the culvert and powerline road appear to be stressed, possibly by a rust fungus or similar type of fungal disease. These stressed willows are exhibiting dark spotting along their leaf margins, which is typical of a rust coating holding fungal spores. However, new growth is emerging, and appears to be unaffected at this time. If these willows are exhibiting a rust fungus, rust spores are typically carried through water or wind and can infect trees up to several miles away. This dark spotting leaf condition has been noted on willows at several locations in the Owens Valley.

Along Freeman creek there is a section of red willows and a Fremont cottonwood that have died back. The cause of this die-back is unknown; however, new healthy sprouts are beginning to emerge out of the trunks of these individuals (refer to photo below).

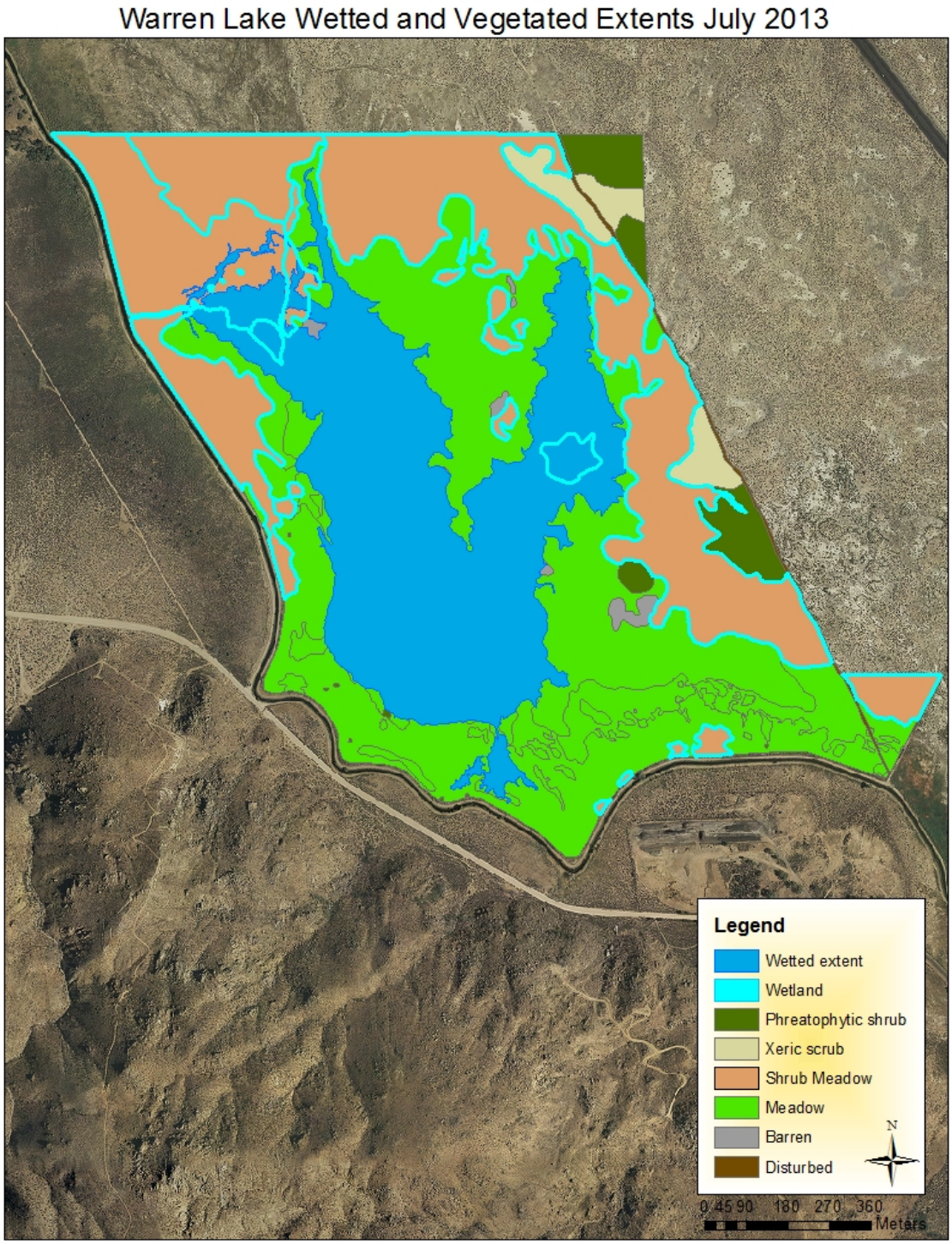
Freeman Creek willow die-back showing new emerging sprouts
July, 2013

Fence Condition: Not applicable.

Recommendations: Despite the below average water year, flows were much in line with long term averages. LADWP has acquired a new metering device which will be installed in 2014 at the flume to automate data collection and verify the volume of water that is going to the project.

The health of the narrowleaf willows will be monitored at the project site to determine the cause for stress if possible (i.e., rust fungus, disease, etc.). If rust is the cause of willow stress and continues to infect leaves and begins to inhibit new growth during the growing season, chemical control methods may be implemented to reduce infection. No additional planting or seeding is necessary at this time, as recruitment of desirable species is naturally occurring. Monitoring for saltcedar seedlings and resprouts will continue and will be removed from the project site as resources are available.

Warren Lake



Flow Monitoring: LADWP released water to Warren Lake from September-November and February–March to fulfill the remaining balance of the 1600 AF water commitment. The total volume of water that was released to the project was 265 AF.

Photo Point Monitoring: Photo points were established in April 2011 and were recaptured at the peak of the growing season in 2012 and 2013 (see photo below). These photos can be made available upon request.

Warren Lake July 2013

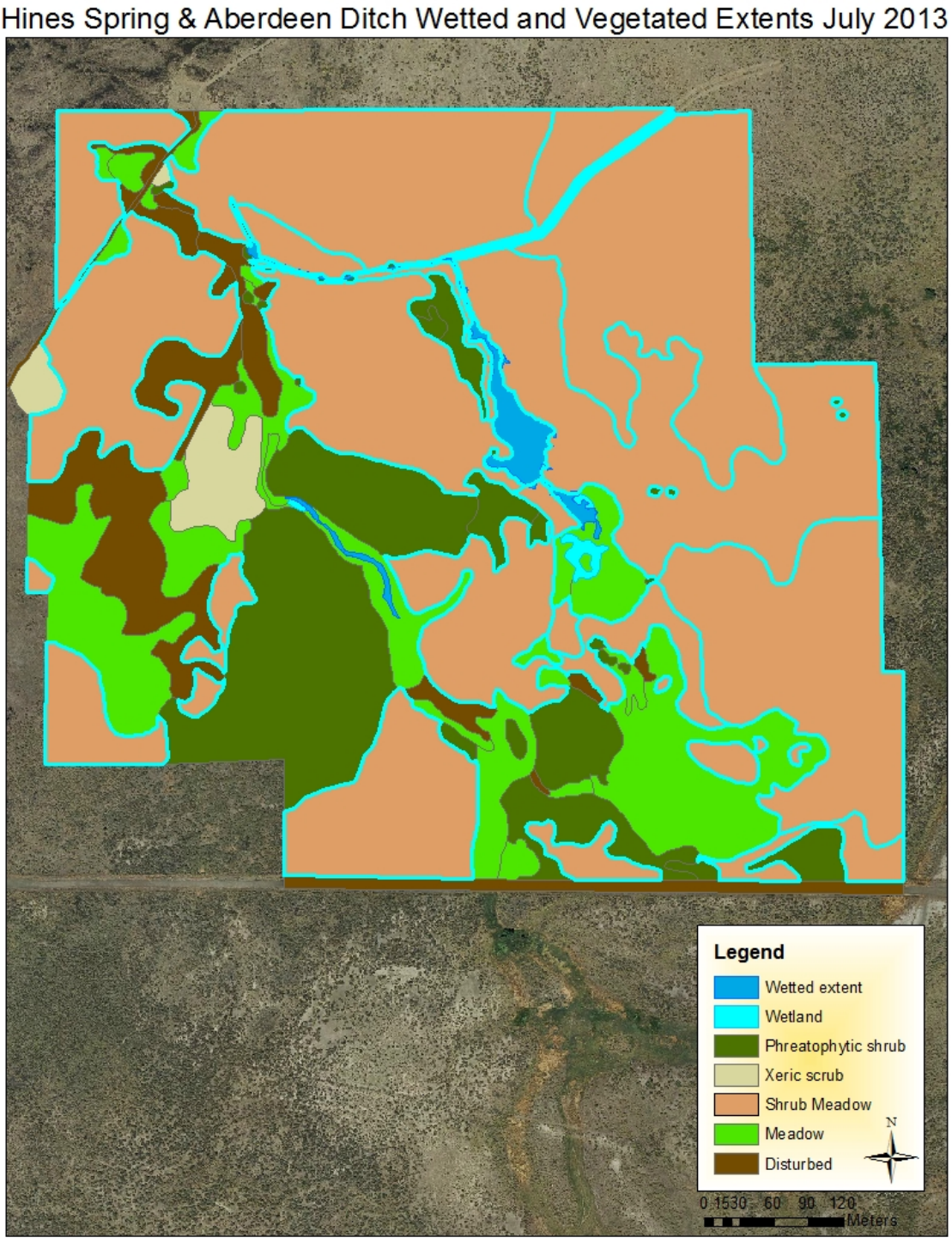
Woody Recruitment: There are three new Fremont cottonwood saplings along the floodplain of Warren Lake west from the canal.

Fence Condition: Not applicable.

Recommendations: The project is operating as necessary. In 2013 a permanent structure was recommended for construction in the Big Pine canal in order to improve efficiency of water release into Warren Lake to balance out the remainder of the 1600 AF mitigation commitment when needed. In February 2014, LADWP crews constructed a check wall structure in the Big Pine canal to improve the facilitation of flows into Warren Lake. This structure replaced the concrete blocks that were previously used to back up flows into Warren Lake that were causing significant erosion to occur along the banks of the canal.

Saltcedar and pepperweed (*Lepidium latifolium*) were not observed in July 2013 but will be removed from the project site as needed.

Hines Spring Well 355



Hines spring is depicted as the wetted extent in the uppermost portion of the map while Aberdeen ditch is depicted as the wetted extent in the lower portion of the map.

Flow Monitoring: The annual water allotment for this project is 240 AF/year. LADWP released 235 AF to this project during the 2013-2014 water year.

Photo Point Monitoring: Photo points were established in March 2012 and were recaptured at the peak of the growing season in 2012 and 2013. These photos can be made available upon request.

The flooded extent varies greatly from winter to summer based on evapotranspiration. Fivehorn smotherweed (*Bassia hyssopifolia*) is encroaching upon the northern end of the pipe outfall; conversely, it is dying back at the southern end. Cattail (*Typha latifolia)* encroachment has increased in the southern end.

Woody Recruitment: Willow seedlings are growing near the pipe outfall. Additionally, an abundant recruitment of desirable non-woody species is occurring throughout the project area (refer to Appendix 1). Alkali sacaton (*Sporobolus airoides*), for example, was observed growing up to 6 feet tall along the ditch bank and saltgrass (*Distichlis spicata*) was observed growing up to two feet tall.

Hines Spring Ditch below pipe outfall, July 2013

Fence Condition: The fence around Well 355 is in good condition. Under the Additional Mitigation Projects document, LADWP was to construct a fence around the Hines Well 355 and Aberdeen Ditch Projects within one year post implementation. Last year, LADWP requested a one-year time extension until March 2014 to allow project conditions to become more static and to more effectively manage these adjacent projects in the Hines Spring area. LADWP has generated a design for a fence exclosure around a ponded portion of Hines Spring that will exclude horse grazing but will allow elk and deer passage. This exclosure will be constructed in Spring 2014.

Recommendations:

No additional planting or seeding is necessary at this time, as recruitment of desirable species is vigorous, healthy, and diverse at the project site (particularly non-woody species). The ditch downstream of the pipe outfall was redirected to the east to prevent drowning the large willow located directly south of the outfall. The fenced exclosure will be monitored to examine the potential effects of grazing in response to vegetation recruitment and will also be monitored to determine what type of grazing effect elk (see photo below) and deer utilizing the area will have on vegetation recruitment.

Elk utilizing Hines Spring ponds, February 2014

Hines Spring Aberdeen Ditch

Refer to Hines Spring map above for wetted and vegetated extent

Flow Monitoring: The annual water allotment for this project is 145 AF/year. Due to consecutive drought years and competing uses, LADWP was only able to release105 AF to this project during the 2012-2013 water year. Two unanticipated sinkholes were discovered in the spring channel in 2012. As a result, LADWP extended the pipe down the channel into a different soil type and monitored the new pipe outfall location. There was approximately 114 meters of surface flow with healthy desirable non-woody vegetation growth from the new pipe outfall location downstream during the summer of 2013 (see photos below). By fall 2013 a new sinkhole was discovered and due to severe drought conditions and lack of available surface water to supply to the project, the Aberdeen ditch flows were dry in February 2014.

Extended pipe outfall (above) and extent of surface water and desirable non-woody vegetation from pipe outfall (below), July 2013

Photo Point Monitoring: Photo points were established in March 2011 and were recaptured at the peak of the growing season in 2012 and 2013. These photos can be made available upon request.

Woody Recruitment: No woody recruitment was noted during project monitoring; however, recruitment of desirable non-woody species are establishing throughout the project area (refer to Appendix 1).

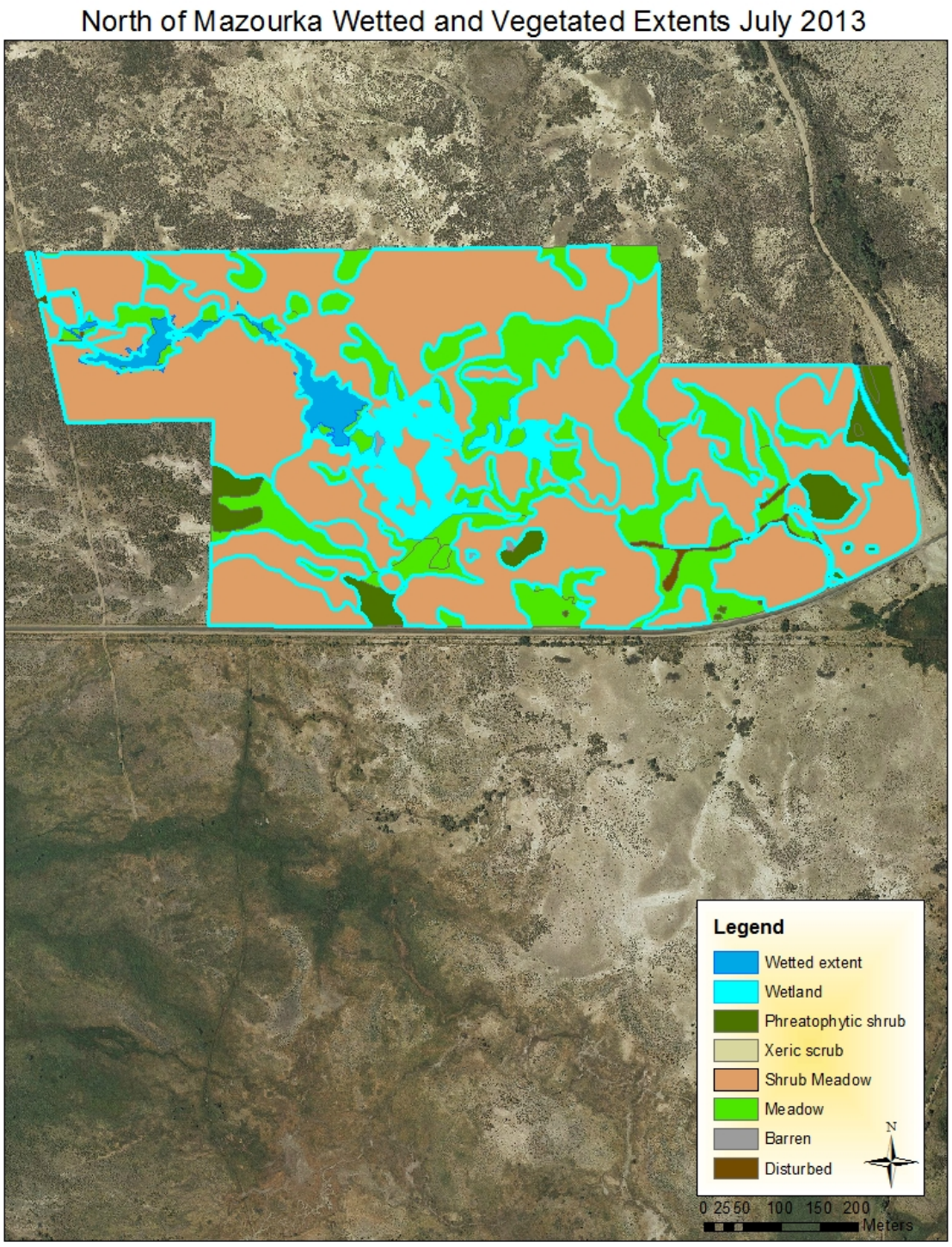
Fence Condition: In 2013, conditions at the Hines Spring Aberdeen Ditch project were not representative of desired project conditions with respect to project flows and the associated flooded extent. LADWP requested an additional one-year time extension until March 2014 for fencing this exclosure to allow project conditions to become more static and to more effectively manage these adjacent projects in the Hines Spring area (February 14, 2013, letter to MOU Parties). To date, sinkholes continue to be problematic at the extended pipe outfall locations.

LADWP has generated a fence design for the Aberdeen Ditch Project. Because sink holes continue to be problematic, a small temporary fence exclosure will be constructed until a permanent pipe outfall location can be determined effective. The fenced exclosure will be constructed to keep out grazing by horses but will allow elk and deer passage. This exclosure will be constructed in Spring 2014.

Recommendations:
Monitoring will continue to determine the effectiveness of the extended pipeline. LADWP will continue monitoring the establishment of woody recruitment and recruitment of desirable non-woody species.

The new fenced exclosure around the pipe outfall will be monitored to examine the potential effects of grazing in response to vegetation recruitment within the Aberdeen ditch channel.

North of Mazourka Canyon Road



Flow Monitoring: The annual water allotment for this project is 300 AF/year from two artesian well sources. These wells produced 108 AF during the 2013-2014 water year, roughly only 1/3 of the anticipated flows, and surface water did not progress as far east

this year. Although it did not reach the eastern pond, this area was notably saturated during monitoring and woody and non-woody vegetation remained vigorous.

North of Mazourka Pond, July 2013

Photo Point Monitoring: Photo points were established in March 2012 and were recaptured at the peak of the growing season in 2012 and 2013. These photos can be made available upon request.

Saltcedar seedlings were present along the channel west of the eastern pond. This area was treated in 2013 and will be monitored for resprouts. Saltcedar is also present around the fence exclosure and along the channel just downstream of the pipe outfall. Eradication methods will be implemented when resources are available and the area will be monitored for resprouts.

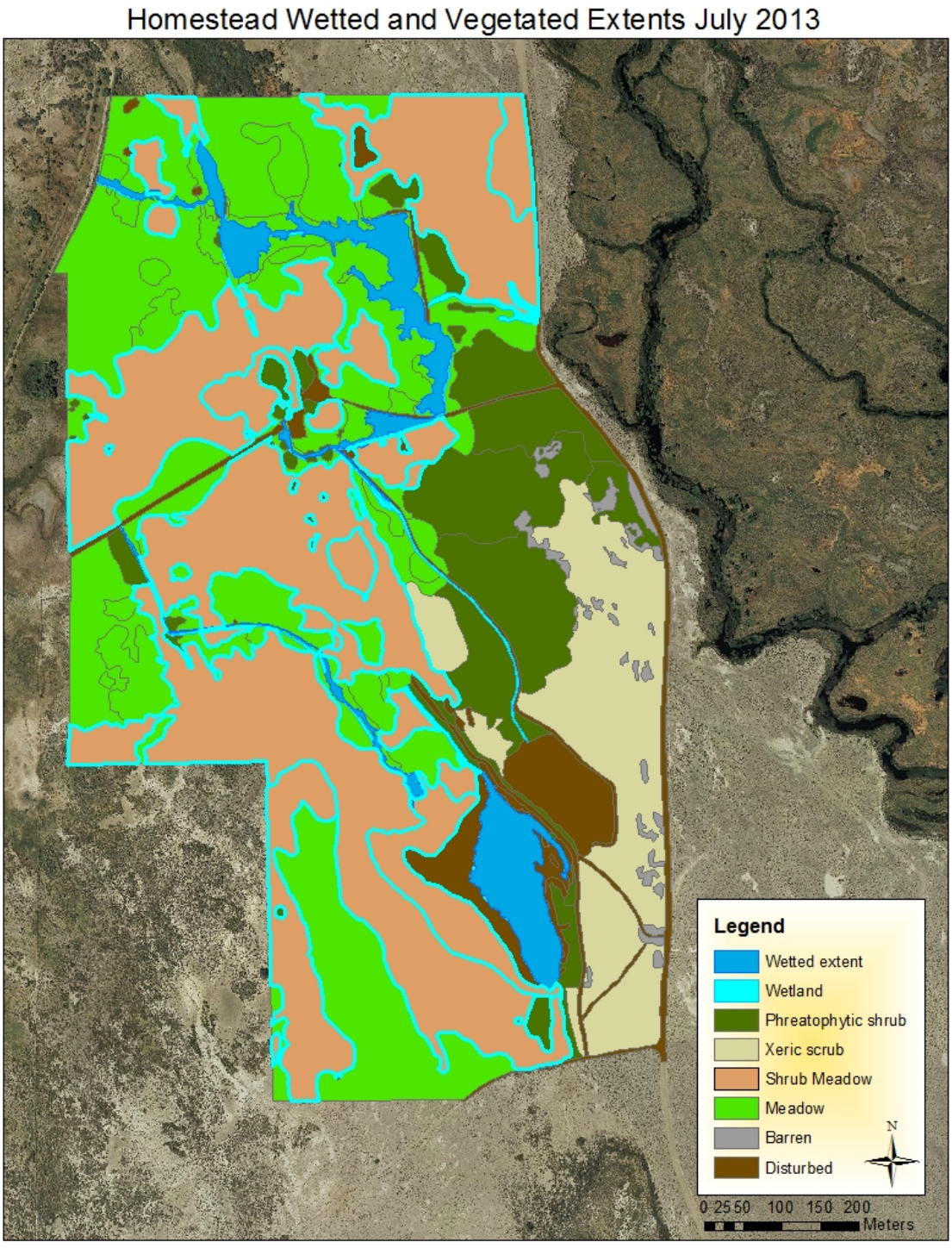
Woody Recruitment: No native woody recruitment was noted during project monitoring. However, there is abundant recruitment of desirable non-woody species in/near the exclosure and pipe outfall extending east into the project area (refer to Appendix 1). Saltgrass and American licorice (*Glycyrrhiza lepidota)* are particularly abundant in this area (see photo below).

North of Mazourka exclosure and pipe outfall, July 2013

Fence Condition: During project implementation, an exclosure was established around the location of water release at the pipe outfall. This fence is currently in good condition.

Recommendations: No additional planting or seeding is necessary at this time, as recruitment of desirable species is naturally occurring, particularly non-woody species in/near the exclosure. Additional saltcedar treatment is needed in areas of resprouts throughout the project area and seedlings in the channel to the project pond. Eradication will be conducted as resources are available and monitored for resprouts.

Homestead



Flow Monitoring: The annual water allotment for this project is 300 AF/year from two artesian well sources. These wells produced 258 AF for the project during the 2013-2014 water year. Well 419 was temporarily turned off in January 2014 in preparation for

a range improvement burn in the southwestern meadow. However, due to climatic conditions and subsequent lack of burn days per CalFire, the burn was not conducted and flows from the well resumed in February. Flows exiting the pond via the north and south spring channels continue to be managed to prevent connectivity to the Owens River.

Much of the flow from Well 419 continues to be sent south via the tee and old irrigation ditch that was reestablished in 2013. LADWP began using this ditch to support required project flows that would otherwise connect with the river if released to the east as originally proposed. This tee and ditch maintain the majority of flow west of the fault by capturing it in an existing depression and creating additional open water habitat.

Photo Point Monitoring: Photo points were established in March 2012 and were recaptured at the peak of the growing season in 2012 and 2013. These photos can be made available upon request.

The surface area of the pond appears to contain more water than last year and riparian non-woody vegetation is well established and healthy (see photo below). Waterfowl were observed utilizing the open water of the pond and Northern harriers were observed hunting around the pond and within the project vicinity during monitoring.

Homestead Pond, July 2013

Woody Recruitment: No woody recruitment was noted in project monitoring. However, there is notable recruitment of desirable non-woody species throughout the project area (refer to Appendix 1). Native grasses are coming in quickly in the areas where saltcedar and Russian olive slash was burned in March 2012. Additionally, wetland obligates have established in/around the ponds and the homestead and western spring

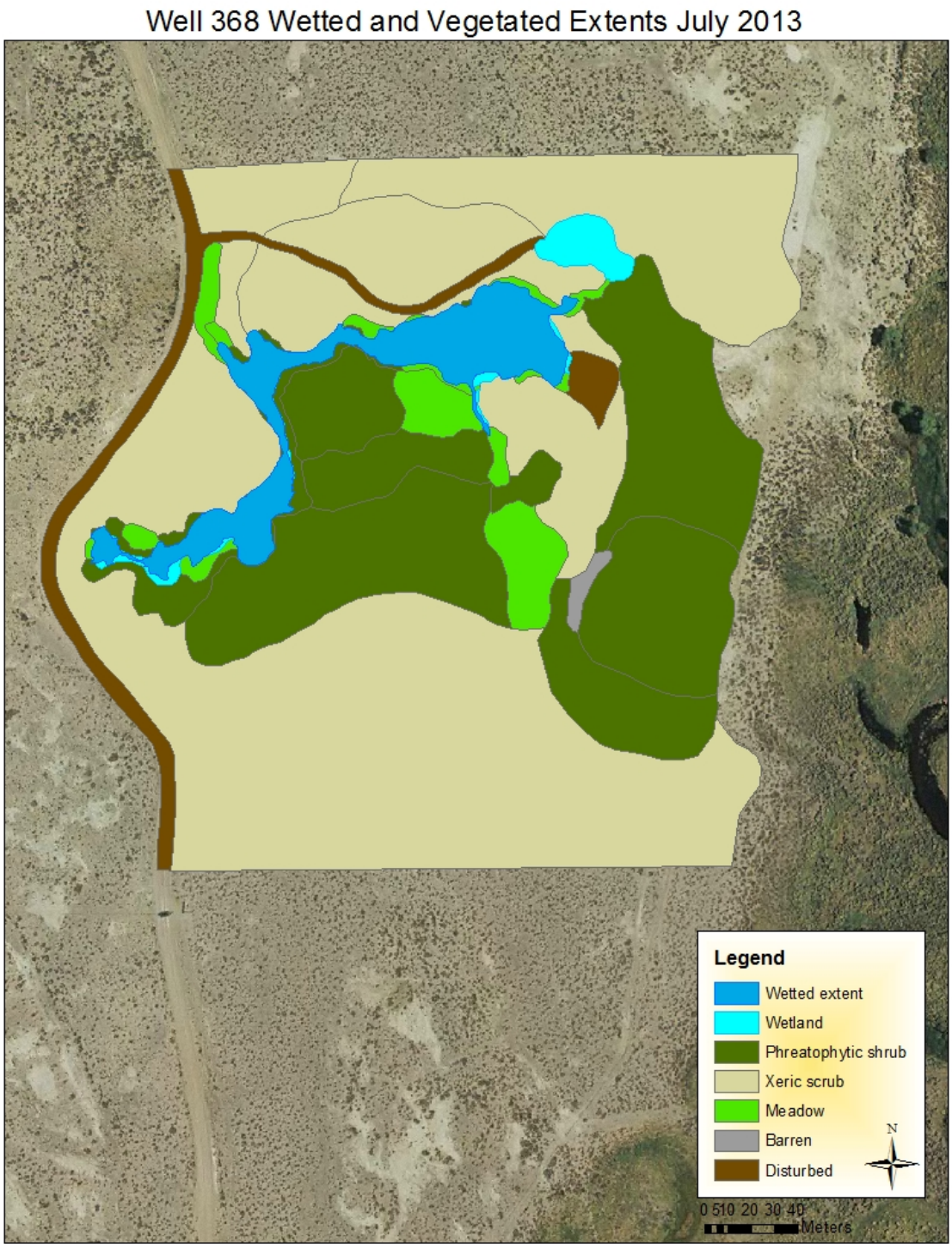
channels. The non-woody vegetation along the main spring channel has also become well established and has increased in growth and cover over the last year (see photo below). Natural recruitment of native species has occurred on approximately two-thirds of the pipeline berm. However, there are a few saltcedar seedlings growing near the tee of the pipeline as well as two along the south spring channel. The tee-ditch terminus has some non-woody vegetation recruitment, but overall vegetation has not yet established in this area.

Homestead Main Spring Channel, July 2013

Fence Condition: Not applicable.

Recommendations: No additional planting or seeding is necessary at this time, as recruitment of desirable species is naturally occurring. LADWP will continue managing flows as necessary for this project to ensure that there is no connectivity to the Owens river. Additional treatment of saltcedar will be implemented as resources are available and monitoring for resprouts will continue to occur.

Well 368



Flow Monitoring: The annual water allotment for this project is 150 AF/year. LADWP released 124 AF to this project during the 2013-2014 water year. Owens Valley pupfish (*Cyprinodon radiosus*) are abundant throughout the extended habitat area.

Photo Point Monitoring: Photo points were established in March 2012 and were recaptured at the peak of the growing season in 2013. These photos can be made available upon request.

There is new healthy narrowleaf willow growth around the pipe outfall. Vegetation along the eastern berm appears to be healthy and thriving. Cattails have significantly increased within the pupfish marsh (see photos below). The lower pond area is dry but riparian vegetation is still thriving. The pipeline berm still exhibits low vegetation recruitment.

Well 368 Eastern Berm, July 2013

Well 368 Pupfish Marsh, July 2013

Woody Recruitment: Narrowleaf willow recruitment is occurring throughout the project area, particularly near the pipe outfall. New seedlings and growth from this year appear healthy; however, much of the more mature narrowleaf willow population within the project area continues to appear stressed from what might possibly be a rust fungus, as described at the Freeman Creek Project. There is abundant recruitment of desirable non-woody species occurring throughout the newly flooded project area and no additional seeding or planting is necessary at this time.

Fence Condition: Not applicable.

Recommendations: The health of the narrowleaf willows will be monitored at the project site to determine the cause for stress if possible (i.e., rust fungus, disease, etc.). If rust is the cause of willow stress and continues to infect leaves and begins to inhibit new growth during the growing season, chemical control methods may be implemented to reduce infection. Monitoring will occur for saltcedar seedlings in the project area and will be eradicated as resources are available.

Diaz Lake

Flow Monitoring: 250 AF of water is allotted for this project. LADWP released 240 AF to the project during the 2013-2014 water year.

Other Monitoring: The lake shore was monitored for pepperweed. No pepperweed was observed but saltcedar and Russian olive are present on the northeastern shore. One saltcedar was observed on the mid-west shore. Large boulders were placed around the lake shore within the last year to block boat access to prevent the spread of the invasive quagga and zebra mussels. Boats will now be required to obtain inspections for quagga

and zebra mussels at the boat launch area before accessing the lake. Photos were taken of the boulders and signs blocking boat access around the lake (see photo below).

Diaz Lake and boulders blocking boat access from shore, July 2013

Recommendations: Saltcedar and Russian olive will be eradicated when resources are available and monitoring for these species will continue to occur.

7.5 Mitigation Monitoring and Reporting Program – MOU Ad Hoc Group Initial Study

Additional Mitigation Projects Developed by the MOU Ad Hoc Group Initial Study / Mitigated Negative Declaration SCH# 2010031094

Introduction

This Mitigation Monitoring and Reporting Program (MMRP) has been developed to ensure implementation of the mitigation measures outlined in the Initial Study/Mitigated Negative Declaration (IS/MND) for the Additional Mitigation Projects Developed by the MOU Ad Hoc Group (State Clearinghouse No. 2010031094). The MMRP has been prepared by LADWP, the lead agency for the Additional Mitigation Projects Developed by the MOU Ad Hoc Group under the California Environmental Quality Act (CEQA), in conformance with Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097. Adoption of a MMRP is required for projects in which the Lead Agency has required changes or adopted mitigation to avoid significant environmental effects.

Mitigation Monitoring and Reporting Responsibility

LADWP shall have primary responsibility for administrating the MMRP activities to staff, consultants, or contractors. LADWP has the responsibility of ensuring that monitoring is documented through periodic reports and that deficiencies are promptly corrected. LADWP's designated environmental monitor will track and document compliance with mitigation measures, note any problems that may result, and take appropriate action to remedy problems. Specific responsibilities of LADWP include:

- Coordination of all mitigation monitoring activities
- Management of the preparation, approval, and filing of monitoring or permit compliance reports
- Maintenance of records concerning the status of all approved mitigation measures
- Coordination with MOU Parties and other agencies

Resolution of Non-compliance Complaints

LADWP will act as the contact for interested parties who wish to register comments or complaints. Any person or agency may file a complaint that states non-compliance with the mitigation measures that were adopted as part of the approval process for the Additional Mitigation Projects Developed by the MOU Ad Hoc Group. The complaint shall be directed to LADWP (111 N. Hope Street, Room 1044, Los Angeles, California 90012) in written form, providing detailed information on the purported violation. LADWP shall conduct an investigation and determine the validity of the complaint. If non-compliance with a mitigation measure is verified, LADWP shall take the necessary action(s) to remedy the violation. The complaint shall receive written confirmation indicating the results of the investigation or the final corrective action that was implemented to respond to the specific non-compliance issue.

Mitigation Monitoring and Reporting Plan Matrix

The MMRP is organized in a matrix format and includes: mitigation measure by number, text of the mitigation measures, time frame for monitoring, agency responsible (in this case, LADWP), and space to indicate verification the measures were implemented. This last column will be used by LADWP to document the person who verified the implementation of the mitigation measure, the date on which this verification occurred, and any other notable remarks.

Table 30. Mitigation Monitoring and Reporting Program for the Additional Mitigation Projects

No.	Impact	Mitigation Measure	Time Frame	Responsible Monitoring Agency		Verification of Compliance
Cultural Resources						
CUL-1	Installation of the proposed pipeline has the potential to disturb surface and subsurface archaeological materials.	Hines Spring Well 355 and Aberdeen Ditch The Aberdeen Supply Line will be relocated to an area where the density of cultural materials appears to be very light or non-existent. Specific locations will be determined in coordination with a qualified archaeologist during a field visit. If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist. During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant, then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil	Prior to and during construction	LADWP	3/12/12	The alignment of the Aberdeen Ditch pipeline was staked by LADWP Survey and a qualified archaeologist on November 29, 2010 prior to earthmoving activities. The pipeline was rerouted around cultural resources and was extended approximately 200' as a result. Installation of the pipeline began in December 2010 and was monitored by a qualified archaeologist. Construction was complete in February 2011. No additional cultural or paleontological resources were located during construction. The proposed pipeline for the Hines Spring Well 355 project was surveyed by a qualified archaeologist March 9, 2011 prior to any earthmoving activities and the only artifact present was a mule shoe. The project area is currently grazed by horses and mules. The resource was avoided and no additional monitoring was conducted during pipeline installation. This pipeline was installed in October 2011 and no additional cultural or paleontological resources were located during construction.

		material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).				
CUL-2	Installation of the proposed pipeline and well has the potential to disturb surface and subsurface archaeological materials.	Homestead The new artesian well shall be installed away from existing Well 044A and multi-component cultural resources Site 1600 AF-06/H to a location without known cultural resources. The pipeline from the T774-T777 complex shall be installed along either side of the road leading to the Homestead project area from the access road, or to another location without known cultural resources. Specific locations will be determined in coordination with a qualified archaeologist during a field visit. If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist. During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant,	Prior to and during construction	LADWP	3/12/12	LADWP determined the location, staging area and pipeline for the new Homestead artesian well with a qualified archaeologist on March 8-9 and 14-16, 2011. Installation of the well near Well 044 required LADWP to apply a geotextile fabric to protect artifacts in the area. Additionally, the qualified archaeologist was onsite for the drilling of the well in June 2011. Unfortunately, the new well did provide a sufficient water supply for the project. LADWP selected an alternative well site, staging area, and pipeline for the project, which were surveyed by a qualified archaeologist September 7, 2011. No cultural or paleontological resources were found during this survey and no further monitoring was recommended by the qualified archeologist for the drilling of the new well, use of new staging area, or installation of the new pipeline. The new well was drilled January 24-27, 2012. Pipeline installation began January 30, 2012 and was complete February 21, 2012. No cultural or paleontological resources were found during construction. The alignment of the T774-T777 pipeline was also surveyed for archaeological resources in March 2011; no artifacts were found, thus no further monitoring was recommended by the qualified archaeologist for installation of this pipeline. This pipeline was installed August/September 2011 and no cultural or

		then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).				paleontological resources were found during construction.
CUL-3	Installation of the proposed pipelines has the potential to disturb surface and subsurface archaeological materials.	Well 368 The short east-west portion of the pipeline from the new artesian well to the access road will be installed in the existing berm or road, or other location without known cultural resources. The north-south portion of the pipeline from the access road to the Well F368 area will be re-aligned west approximately 200 feet from the access road, or to another location without known cultural resources. Specific locations will be determined in coordination with a qualified archaeologist during a field visit. If relocation of these pipelines is impractical, an archaeological testing and evaluation program will be conducted for sites 1600 AF-02 and 1600 AF-03. If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist. During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors	Prior to and during construction	LADWP	3/12/12	LADWP met with a qualified archaeologist on March 8-9, 2011 to determine the location, staging area and pipeline for the new artesian well for the Well 368 project. The well location was moved slightly east based on cultural resource concerns. The installation of the new well required application of geotextile fabric to protect artifacts in the area. Additionally, the qualified archaeologist was onsite for the drilling of the well in June 2011. Unfortunately, the new well did provide a sufficient water supply for the project. LADWP selected an alternative well site, staging area, and pipeline for the project, which were surveyed by a qualified archaeologist September 7, 2011. No cultural or paleontological resources were found during this survey and thus no further monitoring was recommended by the qualified archeologist for the drilling of the new well, use of new staging area, or installation of the new pipeline. The new well was drilled January 17-20, 2012. Pipeline installation began January 24, 2012 and was complete February 21, 2012. No cultural or paleontological resources were found during construction.

		shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant, then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).				
CUL-4	Installation of the proposed pipelines and wells has the potential to disturb surface and subsurface archaeological materials.	Homestead, Well 368, Hines Spring Well 355 and Aberdeen Ditch At the Homestead, Well 368, Hines Spring Well 355 and Aberdeen Ditch project sites, pipeline, power line, and well installation shall be monitored by a qualified archaeologist. Based on the NAHC contact list for the project, Native American representatives shall be notified of project construction schedules at the Homestead, Well 368, Hines Spring Well 355 and Aberdeen Ditch project sites, and invited to be present during well, power line and pipeline installation on a volunteer basis. If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist.	During construction	LADWP	3/12/12	**Homestead**: Installation of the first artesian well was monitored by a qualified archeologist and Native American representatives were contacted prior to drilling (June 2011). Unfortunately, the new well did not provide a sufficient water supply for the project. The alternative well site, staging area, and pipeline alignment were surveyed by a qualified archaeologist in September 2011 prior to construction. No cultural or paleontological resources were found during this survey and thus no further monitoring was recommended by the qualified archeologist. Additionally, no further monitoring of the T774-T775 pipeline were required based on the initial pedestrian survey. Further, no cultural or paleontological resources were found during construction. **Well 368**: Installation of the first artesian well was monitored by a qualified archeologist and Native American

		During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant, then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).				representatives were contacted prior to drilling (June 2011). Unfortunately, the new well did not provide a sufficient water supply for the project. The alternative well site, staging area, and pipeline alignment were surveyed by a qualified archaeologist in September 2011 prior to construction. No cultural or paleontological resources were found during this survey and thus no further monitoring was recommended by the qualified archeologist. Further, no cultural or paleontological resources were found during construction. **Hines Spring Well 355**: The proposed pipeline for the Hines Spring Well 355 project was surveyed by a qualified archaeologist March 9, 2011 prior to any earthmoving activities and the only artifact present was a mule shoe. The project area is currently grazed by horses and mules. The resource was avoided and no additional monitoring was conducted during pipeline installation. This pipeline was installed in October 2011 and no additional cultural or paleontological resources were located during construction. The Hines Spring Well 355 power line was installed November 2011-January 2012. Power line installation was monitored by a qualified archaeologist based on preconstruction surveys of the alignment conducted in September 2010. Native American representatives were contacted prior to construction and invited to attend, but none participated. One cultural artifact was found during construction and will be given to the Big Pine Paiute Tribe for curation as recommended by the qualified archaeologist that was monitoring onsite.

						Aberdeen Ditch: The Aberdeen Ditch pipeline was constructed December 2010-February 2011 and was monitored by a qualified archaeologist. Native American representatives were notified prior to the construction work, but no representatives participated in monitoring activities. No additional cultural or paleontological resources were located during construction.
CUL-5	Installation of the proposed pipelines and wells has the potential to disturb surface and subsurface archaeological materials.	If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist. During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant, then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).	During construction	LADWP	3/12/12	No unrecorded cultural or paleontological resources were encountered during construction. All resources encountered had been recorded in preconstruction surveys, and all sites with documented resources were monitored by a qualified archaeologist.
CUL-6	Excavation for installation of	If previously unrecorded cultural resources are encountered during the	During construction	LADWP	3/12/12	No unrecorded cultural or paleontological resources were encountered during

	project facilities could result in the disturbance of paleontological resources.	project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist. During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant, then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).				excavation or installation of project facilities.
CUL-7	Excavation for installation of project facilities could result in the disturbance of human remains.	In the unexpected event that human remains are discovered, the Inyo County Coroner shall be contacted, the area of the find shall be protected, and provisions of State CEQA Guidelines Section 15064.5 shall be followed. If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist.	During construction	LADWP	3/12/12	No human remains were encountered during excavation or installation of project facilities.

		During earthwork necessary for installation of project facilities (wells, pipelines, ditches), the construction crew and/or archaeological monitors shall implement the following measures if there is a discovery of paleontological resources: Stop all construction work within a 50-foot radius of the find until a qualified paleontologist or paleontologically-trained archaeologist can assess the significance of the find. If the discovery is significant or potentially significant, then the following would apply: data recovery and analysis, preparation of a data recovery report or other reports, and accession of recovered fossil material at an accredited paleontological repository (e.g., the University of California's Museum of Paleontology).				

7.5.1 Additional Mitigation Projects References

City of Los Angeles Department of Water and Power (LADWP). 1991. *1991 Environmental Impact Report – Water from the Owens Valley to Supply the Second Los Angeles Aqueduct 1970 to 1990 and 1990 Onward, Pursuant to a Long Term Groundwater Management Plan.*

City of Los Angeles Department of Water and Power (LADWP), the County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, the Owens Valley Committee (1997 MOU). 1997. *Memorandum of Understanding between the City of Los Angeles Department of Water and Power the County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, the Owens Valley Committee*. Los Angeles Department of Water and Power, Bishop, California.

City of Los Angeles Department of Water and Power (LADWP) et al. 2008. *Additional Mitigation Projects Developed by the MOU Ad Hoc Group.* Bishop, CA.

Superior Court of the State of California, County of Inyo. 2010. *The Second Amendment of Amended Stipulation and Order Case No. S1CVCV01-29768.* Executed March 2010.

7.6 Annual Report on the Owens Valley Land Management Plan

Introduction

Section II.B of the 1997 MOU describes the requirement for a land management plan for City of Los Angeles (City) owned, non-urban lands in the Owens River Watershed in Inyo County (excluding the LORP planning area). The 1997 MOU states that LADWP shall continue to protect water resources used by the citizens of Los Angeles while providing for the continuation of sustainable uses such as recreation, livestock grazing, agriculture, and other activities. In doing so, LADWP shall promote biodiversity and healthy ecosystems, and address situations or problems that occur from the effects of various land uses on City-owned property. The 1997 MOU states that priority is to be given to riparian areas, irrigated meadows, and sensitive plant and animal habitats.

Subsequently, LADWP developed the OVLMP (LADWP and Ecosystem Sciences 2010) to fulfill this requirement of the 1997 MOU and guide management of the City's lands in the Owens Valley. The OVLMP consists of 10 chapters that describe current conditions and future management of grazing, riverine-riparian ecosystems, recreation, cultural resources, fire, commercial uses, threatened and endangered species, and areas of special management concern. The fundamental role of resource management is to assess and evaluate the effects of existing land and water use practices, and recommend flow management and land management improvements if necessary.

CEQA Process for the Owens Valley Land Management Plan

An Initial Study and Mitigated Negative Declaration (MND) (LADWP 2010) was prepared for the OVLMP in March 2010. After review of the comments received and based on the information in the Initial Study, LADWP determined that with adoption of mitigation measures, implementation of the OVLMP would not have a significant impact on the environment. The final MND and Mitigation Monitoring and Reporting Program were approved by the City of Los Angeles Board of Water and Power Commissioners on June 1, 2010. A Notice of Determination was filed with the Inyo County Clerk on June 2, 2010.

7.6.1 Monitoring and Reporting for OVLMP Flow Management Component

Water Year - October 1, 2011 thru September 30, 2012

Introduction

Flow management of the Owens River has primarily depended on the water needs of the City of Los Angeles (City). Owens River water is provided to the City through its aqueduct system. Besides providing water to the City, the Los Angeles Department of Water and Power (LADWP) manages flow in most of the Owens Valley canals and ditches to support ranching, agricultural operations (as run by lessees on LADWP lands) and environmental projects (Klondike Lake, McNally canals, Buckley Ponds, and the 1600AF Mitigation Project). To adequately and efficiently provide water to the lessees LADWP monitors stream flown creeks, canals, ditches, and the Owens River.

Hydrologic features of the Middle Owens River riparian area include the Owens River, several perennial streams, canals, flowing wells and springs. These perennial streams, canals, flowing wells and springs augment and diminish the flow in the Owens River as it courses through the Owens Valley from Pleasant Valley Reservoir to the Los Angeles Aqueduct (LAA) Intake.

The following chart details the monthly average outflows, and the monthly average gain (“+”) or loss (“-“) to the Owens River from Pleasant Valley Reservoir to the LAA Intake.

MONTH	LOCATION							
	Pleasant Valley Reservoir	O.R. below Big Pine Creek	Tinemaha Reservoir	Well W118	Taboose Crk (including W347&W342)	Well W349	LORP Intake	LAA Intake
	Average Monthly OutFlow (cfs)							
Oct-11	587	645	634	3.23	9.42	13.9	55	606
Nov-11	438	558	522	3.24	6.24	9.9	47.1	494
Dec-11	117	232	275	3.32	5.3	16.9	44.9	256
Jan-12	200	318	339	3.3	4.73	16.9	44.3	320
Feb-12	158	251	306	3.29	4.26	10.2	46	278
Mar-12	143	229	237	3.29	3.95	0.33	44.77	200
Apr-12	276	306	275	3.26	4.27	16.1	51.56	247
May-12	399	410	383	3.27	5.06	16.9	47.51	361
Jun-12	464	480	388	3.18	3.13	16.82	79.47	332
Jul-12	334	370	297	3.01	1.61	16.78	97.58	221
Aug-12	418	370	404	3.27	2.78	16.72	74.88	352
Sep-12	473	463	443	3.23	2.69	16.74	58.58	407

MONTH	LOCATION		
	Pleasant Valley Reservoir to O.R. below Big Pine Creek	O.R. below Big Pine Creek to Tinemaha Reservoir	Tinemaha Reservoir to LAA Intake
	Average Monthly gain (+) or loss (-) (cfs)		
Oct-11	58	-11	-28
Nov-11	120	-36	-28
Dec-11	115	43	-19
Jan-12	118	21	-19
Feb-12	93	55	-28
Mar-12	86	8	-37
Apr-12	30	-31	-28
May-12	11	-27	-22
Jun-12	16	-92	-56
Jul-12	36	-73	-76
Aug-12	-48	34	-52
Sep-12	-10	-20	-36

NOTES
1. "LAA Intake" value was determined from taking "Tinemaha Reservoir" value and adding "Well W116 plus "Taboose Crk" pl
minus "LORP Intake".

7.6.2 Monitoring and Reporting for OVLMP Grazing Management Component

Introduction

The land use component of the Owens Valley Annual Report is composed of project elements related to livestock grazing management. Under the land management program, the intensity, location, and duration of grazing is managed through the establishment of riparian pastures, forage utilization rates, and prescribed grazing periods (described in Section 3.3 Owens Valley Land Management Plan, 2010). Other actions include protection of rare plant populations, establishment of off-river watering sources (to reduce use of the river and off-river ponds for livestock watering) and the monitoring of utilization and rangeland trend throughout the leases to ensure that grazing rates maintain the long-term productivity.

Grazing management plans developed modified grazing practices in riparian and upland areas on Los Angeles Department of Water and Power (LADWP) leases in order to support Owens Valley Land Management Plan (OVLMP) goals. There are 40 leases contained in the Owens Valley Report; the ST Ranch Lease (RLI-483), 3V Ranch Lease (RLI-435), Reata Ranch Lease (RLI-453), Horseshoe Bar Ranch Lease (RLI-462), Rainbow Pack Outfit Lease (RLI-460), Rockin C Ranch Lease (RLI-493), Rafter DD Ranch Lease (RLI-439), Quarter Circle B Ranch Lease (RLI-404, 413), CT Ranch Lease (RLI-451,500), Mandich Ranch Lease (RLI-424), LI Bar Ranch Lease (RLI-487), U Bar Ranch Lease (RLI-402), Round Valley Ranch Lease (RLI-483), Big Pine Canal Lease (RLI-438), Cashbaugh Ranch

Lease (RLI-411), Warm Springs Ranch Lease (RLI-497), Reinhackle Ranch Lease (RLI-492), Four J Cattle Ranch Lease (RLI-491 and 499), Rockin DM Ranch Lease (RLI-420), Baker Road Ranch Lease (RLI-475), Aberdeen Pack Lease (RLI-479), Coloseum Ranch Lease (RLI-407), Three Corner Round Ranch Lease (RLI-464), Eight Mile Ranch Lease (RLI-408), Fort Independence Ranch Lease (RLI-406,489), Georges Creek Parcel (RLI-489), JR Ranch Lease (RLI-436), Lone Pine Dairy Lease (RLI-452), Mount Whitney Pack Lease (RLI-495), Horse Shoe Ranch Lease (RLI-480), Olancha Creek Adjunct (RLI-427), Home Place Adjunct (RLI-428A), Archie Adjunct (RLI-489), Blackrock Ranch (RLI-428), Intake Ranch Lease (RLI-475), Island Ranch Lease (RLI-489), Delta Ranch Lease (RLI-490), Lone Pine Ranch Lease (RLI-456), Thibaut Ranch Lease (RLI-430), Twin Lakes Ranch Lease (RLI-491). Maps detailing the locations of each of these leases can be found in the Owens Valley Land Management Plan (2010).

7.6.3 Utilization

The *Owens Valley Land Management Plan* identifies grazing utilization standards for upland and riparian areas. Utilization is defined as the percentage of the current year's herbage production consumed or destroyed by herbivores. Grazing utilization standards identify the maximum amount of biomass that can be removed by grazing animals during specified grazing periods. LADWP has developed height-weight relationship curves for native grass and grass-like forage species in the Owens Valley using locally-collected plants. These height-weight curves are used to relate the percent of plant height removed with the percent of biomass removed by grazing animals. Land managers can use this data to document the percent of biomass removed by grazing animals and determine whether or not grazing utilization standards are being exceeded. Utilization data collected on a seasonal basis (mid- and end-points of a grazing period) will determine compliance with grazing utilization standards, while long-term utilization data will aid in the interpretation of range trend data and will help guide future grazing management decisions.

The calculation of utilization (by transect and pasture) is based on a weighted average. Therefore, species that only comprise a small part of available forage contribute proportionally less to the overall use value than more abundant species.

7.6.4 Riparian & Upland Utilization Rates and Grazing Periods

Under the *Owens Valley Land Management Plan* (OVLMP), livestock are allowed to graze in riparian pastures during the grazing periods prescribed for each lease (see Sections 3.4.1 through 3.4.50 OVLMP). Livestock are to be removed from riparian pastures when the utilization rate reaches 40%, at the end of the grazing period, or before May 1st from pastures along the Owens River that are within the boundaries of the Southwestern Willow Flycatcher recovery zone. The beginning and ending dates of the lease-specific grazing periods may vary from year-to-year depending on conditions such as climate and weather, but the duration remains approximately the same. The grazing periods and utilization rates are designed to facilitate the recruitment and establishment of riparian shrubs and trees.

In upland pastures, the maximum utilization allowed on herbaceous vegetation is 65% annually if grazing occurs only during the plant dormancy period. Once 65% is reached all pastures must receive 60 continuous days of rest for the area during the plant "active growth period" to allow seed set between June and September. If livestock graze in upland pastures during the active growth period (that period when plants are "active" in putting on green growth and seed). Maximum allowable utilization on herbaceous vegetation is 50%. The utilization rates and grazing periods for upland pastures are designed to sustain livestock grazing and productive wildlife habitat through

efficient use of forage. Riparian pastures may also contain upland habitat. If significant amounts of upland vegetation occur within a riparian pasture or field, upland grazing utilization standards will also apply to these upland habitat types. Livestock will be removed from a riparian pasture when either the riparian or the upland grazing utilization standards are met. Typically riparian utilization rate of 40% is reached before 65% use in the uplands occurs. Because of this pattern, utilization is not quantitatively sampled in adjacent upland areas, but use is assessed based on professional judgment. If utilization appears greater than 50% then utilization estimates using height weight curves will be implemented on the upland areas in the riparian field.

7.6.5 Utilization Monitoring

Monitoring methodologies are fully described in Section 4.6.2 of the *Lower Owens River Monitoring Adaptive Management and Reporting Plan* (Ecosystem Sciences, 2008).

Utilization is compliance monitoring and involves determining whether the utilization guidelines set forth in the grazing plans are being adhered to. Similar to precipitation data, utilization data alone cannot be used to assess ecological condition or trend. Utilization data is used to assist in interpreting changes in vegetative and soil attributes collected from other trend monitoring methods.

Utilization monitoring is conducted annually. Permanent utilization transects have been established in upland and riparian areas of pastures within the MORP, LORP, and areas outside these two project locations. An emphasis has been placed on establishing utilization monitoring sites within riparian management areas. Each monitoring site is visited prior to any grazing in order to collect ungrazed plant heights for the season. Sites are visited again approximately mid-way through the grazing period (mid-season) and again at the conclusion of the grazing period (end-of-season).

Utilization estimates are conducted on all range trend transects if there is an adequate amount of the key forage species (Alkali sacaton, saltgrass, etc…). There are additional utilization transects not associated with range trend sites. These are designated as spatial utilization transects and will be read annually as long as they represent typical use in a pasture. If they fail to be representative (e.g. fire, flooding, and change in grazing patterns) they will be temporarily or permanently abandoned.

Watershed Resources staff will update each lessee with their mid-season and end-of-season utilization results for each year. During that time the lessee will also be provided with next years target utilization stubble heights for riparian and upland management areas. This will allow LADWP and the lessees to communicate and make grazing management changes as needed in order to meet LORP goals.

Target stubble heights have been calculated for each transect and pasture on a given lease and distributed to each lessee, to allow compliance with the set utilization standards. To calculate target stubble heights, ungrazed plant heights are collected after the end of the growing season to allow the plants to reach maximum production before the grazing season begins. The ungrazed heights are then averaged by species and transect in order to calculate the stubble heights that will meet the utilization standards for each field. The resulting calculated stubble heights are based on the same height/weight curves used in the mid- and end-of-season utilization calculations. The target stubble height information is provided to the lessees so that they may monitor utilization on their lease throughout the grazing season.

Range Trend

Overview of Monitoring and Assessment Program

Monitoring was conducted at all irrigated pastures and at key areas within riparian and upland management areas. Areas not identified as irrigated pasture, riparian management areas, or springs and seeps are considered upland management areas. Monitoring and assessment of key sites in riparian and upland management areas includes utilization and range trend monitoring.

This report presents data collected during various periods typically beginning in 2007. Each site will generally be read every three years unless a significant change has occurred such as a fire or a major change in management.

A description of monitoring methods, data compilation and analysis techniques can be found in the *2008 LORP Monitoring, Adaptive Management and Reporting Plan*. Descriptions of the range trend monitoring sites and their locations on the leases are in the individual lease monitoring narratives and maps in this section.

Because of the high resource value associated with riparian areas on LADWP property in the Owens Valley the majority of the monitoring plots are either located on Moist Floodplain and Saline Meadow sites in close proximity to the Owens River.

Utilization is compliance monitoring and involves determining whether the utilization guidelines set forth in the grazing plans are being adhered to. Similar to precipitation data, utilization data alone cannot be used to assess ecological condition or trend. Utilization data is used to assist in interpreting changes in vegetative and soil attributes collected from trend monitoring methods.

Following implementation of the grazing management plans, the utilization standard for riparian management areas is 40%. The utilization standard for upland areas is 65% if grazing occurs during the plant dormancy season. The standard for upland areas is 50% if grazing occurs during the active plant growing period; however, if the pasture is completely rested for a minimum of 60 continuous days during the latter part of the active stage to allow seed set, allowable forage utilization is 65%.

These standards are not expected to be met precisely every year because of the influence of annual climatic variation, livestock distribution and the inherent variability associated with techniques for estimating utilization. Rather, these levels should be reached over an average of several years. If utilization levels are consistently 10% above or below desired limits during this period, adjustments should be implemented (Holecheck and Galt, 2000; Smith et al., 2007).

An additional driver for the 40% utilization rate on riparian pastures in the northern portion of the Owens Valley are grazing requirements as they relate to the federally listed southwestern willow flycatcher. Within the Middle Owens River management area, beginning from just north of Tinemeha Reservoir to Pleasant Valley and adjacent Horton Slough the United States Fish and Wildlife (USFWS), in an effort to increase the endangered Southwestern Willow Flycatcher population in the Owens Valley mandated a 40% utilization limit along the river with livestock grazing permitted during the winter and spring and no later than May 1st.

Range trend monitoring involves the quantitative sampling of the following attributes: frequency of all plant species, canopy cover estimates for herbaceous plant species, line intercept sampling for shrub canopy cover, estimates for ground cover, shrub density, and age classification of shrubs. Photo documentation of the site conditions is included as part of range trend monitoring.

Range trend monitoring at permanent transects provides quantitative data to determine the state of monitoring sites relative to baseline conditions and how a given site compares to the desired plant community. The desired plant community can be one of several plant communities that may occupy a site or one that has been identified through a management plan to best meet the plan's objective for the site. The desired plant community must protect the site as a minimum and may be described as dynamic, changing through time, or within a range of variability (Bedell, 1988). Until site-specific objectives are established, the desired plant community, which will serve as the benchmark for evaluating condition, will be the "reference plant community" described in the ecological site description for a site. The reference plant community is the historic climax or potential plant community described for each ecological site.

Ecological site descriptions are a tool developed by USDA Natural Resource Conservation Service (NRCS) that can be used to assist in management decisions. Ecological sites are distinct units distinguished between one another by significant differences in potential vegetation composition or production between soils (NRCS, 2003). Ecological site descriptions are represented spatially as soil map units, developed from soil survey data in the Owens Valley.

Soil surveys in the area were conducted by NRCS and the final data can be found in the *Soil Survey of Benton-Owens Valley Area, California, Parts of Inyo and Mono Counties* (USDA NRCS, 2002). Vegetation data used to develop the ecological site descriptions were collected by LADWP between 1984 and 1994. This vegetation data is also referred to as "baseline" as described in the *Green Book for the 1990 Long-Term Groundwater Management Plan for the Owens Valley and Inyo County.* Ecological site descriptions include the expected production (pounds per-acre) for each soil map unit based on growing conditions (normal, favorable, unfavorable). Yearly growing conditions are based on annual precipitation data (October through September).

Nested frequency, cover, and shrub age classification data are presented for each lease and are presented as range trend transect data tables for each sampling transect and sampling year. To compare range trend sites to the associated reference plant community in the ecological site descriptions, the soil map unit that each transect was located on was cross-referenced to the *Soil Survey of Benton-Owens Valley Area, California*, *Parts of Inyo and Mono Counties* (USDA NRCS, 2002). The soil map unit narrative references the ecological site descriptions. The ecological site description describes the potential plant community by percent composition by dried weight of the major plant species. The potential plant community information does not set a specific percent composition for each species, but specifies an expected range of abundance of each of the major plant species by soil type and ecological site.

The majority of land management monitoring transects are located on the Moist Floodplain Ecological Site (MLRA 29-20). The site describes axial-stream floodplains. This ecological site does not include actual river or stream banks. Moist floodplain sites are dominated by saltgrass and to a lesser extent alkali sacaton and beardless wildrye. Only 10% of the total plant community is expected to be composed of shrubs and the remaining 10% forbs.

Saline Meadow ecological sites (MLRA 29-2) are the second most commonly encountered ecological sites on the MORP. These sites are located on fan, stream, lacustrine terraces, and may also be found on axial stream banks. Potential plant community groups are 80% perennial grass with a larger presence of alkali sacaton than moist floodplain sites. Shrubs and trees comprise up to 15% of the community while forbs are only 5% of the community at potential. Saline Bottom (MLRA 29-7) and Sodic Fan (MLRA 29-5) ecological sites were also associated with several range trend sites. These are more xeric stream and lacustrine terrace sites. Saline Bottom ecological sites still maintain up to 65% perennial grasses, the majority of which is alkali sacaton, while shrubs compose up to 25% of

the plant community, and forbs occupy the remaining 10%. Sodic Fan ecological sites are 70% shrubs, primarily Nevada saltbush (*Atriplex torreyi*), with a minor component of alkali sacaton of up to 25% and 5% forbs.

With regards to the ecological site descriptions for the Owens Valley, management objectives for a given area may or may not correlate directly to high similarity indexes or different seral conditions. For example, a portion of the reference plant communities described for the moist floodplain ecological site allow for a species composition (dry weight) of 10% for shrubs and 80% for perennial grass; optimum wildlife habitat for a particular species might require more woody plants than allowed for and livestock production would improve with a greater percent composition of perennial grass and a decrease in shrubs. Each of these scenarios are feasible through different management prescriptions but none would reflect a high similarity to the reference plant community for the ecological site. Furthermore, due to historical or existing disturbances or the presence of nonnative species, attaining "excellent condition" or 76-100% similarity may not be feasible.

It is important to point out that reference plant communities associated with ecological sites are amalgamations of both existing reference sites and professional judgment of what the site's potential could have been under pristine conditions. The reference plant community is a conceptual model intended to help managers gauge how a site compares to what potentially could be found on similar sites; to expect any existing location to identically match the described community would be erroneous. Estimating how similar a given site is to its potential described in the ecological site description is useful when conducting an inventory across an area but if repeat monitoring is available for the site (as it is for most LADWP leases) changes over time (trend), when compared to baseline data collected at the same location, is a more effective approach to assessing the trend of that particular key area because comparisons are made directly to the site and not between the key area and a reference plant community in an ecological site description which ultimately has no physical existence. For this reason similarity indices were not calculated and discussions in trend will not focus on changes in similarity indices.

Reference plant community data is derived from annual aboveground production (dry weight). The vegetative attribute of annual production and canopy cover are very sensitive to annual growing conditions and will therefore vary in accordance to natural climatic fluctuations. Annual production and canopy cover are inappropriate attributes to interpret long-term impacts of management decisions on plant communities when compared to other plant monitoring methods such as nested frequency.

Because frequency data is sensitive to plant densities and dispersion, frequency is an effective method for monitoring and documenting changes in plant communities (Mueller-Dombois and Ellenberg, 1974; Smith et al., 1986; Elzinga, Salzer et al., 1988; BLM 1996; Heywood and DeBacker, 2007). For this reason frequency data will be the primary means for evaluating trend at a given site during subsequent years. Based on recommendations for evaluating differences between summed nested frequency plots (Smith et al.,1987 and Mueller-Dombois and Ellenberg, 1974), a Chi-Square analysis with a Yate's correction factor was used to determine significant differences between years. Future analysis will compare estimates to the baseline datasets presented in this report.

During the pre-project period, a range of environmental conditions were encountered including "unfavorable" growing years when precipitation in the southern Owens Valley was less than 50% of the 1970-2009 average, "normal" years, when precipitation was 50-150% of average, and "favorable" conditions when precipitation was greater than 150% of average. Many of the monitoring sites responded to the variability in precipitation during the baseline period, this provided the Watershed Resources staff an opportunity to sample across a broad amplitude of ecological conditions for these sites which contributed to a robust baseline dataset.

Range trend analysis on the LORP leases began in 2002. In response to the potential critical habitat designation and subsequent MOU with the USFWS concerning the Southwestern Willow Flycatcher, rangeland analysis expanded to include the Middle Owens River areas beginning in 2007. Because of the lengthier period of monitoring on the LORP leases there is greater discussion of overall trends on those leases. As monitoring continues on the MORP leases further discussion of results will be included in the reporting component of the project.

On transects with a long history of monitoring, trends appear to be fairly static with no obvious trajectories as each year captures and extends what appears to be the normal range of variability. The majority of range trend sites are situated on moist flood plain or saline meadow ecological sites. These sites are naturally sub-irrigated and less influenced by annual fluctuations in precipitation when compared to the more xeric ecological sites such as Saline Bottom or Sodic sites. In general perennial grass and forb communities on the mesic sites are resilient to both moderate and heavy grazing, particularly if grazing occurs during the dormant season which is the case for most LADWP grazing leases. Sites where apparent trends are occurring tend to be on: 1) shrub dominated sites where encroachment accelerates in a non-linear fashion; 2) burned sites where shrub cover is significantly reduced; 3) on sites where changes in water tables act as the primary driver for plant community composition and/or species abundance. Rising water tables will reduce shrub cover on terraces as the root zone of shrubs becomes permanently inundated. A dropping water table will have the reverse effect but similar end results with increased shrub mortality as well as a shift in plant composition. Transects along the Owens River on the Twin Lake, Thibaut and Blackrock lease have experienced an upsurge and then widespread mortality of Nevada saltbush on terraces closest to the water's edge. The nested frequency transects are sensitive enough to detect vegetation responses to climatic variation by tracking the increase or decrease of annual forbs and grasses on sites.

Irrigated Pastures

Monitoring of irrigated pastures consisted of Irrigated Pasture Condition Scoring following protocols developed by the (NRCS, 2001). Irrigated pastures that score 80% or greater are considered to be in good to excellent condition. If a pasture rates below 80%, changes to pasture management will be implemented.

All irrigated pastures were evaluated in 2013. Pastures that scored 80% or below were be evaluated in 2014. The results of the evaluations will be presented in a table format by lease. All irrigated pastures will be evaluated again in 2016

4.1.1 ST Ranch Lease (RLI-461)

The ST Ranch Lease (10,925 acres) consists of parcels from Aberdeen, Bishop, and Round Valley. The livestock program is a commercial cow/calf operation.

The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the ST Ranch Lease, RLI-461, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
*Calvert Slough Pasture	56%	43%	52%	51%	25%	28%	15%
*Charlie Butte Field	57%	72%	62%	0%	24%	29%	15%
*East River Field	73%	52%	59%	22%	19%	28%	26%
*North Horton Slough Riparian	25%	23%	13%	13%	0%	21%	0%
*Northeast McCumber Riparian	9%	15%	20%	0%	12%	45%	0%
*Northwest McCumber Riparian	34%	0%	74%	0%	0%	59%	21%
*South Horton Slough Riparian	68%	60%	68%	31%	0%	28%	0%
*Southeast McCumber Riparian	24%	27%	59%	25%	28%	14%	77%
*Southwest McCumber Riparian	55%	35%	90%	40%	66%	72%	0%
*West River Field	53%	58%	44%	0%	66%	34%	8%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the ST Ranch Lease, RLI-461, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
*Calvert Slough Pasture	CALVERT_02	0%	50%	0%	55%	18%	0%	0%
	CALVERT_03	0%	45%	62%	39%	0%	0%	0%
	CALVERT_04	0%	0%	34%	5%	26%	0%	0%
	TATUM_11	94%	70%	77%	64%	37%	69%	71%
	TATUM_13	37%	22%	34%	37%	13%	42%	20%
	TATUM_29	51%	46%	63%	75%	55%	0%	0%
*Charlie Butte Field	TATUM_10	57%	71%	62%	0%	24%	29%	15%
*East River Field	TATUM_07	74%	69%	67%	0%	0%	16%	31%
	TATUM_08	67%	34%	65%	10%	11%	28%	28%
	TATUM_09	86%	82%	77%	48%	61%	49%	30%
	TATUM_12	70%	28%	39%	23%	14%	28%	22%
	TATUM_14	73%	0%	47%	28%	11%	17%	17%
*North Horton Slough Riparian	TATUM_02	25%	23%	13%	13%	0%	21%	0%
*Northeast McCumber Riparian	TATUM_01	9%	14%	20%	0%	12%	45%	0%
*Northwest McCumber Riparian	TATUM_04	34%	0%	74%	0%	0%	59%	21%
*South Horton Slough Riparian	TATUM_06	68%	60%	68%	28%	0%	28%	0%
*Southeast McCumber Riparian	TATUM_03	24%	27%	59%	25%	28%	14%	77%
*Southwest McCumber Riparian	TATUM_05	55%	35%	90%	40%	66%	72%	0%
*West River Field	TATUM_15	53%	58%	44%	57%	66%	34%	8%

**Riparian Utilization, 40%*

Summary of Utilization

Riparian

Over all the utilization of riparian pastures has come into compliance with the riparian grazing prescription of 40%. Compliance can be attributed to the *Conservation Strategy for the Southwestern Willow Western Flycatcher*, close work with Watershed Resources staff and fencing projects in the Pleasant Valley area, that have allowed the lessee to control livestock movement and distribution. Future range burns could improve riparian habitats and over all forage production in the riparian pastures on the lease.

Upland

The uplands on the lease are comprised of abandoned agriculture and shrub dominated vegetation communities. The utilization in these areas generally occurs in the spring is relegated to annuals and shrubs.

ST Ranch Lease RLI-483

North Horton Slough Riparian Pasture

Tatum_02 is located on a Saline Meadow Ecological site in the North Horton Slough Riparian Pasture on a Torrifluvent soil unit. Frequency trends have remained static on the site during the sampling period between 2007-2010.

End of season utilization for Tatum_02

	2009	2010
TATUM_02	13%	3%

Frequency Tatum_02

Life Forms	Species	2007	2009	2010
Perennial Forb	NIOC2	6	10	10
Perennial Graminoid	DISP	119	132	124
	JUBA	0	0	0
	PADI6	2	0	0
	SPAI	54	59	65

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%), Tatum_02

Life Forms	Species	2007	2009	2010
Perennial Forb	NIOC2	1	1	1
Perennial Graminoid	DISP	16	7	10
	SPAI	25	20	26

Ground Cover (%) Tatum_02

Substrate	2007	2009	2010
Dung	1	2	1
Litter	59	56	67
Bare Ground	39	42	32

South Horton Slough Riparian Pasture

Tatum_06 is located on a Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. Frequency trends indicate during the three sampling periods trend has remained static with the exception of saltgrass (DISP) which increased after 2007.

Frequency Tatum_06

Life Forms	Species	2007	2009	2010
Annual Forb	HEAN3	0	0	1
Perennial Forb	GLLE3	0	7	1
	NIOC2	80	94	81
	PYRA	3	0	0
Perennial Graminoid	DISP	141	165*	163
	JUBA	34	34	27
	LETR5		92	103
Nonnative Species	BAHY	0	0	12

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%), Tatum_06

Life Forms	Species	2007	2009	2010
Annual Forb	HEAN3	0	0	T
Perennial Forb	GLLE3	0	2	1
	NIOC2	14	21	18
	PYRA	1	0	0
Perennial Graminoid	DISP	69	32	49
	JUBA	2	T	1
	LETR5	0	5	18
Nonnative Species	BAHY	0	0	T

Ground Cover (%) Tatum_06

Substrate	2007	2009	2010
Dung	6	3	1
Litter	87	96	97
Bare Ground	7	1	2

Northwest McCumber Riparian

Tatum_04 is located on a Saline Meadow Ecological Site, directly south the terrace elevation drops down to a Moist Floodplain Ecological Site. The entire area from the river north to chalk bluffs is mapped as a Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. However the site is likely on a Torrifluvent soil unit. Plant frequencies have remained static or increased with regards to alkali sacaton.

Frequency Tatum_04

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	4
	ATTR	0	0	10
Perennial Forb	GLLE3	0	1	0
	PYRA	0	0	8
	SUMO	0	0	2
Perennial Graminoid	DISP	11	18	21
	JUBA	17	24	24
	LETR5	2	2	2
	SPAI	107	119	136**
Shrubs	ERNA10	10	3	1
Nonnative Species	BAHY	3	0	3
	LELA2	0	0	2
	BRRU2	0	0	1

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%), Tatum_04

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	1
	ATTR	0	0	1
Perennial Forb	GLLE3	1	T	T
	PYRA	0	0	T
	SUMO	0	0	0
Perennial Graminoid	DISP	2	1	2
	JUBA	1	T	1
	LETR5	1	0	T
	SPAI	58	18	42
Nonnative Species	BAHY	0	0	T
	BRRU2	0	0	T

Shrub Cover (%) Tatum_04

Species	2007	2009
ATTO	T	0
ERNA10	4	1
SUMO	T	0
Total	5	1

Shrub Densities and Age Classes Tatum_04

	ATTO	ERNA10		SUMO	
Age Class	2007	2007	2009	2007	2009
Juvenile	0	7	0	12	0
Mature	1	17	5	4	1
Decadent	0	2	0	0	0
Total	1	26	5	16	1

Ground Cover (%) Tatum_04

Substrate	**2007**	**2009**	**2010**
Dung	2	1	1
Litter	86	65	71
Standing Dead	0	T	T
Bare Ground	11	33	28

Tatum_01 is located on a Saline Meadow Ecological Site. The transect corresponds to the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit however the site is on an elevated terrace above the functioning floodplain and exhibits botanical characteristics similar to a Torrifluvent site (Saline Meadow). Saltgrass frequency has been stable while alkali sacaton and Baltic rush have declined between 2007 and 2010.

Frequency (%), Tatum_01

Life Forms	**Species**	**2007**	**2009**	**2010**
Perennial Forb	ASTER	0	0	0
	NIOC2	0	4	6
	PYRA	30	27	32
Perennial Graminoid	CAREX	0	4	12
	DISP	109	106	116
	JUBA	65	74	57*
	LETR5	4	0	4
	POSE	2	0	9
	SPAI	85	72	53**
	SPGR	13	28	27
Nonnative Species	DESO2	0	0	4

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%), Tatum_01

Life Forms	Species	2007	2009	2010
Perennial Forb	ASTER	0	0	2
	NIOC2	0	T	1
	PYRA	2	1	2
Perennial Graminoid	CAREX	0	T	T
	DISP	10	6	9
	JUBA	8	1	1
	LETR5	T	0	0
	POSE	0	0	0
	SPAI	28	5	12
	SPGR	1	1	1

Ground Cover (%) Tatum_01

Substrate	2007	2009	2010
Dung	2	1	2
Litter	70	60	70
Bare Ground	29	39	28

Southeast McCumber Riparian

Tatum_03 is located on an Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. The site shows no trends during the sampling periods between 2007 and 2010. Pepperweed (LELA2) is on site and c
ommon throughout the area.

Frequency (%), Tatum_03

Life Forms	Species	2007	2009	2010
Annual Forb	ATTR	0	0	1
	COMAC	0	0	0
	HEAN3	0	0	2
Perennial Forb	ASTER	0	0	1
	ERIGE2	5	0	0
	NIOC2	7	16	5
	PYRA	15	8	7
Perennial Graminoid	CADO2	4	0	0
	DISP	121	128	111*
	JUBA	101	104	102
	LETR5	77	82	87
	SPAI	11	15	17
Shrubs	ATTO	14	12	0
Nonnative Species	BAHY	0	6	24**
	LELA2	0	0	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%), Tatum_03

Life Forms	Species	2007	2009	2010
Annual Forb	ATTR	0	0	T
	COMAC	0	0	T
	HEAN3	0	0	T
Perennial Forb	ASTER	0	0	T
	ERIGE2	1	0	0
	NIOC2	1	T	T
	PYRA	1	T	1
Perennial Graminoid	CADO2	1	0	0
	DISP	47	14	26
	JUBA	9	1	4
	LETR5	14	5	15
	SPAI	10	3	8
Nonnative Species	BAHY	0	T	1

Ground Cover (%) Tatum_03

Substrate	2007	2009	2010
Dung	3	2	1
Litter	96	95	99
Standing Dead	0	T	T
Bare Ground	1	3	0

Southwest McCumber Riparian

Tatum_05 is located on a Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. The site remained static with the exception of five-horn smotherweed (BAHY) which spiked in response to the wet than normal winter in 2009-10.

Frequency, Tatum_05

Life Forms	Species	2007	2009	2010
Annual Forb	ATTR	0	0	52**
Perennial Forb	GLLE3	9	1	2
	PYRA	0	0	4
Perennial Graminoid	DISP	130	143	140
	JUBA	73	66	71
	LETR5	79	78	86
	SPAI	0	2	3
Nonnative Species	BAHY	0	0	26**

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_05

Life Forms	Species	2007	2009	2010
Annual Forb	ATTR	0	0	2
Perennial Forb	GLLE3	2	1	1
	PYRA	0	0	T
Perennial Graminoid	DISP	40	13	31
	JUBA	9	2	2
	LETR5	7	1	5
	SPAI	T	1	1
Nonnative Species	BAHY	0	0	1

Shrub Cover (%) Tatum_05

Species	2007	2009	2010
ERNA10	T	1	1

Shrub Densities and Age Classes Tatum_05

	ERNA10		
Age Class	2007	2009	2010
Mature	7	2	4
Decadent	1	0	0
Total	8	2	4

Ground Cover (%) Tatum_05

Substrate	2007	2009	2010
Dung	9	2	4
Litter	86	87	90
Bare Ground	3	11	6

West River Field

Tatum_15 is located on a Saline Bottom Ecological Site on the Winerton-Hessica Complex soil unit. Frequency has remained static during the three sampling periods.

Frequency Tatum_15

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	7	7	6
	SPAI	92	102	97
	SPGR	0	0	1
Shrubs	ATCO	20	26	26
	ATTO	14	9	2
	ERNA10	15	3	2
	MACA17	0	3	0
	TEAX	3	2	2
Nonnative Species	BRRU2	0	0	3

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_15

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	T	T	T
	SPAI	13	4	11
Nonnative Species	BRRU2	0	0	T

Shrub Cover (%) Tatum_15

Species	2007	2009	2010
ATCO	2	1	T
ATTO	1	1	1
ERNA10	1	2	3
TEAX	T	T	0
Total	4	4	4

Ground cover (%) Tatum_15

Substrate	2007	2009	2010
Dung	2	2	1
Litter	28	15	14
Rock	8	1	4
Standing Dead	1	1	2
Bare Ground	62	83	81

East River Field

Tatum_07 is located on a Saline Bottom Ecological Site on the Winerton-Hessica Complex soil unit. The site has remained static with the exception of the disappearance of bud sagebrush (PIDE4) on the site.

Frequency (%) Tatum_07

Life Forms	Species	2007	2009	2010
Annual Forb	CORA5	0	0	2
Perennial Forb	SUMO	1	1	0
Perennial Graminoid	DISP	2	2	2
	SPAI	96	96	92
Shrubs	ATCO	22	21	22
	ATPA3	2	2	1
	SAVE4	8	5	12
	TEAX	2	1	1
	ARTR2	0	0	2
	PIDE4	12	14	0**

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_07

Life Forms	Species	2007	2009	2010
Annual Forb	CORA5	0	0	T
Perennial Forb	SUMO	T	T	0
Perennial Graminoid	DISP	T	T	T
	SPAI	4	4	3

Shrub Cover (%) Tatum_07

Species	2007	2009	2010
ARSP	0	0	1
ATCO	3	2	2
SAVE4	4	4	15
TEAX	1	0	0
ARTR2	1	0	0
PIDE4	0	1	0
Total	8	8	18

Ground Cover (%) Tatum_07

Substrate	2007	2009	2010
Dung	2	1	0
Litter	28	31	28
Rock	7	0	1
Standing Dead	8	5	2
Bare Ground	63	68	70

Tatum_08
Tatum_08 is located on a Saline Bottom Ecological Site on the Winerton-Hessica Complex soil unit. There are no apparent trends in the frequency data among the three sampling events.

Frequency Tatum_08

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	84	86	94
	JUBA	9	8	1**
	SPAI	74	99	79**
	SPGR	0	0	1
Shrubs	ATTO	3	1	2
	ERNA10	20	19	9
Nonnative Species	BAHY	0	0	1

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_08

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	11	6	6
	JUBA	T	1	0
	SPAI	16	12	8

Shrub Cover (%) Tatum_08

Species	2007	2009	2010
ATTO	1	1	1
ERNA10	12	18	12
Total	12	19	13

Ground Cover (%) Tatum_08

Substrate	2007	2009	2010
Dung	3	1	0
Litter	69	59	70
Standing Dead	2	6	3
Bare Ground	28	40	30

Tatum_09

Tatum_09 is located on a Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. No evidence of any directional trends were detected during the three sampling events on Tatum_09.

Frequency Tatum_09

Life Forms	Species	2007	2009	2010
Annual Forb	ATSES	0	0	7
Perennial Forb	ANCA10	37	44	47
	GLLE3	0	3	2
	HECU3	1	1	0
	NIOC2	5	0	0
Perennial Graminoid	DISP	111	124	111
	JUBA	10	13	9
	LETR5	0	4	2
	SPAI	17	23	21
Shrubs	ATTO	2	8	2
	ERNA10	6	7	3
Nonnative Species	BAHY	2	31	46

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_09

Life Forms	Species	2007	2009	2010
Annual Forb	ATSES	0	0	1
Perennial Forb	ANCA10	23	19	24
	GLLE3	0	T	T
	HECU3	T	T	0
Perennial Graminoid	DISP	36	21	16
	JUBA	1	T	T
	LETR5	0	T	T
	SPAI	5	5	7
Nonnative Species	BAHY	0	1	2

Shrub Cover (%) Tatum_09

Species	2007	2009	2010
ATTO	11	15	14
ERNA10	7	7	5
Total	17	21	19

Ground Cover (%) Tatum_09

Substrate	2007	2009	2010
Dung	9	5	2
Litter	89	94	94
Standing Dead	2	2	2
Bare Ground	1	1	4

Tatum_12

Tatum_12 is located on a Saline Meadow Ecological Site on the Torrifluvent soil unit. Saltgrass declined in 2010 compared to 2009 but was unchanged when compared to 2007.

Frequency Tatum_12

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	8
Perennial Forb	NIOC2	0	3	2
	STEPH	0	0	0
Perennial Graminoid	DISP	140	159	146**
	SPAI	7	11	8
Shrubs	ATTO	7	16	11

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_12

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	T
Perennial Forb	NIOC2	0	T	T
	STEPH	0	0	0
Perennial Graminoid	DISP	66	65	43
	SPAI	5	2	2

Shrub Cover (%) Tatum_12

Species	2007	2009	2010
ATTO	3	3	3
ERNA10	0	T	0
Total	3	4	3

Ground Cover (%) Tatum_12

Substrate	2007	2009	2010
Dung	8	4	1
Litter	85	89	92
Standing Dead	0	3	1
Bare Ground	8	7	7

Tatum_14

Tatum_14 is situated on a Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. Aerial photos from 2009, 1981, and 1944 show a steady conversion of an herbaceous dominated floodplain to a shrub dominated floodplain. Frequency of saltgrass for 2009 and 2010 was significantly higher than 2007, while all other frequency values remained static.

Frequency Tatum_14

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	15
	COMAC	0	0	13
Perennial Forb	ANCA10	4	5	2
	PYRA	1	1	0
	STPA4	0	3	0
Perennial Graminoid	DISP	103	124	120
	JUBA	19	21	20
	SPAI	37	37	27
Shrubs	ATTO	8	5	8
	ERNA10	3	13	10
Nonnative Species	BAHY	0	19	3**

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_14

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	T
	COMAC	0	0	T
Perennial Forb	ANCA10	3	2	2
	PYRA	T	T	0
	STPA4	0	T	0
Perennial Graminoid	DISP	22	21	13
	JUBA	1	T	T
	SPAI	9	4	5
Nonnative Species	BAHY	0	T	T

Shrub Cover (%) Tatum_14

Species	2007	2009	2010
ATTO	2	3	3
ERNA10	6	8	6
Total	8	10	9

Ground Cover (%) Tatum_14

Substrate	2007	2009	2010
Dung	5	4	1
Litter	68	62	66
Rock	0	1	0
Standing Dead	2	4	1
Bare Ground	27	34	33

Charlie Butte Field

Tatum_10 is located on a Saline Meadow Ecological Site on the Shondow Loam soil unit. Frequency values remained static.

Frequency Tatum_10

Life Forms	Species	2007	2009	2010
Perennial Forb	CALI4	0	1	0
	STEPH	0	7	0
	STPA4	0	0	12
Perennial Graminoid	DISP	0	14	12
	LECI4	0	1	0
	SPAI	78	85	88
Shrubs	ATTO	21	15	6
	ERNA10	2	11	13
	SAVE4	3	0	1
	ARTR2	2	0	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_10

Life Forms	Species	2007	2009	2010
Perennial Forb	CALI4	0	T	0
	STEPH	0	1	0
Perennial Graminoid	DISP	0	1	T
	LECI4	0	T	0
	SPAI	6	5	6

Shrub Cover (%) Tatum_10

Species	2007	2009	2010
ATTO	4	6	6
ERNA10	1	8	4
SAVE4	1	1	1
MACA17	0	0	0
Total	6	15	11

Ground Cover (%) Tatum_10

Substrate	2007	2009	2010
Dung	1	1	0
Litter	35	37	47
Rock	0	0	2
Standing Dead	3	13	4
Bare Ground	64	62	48

Calvert Slough Pasture

Tatum_11 is located on a Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. Saltgrass frequency declined significantly in 2010 when compared to all previous years.

Frequency Tatum_11

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	5
	CORA5	0	0	4
Perennial Forb	GLLE3	0	2	1
Perennial Graminoid	DISP	152	157	141*
	JUBA	32	33	28
	LETR5	25	18	21
	SPAI	0	0	4
	SPGR	0	0	4
Shrubs	ATTO	3	8	10
Nonnative Species	BAHY	3	36	54**

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_11

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	T
	CORA5	0	0	1
Perennial Forb	GLLE3	T	T	T
Perennial Graminoid	DISP	64	49	33
	JUBA	1	T	T
	LETR5	1	1	2
	SPAI	0	0	2
Nonnative Species	BAHY	T	1	1

Shrub Cover (%) Tatum_11

Species	2007	2009	2010
ATTO	5	12	17
ERNA10	0	0	2
Total	5	12	19

Ground Cover (%) Tatum_11

Substrate	2007	2009	2010
Dung	12	8	1
Litter	87	91	96
Standing Dead	1	3	0
Bare Ground	0	1	3

Tatum_13

Tatum_13 is found on a Moist Floodplain Ecological Site on the Torrifluvents-Fluvaquentic Endoaquaolls Complex soil unit. No trends were observed during the last three sampling periods.

Frequency Tatum_13

Life Forms	Species	2007	2009	2010
Perennial Forb	NIOC2	0	5	0
Perennial Graminoid	DISP	88	79	79
	JUBA	5	13	4**
	SPAI	64	57	56
	SPGR	0	0	3
Shrubs	ATTO	20	16	12
	ERNA10	0	3	0
Nonnative Species	BAHY	0	0	3

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_13

Life Forms	Species	2007	2009	2010
Perennial Forb	NIOC2	0	T	0
Perennial Graminoid	DISP	15	14	5
	JUBA	T	T	T
	SPAI	18	11	7

Shrub Cover (%) Tatum_13

Species	2007	2009	2010
ATTO	5	10	9
ERNA10	0	0	0
Total	5	10	9

Ground Cover (%) Tatum_13

Substrate	2007	2009	2010
Dung	5	1	0
Litter	71	70	68
Standing Dead	6	7	1
Bare Ground	26	29	32

Calvert

Tatum_29

Tatum_29 is located on a Saline Bottom Ecological Site on the Pokonahbe Loamy Fine Sand, 0-2% Slopes. No trends in frequency were observed over the five sampling periods with the exception of a spike in bushy bird's beak (CORA5) as a response from the above average precipitation during the winter and spring of 2010.

Frequency Tatum_29

Life Forms	Species	2002	2003	2007	2009	2010
Annual Forb	CLOB	0	3	0	0	0
	CORA5	0	13	0	0	64**
	ERIAS	0	3	0	0	0
Perennial Forb	STEPH	0	1	0	0	0
	SUMO	0	1	0	0	0
Perennial Graminoid	DISP	12	6	8	2	4
	SPAI	121	107	109	123	115
Shrubs	ARTRW8	0	0	0	0	0
	ATCO	0	0	0	3	0
	ERNA10	0	9	0	5	0
	SAVE4	0	2	0	0	3
	ARTR2	9	20	14	30	21
Nonnative Species	SATR12	0	3	0	0	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) Tatum_29

Life Forms	Species	2002	2003	2007	2009	2010
Annual Forb	2FORB	0	T	0	0	0
	CLOB	0	T	0	0	0
	CORA5	0	1	0	0	5
Perennial Forb	STEPH	0	T	0	0	0
Perennial Graminoid	DISP	T	T	T	0	T
	SPAI	14	17	12	14	10

Shrub Cover (%) Tatum_29

Species	2003	2007	2009	2010
ERNA10	0	1	1	1
SAVE4	0	1	2	2
ARTR2	2	3	3	4
Total	3	6	6	7

Ground Cover (%) Tatum_29

Substrate	2002	2003	2007	2009	2010
Bare soil	45	0	0	0	0
Dung	3	2	2	1	0
Litter	24	45	20	42	36
Rock	5	2	5	1	11
Standing Dead	0	0	1	1	0
Bare Ground	0	42	72	57	53

Irrigated Pastures

The following table shows Irrigated Pasture Condition Scores.

Irrigated Pasture Condition Scores ST Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
N Highland Pasture	86	X	78	88	X	X	82
S Highland Pasture	74	78	70	86	X	X	82
N Y Road Pasture	X	X	70	84	X	X	80
S Y Road Pasture	86	X	74	86	X	X	80
Bogie Field	X	X	66	84	X	X	84
Steward Pasture	84	X	82	84	X	X	84
North Horse	X	X	X	82	86	X	84
West Horse	84	X	X	82	88	X	82
Wanacott	82	X	78	84	X	X	84
Horse Trap	94	94	86	94	X	X	92
Mare Pasture	90	90	84	92	X	X	86
Front Pasture	80	80	86	90	X	X	86
Swamp Pasture	80	80	82	88	X	X	86
Castaway Pasture	X	X	74	86	X	X	80
Calvert Slough	X	X	X	84	X	X	80

X indicates no evaluation made.

Summary of Irrigated Pastures

Watershed Resources staff has been working with the lessee to improve irrigated pasture condition scores since 2007. One of the main problems on the lease was water management and availability which, was being impeded by old irrigation diversions and lack of water supply. A new irrigation schedule was implemented and maintenance and repairs to ditches and head gates has improved Irrigated Pasture Condition scores.

Stockwater Sites

There are no stockwater sites planned for the ST Ranch Lease.

Fencing

In 2009 4.5 mile fence was constructed in Pleasant Valley on the south side of the Owens River. Included as part of this fence were two cross fences that helped create six riparian pastures. In 2010 1 mile of fence was constructed on the east end of the existing Pleasant Valley fence that is located

on the north side of the Owens River. All fence was constructed as part of the *Conservation Strategy for the Southwestern Willow Western Flycatcher,* and to protect riparian habitat as it recovered from a wild fire that occurred in 2007.

Salt and Supplement Sites

Feed pellets that contain trace minerals and protein are distributed for supplement on the lease.

4.1.2 3V Ranch Lease (RLI-435)

The 3V Ranch (33 acres) west of Bishop is leased to Kenneth, Kenny, and Barbara Partridge and Venneta Johnson. Kenneth and Kenny Partridge manage the 3V Ranch. There are four irrigated pastures that comprise the lease and, they are grazed on a rotational grazing schedule year round. The ranch is a commercial cow/calf operation.

All pastures on the lease are irrigated so there is no utilization monitoring.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores 3V RanchLease RLI-435, 2007-13

Pastures	2007	2008	2009	2010	2011	2012	2013
Swamp	96	X	X	90	X	X	72
Front	96	X	X	94	X	X	88
Horse	96	X	X	94	X	X	84
Little	96	X	X	94	X	X	82

X indicates no evaluation made.

Summary Irrigated Pastures

Irrigated pastures on the 3V Ranch lease have been consistently high. In 2010 a new irrigation schedule was implemented that measured irrigation water allotments more accurately. As a result any extra water was received before was no longer available. As a result irrigated pasture conditions have decreased. The lower scores are a product of lack of weed control and inability to adapt to the new irrigation duty. Pastures on the lease will be evaluated again in 2014.

Stockwater Sites

Stockwater is provided by the irrigation diversions on the lease.

Fencing

There has been no new fencing on the lease, and there is none planned for the future beyond normal maintenance.

Salt and Supplement Sites

Cattle are fed hay and protein supplement during the winter.

4.1.3 Reata Ranch Lease (RLI-453)

The Reata Ranch (139 acres) consists of the Fish Slough Parcel (84 acres), north of Bishop; and the Reata Parcel (55 acres), west of Bishop. The ranch is leased to Ms. Kathleen Hadeler, Ms. Amanda Miloradich, and Mr. John McMurtrie. The ranch is managed by Mr. McMurtrie. The ranch is a cow/calf operation; pairs spend summer months on private property and winter on the Reata Parcel. The Fish Slough Parcel is in nonuse.

Since the Fish Slough Parcel is in nonuse and the remaining pastures on the lease are irrigated, utilization is not monitored.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Reata Ranch Lease RLI-453, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
North Reata	86	X	X	90	X	X	90
South Mummy	86	X	X	88	X	X	84
Bishop Creek	86	X	X	92	X	X	90
South Reata	92	X	X	90	X	X	90
North Mummy	84	X	X	84	X	X	84

X indicates no evaluation made.

Summary Irrigated Pastures

All of the irrigated pastures have maintained healthy condition since 2007 and no management changes have been recommended.

Stockwater Sites

Stockwater is provided by irrigation diversions and Bishop Creek.

Fencing

No new fencing has been constructed on the lease, nor is any planned for the future beyond normal maintenance.

Salt and Supplement Sites

Cattle are supplemented with hay and protein during the winter months.

4.1.4 Horseshoe Bar Ranch Lease (RLI-462)

The Horseshoe Bar Ranch (336 acres) consists of two separate parcels: the 141-acre Sewer Parcel, which lies to the east of Bishop; and the 195-acre Dairy Parcel, which lies west of Bishop. The ranch is leased to Don Tatum, Jim Tatum, and Lee Tatum. It is managed by Jim Tatum as a cow/calf operation. Cattle are typically grazed during the winter months but, the Sewer Parcel does get some grazing during the summer.

Utilization monitoring is not needed on this lease because the lease is solely comprised of irrigated pastures.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Horseshoe Bar Ranch Lease RLI- 462, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
West Pasture	82	X	X	90	X	X	84
Front Pasture	82	X	X	92	X	X	84
Sewer Pasture	82	X	X	88	X	X	88

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pastures on the lease were just within the irrigated pasture condition minimum score of 80% in 2007. The main problem that contributed to the low pasture condition scores was old irrigation diversion which did not convey water efficiently. Since that time new head gates have been constructed and the lessee has been able to irrigate more effectively. However weed management is still and issue lowering scores during 2013.

Stockwater Sites

All stockwater is provided by irrigation diversions.

Fencing

There has been no new fencing constructed on the lease, and there are no planed fencing projects beyond normal maintenance.

Salt and Supplement Sites

Cattle are supplemented with protein tubs during the winter.

4.1.5 Rainbow Pack Outfit Lease (RLI-460)

The Rainbow Pack Outfit Lease (144 acres), leased to Greg Allen, and managed by Greg and Ruby Allen, is a commercial pack operation that grazes horses and mules. The lease consists of the Wye Road, Brockman, and Dutch John Parcels, all in the Bishop area. The Wye Road Parcel consists of the Spruce Street and the Wye Road Fields, which are separated by a ditch. The Brockman pasture is irrigated and is located just off of Highway 395 and Brockman lane. The Dutch John Parcel is located up the Bishop Creek drainage off of Highway 168, it currently does not receive any use.

Summary of Utilization

The Wye Road Field is the only field on the lease that requires utilization monitoring. Livestock begin grazing in January and remain in the field until a 2 inch stubble height is reached, or rare plants

(Owens Valley sidalcea) begin to start growing. When either one of these criteria are met livestock are moved from the field.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Rainbow Pack Outfit RLI-460, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Brockman	X	72	82	80	82	80	80

X indicates no evaluation made.

Summary Irrigated Pastures

In 2007 the Brockman pasture was not rated because there was no grazing allowed. At that time the condition of the pasture was to poor to allow any grazing. In 2008 irrigated pasture condition improved as a result of better irrigation practices and grazing management. Since 2008 conditions of the pasture have increased to meet the minimum pasture condition score of 80%. Water distribution and weeds have continued to be a problem that the lessee is working on. Annual monitoring of this pasture will continue until a consistent upward trend in scores is achieved.

Stockwater Sites

There are no stockwater sites planed for the lease. Stockwater is provided by irrigation diversions.

Fencing

A temporary fence was constructed by the lessee in the Wye Road Field in 2008 to prevent livestock from crossing to the south end of the field. This was done to utilize available forage on the north end of the pasture, which had not yet met the utilization stubble height of 2 inches. Since then, the lessee has been maintaining the fence.

Salt and Supplement Sites

A large supplement area had been established on the west side of the Wye Road field. This site became degraded, harming vegetation and it was in close proximity to a stream so the lessee was asked to move the site. The lessee moved the site to the north end of the field were there is a large disturbed area. This has now become the new supplement site.

4.1.6 Rockin C Ranch Lease (RLI-493)

The Rockin C Ranch (320 acres) lies east of Bishop and is leased by Cathy Caballero, Chance Johnson and Becky Johnson. The Ranch is managed by Chance and Becky Johnson who graze cattle and five to ten horses. The livestock spend the summer on the Sewer Farm (RLI-462).

Currently there is no utilization monitoring occurring on the lease. Grazing occurs on the Sewer Farm pasture, Holding Pasture, and Little Horse Pasture which are irrigated.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Rockin C Ranch RLI- 493, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Little Horse Pastue	X	X	X	X	X	X	84
Rain Gun Pasture	X	X	X	X	X	X	84

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pastures located on the lease have not been rated for the past four years. This is due to a change of management in 2007 that lead to the reseeding and construction of a new irrigation system. Both pastures were rated in 2013 and the pastures rated above the minimum score of 80.

Stockwater Sites

There are no new stockwater sites purposed for the lease. Stockwater is provided by irrigation diversions and the Kingsley ditch.

Fencing

There are no new fencing projects proposed for the lease. In 2007 when management changed on the lease new corrals and fencing were constructed by the lessee.

Salt and Supplement Sites

Cattle are fed hay in the winter along with cake and salt blocks.

4.1.7 Rafter DD Ranch Lease (RLI-439)

The Rafter DD Ranch (240 acres) consists of two parcels: the Round Valley Parcel (160 acres), north of Bishop, leased to Dave Dohnel and Kent Dohnel and managed by Kent Dohnel; and the Bishop Parcel (80 acres), east of Bishop, leased to Dave and Shannon Dohnel and managed by Dave Dohnel. The Rafter DD Ranch Lease is a commercial pack operation (Frontier Packers), grazing horses and mules on the Round Valley Parcel and on the Bishop Parcel.
The Bishop parcel consists of irrigated pastures and some dry grazing located in the Desert Field.

Utilization is not monitored on the lease because, the Desert Field is abandoned agriculture land comprised of shrubs and annuals.

The Round Valley portion of the lease consists of all irrigated pastures that get grazed during the winter by pack stock.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Big Pine Canal Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Mare Pasture	84	X	X	86	X	X	86

Pasture 1	86	X	X	92	X	X	82
Archy	92	X	X	92	X	X	92
Corral Holding	84	X	X	86	X	X	88
South Archy	94	X	X	94	X	X	88
Schober	88	X	X	90	X	X	96
South Schober	88	X	X	88	X	X	88

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pasture condition scores for the lease have been consistently above the minimum required score of 80%. The only pasture that is a problem is Pasture 2. A rain gun sprinkler system was installed in it with plans to plant the field to pasture. However, cost of operation and poor irrigation uniformity has hampered the ability of the lessee to get the pasture established. Currently the lessee is researching new techniques to get the pasture established.

The Round Valley portion of the lease is in good condition and no management changes are required.

Stockwater Sites

There are no new stockwater sites planned for the lease. All stockwater is provided by irrigated diversions or troughs.

Fencing

All fencing activities on the lease will consist of normal maintenance.

Salt and Supplement Sites

Hay and salt are provide for the horses and mules on the lease during the winter.

4.1.8 Quarter Circle B Ranch Lease (RLI-404, 413)

The Quarter Circle B Ranch (1143 acres) lies west of Bishop. The leases and use permits that make up the Quarter Circle B Ranch are owned by Dan Boyd and Troy Oney. Messrs. Boyd and Oney are both responsible for the management of the leases and use permits. The Quarter Circle B Ranch is a cow/calf operation. The RLI-404 portion of the lease produces alfalfa or grass hay and grazes the stubble with cattle or horses.

The lease is comprised of irrigated pastures and dry grazing. Utilization monitoring is not required because, the fields consist shrubs and annuals.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Quarter Circle B Ranch RLI- 404,413, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Riata Pasture	76	76	76	74	70	80	78

Mummy Pasture	78	76	76	72	70	80	78
Otey Pasture	80	72	76	76	76	78	81

X indicates no evaluation made.

Summary Irrigated Pastures

Since 2010 pasture condition scores have been below or at the minimum standard of 80%. These pastures rate continually low, due to a lack of consistent irrigation and weed control. Sucker elm trees located in the pasture are also bringing the overall score down. The lessee has been working on removing the elms trees and spraying the weeds. They have also been working on different irrigation strategies to improve pasture condition. Yearly evaluations of the lease will continue to be made until pasture conditions improve on the lease.

Currently the lessee's have sold all of the cattle on the lease and no grazing is occurring on the irrigated pastures.

Stockwater Sites

There are no stockwater sites planned for the lease. Stockwater is provided by irrigation ditches.

Fencing

There are no new fencing projects planned for the lease beyond normal maintenance.

Salt and Supplement Sites

Hay and protein supplement are fed to the cattle during the winter months. Site locations are in good condition at this time.

4.1.9 CT Ranch Lease (RLI-451,500)

The C-T Ranch (6055 acres) consists of several different leases. The Chance Ranch Parcels RLI-451 (1040 acres) are located in Round Valley. The first parcel (569 ac) is approximately 10 miles northwest of Bishop, east of Rock Creek Road, and north of Birchim Road. The second Parcel (471 acres) consists of the Roberts Ranch, north of Pine Creek Road and west of Rock Creek Road; and the Evans Ranch west of U.S. Highway 395 and south of Pine Creek Road. The Sunland Parcel RLI-500 (249 acres) is southwest of Bishop and west of Sunland Road; and the Patch Parcel (4766 acres) is 13 miles northeast of Bishop in Mono County, near Chalfant Valley. The leases are held by William and Sharon Talbot, and Thomas and Laura Talbot and managed by William and Thomas Talbot. The livestock program is a commercial cow/calf operation.

All of the CT Ranch that is located within Inyo County is comprised of irrigated pastures and there is no utilization monitoring needed.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores CT Ranch RLI-451, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Upper Pond Pasture	92	X	X	82	X	X	88
Locust Pasture	94	X	X	86	X	X	86
Iron Gate Pasture	94	X	X	88	X	X	86
80 Pasture 1	96	X	X	90	X	X	86
80 Pasture 2	94	X	X	88	X	X	86
Below Hay Stack	90	X	X	88	X	X	86
Hay Stack Pasture	86	X	X	88	X	X	86
Rock Pasture	86	X	X	90	X	X	86
Holding Pasture	86	X	X	90	X	X	86
Pasture Below House	94	X	X	92	X	X	92
Stink Ant Pasture	88	X	X	94	X	X	86
Pasture #4	94	X	X	84	X	X	96
Derick Pasture	90	X	X	92	X	X	88
Pond Pasture	96	X	X	92	X	X	96
Lowest South Pasture	94	X	X	96	X	X	96
Lower Middle Pasture	92	X	X	100	X	X	92
Wahlene Pasture	94	X	X	98	X	X	92
Second Pasture	96	X	X	86	X	X	88
Iris Pasture	94	X	X	96	X	X	92
Long Pasture	88	X	X	94	X	X	84
Horse Pasture	88	X	X	86	X	X	88
Front Pasture	92	X	X	94	X	X	96
Alfalfa Pasture	94	X	X	86	X	X	98
Pine Cr Road Pasture	92	X	X	94	X	X	94
Four Pasture	90	X	X	90	X	X	94
A Pasture	94	X	X	94	X	X	98
B Pasture	94	X	X	90	X	X	96
40 Acre Pasture	92	X	X	90	X	X	96
F Pasture	92	X	X	94	X	X	96
Lou's Pasture	98	X	X	92	X	X	94
Highway Pasture	94	X	X	90	X	X	94
Bull Pasture	90	X	X	82	90	X	94
Orchard Pasture	90	X	X	86	X	X	90
G Pasture	84	X	X	90	X	X	96
E Pasture	84	X	X	82	94	X	98

X indicates no evaluation made.

Irrigated Pasture Condition Scores CT Ranch RLI-500, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
South 80	84	X	X	92	X	X	82
North 40	86	X	X	96	X	X	86
Trailer Park	86	X	X	94	X	X	86

X indicates no evaluation made.

Summary Irrigated Pastures

All of the pastures on the CT Ranch have been well above the required irrigated pasture condition score of 80%. They lessee's are currently working on removing a non-native ornamental perennial bunch grass by burning and spraying herbicides. There are no recommended management changes for the lease.

Stockwater Sites

There are no stockwater sites planned for the lease. All stockwater is provided by irrigation diversions or perennial streams.

Fencing

There have been no fencing projects on the lease and none are planned for the future beyond normal maintenance by the lessee.

Salt and Supplement Sites

Hay and protein supplement are fed on a seasonal basis, and sites are rotated.

4.1.10 Mandich Ranch Lease (RLI-424)

The Mandich Ranch (165 acres) southwest of Bishop is owned by Chance Rossi, Holly Rossi, Justin Rossi, and Michael Rossi . Chance Rossi is the ranch manager for the cow/calf operation.

The entire Mandich Ranch lease is comprised of irrigated pastures, and utilization monitoring is not required.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Mandich Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
West Schober	86	X	X	96	X	X	88
East Schober	86	X	X	90	X	X	88
North Horse	90	X	X	86	X	X	90
South Horse	86	X	X	86	X	X	90
Heifer Pasture	88	X	X	94	X	X	90
Jack In The Box	84	X	X	90	X	X	88
Sheep Pasture	90	X	X	86	X	X	90
East 80	88	X	X	92	X	X	90
West 80	88	X	X	90	X	X	90

X indicates no evaluation made.

Summary Irrigated Pastures

All irrigated pastures on the lease have been well above the minimum score of 80%. The lessee has just finished replacing old irrigation diversions on the lease. There is no management changes recommended.

Stockwater Sites

There are no stockwater sites planned for the lease. All water in provided by irrigation diversions.

Fencing

The lessee is currently replacing all the perimeter fences on the lease.

Salt and Supplement Sites

Hay and protein supplements are fed during the winter and all feed sites are rotated.

4.1.11 LI Bar Ranch Lease (RLI-487)

The LI-Bar Lease (684 acres) consists of two separate parcels: the South Bishop Place, which lies to the southeast of Bishop, east of U.S. Highway 395; and the Hess Place, which is west of Bishop, south of west Line Street, and east of Barlow Lane. The lease is owned by Gary E. and Alonna M. Giacomini as Trustees of the Giacomini Trust. The Giacomini Family's livestock program is a commercial cow/calf operation.

The entire LI Bar Ranch lease is comprised of irrigated pastures, and utilization monitoring is not required.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Big Pine Canal Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Sheep/Horse Pasture	89	X	X	92	X	X	88
Hess Pasture	86	X	X	94	X	X	88
West Line	92	X	X	94	X	X	94

X indicates no evaluation made.

Summary Irrigated Pastures

All irrigated pastures on the lease have consistently been in good condition since 2007. No management changes are recommended for the lease.

Stockwater Sites

There are no stockwater sites planned for the lease. All stockwater is provided by irrigation diversions.

Fencing

There is no fencing projects planned for the lease beyond normal maintenance.

Salt and Supplement Sites

Cattle are supplemented with hay pellets and protein tubs. Supplement sites are rotated each time the cattle are fed.

4.1.12 U Bar Ranch Lease (RLI-402)

The U-Bar Ranch Lease (407 acres) lies south of Bishop, east of U.S. Highway 395, and is owned and managed by Alice J. Boothe, and Roy and Beverly Boothe. The U-Bar Ranch is a cow/calf operation. The ranch is comprised of irrigated pasture and some dry abandoned agriculture.

The abandoned agriculture on the U Bar Ranch is comprised of shrubs and annuals. There are no native perennial grasses present to measure utilization.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores U Bar Ranch RLI- 402, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Highway North	88	X	X	92	X	X	80
Highway South	88	X	X	92	X	X	80
Upper North 40	88	X	X	90	X	X	86
Upper Middle	88	X	X	88	X	X	92
Lower Middle	92	X	X	94	X	X	92
Bull	88	X	X	90	X	X	92

X indicates no evaluation made.

Summary Irrigated Pastures

Irrigated pasture condition scores dropped in 2013 in the North and South Highway pastures, caused by inconsistent water delivery due to drought conditions. The drought conditions are temporary so no management changes are planned for the lease.

Stockwater Sites

There are no stockwater sites planned for the lease. Stockwater is provided by irrigation diversions.

Fencing

No fencing projects are planned for the lease beyond general maintenance.

Salt and Supplement Sites

Hay and protein supplement are fed to the cattle during the winter months. Feeding areas are rotated periodically for cattle health and to minimize grazing impacts.

4.1.13 Round Valley Ranch Lease (RLI-483)

The Round Valley Ranch Lease covers 19,780-acres and is a commercial cow/calf operation. The Round Valley Ranch is broadly distributed across several different locations within the Owens Valley. In the Big Pine area, the lease consists of 13 separate pastures. The southernmost pasture lies on the east side of the Owens River and extends from Tinemaha Reservoir, on the south, to U.S. Highway 168, on the north. On the east side of the Owens River, the lease extends from north of Steward Lane to north of Klondike Lake. The Round Valley portion of the ranch, approximately eight miles northwest of Bishop, consists of 22 pastures/fields. The Buttermilk portion of the ranch lies approximately eight miles west of Bishop, and consists of eight pastures/fields.

There are five pastures on the Round Valley Ranch lease within the MORP boundary. The East Side Riparian , East Side River Field, Hole Pasture, River Pasture, Zurich Riparian all of which are located in the Big Pine portion of the lease.

The following tables present the summarized utilization data for each field/pasture, and the transects in each field.

Table 1. Grazing Utilization for Fields/Pastures on the Round Valley Lease, RLI-483, 2007-2010

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
*East Side Riparian	85%	51%	76%	17%	14%	28%	0%
*East Side River Field	75%	30%	46%	17%	44%	30%	14%
*Hole Pasture	25%	65%	79%	63%	61%	56%	47%
*River Riparian	60%	32%	72%	29%	16%	20%	17%
*Zurich Riparian	56%	51%	27%	20%	6%	18%	16%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Round Valley Lease, RLI-483, 2007-13

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
*East Side Riparian	MEND_04	67%	68%	75%	19%	14%	28%	0%
*East Side River Field	MEND_05	96%	43%	76%	17%	0%	0%	0%
	MEND_06	77%	27%	73%	20%	46%	62%	29%
	MEND_07	72%	52%	52%	15%	40%	12%	26%
	MEND_08	75%	16%	15%	0%	47%	17%	0%
*Hole Pasture	MEND_12	25%	65%	67%	50%	61%	56%	47%
*River Riparian	MEND_03	68%	72%	79%	33%	53%	51%	28%
	MEND_09	0%	9%	10%	0%	0%	2%	6%
	MEND_10	0%	14%	41%	0%	3%	0%	33%
	MEND_11	67%	42%	94%	29%	15%	25%	0%
*Zurich Riparian	MEND_04	56%	51%	27%	20%	33%	18%	16%

**Riparian Utilization, 40%*

Summary of Utilization

In 2009 a new ranch manager took over managing the lease for the lessee, and has consistently worked with Watershed Resources staff to decrease utilization. In 2010, the Hole Pasture was the only pasture over the riparian utilization standard. Since that time the duration of grazing in the Hole Pasture has been decreased to only 5 days or it isn't grazed at all.

The completion of the new riparian fencing north of Highway 168, has allowed the manager to control grazing intensity and cattle distribution more effectively. In turn, utilization scores have decreased and are expected to remain within the current riparian standard of 40%. No management changes are recommended for the lease.

River Riparian Pasture

MEND_09 is located on the northern end of the River Riparian pasture on torrifluvents, 0-2% slopes. The site is situated on a Saline Meadow. The site was static between 2007 and 2009 with the exception of Sandberg's bluegrass (POSE) which was detected on the transect in 2009 but not in 2009.

Frequency MEND_09

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	5	2
	NIOC2	6	1
	PYRA	32	21
Perennial Graminoid	CAREX	4	0
	DISP	138	133
	JUBA	69	67
	LETR5	21	28
	POSE	14	0**
	SPAI	2	4
Nonnative Species	BAHY	4	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_09

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	0	0
	NIOC2	0	0
	PYRA	3	0
Perennial Graminoid	CAREX	0	0
	DISP	31	14
	JUBA	2	1
	LETR5	2	1
	POSE	0	0
	SPAI	0	0
Nonnative Species	BAHY	0	0

Shrub Cover (%) MEND_09

Species	2007	2009
ATTO	0.2	0
ERNA10	0	0.5
Total	0.2	0.5

Shrub Densities and Age Classes MEND_09

	ATTO		ERNA10
Age Class	2007	2009	2009
Juvenile	1	1	1
Mature	1	3	1
Total	2	4	2

Ground cover (%) MEND_09

Substrate	2007	2009
Dung	1	0
Litter	53	24
Standing Dead	47	76
Bare Ground	1	0

MEND_10

MEND_10 is located in the River Riparian pasture on the Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes. The site is on the moist floodplain ecological site. Although not very abundant, Nevada saltbush (ATTO) declined slightly in 2009.

Frequency MEND_10

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	125	116
	LETR5	3	3
	SPAI	4	3
Shrubs	ATTO	22	7**
	ERNA10	4	2
	MACA17	7	0
	MACAI3	0	5

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_10

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	28	14
	LETR5	0	0
	SPAI	1	0
Shrubs	ATTO	0	0
	ERNA10	0	0
	MACA17	1	0
	MACAI3	0	0

Shrub Cover (%) MEND_10

Species	2007	2009
ATTO	1.3	3.0
ERNA10	3.6	5.2
SAVE4	0.6	0.8
Total	5.6	9.1

Ground cover (%) MEND_10

Substrate	2007	2009
Dung	3	3
Litter	67	71
Rock	0	0
Standing Dead	4	3
Bare Ground	30	27

MEND_11

MEND_11 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site. Salt grass frequency increased in 2009.

Frequency MEND_11

Life Forms	Species	2007	2009
Perennial Forb	SUMO	1	1
Perennial Graminoid	DISP	118	133*
	SPAI	1	0
Shrubs	ATTO	14	9
	ERNA10	19	11
Nonnative Species	BAHY	0	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_11

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	42	24

Shrub Cover (%) MEND_11

Species	2007	2009
ATTO	3.1	6.4
ERNA10	10.2	13.1
SAVE4	0	0.1
SUMO	1.5	1.7
Total	14.8	21.3

Ground cover (%) MEND_11

Substrate	2007	2009
Dung	3	3
Litter	73	67
Standing Dead	0	5
Bare Ground	24	30

MEND_03

MEND_03 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the River Riparian pasture. Saltgrass increased 2009.

Frequency MEND_03

Life Forms	Species	2007	2009
Perennial Forb	SUMO	15	5
Perennial Graminoid	DISP	139	151*
Nonnative Species	BAHY	0	9

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_03

Life Forms	Species	2007	2009
Perennial Forb	SUMO	0	0
Perennial Graminoid	DISP	60	39
Nonnative Species	BAHY	0	0

Shrub Cover (%) MEND_03

Species	2007	2009
ATTO	0	0.1
SUMO	2.2	7.5
Total	2.2	7.5

Ground cover (%) MEND_03

Substrate	2007	2009
Dung	13	7
Litter	76	73
Standing Dead	0	0
Bare Ground	12	20

MEND_12

MEND_12 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Hole pasture. Saltgrass decreased in 2009.

Frequency MEND_12

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	163	148**
	JUBA	9	0
	LETR5	12	3
	SPAI	6	3
Shrubs	ATTO	1	0
Nonnative Species	BAHY	2	40

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_12

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	82	50
	JUBA	4	0
	LETR5	3	0
	SPAI	6	1
Shrubs	ATTO	0	0
Nonnative Species	BAHY	0	4

Ground cover (%) MEND_12

Substrate	2007	2009
Dung	2	3
Litter	96	66
Bare Ground	3	31

MEND_02

MEND_02 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Little pasture. Bassia (BAHY) responded to above average precipitation in 2009.

Frequency MEND_02

Life Forms	Species	2007	2009
Perennial Forb	PYRA	2	4
Perennial Graminoid	DISP	137	143
	JUBA	25	34
	LETR5	14	18
	SPAI	45	35
Shrubs	ATTO	5	12
	ERNA10	2	0
	MACA17	4	0
	SAVE4	0	3
	MACAI3	0	5
Nonnative Species	BAHY	0	20**
	MEOF	0	2
	PHAU7	1	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_02

Life Forms	Species	2007	2009
Perennial Forb	PYRA	0	0
Perennial Graminoid	DISP	47	35
	JUBA	1	1
	LETR5	1	1
	SPAI	12	6
Shrubs	ATTO	0	0
	ERNA10	0	0
	MACA17	1	0
	SAVE4	0	0
	MACAI3	0	0
Nonnative Species	BAHY	0	0
	MEOF	0	0
	PHAU7	0	0

Shrub Cover (%) MEND_02

Species	2007	2009
ERNA10	0.9	0.4
SAVE4	0	0.1
Total	0.9	0.5

Ground cover (%) MEND_02

Substrate	2007	2009
Dung	11	2
Litter	66	60
Standing Dead	0	1
Bare Ground	24	38

MEND_04

MEND_04 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Zurich Riparian pasture. Bassia (BAHY) responded to above average precipitation in 2009.

Frequency MEND_04

Life Forms	Species	2007	2009
Perennial Forb	MALE3	0	1
Perennial Graminoid	DISP	157	152
	LETR5	17	26
Nonnative Species	BAHY	17	67**

Cover (%) MEND_04

Life Forms	Species	2007	2009
Perennial Forb	MALE3	0	0
Perennial Graminoid	DISP	74	43
	LETR5	3	1
Nonnative Species	BAHY	2	4

Ground cover (%) MEND_04

Substrate	2007	2009
Dung	9	12
Litter	84	76
Bare Ground	7	12

MEND_05

MEND_05 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the East Side Riparian pasture. Saltgrass decreased in 2009 when compared to 2007.

Frequency MEND_05

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	4	0
Perennial Graminoid	DISP	124	108*
	JUBA	1	4
	LETR5	2	2
	SPAI	66	63
Shrubs	ATTO	8	4
	ERNA10	16	15
Nonnative Species	BAHY	0	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_05

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	1	1
Perennial Graminoid	DISP	18	7
	JUBA	0	0
	LETR5	0	0
	SPAI	12	12
Shrubs	ATTO	0	0
	ERNA10	0	0
Nonnative Species	BAHY	0	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Shrub Cover (%) MEND_05

Species	2007	2009
ATTO	4.2	3.9
ERNA10	4.8	6.8
Total	8.9	10.8

Ground cover (%) MEND_05

Substrate	2007	2009
Dung	6	4
Litter	53	71
Standing Dead	1	1
Bare Ground	41	26

MEND_06

MEND_06 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the East Side River Field. Alkali sacaton increased in 2009.

Frequency MEND_06

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	130	131
	JUBA	13	19
	SPAI	26	38*
Shrubs	ATTO	7	5
	ERNA10	3	1
	MACA17	0	1

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_06

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	14	9
	JUBA	0	0
	SPAI	3	3
Shrubs	ATTO	0	0
	ERNA10	0	0
	MACA17	0	0

Shrub Cover (%) MEND_06

Species	2007	2009
ATTO	2.7	3.1
ERNA10	1.0	2.4
Total	3.7	5.5

Ground cover (%) MEND_06

Substrate	2007	2009
Dung	2	1
Litter	45	54
Standing Dead	3	0
Bare Ground	53	45

MEND_07

MEND_07 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the East Side River Field.

Frequency MEND_07

Life Forms	Species	2007	2009
Annual Forb	HEAN3	5	0
Perennial Forb	SUMO	5	4
Perennial Graminoid	DISP	121	124
	JUBA	2	1
	SPAI	17	20
Shrubs	ATCO	3	2
	ATPA3	0	5
	MACA17	0	6
Nonnative Species	BAHY	3	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_07

Life Forms	Species	2007	2009
Annual Forb	HEAN3	0	0
Perennial Forb	SUMO	0	0
Perennial Graminoid	DISP	26	21
	JUBA	0	0
	SPAI	3	2
Shrubs	ATCO	0	0
	ATPA3	0	0
	MACA17	0	0
Nonnative Species	BAHY	0	0

Shrub Cover (%) MEND_07

Species	2007	2009
ATPA3	0.5	0.4
ATTO	0.1	0
SAVE4	0.2	0
Total	0.7	0.4

Ground cover (%) MEND_07

Substrate	2007	2009
Dung	1	1
Litter	38	59
Rock	0	0
Standing Dead	0	0
Bare Ground	61	39

MEND_08

MEND_08 is located on the Winterton-Hessica Complex, 0-2% slopes, situated on a Saline Bottom ecological site. Similar to many other sites, Bassia increased substantially in response to the above average winter of 2009.

Frequency MEND_08

Life Forms	Species	2007	2009
Perennial Forb	HECU3	6	4
	MALE3	6	7
Perennial Graminoid	DISP	109	100
	SPAI	48	47
Shrubs	ERNA10	3	4
Nonnative Species	BAHY	3	27**

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) MEND_08

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	8	8
	SPAI	6	4

Shrub Cover (%) MEND_08

Species	2007	2009
ATTO	0.1	0
ERNA10	4.3	5.3
Total	4.4	5.3

Ground cover (%) MEND_08

Substrate	2007	2009
Dung	3	4
Litter	48	59
Standing Dead	0	0
Bare Ground	50	38

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores..

Irrigated Pasture Condition Scores Round Valley Ranch, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Big Stockley	80	86	92	88	X	X	90
Heifer	82	X	94	92	X	X	88
Little Stockley	82	X	94	86	X	X	90
Outside	82	X	90	88	X	X	90
Sheep	90	X	94	92	X	X	92
Bull	88	X	92	88	X	X	90
Horse	88	X	90	70	X	X	94
Triangle	86	X	92	90	X	X	90
Georges	86	X	96	86	X	X	90
40 Acre	82	88	88	90	X	X	88
Freeway	84	84	94	88	X	X	90
Tonys	88	X	86	86	X	X	94
Rock House	82	X	90	90	X	X	94
Steer	86	X	90	92	X	X	90
Canal Pasture	X	X	X	82	X	X	88
Hole Pasture	X	X	X	82	X	X	88
Little Pasture	X	X	X	78	X	X	88
Wells Pasture	80	X	X	86	X	X	90
McGee Pasture	81	X	X	88	X	X	90
Birch Pasture	80	X	X	88	X	X	88
Horse Pasture	80	X	X	86	X	X	88

X indicates no evaluation made.

Summary of Irrigated Pastures

All irrigated pastures on the lease have rated well above 80%. There is no management changes recommended for the lease.

Stockwater Sites

One new stockwater well will be drilled in 2014 in the East Side River Field. This well l help improve livestock distribution and relieve grazing pressure from the riparian area during the spring months. All other stockwater on the lease is provided by creeks or irrigation ditches.

Fencing

A new 4.5 mile long riparian fence was constructed in March of 2011. The fence begins just north of Highway 168, and ties into the existing fence line boundary for the Big Pine canal and Round Valley ranch leases. This fence will allow the lessee to better control cattle movement and improve grazing uniformity. It will also create 2 new riparian pastures along the Owens River.

Salt and Supplement Sites

Hay and Protein supplement tubs are used during the winter. Supplement sites are rotated regularly to improve livestock distribution and reduce impacts to supplement sites.

4.1.14 Big Pine Canal Lease (RLI-438)

The Big Pine Canal Lease is made up of the Canal and Coyote Mountain Parcels. The Canal Parcel (9,084 acres) lies south of the city of Bishop, along U.S. Highway 395. The Coyote Mountain Parcel (357 acres) includes three fields north of Baker Creek that are surrounded by Forest Service land. The livestock operation is a cow/calf operation.

The following tables present the summarized utilization data for each field/pasture, and the transects in each field.

Table 1. Grazing Utilization for Fields on the Big Pine Canal Lease, RLI-438, 2007-2013

Fields	2007	2008	2009	2010	2011	2012	2013
*North 40	85%	41%	52%	24%	24%	37%	29%
*South 40	75%	25%	25%	17%	0%	19%	17%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Big Pine Canal Lease, RLI-438, 2007-2013

Fields	Transect	2007	2008	2009	2010	2011	2012	2013
*North 40	YRIB_04	84%	41%	52%	34%	37%	28%	23%
	YRIB_03	91%	36%	62%	47%	0%	0%	33%
	YRIB_06					10%	46%	30%
*South 40	YRIB_01	65%	13%	20%	11%	0%	28%	26%
	YRIB_02	76%	32%	59%	69%	0%	10%	9%
	YRIB_05	0%	0%	0%	14%	0%	0%	17%

**Riparian Utilization, 40%*

Summary of Utilization

Since 2007 the lessee has been working to lower grazing utilization in both the North and South 40 fields. Each grazing season has improved except for the North 40 in 2009. Utilization was high at YRIB_04 because a temporary exclosure was built directly next to the transect. This created a fence effect that increase utilization. In 2010 YRIB_04 was moved to a new location, also an additional transect in the North 40 Field was added YRIB_6.

Range Trend

YRIB_04
YRIB_04 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the North 40 pasture.

Frequency YRIB_04

Life Forms	Species	2007	2010	2013
Annual Forb	ATPH	0	11	0**
	COMAC	0	21	0**
	CORA5	0	5	0
Perennial Forb	GLLE3	0	3	0
	PYRA	5	7	4
Perennial Graminoid	CAREX	0	14	0
	DISP	102	99	103
	JUBA	34	34	19**
	LETR5	11	0	0
	SPAI	37	21	21
	SPGR	0	5	0
Shrubs	ERNA10	0	7	18

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) YRIB_04

Life Forms	Species	2007	2010
Annual Forb	ATPH	0	1
	COMAC	0	2
	CORA5	0	1
Perennial Forb	GLLE3	0	1
	PYRA	0	0
Perennial Graminoid	CAREX	0	1
	DISP	24	10
	JUBA	1	1
	LETR5	1	0
	SPAI	18	5
	SPGR	0	0
Shrubs	ERNA10	0	0

Shrub Cover (%) YRIB_04

Species	2007	2010	2013
ERNA10	0.3	15.1	11.9
Total	0.3	15.1	11.9

Ground cover (%) YRIB_04

Substrate	2007	2010
Dung	7	0
Litter	66	65
Standing Dead	0	4
Bare Ground	27	35

YRIB_06

YRIB_06 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the North 40 pasture.

Frequency YRIB_06

Life Forms	Species	2013
Perennial Graminoid	DISP	49
	JUBA	1
	SPAI	64
Shrubs	ATTO	3
	ERNA10	9

Shrub Cover (%) YRIB_06

Species	2013
ERNA10	4.9

YRIB_03

YRIB_03 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the South 40 pasture. Saltgrass frequency increased significantly over the last two sampling periods when compared to 2007.

Frequency YRIB_03

Life Forms	Species	2007	2009	2013
Perennial Graminoid	DISP	116	144	132
	SPAI	5	10	9
Shrubs	ATTO	2	3	3
	ERNA10	4	6	5

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) YRIB_03

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	33	27
	SPAI	4	3

Shrub Cover (%) YRIB_03

Species	2007	2009	2013
ATTO	0.3	6.1	0.4
SAVE4	0	0.6	0
Total	0.3	6.7	0.4

Shrub Densities and Age Classes YRIB_03

	ATTO		ERNA10		SAVE4	
Age Class	2007	2009	2007	2009	2007	2009
Seedling	1	0	0	0	0	0
Juvenile	5	2	2	2	0	0
Mature	2	4	1	4	0	2
Decadent	1	1	0	0	2	0
Total	9	7	3	6	2	2

Ground cover (%) YRIB_03

Substrate	2007	2009
Dung	8	7
Litter	75	80
Standing Dead	3	1
Bare Ground	17	14

YRIB_01

YRIB_01 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the South 40 pasture. Saltgrass declined in 2013 when compared to 2010 but changed little compared to 2007 and 2009.

Frequency YRIB_01

Life Forms	Species	2007	2009	2010	2013
Annual Forb	ATPH	0	0	6	0
	CLOB	0	0	1	0
Perennial Forb	MACA2	0	0	3	0
Perennial Graminoid	DISP	77	75	92	67**
	JUBA	7	5	2	1
	SPAI	53	45	51	52
Shrubs	ATTO	2	1	0	2
	ERNA10	10	4	5	13
	MACA17	3	0	0	0
	MACAI3	0	2	0	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) YRIB_01

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	9	5	5
	SPAI	11	6	6

Shrub Cover (%) YRIB_01

Species	2007	2009	2010	2013
ATTO	0	0	1.2	1.2
ERNA10	2.9	3.6	6.5	3.4
SAVE4	0.3	0.3	0.3	0
Total	3.2	3.8	7.9	4.6

Ground cover (%) YRIB_01

Substrate	2007	2009	2010
Dung	1	0	0
Litter	58	16	16
Rock	0	0	0
Standing Dead	6	5	0
Bare Ground	41	84	84

YRIB_05

YRIB_05 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the South 40 pasture. The site has remained relatively static with the exception of a spike in annual forbs responding to above average precipitation during the winter of 2010.

Frequency YRIB_05

Life Forms	Species	2009	2010	2013
Annual Forb	ATPH	0	43	0**
	CLOB	0	10	0
	COMAC	0	2	0
Perennial Forb	GLLE3	3	0	0
	PYRA	17	0	0
Perennial Graminoid	CAREX	16	0	0
	DISP	93	112	102
	JUBA	28	0	0
	SPAI	21	12	11
Shrubs	ATTO	0	17	8
	ERNA10	14	0	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) YRIB_05

Life Forms	Species	2009	2010
Annual Forb	ATPH	0	1
	COMAC	0	0
Perennial Forb	GLLE3	2	0
	PYRA	1	0
Perennial Graminoid	CAREX	0	0
	DISP	8	12
	JUBA	1	0
	SPAI	4	2

Shrub Cover (%) YRIB_05

Species	2009	2010	2013
ATTO	0	2.0	1.6
ERNA10	18.0	1.5	1.1
SAVE4	0	0.5	0.2
Total	18.0	4.0	2.9

Shrub Densities and Age Classes YRIB_05

	ATCO	ATTO		ERNA10		SAVE4
Age Class	2010	2009	2010	2009	2010	2010
Seedling	0	0	1	7	0	3
Juvenile	0	3	6	20	1	14
Mature	1	0	11	45	4	3
Decadent	0	0	1	7	0	1
Total	1	3	19	79	5	21

Ground cover (%) YRIB_05

Substrate	2009	2010
Dung	0	1
Litter	42	43
Standing Dead	10	0
Bare Ground	58	56

YRIB_02
Discontinued

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Big Pine Canal Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Alfalfa 2	96	X	X	96	X	X	78
Alfalfa 1	94	X	X	96	X	X	91
Alfalfa 3	92	X	X	94	X	X	91
Heifer	94	X	X	98	X	X	94
South Meadow	90	X	X	100	X	X	96
Horse Pasture	94	X	X	94	X	X	90
4C	96	X	X	96	X	X	98
Canal	100	X	X	98	X	X	94
Baker	X	98	96	X	X	X	80
Sanger Meadow	X	98	96	X	X	X	X
Cow Creek	X	98	96	X	X	X	X

X indicates no evaluation made.

Summary Irrigated Pastures

All irrigated pastures on the lease have rated well. Sanger and Cow Creek meadows were not rated in 2013 due to a lack of irrigation water. These are high altitude meadows located in Coyote and irrigation water comes from spring flow and snow melt. No management changes are planned for the lease.

Stockwater Sites

One stockwater well is located in the Horse Field and provides water for the Old Bull and North 40 Fields and Horse.

Fencing

No new fencing projects are planned for the lease besides normal maintenance.

Salt and Supplement Sites

Hay and mineral supplement are fed during the winter months. Supplemental feeding sites are rotated regularly to improve livestock distribution and reduce impacts to supplement sites.

4.1.15 Cashbaugh Ranch Lease (RLI-411)

The 23,602-acres that comprise the Cashbaugh Ranch Lease are located around the eastern edges of Bishop, extending south to Big Pine on the east side of the Owens River. The lease is a commercial cow/calf operation.

The following tables present the summarized utilization data for each field/pasture, and the transects in each field.

Table 1. Grazing Utilization for Fields on the Cashbaugh Ranch Lease, RLI-411, 2007-2013

Fields	2007	2008	2009	2010	2011	2012	2013
*Bishop Creek Field	26%	37%	23%	23	15%	22%	29%
*Ears Field	0%	4%	1%	0%	0%	4%	4%
*East of River Field	63%	0%	26%	15	25%	38%	54%
*Laws River Field	34%	18%	18	20%	25%	47%	45%
*Slough Field	35%	10%	35%	15%	25%	29%	15%
*Warm Springs Holding Field	81%	60%	76%	50%	77%	55%	5%
*White Mountain Field	41%	50%	16%	21%	18%	42%	42%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Cashbaugh Ranch Lease, RLI-411, 2007-2013

Fields	Transect	2007	2008	2009	2010	2011	2012	2013
*Bishop Creek Field	CASHBA_02	14%	20%	2%	0%	11%	11%	10%
	CASHBA_04	0%	75%	59%	51%	37%	53%	81%
	CASHBA_05	44%	47%	1%	13%	0%	14%	27%
	CASHBA_06	41%	46%	21%	12%	0%	14%	12%
	CASHBA_09	10%	16%	33%	20%	26%	16%	17%
*Ears Field	CASHBA_19	0%	2%	0%	0%	0%	0%	0%
	CASHBA_20	0%	7%	0%	0%	0%	0%	0%
	CASHBA_21	0%	5%	4%	0%	0%	15%	0%
	CASHBA_22	0%	0%	0%	0%	0%	0%	0%
	CAHSBA_25	0%	0%	0%	0%	0%	0%	16%
*East of the River Field	CASHBA_16	59%	0%	21%	21%	24%	28%	20%
	CASHBA_24	67%	0%	31%	10%	43%	38%	49%
*Laws River Field	CASHBA_01	16%	14%	8%	12%	22%	44%	50%
	CASHBA_03	66%	15%	46%	44%	49%	66%	56%
	CASHBA_07	27%	33%	0%	0%	15%	47%	31%
	CASHBA_08	36%	16%	5%	9%	14%	31%	43%
*Slough Field	CASHBA_17	38%	15%	42%	0%	20%	19%	25%
	CASHBA_18	32%	6%	34%	17%	25%	39%	15%
	CASHBA_23	35%	11%	27%	0%	32%	30%	6%
*Warm Springs Holding Field	CASHBA_15	81%	60%	76%	50%	77%	55%	5%
*White Mountain Field	CASHBA_12	53%	50%	17	26%	0%	55%	64%
	CASHBA_14	24%	50%	15%	15%	18%	29%	21%

**Riparian Utilization, 40%*

Summary of Utilization

Overall, utilization on the Cashbaugh Ranch lease has been within riparian standards. The only field that has consistently been over utilization is the Warm Springs Holding Field. This field is located on the north end of the East of the River Field, and cattle tend to concentrate in this area. There are also several roads that are used for recreation that lead through the field, and the gates are left open. When the gates are left open the cattle move into the field and tend to stay until the forage in gone. The only way to reduce utilization in this field is to continually move the cattle out of the field.

Watershed Resources staff have been working with the lessee for several years to solve the over utilization problem in the Warm Springs Holding Field. For the past two years the lessee has used signs on the gates to keep the gates closed, this has had some success but the gates still get left open. The main improvement that has helped control utilization is the repair of the southern cross fence between the Ears Field and the Warm Springs Holding Field. LADWP supplied fence materials to the lessee and installed two cattle guards in the southern cross fence. The repair to the fence has allowed the lessee to control the duration of grazing in the Ears, East of River and Warm Springs Holding Fields.

Laws River Field

CASHBA_03

CASHBA_03 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Laws River Field. Saltgrass frequency increased substantially in 2012.

Frequency CASHBA_03

Life Forms	Species	2007	2010	2012
Annual Forb	ATTR	0	5	0
	COMAC	0	2	0
Perennial Forb	ANCA10	12	0	17
	GLLE3	8	0	21
Perennial Graminoid	CADO2	4	0	0
	DISP	117	124	154**
	JUBA	4	17	4
	LETR5	41	84	82
	SPAI	20	0	15
	SPGR	1	0	0
Shrubs	ROWO	0	2	0
Nonnative Species	BAHY	1	2	34

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_03

Life Forms	Species	2007	2010
Annual Forb	COMAC	0	1
Perennial Forb	ANCA10	9	0
	GLLE3	1	0
Perennial Graminoid	DISP	59	28
	JUBA	1	0
	LETR5	23	8
	SPAI	4	0

Ground cover (%) CASHBA_03

Substrate	2007	2010
Dung	6	5
Litter	93	93
Standing Dead	0	2
Bare Ground	1	2

CASHBA_08

CASHBA_08 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the Laws River Field. Frequency appears static during the past three sampling events.

Frequency CASHBA_08

Life Forms	Species	2007	2010	2012
Annual Forb	ATPH	0	0	6
	ATTR	0	40	0
	CORA5	0	11	0
Perennial Forb	GLLE3	13	22	6
Perennial Graminoid	DISP	96	93	96
	JUBA	24	24	26
	LETR5	9	10	3
	SPAI	58	73	56*
Shrubs	ATTO	9	0	11
Nonnative Species	BAHY	0	15	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_08

Life Forms	Species	2007	2010
Annual Forb	ATTR	0	3
	CORA5	0	1
Perennial Forb	GLLE3	6	3
Perennial Graminoid	DISP	22	12
	JUBA	1	0
	LETR5	1	0
	SPAI	38	21

Shrub Cover (%) CASHBA_08

Species	2007	2010	2012
ATTO	1.8	1.1	0.5
ERNA10	0	0.1	0
Total	1.8	1.2	0.5

Ground cover (%) CASHBA_08

Substrate	2007	2010
Dung	1	1
Litter	81	80
Bare Ground	17	18

CASHBA_07

CASHBA_07 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the Laws River Field.

Frequency CASHBA_07

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATTR	0	0	17	0
	CORA5	0	0	6	0
Perennial Forb	GLLE3	16	12	20	13
	PYRA	1	0	0	0
Perennial Graminoid	JUBA	8	9	19	12
	LECI4	0	0	0	1
	SPAI	88	97	110	101
Shrubs	ALOC2	7	3	1	1
	ATTO	1	1	0	0
	ERNA10	4	6	4	5
Nonnative Species	BAHY	4	0	5	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_07

Life Forms	Species	2007	2009	2010
Perennial Forb	GLLE3	5	1	2
Perennial Graminoid	JUBA	1	0	1
	SPAI	29	8	17

Shrub Cover (%) CASHBA_07

Species	2007	2009	2010	2012
ALOC2	1.8	0.6	0	0
ERNA10	1.8	1.9	2.7	2.8
Total	3.6	2.5	2.7	2.8

Ground cover (%) CASHBA_07

Substrate	2007	2009	2010
Dung	2	0	1
Litter	62	49	51
Rock	2	0	0
Standing Dead	0	0	0
Bare Ground	34	51	48

Bishop Creek Field

CASHBA_02

CASHBA_02 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the Bishop Creek Field.

Frequency CASHBA_02

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	6	0
	ATTR	0	0	28	0
	CLOB	0	0	7	0
Perennial Forb	ANCA10	0	18	0	0
	GLLE3	6	17	9	5
	PYRA	0	0	0	4
Perennial Graminoid	CAREX	0	4	0	0
	DISP	72	141	60	59
	JUBA	21	9	15	4
	LETR5	0	69	0	0
	SPAI	77	21	79	79
Shrubs	ATTO	0	0	1	0
	ERNA10	0	0	2	0
Nonnative Species	BAHY	0	11	3	2
	SATR12	0	0	1	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_02

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATTR	0	0	1	0
Perennial Forb	ANCA10	0	7	0	0
	GLLE3	6	3	6	0
Perennial Graminoid	DISP	13	49	7	0
	JUBA	2	0	1	0
	LETR5	0	11	0	0
	SPAI	35	5	22	0

Ground cover (%) CASHBA_02

Substrate	2007	2009	2010
Dung	1	4	0
Litter	79	96	57
Standing Dead	0	0	0
Bare Ground	20	0	43

CASHBA_06

CASHBA_06 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Bishop Creek Field.

Frequency CASHBA_06

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATTR	0	0	4	0
	COMAC	0	0	9	0
Perennial Forb	GLLE3	15	13	12	6
	NIOC2	0	3	0	0
	PYRA	0	4	0	0
Perennial Graminoid	DISP	118	223	129	138
	JUBA	5	44	7	9
	LETR5	8	8	11	6
	SPAI	0	65	0	5
Shrubs	ATTO	3	7	9	9
	ERNA10	3	1	0	3
Nonnative Species	BAHY	0	0	69	9

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_06

Life Forms	Species	2007	2009	2010
Annual Forb	COMAC	0	0	2
Perennial Forb	GLLE3	13	12	4
	PYRA	0	0	0
Perennial Graminoid	DISP	41	23	24
	JUBA	0	1	0
	LETR5	1	0	2
	SPAI	0	14	0
Nonnative Species	BAHY	0	0	6

Shrub Cover (%) CASHBA_06

Species	2007	2009	2010	2012
ATTO	0.4	3.4	6.7	7.0
ERNA10	2.2	3.7	2.4	5.6
Total	2.6	7.0	9.0	12.7

Ground cover (%) CASHBA_06

Substrate	2007	2009	2010
Dung	3	3	2
Litter	77	118	81
Standing Dead	0	0	0
Bare Ground	20	79	17

CASHBA_04
CASHBA_04 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the Bishop Creek Field.

Frequency CASHBA_06

Life Forms	Species	2007	2009	2012
Perennial Forb	ANCA10	3	0	9
Perennial Graminoid	DISP	113	121	137**
	JUBA	56	60	62
	LETR5	17	16	12
Shrubs	ATTO	2	0	5
Nonnative Species	BAHY	0	0	1
	PHAU7	1	3	0

Cover (%) CASHBA_06

Life Forms	Species	2007	2009
Perennial Forb	ANCA10	2	0
Perennial Graminoid	DISP	33	9
	JUBA	5	2
	LETR5	1	1

Ground cover (%) CASHBA_04

Substrate	2007	2009
Dung	15	4
Litter	82	88
Bare Ground	4	8

CASHBA_05
CASHBA_05 is located on a Torrifluvents, 0-2% slopes soil unit, on a Saline Meadow ecological site in the Bishop Creek Field. Saltgrass significantly dropped in 2012 while alkali sacaton remains high when compared to the first sampling event.

Frequency CASHBA_05

Life Forms	Species	2007	2010	2012
Annual Forb	ATPH	0	7	0
	ATTR	0	5	0
	COMAC	0	4	0
Perennial Forb	GLLE3	2	3	3
	NIOC2	2	6	3
Perennial Graminoid	DISP	101	109	74**
	JUBA	39	41	38
	LETR5	0	0	1
	PADI6	5	0	0
	SPAI	39	62	57
Shrubs	ATPA3	0	0	0
Nonnative Species	BAHY	0	7	0

Cover (%) CASHBA_05

Life Forms	Species	2007	2010
Perennial Forb	GLLE3	2	0
Perennial Graminoid	DISP	17	7
	JUBA	2	0
	SPAI	17	12

Shrub Cover (%) CASHBA_05

Species	2012
ERNA10	0.1

Ground cover (%) CASHBA_05

Dung	0	1
Litter	77	60
Standing Dead	0	0
Bare Ground	23	39

CASHBA_09

CASHBA_09 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Bishop Creek Field. Saltgrass increased to its highest levels while sacaton decreased to levels similar to what was observed in 2007.

Frequency CASHBA_09

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	1	0
	ATTR	0	0	3	0
	COMAC	0	0	13	0
	HEAN3	0	0	4	0
Perennial Forb	ASTER	0	0	10	0
	CIMO	0	0	11	0
	CIOC2	0	7	0	0
	CIRSI	13	0	0	0
	GLLE3	16	17	13	9
	PYRA	11	6	14	0
Perennial Graminoid	CAREX	21	44	0	0
	DISP	64	73	70	94**
	JUBA	24	14	8	0
	LETR5	16	31	29	19
	POSE	2	0	25	0
	SPAI	78	86	96	73**
Shrubs	ERNA10	5	2	5	2
	MACAI3	0	2	0	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_09

Life Forms	Species	2007	2009	2010
Annual Forb	COMAC	0	0	1
Perennial Forb	CIMO	0	0	2
	CIRSI	2	0	0
	GLLE3	5	4	2
Perennial Graminoid	CAREX	0	3	0
	DISP	11	11	8
	LETR5	10	2	5
	POSE	0	0	3
	SPAI	41	21	23

Shrub Cover (%) CASHBA_09

Species	2009	2010	2012
ERNA10	0.8	0.3	3.2

Ground cover (%) CASHBA_09

Substrate	2007	2009	2010
Dung	1	3	1
Litter	90	90	82
Bare Ground	9	7	17

White Mountain Field

CASHBA_14 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the White Mountain Field.

Frequency CASHBA_14

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATTR	0	0	18	0
Perennial Forb	GLLE3	14	14	14	11
	PYRA	5	5	0	0
Perennial Graminoid	DISP	16	23	7	24**
	JUBA	13	7	0	2
	LETR5	3	0	3	0
	SPAI	118	132	137	130
Shrubs	ALOC2	3	6	8	7
	ATTO	4	5	1	0
	ERNA10	0	0	0	5
Nonnative Species	BAHY	0	0	2	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_14

Life Forms	Species	2007	2009	2010
Annual Forb	ATTR	0	0	1
Perennial Forb	GLLE3	5	3	4
	PYRA	1	0	0
Perennial Graminoid	DISP	1	1	0
	SPAI	36	25	29

Shrub Cover (%) CASHBA_14

Species code	2007	2009	2010	2012
ALOC2	0.6	0.1	0	0
ATTO	0	0	0.2	T

Ground cover (%) CASHBA_14

Substrate	2007	2009	2010
Dung	2	2	1
Litter	64	68	66
Bare Ground	34	30	32

CASHBA_12 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the White Mountain Field. Saltgrass increased in 2012 but remains inside previously sampled parameters.

Frequency CASHBA_12

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATTR	0	0	20	0
	CORA5	0	0	4	0
Perennial Forb	GLLE3	1	2	0	3
Perennial Graminoid	DISP	90	58	67	104**
	JUBA	0	0	2	0
	LETR5	0	0	0	3
	SPAI	104	115	115	112
	SPGR	0	0	3	0
Shrubs	ATTO	1	5	1	0
Nonnative Species	BAHY	0	1	19	10

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_12

Life Forms	Species	2007	2009	2010
Annual Forb	ATTR	0	0	1
Perennial Forb	GLLE3	3	1	1
Perennial Graminoid	DISP	24	8	17
	SPAI	59	40	51
Shrubs	ATTO	0	0	0
Nonnative Species	BAHY	0	0	1

Shrub Cover (%) CASHBA_12

Species code	2009	2012
ATTO	0.5	1.2

Ground cover (%) CASHBA_12

Substrate	2007	2009	2010
Dung	3	4	4
Litter	90	91	91
Rock	0	0	3
Bare Ground	7	5	3

WARM SPRINGS HOLDING FIELD

CASHBA_15 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Warm Springs Holding Field. Despite heavy utilization in the pasture the plant community remains stable.

Frequency CASHBA_15

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	3	0
Perennial Forb	GLLE3	15	2	5	1
	HECU3	2	2	0	0
Perennial Graminoid	DISP	83	66	79	85
	JUBA	3	0	2	0
	LETR5	15	19	23	25
	SPAI	79	99	95	81
Nonnative Species	BAHY	0	9	31	16

Cover (%) CASHBA_15

Life Forms	Species	2007	2009	2010
Perennial Forb	GLLE3	3	1	0
	HECU3	0	1	0
Perennial Graminoid	DISP	37	13	22
	LETR5	6	4	3
	SPAI	49	35	46
Nonnative Species	BAHY	0	1	4

Shrub Cover (%) CASHBA_15

Species code	2007	2009	2010	2012
ATTO	0.1	1.5	0.3	0.5
ERNA10	1.6	0.4	0.7	0.9
Total	1.7	1.9	1.0	1.4

Ground cover (%) CASHBA_15

Substrate	2007	2009	2010
Dung	11	9	1
Litter	84	88	99
Rock	0	0	0
Standing Dead	0	0	1
Bare Ground	5	3	0

Slough Pasture

CASHBA_18 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Slough Pasture. Two key forage species, saltgrass and alkali sacaton declined dramatically in 2012.

Frequency CASHBA_18

Life Forms	Species	2007	2009	2012
Perennial Forb	GLLE3	0	12	0
	STPA4	4	1	0
Perennial Graminoid	DISP	74	147	45**
	JUBA	0	27	0
	LETR5	0	9	0
	SPAI	95	122	39**
Shrubs	ATCO	18	0	4
	ATPA3	19	1	3
	ATTO	0	7	0
	ERNA10	12	10	2
	MACA17	12	0	13
	SAVE4	4	0	0
	MACAI3	0	7	0
Nonnative Species	BAHY	0	3	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_18

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	0	2
Perennial Graminoid	DISP	2	11
	SPAI	9	22

Shrub Cover (%) CASHBA_18

Species code	2007	2009	2012
ATCO	1.4	0.6	2.1
ATPA3	0.7	1.3	0
ATTO	0	1.1	0
ERNA10	3.2	3.7	2.2
SAVE4	1.1	0	0
ARTR2	0	0.7	0
Total	6.3	7.4	4.4

Ground cover (%) CASHBA_18

Substrate	2007	2009
Dung	1	1
Litter	33	110
Rock	0	0
Standing Dead	3	2
Bare Ground	66	88

CASHBA_23

CASHBA_23 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Slough Pasture.

Frequency CASHBA_23

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	13	0
	CLEOM2	0	0	0	2
	COMAC	0	0	12	0
	CORA5	0	0	21	0
Perennial Forb	MACA2	0	0	6	0
	PYRA	6	7	5	6
	STPA4	0	0	0	9
	SUMO	0	5	0	0
Perennial Graminoid	DISP	118	144	125	125
	JUBA	4	0	3	0
	SPAI	18	145	30	23
Shrubs	ATCO	0	3	0	0
	ATTO	0	25	0	0
	ERNA10	0	2	0	0
	MACA17	6	0	0	0
	SAVE4	3	1	3	6
	MACAI3	0	4	0	0
Nonnative Species	BAHY	0	0	0	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_23

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	1
	COMAC	0	0	4
Perennial Graminoid	DISP	34	31	28
Shrubs	SPAI	6	16	6
	MACA17	1	0	0

Shrub Cover (%) CASHBA_23

Species code	2007	2009	2010	2012
ATTO	0.9	3.9	0.8	0.4
ERNA10	0	1.3	0.5	0.3
SAVE4	6.5	6.3	5.8	5.1
Total	7.3	11.4	7.0	5.8

Ground cover (%) CASHBA_23

Substrate	2007	2009	2010
Dung	1	1	1
Litter	73	108	82
Rock	0	0	0
Standing Dead	1	8	1
Bare Ground	27	89	17

CASHBA_17 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Slough Pasture.

Frequency CASHBA_17

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	29	0
	ATTR	0	0	4	0
	CLOB	0	0	1	0
	COMAC	0	0	15	0
	CORA5	0	0	4	0
	CLPL2	0	0	0	1
Perennial Forb	GLLE3	0	0	0	0
	MACA2	0	0	11	0
	PYRA	0	4	4	0
	STPA4	0	0	0	5
Perennial Graminoid	DISP	67	69	47	59
	LECI4	0	0	0	0
	SPAI	107	88	91	111**
Shrubs	ERNA10	3	7	1	0
	MACA17	11	0	0	0
	MACAI3	0	5	0	0
Nonnative Species	BAHY	0	0	5	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_17

Life Forms	Species	2007	2009	2010
Annual Forb	ATPH	0	0	1
	COMAC	0	0	1
Perennial Graminoid	DISP	4	3	3
	SPAI	22	20	19
Shrubs	MACA17	2	0	0

Shrub Cover (%) CASHBA_17

Species code	2007	2009	2010	2012
ERNA10	2.1	4.4	2.7	3.6

Ground cover (%) CASHBA_17

Substrate	2007	2009	2010
Dung	1	2	0
Litter	67	73	71
Standing Dead	0	0	1
Bare Ground	31	25	29

East of the River Field

CASHBA_16 is located on the NUMU Loam, 0-2% slopes soil series which corresponds to a Saline Bottom ecological site in the East of the River Field.

Frequency CASHBA_16

Life Forms	Species	2007	2009	2010	2012
Perennial Graminoid	DISP	24	32	26	14**
	SPAI	105	100	99	86
Shrubs	ATCO	0	0	8	0
	ATTO	12	5	1	5
Nonnative Species	BAHY	0	0	3	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_16

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	0	1	1
	SPAI	17	6	10

Shrub Cover (%) CASHBA_16

Species code	2007	2009	2010	2012
ATTO	0.3	0.7	0.7	0.4
ERNA10	1.3	1.8	2.0	2.3
Total	1.6	2.5	2.8	2.7

Ground cover (%) CASHBA_16

Substrate	2007	2009	2010
Dung	1	0	1
Litter	35	21	30
Standing Dead	0	0	0
Bare Ground	64	78	70

CASHBA_24

CASHBA_24 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the East of the River Field.

Frequency CASHBA_24

Life Forms	Species	2007	2010	2012
Annual Forb	ATPH	0	3	0
	COMAC	0	4	0
	CORA5	0	1	0
Perennial Forb	SUMO	6	5	3
Perennial Graminoid	DISP	24	35	49*
	SPAI	120	132	128
Shrubs	ATCO	11	6	0
	ATTO	18	20	21
	ERNA10	7	2	3
Nonnative Species	BAHY	0	23	15

Cover (%) CASHBA_24

Life Forms	Species	2007	2010
Perennial Graminoid	DISP	1	1
	SPAI	32	19

Shrub Cover (%) CASHBA_24

Species code	2007	2010	2012
ATCO	0.1	0	0
ATTO	3.3	4.5	5.7
ERNA10	0.6	1.2	1.1
SAVE4	0.3	0.4	0.7
SUMO	0	0.1	0
Total	4.3	6.2	7.5

Ground cover (%) CASHBA_24

Substrate	2007	2010
Dung	2	1
Litter	54	48
Standing Dead	0	0
Bare Ground	44	51

Warm Springs Pasture

CASHBA_25 is located on the NUMU Loam, 0-2% slopes soil series which corresponds to a Saline Bottom ecological site in the Warm Springs Pasture.

Frequency CASHBA_25

Life Forms	Species	2009	2010	2012
Annual Forb	ATPH	0	30	2**
	CLOB	0	2	0
	COMAC	0	2	0
Perennial Forb	MACA2	0	5	0
	PYRA	0	0	3
Perennial Graminoid	DISP	87	78	78
	SPAI	116	97	99
Shrubs	ATCO	0	11	0
	ERNA10	10	5	10
	MACA17	7	0	0
	SAVE4	3	0	3

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_25

Life Forms	Species	2009	2010
Perennial Graminoid	DISP	1	2
	SPAI	6	6

Shrub Cover (%) CASHBA_25

Species code	2009	2010	2012
ATPA3	0	0	0
ERNA10	0.3	1.1	1.8
SAVE4	0	0.1	0
Total	0.3	1.3	1.8

Ground cover (%) CASHBA_25

Substrate	2009	2010
Dung	0	0
Litter	13	14
Standing Dead	0	0
Bare Ground	87	86

Ears Field

CASHBA_19 is located on the NUMU Loam, 0-2% slopes soil series which corresponds to a Saline Bottom ecological site in the Ears Field.

Frequency CASHBA_19

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	5	0
	CORA5	0	0	16	0
	ERAM2	0	0	1	0
Perennial Forb	GLLE3	5	6	10	4
	HECU3	0	0	3	0
	MACA2	0	0	4	0
	NIOC2	0	2	1	0
	STEPH	0	0	4	9
	STPA4	6	7	0	0
Perennial Graminoid	DISP	40	45	41	38
	JUBA	3	5	4	2
	SPAI	90	96	97	87
Shrubs	ATCO	7	2	4	15
	ATTO	15	11	15	0
	ERNA10	17	15	17	15
	MACA17	0	7	0	0
	ROWO	0	0	0	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_19

Life Forms	Species	2007	2009	2010	2012
Perennial Forb	GLLE3	2	1	1	0
Perennial Graminoid	DISP	1	1	1	0
	SPAI	12	7	8	0

Shrub Cover (%) CASHBA_19

Species code	2007	2009	2010	2012
ATCO	0	0	0	0.2
ATTO	0.5	0.4	0.2	0.2
ERNA10	4.8	4.6	4.6	2.3
EPNE	0	0	0.1	0
Total	5.3	5.0	4.8	2.8

Ground cover (%) CASHBA_19

Substrate	2007	2009	2010
Dung	1	0	0
Litter	40	34	20
Rock	0	0	0
Standing Dead	5	1	2
Bare Ground	58	65	80

CASHBA_20

CASHBA_20 is located on the NUMU Loam, 0-2% slopes soil series which corresponds to a Saline Bottom ecological site in the Ears Field.

Frequency CASHBA_20

Life Forms	Species	2007	2009	2010	2012
Perennial Forb	ASTRA	0	1	2	0
	MACA2	0	0	7	0
	STEPH	0	0	22	0
	STPA4	22	0	0	15
Perennial Graminoid	DISP	7	5	7	5
	SPAI	82	83	84	78
Shrubs	ATCO	2	1	3	0
	ATTO	8	4	3	4
	ERNA10	34	19	14	23
	MACA17	0	30	0	0
	SAVE4	8	9	10	4
	TEAX	1	1	0	0
	ATPO	0	0	0	9
Nonnative Species	BRTE	0	3	0	0
	BRRU2	0	0	68	0

Cover (%) CASHBA_20

Life Forms	Species	2007	2009	2010
Perennial Forb	STEPH	0	0	1
	STPA4	1	0	0
Perennial Graminoid	SPAI	9	7	7
Shrubs	MACA17	0	1	0
Nonnative Species	BRRU2	0	0	1

Shrub Cover (%) CASHBA_20

Species code	2007	2009	2010	2012
ATCO	0.1	0	0.3	0
ATTO	0	0.2	0	0
ERNA10	5.7	8.5	7.6	6.3
SAVE4	2.1	2.2	2.4	3.1
STEPH	0	0	1.8	0
Total	7.9	10.9	12.0	9.4

Ground cover (%) CASHBA_20

Substrate	2007	2009	2010
Dung	1	0	0
Litter	34	27	19
Rock	0	0	0
Standing Dead	6	4	1
Bare Ground	64	73	81

CASHBA_21

CASHBA_21 is located on the NUMU Loam, 0-2% slopes soil series which corresponds to a Saline Bottom ecological site in the Ears Field.

Frequency CASHBA_21

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	3	0
	CORA5	0	0	44	0**
	HEAN3	0	0	0	4
Perennial Forb	ASFA	4	2	1	3
	HECU3	3	2	3	0
	MACA2	0	0	9	0
	NIOC2	0	2	2	0
	STEPH	0	0	11	0
	STPA4	19	0	0	11
	SUMO	0	0	0	3
Perennial Graminoid	DISP	25	27	24	15
	LECI4	13	10	16	16
	SPAI	58	61	48	47
Shrubs	ATCO	4	1	2	5
	ATTO	1	0	0	0
	ERNA10	35	29	35	34
	MACA17	11	32	0	0
	SAVE4	7	2	4	8
Nonnative Species	SATR12	0	1	0	0
	BRRU2	0	0	8	0

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_21

Life Forms	Species	2007	2009	2010
Annual Forb	CORA5	0	0	3
Perennial Forb	STPA4	1	0	0
Perennial Graminoid	DISP	1	0	1
	LECI4	2	1	1
	SPAI	6	3	3
Shrubs	MACA17	1	0	0

Shrub Cover (%) CASHBA_21

Species code	2007	2009	2010	2012
ATCO	0	0.4	0	0
ATTO	0.7	1.0	1.0	1.0
ERNA10	4.6	6.0	4.4	6.3
SAVE4	2.0	1.3	2.4	1.7
Total	7.3	8.7	7.7	9.1

Ground cover (%) CASHBA_21

Substrate	2007	2009	2010
Dung	1	0	0
Litter	44	30	31
Standing Dead	12	4	6
Bare Ground	55	70	69

CASHBA_22

CASHBA_22 is located on the NUMU Loam, 0-2% slopes soil series which corresponds to a Saline Bottom ecological site in the Ears Field.

Frequency CASHBA_22

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	2	0
Perennial Forb	MACA2	0	0	17	0
	MALE3	0	0	1	0
	NIOC2	0	0	0	0
	STEPH	0	0	10	0
	STPA4	0	0	0	3
	SUMO	2	1	2	0
Perennial Graminoid	DISP	56	51	59	44
	SPAI	116	116	117	116
Shrubs	ATCO	19	6	7	0
	ATTO	0	2	0	0
	ERNA10	3	8	1	3
	MACA17	20	20	0	0
	MESP2	2	0	0	0
	SAVE4	4	0	4	4
	ARTR2	5	4	1	4
	LYCO2	0	0	0	2

** indicates a significant difference, α<0.1, **<05 compared to previous sampling period*

Cover (%) CASHBA_22

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	3	1	2
	SPAI	20	8	9
Shrubs	MACA17	2	0	0

Shrub Cover (%) CASHBA_22

Species code	2007	2009	2010	2012
ERNA10	0.8	0.8	0.7	0.5
MESP2	0.2	0	0	0
SAVE4	0	0.6	0	0
SUMO	0	0.1	0	0.2
ARTR2	0.6	0.5	0	0.7
TECA2	0	0.1	0	0
Total	1.6	2.2	0.7	1.4

Ground cover (%) CASHBA_22

Substrate	2007	2009	2010
Dung	1	0	1
Litter	43	13	19
Rock	0	0	0
Standing Dead	1	0	2
Bare Ground	56	87	80

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Cashbaugh Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Bull Pasture	92	X	X	96	X	X	94
Horse Pasture	80	X	X	96	X	X	94
Old Bull Pasture	92	X	X	90	X	X	96
Lower Pasture	90	X	X	98	X	X	94
Middle Pasture	92	X	X	98	X	X	94
Upper Pasture	92	X	X	96	X	X	94
Sheep Pasture	86	X	X	92	X	X	84
Winter Pasture	82	X	X	82	X	X	80
Lake Pasture	86	X	X	86	X	X	80
Williams Pasture	82	X	X	88	X	X	84
Symons Pasture	X	X	90	86	X	X	96

X indicates no evaluation made.

Summary Irrigated Pastures

All irrigated pastures on the lease have rated well for the past four years. No management changes are planned for the lease.

Stockwater Sites

Three stockwater wells were drilled in 2011. One well site is located east of the Owens River off of Warm Springs Road in the East of the River Field. The second well site is located east of Poleta Road in the Coral Field and the third well was drilled east of the river in the Ears Field. All well have been fitted with troughs and are being used. The Poleta well is currently being augmented by the Upper McNally Canal because it cannot keep up with the demand from the cattle in the field.

Fencing

A cross fence was repaired and two cattle guards were installed on the lease in 2011. No other fencing projects are scheduled for the lease beyond general maintenance.

Salt and Supplement Sites

Hay and Protein supplement tubs are fed during the winter months. Supplemental feeding sites are rotated regularly to improve livestock distribution and reduce impacts to supplement sites.

4.1.16 Warm Springs Ranch Lease (RLI-497)

The Warm Springs Lease (4,161 acres) lies southeast of Bishop, north of Warm Springs Road, between U.S. Highway 395 and the Owens River. The ranch operates a commercial cow/calf operation.

River Field

CASHBA_11 is located on the Torrifluvents, 0-2% slopes soil series which corresponds to a Saline Meadow ecological site in the River Field.

Frequency CASHBA_11

Life Forms	Species	2007	2009
Perennial Forb	ASTRA	0	0
	CIOC2	0	4
	GLLE3	3	5
Perennial Graminoid	DISP	93	90
	JUBA	28	23
	LECI4	0	5
	SPAI	47	34
Shrubs	ATTO	0	1
	ERNA10	1	0
Nonnative Species	CADR	7	2

Cover (%) CASHBA_11

Life Forms	Species	2007	2009
Perennial Forb	ASTRA	0	0
	CIOC2	0	0
	GLLE3	3	2
Perennial Graminoid	DISP	23	14
	JUBA	3	3
	LECI4	0	1
	SPAI	18	12
Shrubs	ATTO	0	0
	ERNA10	0	0
Nonnative Species	CADR	1	0

Shrub Cover (%) CASHBA_11

Species code	2007	2009
ATCO	0	0.4
ATTO	0.5	0.2
ERNA10	0	0.3
Total	0.5	0.9

Ground cover (%) CASHBA_11

Substrate	2007	2009
Dung	1	0
Litter	64	61
Standing Dead	0	0
Bare Ground	35	39

CASHBA_10

CASHBA_10 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the River Field.

Frequency CASHBA_10

Life Forms	Species	2007	2009
Perennial Forb	CIOC2	2	0
	GLLE3	3	0
	NIOC2	26	20
Perennial Graminoid	DISP	100	103
	JUBA	5	1
	LETR5	9	8
	SPAI	73	88
Shrubs	SAVE4	2	0

Cover (%) CASHBA_10

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	1	1
	NIOC2	6	3
Perennial Graminoid	DISP	19	14
	LETR5	1	1
	SPAI	45	33

Ground cover (%) CASHBA_10

Substrate	2007	2009
Dung	5	2
Litter	76	83
Bare Ground	19	15

CASHBA_13 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the River Field.

Frequency CASHBA_13

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	1	0
	NIOC2	0	1
Perennial Graminoid	CAREX	2	0
	DISP	162	152
	LETR5	25	24
Shrubs	ERNA10	0	1

Cover (%) CASHBA_13

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	2	0
Perennial Graminoid	DISP	90	58
	LETR5	8	6

Shrub Cover (%) CASHBA_13

Species code	2009
ERNA10	0.2

Ground cover (%) CASHBA_13

Substrate	2007	2009
Dung	4	6
Litter	96	94
Standing Dead	0	0
Bare Ground	1	1

The following tables present the summarized utilization data for each field/pasture, and the transects in each field.

Table 1. Grazing Utilization for Fields/Pastures on the Warm Springs Lease, RLI-497, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
River Field	22%	23%	12%	0%	11%	29%	37%
White Mountain Field	38%	50%	16%	21%	18%	42%	43%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Warm Springs Ranch Lease, RLI-497,2007- 2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
River Field	CASHBA_10	0%	23%	14%	0%	25%	32%	48%
	CASHBA_11	16%	33%	5%	0%	0%	21%	22%
	CASHBA_13	7%	15%	20%	0%	7%	34%	41%
White Mountain Field	CASHBA_12	53%	50%	17%	26%	0%	55%	64%
	CASHBA_14	24%	50%	15%	15%	18%	29%	21%

**Riparian Utilization, 40%*

Summary of Utilization

Utilization for the River Field has been minimal every year except for 2013. Use increased greatly mostly due to drought conditions. The lessee has since de stocked as a result of the percisting drought in 2014. There are currently no plans to change management.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Warmspring Ranch Lease RLI- 497, 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Watterson North	90	X	X	94	X	X	96
Watterson South	86	X	X	84	X	X	96
Calving Pasture	86	X	78	X	X	X	86
New Alfalfa	X	80	70	X	X	X	82
Old Alfalfa	X	80	78	X	X	X	82

X indicates no evaluation made.

Summary Irrigated Pastures

The Watterson North and South pastures have rated well since 2007. The Calving, New Alfalfa, and Old Alfalfa have rated low but have improved. Improvements have been due to repaired irrigation diversions on the lease allowing more efficient water use by the lessee.

Stockwater Sites

There is one stockwater site planned for the lease in 2014. It is located east of Warm Springs road on the uplands. It should help pull livestock away from the riparian areas in the spring months.

Fencing

There is no fencing projects planned for the lease beyond general maintenance.

Salt and Supplement Sites

Alfalfa cubes and protein supplement tubs are fed during the winter months at rotated supplement sites.

4.1.17 Reinhackle Ranch Lease (RLI-492)

The Reinhackle Ranch Lease (5947 acres) consists of three separate parcels: the Reinhackle Place, which lies to the east of Bishop and south of U.S. Highway 395; the Five Bridges Parcel, which is north of Bishop and west of Five Bridges Road; and the Laws Parcel, which lies west of U.S. Highway 6 and east of Five Bridges Road.

LACEY_02
LACEY_02 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Triangle Field. Saltgrass decreased significantly on Lacey_02 while alkali sacaton significantly increased in 2013.

Frequency LACEY_02

Life Forms	Species	2007	2009	2013
Perennial Forb	GLLE3	0	4	0
	NIOC2	0	0	1
	PYRA	0	0	0
Perennial Graminoid	DISP	144	133	104**
	JUBA	41	25	17
	LETR5	25	22	25
	SPAI	55	40	64**
Shrubs	ATTO	0	0	3
	ERNA10	6	3	3

Cover (%) LACEY_02

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	0	0
	NIOC2	0	0
	PYRA	0	0
Perennial Graminoid	DISP	33	19
	JUBA	1	0
	LETR5	1	0
	SPAI	12	4
Shrubs	ATTO	0	0
	ERNA10	0	0

Shrub Cover (%) LACEY_02

Species code	2007	2009	2013
ATTO	0	0	T
ERNA10	0.3	0.2	1.2
Total	0.3	0.2	1.2

Ground cover (%) LACEY_02

Substrate	2007	2009
Dung	2	2
Litter	83	76
Standing Dead	2	1
Bare Ground	16	22

LACEY_08 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the Laws Holding Riparian field.

Frequency LACEY_08

Life Forms	Species	2013
Annual Forb	HEAN3	3
Perennial Forb	ANCA10	27
	GLLE3	12
Perennial Graminoid	DISP	85
	JUBA	22
	LETR5	131
Nonnative Species	BAHY	1

LACEY_03 is on a Torrifluvents 0-2% slopes, saline meadow ecological site, situated in the River Field. Saltgrass has decreased significantly on this site in 2013.

Frequency LACEY_03

Life Forms	Species	2007	2009	2013
Perennial Graminoid	DISP	139	157	75**
	JUBA	3	2	0
	LETR5	42	26	17
	SPAI	31	5	1
Shrubs	ALOC2	0	5	8

Cover (%) LACEY_03

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	56	44
	LETR5	6	1
	SPAI	17	1

Shrub Cover (%) LACEY_03

Species code	2009	2013
ALOC2	4.7	0
ATTO	1.2	3.3
Total	5.9	3.3

Ground cover (%) LACEY_03

Substrate	2007	2009
Dung	8	4
Litter	92	95
Standing Dead	0	1
Bare Ground	0	0

LACEY_05

LACEY_05 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the River Field.

Frequency LACEY_05

Life Forms	Species	2007	2009	2013
Perennial Forb	GLLE3	22	0	19
Perennial Graminoid	DISP	73	91	81
	JUBA	34	4	35
	LETR5	66	113	70**
	SPAI	82	0	78
Shrubs	ALOC2	8	0	3
	ATTO	8	0	5
	ERNA10	3	0	2
Nonnative Species	BAHY	0	3	0

Cover (%) LACEY_05

Life Forms	Species	2007	2009
Perennial Forb	GLLE3	4	0
Perennial Graminoid	DISP	8	23
	LETR5	8	28
	SPAI	29	0
Nonnative Species	BAHY	0	1

Shrub Cover (%) LACEY_05

Species code	2007	2013
ALOC2	1.3	0
ATTO	5.8	5.7
ERNA10	1.4	3.9
Total	8.5	9.5

Ground cover (%) LACEY_05

Substrate	2007	2009
Dung	1	7
Litter	94	93
Standing Dead	3	0
Bare Ground	5	0

LACEY_04

LACEY_04 is on a Torrifluvents 0-2% slopes, saline meadow ecological site, situated in the Triangle Field.

Frequency LACEY_04

Life Forms	Species	2007	2009	2013
Perennial Graminoid	DISP	24	18	23
	JUBA	11	17	19
	SPAI	96	113	65**
Shrubs	ATTO	3	1	3
	ERNA10	14	9	13

Cover (%) LACEY_04

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	1	1
	JUBA	0	1
	SPAI	12	13

Shrub Cover (%) LACEY_04

Species code	2007	2009	2013
ATCO	0	0.7	0
ATTO	1.8	0.9	1.0
ERNA10	11.0	15.7	18.1
SAVE4	1.2	1.1	0
Total	14.0	18.5	19.0

Ground cover (%) LACEY_04

Substrate	2007	2009
Dung	1	1
Litter	65	70
Rock	0	0
Standing Dead	21	12
Bare Ground	34	29

LACEY_06

LACEY_06 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the River Field.

Frequency LACEY_06

Life Forms	Species	2007	2009	2013
Perennial Graminoid	DISP	100	100	106
	SPAI	83	83	79
Shrubs	ATTO	17	6	6
Nonnative Species	BAHY	0	1	0

Cover (%) LACEY_06

Life Forms	Species	2007	2009
Perennial Graminoid	DISP	22	22
	SPAI	21	21
Shrubs	ATTO	0	0
Nonnative Species	BAHY	0	0

Shrub Cover (%) LACEY_06

Species code	2007	2009	2013
ATTO	7.0	7.5	3.8

Ground cover (%) LACEY_06

Substrate	2007	2009
Dung	1	1
Litter	71	82
Standing Dead	5	2
Bare Ground	27	17

LACEY_07 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the River Field.

Frequency LACEY_07

Life Forms	Species	2009	2013
Perennial Forb	GLLE3	44	53
	NIOC2	2	4
	PYRA	0	5
Perennial Graminoid	DISP	101	93
	JUBA	21	30
	LETR5	27	35
	SPAI	72	55**

Cover (%) LACEY_07

Life Forms	Species	2009
Perennial Forb	GLLE3	3
Perennial Graminoid	DISP	9
	LETR5	1
	SPAI	8

Ground cover (%) LACEY_07

Substrate	2009
Dung	2
Litter	94
Bare Ground	4

The following tables present the summarized utilization data for each pasture, for the transects in each field.

Table 1. Grazing Utilization for Fields/Pastures on the Reinhackle Ranch Lease, RLI-492, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Laws Holding Field	33%	34%	35%	45%	25%	39%	33%
Laws Holding Riparian*					8%	19%	38%
Triangle Field*	32%	14%	36%	34%	37%	46%	43%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Reinhackle Ranch Lease, RLI-492 ,2007- 2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
Laws Holding Field	LACEY_03	0%	0%	32%	37%	5%	34%	27%
	LACEY_05	27%	45%	40%	52%	62%	65%	35%
Laws Holding Riparian*	LACEY_08					8%	19%	38%
Triangle Field*	LACEY_01	23%	4%	56%	33%	41%	79%	56%
	LACEY_02	24%	16%	50%	33%	19%	35%	41%
	LACEY_04	0%	13%	17%	0%	34%	21%	0%
	LACEY_06	48%	19%	25%	0%	26%	62%	50%
	LACEY_07	0%	0%	41%	39%	65%	31%	65%

**Riparian Utilization, 40%*

Summary of Utilization

A new riparian fence was constructed in 2010 creating the Laws Holding Riparian Field. Utlization in this field has been below the allowable utilization standard of 40%. The Triangle has steadily increased utilization and exceeded 40% over the years. This is mostly due to livestock crossing the river from the north. Grazing is better in the south portion of the Triangle field, and low winter flows in the Owens River allow livestock to cross easily. Supplement and a change in field rotation are going to be tried by the lessee to lower the utilization in the Triangle Field.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Reinhackle Ranch 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
South Pasture	80	74	74	92	X	X	86
West Pasture	86	74	X	90	X	X	86
East Pasture	80	X	X	94	X	X	86
Horse Pasture	82	X	66	86	X	X	72

X indicates no evaluation made.

Summary Irrigated Pastures

Irrigation on the lease has improved due to a new irrigation schedule. However, the Horse Pasture has remained consistently low due to invasive weeds and over grazing. The lessee is in the process of making management changes to improve the condition of the pasture, it will be rated again in 2014.

Stockwater Sites

Two stockwater wells were drilled in 2011. The wells are located in the Laws area one supplying the Holding Field and the other just north of the Lower McNally canal to supply water for spring grazing and to remove grazing pressure from the Owens River.

Fencing
There are no fence projects planned for the lease other than general maintenance.

Salt and Supplement Sites
Portable liquid supplement stations are used during the winter. These stations are placed in designated areas outside the riparian corridor and are periodically moved.

4.1.18 Four J Cattle Ranch Lease (RLI-491 and 499)

The 4-J Ranch Lease consists of two different ranches. The Big Pine Ranch (RLI-491) contains approximately 10,764 acres, (9,567 acres are covered by this plan) and is located near the community of Big Pine. The Laws Ranch (RLI-499) contains approximately 1,197 acres and lies north of Laws, between U.S. Highway 6 and the Upper McNally Canal. The 4-J Ranch Lease is owned by the 4-J Cattle Company, Inc., and managed by Mr. Mark Johns. In addition to this lease, the lessee holds the Big Pine lease (RLI-491) which is comprised of the Baker Creek area near Big Pine and the Twin Lakes area near Blackrock. The majority of the mature breeding cattle graze in the Owens Valley in winter and summer in Long Valley. However, there are small herds that graze the Laws Ranch, Baker Creek Ranch periodically throughout the year. Cattle that graze on the Long Valley and Baker Creek LADWP leases also utilize adjacent Federal grazing allotments.

The Big Pine portion of the Lease consists of irrigated pastures with the surrounding fields being a mix of native alkali sacaton meadows and dry uplands in the Twin Lakes portion of the lease. Cattle typically graze the Ranch from late October to early May. The duration of grazing may vary from year to year dependant upon forage conditions in Long Valley. During the grazing season cattle are moved using the best pasture rotation strategy.

The Laws Ranch consists entirely of irrigated pastures. Cattle graze the ranch on a year round basis under various stocking rates that are dependent upon available forage.

All grazing on the lease occurs on irrigated pastures or federal grazing allotments so no utilization data is collected. The Twin Lakes portion of the lease is part of the LORP and all grazing monitoring results are contained in the LORP Annual Report.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Four J Cattle Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Front Pasture	81	86	X	90	X	X	80
Triangle Pasture	84	X	X	88	X	X	72
Holding Pasture	90	X	X	98	X	X	90
Hessian Pasture	84	X	X	84	X	X	76
Fish Springs	86	X	X	90	X	X	94
Tinemaha Pasture	86	X	X	84	X	X	94
Baker Meadow	98	X	X	94	X	X	90
Cottonwood Meadow	86	X	X	90	X	X	94
Silver Canyon Pasture	86	X	X	86	X	X	94
Middle Pasture	90	X	X	88	X	X	94

Jean Blank Pasture	84	X	X	88	X	X	96
Pasture	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Wiper Pivots Pasture	94	X	X	98	X	X	96
Full North Pivot	88	X	X	90	X	X	96
Full South Pivot	88	X	X	86	X	X	96
Mitigation Pasture	84	X	X	86	X	X	96

X indicates no evaluation made.

Summary Irrigated Pastures

Irrigated pastures on the lease have scored well in the past. However, with drought conditions affecting the water availability out of the perennial stream condition in the Front and Triangle pastures has declined. With normal irrigation the pastures should improve condition. No management changes are recommended for the lease.

Stockwater Sites

There are no stockwater sites planned for the lease. All stockwater is provided by Baker Creek irrigation diversions, Big Pine Canal or troughs.

Fencing

No fencing is planned on the lease beyond general maintenance.

Salt and Supplement Sites

Hay and liquid supplement are fed on the lease during the winter.

4.1.19 Independence Ranch Lease (RLI-454)

The Independence Lease (5,437 acres) consists of the Big Pine, Springfields, and Shepherds Creek Parcels. The Big Pine Parcel (5087 acres) consists of 12 irrigated pastures, 4 of which are used for hay production. The Springfields Parcel (4,674 acres) consists of 13 pastures (plus a county landfill, several revegetation sites, and livestock corrals) east of U.S. Highway 395 and west of the Los Angeles Aqueduct near the town of Independence. The Shepherds Creek Parcel (315 acres) is an irrigated alfalfa field and hay yard west of U.S. Highway 395 and north of the Manzanar National Monument.

South River Field

4J_02 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the South River Field.

Frequency 4J_02

Life Forms	Species	2007	2009	2010	2012
Perennial Forb	ARSP	0	1	0	0
	ASFA	4	3	3	0
	GLLE3	6	8	11	12

	ARDR4	0	1	1	0
Perennial Graminoid	DISP	69	83	57	45
	HOJU	0	0	0	1
	JUBA	65	51	66	61
	LETR5	33	40	50	53
	SPAI	90	65	79	66
Shrubs	ATTO	0	0	0	1
Nonnative Species	BAHY	0	12	22	3
	LOCO6	2	0	0	3

Cover (%) 4J_02

Life Forms	Species	2007	2009	2010
Perennial Forb	GLLE3	2	3	1
Perennial Graminoid	DISP	20	15	9
	JUBA	9	2	1
	LETR5	12	8	6
	SPAI	37	16	20

Shrub Cover (%) 4J_02

Species code	2007	2009	2010	2012
ATTO	1.5	2.2	2.3	1.3

Ground cover (%) 4J_02

Substrate	2007	2009	2010
Dung	5	1	2
Litter	91	90	88
Standing Dead	0	0	2
Bare Ground	4	9	10

4J_03 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the South River Field.

Frequency 4J_03

Life Forms	Species	2007	2009	2010	2012
Annual Forb	ATPH	0	0	2	0
	CLPA4	0	0	1	0
	CLPL2	0	0	25	0
Perennial Forb	STPA4	4	4	6	2
Perennial Graminoid	DISP	137	136	137	143
	SPAI	46	48	44	34
Shrubs	ATTO	3	0	0	3
	SAVE4	8	4	2	3

Cover (%) 4J_03

Life Forms	Species	2007	2009	2010
Perennial Graminoid	DISP	36	22	18
	SPAI	6	4	5

Shrub Cover (%) 4J_02

Species code	2007	2009	2010	2012

ATTO	0.2	0	0.8	0.3
SAVE4	0.5	1.6	2.0	2.2
Total	0.7	1.6	2.8	2.5

Ground cover (%) 4J_03

Substrate	2007	2009	2010
Dung	3	1	4
Litter	74	60	59
Standing Dead	1	3	2
Bare Ground	23	40	36

4J_04

4J_04 is on a Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, moist flood plain ecological site, situated in the South River Field.

Frequency 4J_04

Life Forms	Species	2007	2009	2010	2012
Perennial Forb	GLLE3	3	0	0	3
	NIOC2	18	18	22	18
Perennial Graminoid	DISP	144	126	134	152
	LECI4	5	0	0	0
	LETR5	24	27	27	16
	SPAI	30	30	36	24
Shrubs	ATTO	0	2	0	0
	ERNA10	0	0	0	5

Cover (%) 4J_04

Life Forms	Species	2007	2009	2010
Perennial Forb	GLLE3	2	0	0
	NIOC2	8	4	6
Perennial Graminoid	DISP	63	30	26
	LETR5	4	10	4
	SPAI	12	6	6

Shrub Cover (%) 4J_04

Species code	2007	2009	2010	2012
ATTO	1.4	2.1	8.4	1.5
ERNA10	1.0	0	0	0.6
Total	2.4	2.1	8.4	2.2

Ground cover (%) 4J_04

Substrate	2007	2009	2010
Dung	4	1	2
Litter	92	92	98
Standing Dead	0	0	1
Bare Ground	4	7	1

Table 1. Grazing Utilization for Independence Ranch Lease, RLI-454, 2007- 2013

Field	2007	2008	2009	2010	2011	2012	2013
*South River Field	0%	14%	17%	15%	46%	30%	46%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Independence Ranch Lease, RLI-454, 2007-2013

Field	Transect	2007	2008	2009	2010	2011	2012	2013
*South River Field	4J_02	0%	18%	25%	15%	0%	61%	0%
	4J_03	0%	10%	9%	0%	31%	6%	28%
	4J_04	0%	10%	17%	16%	61%	24%	64%

**Riparian Utilization, 40%*

Summary of Utilization

Utilization has increase in the South River Field mainly due to a change in management in 2010. The utilization increased under the new lessee and was over utilization for several years. Since 2010 the lessee has been working with Watershed Resources staff to decrease utilization. Faster pasture rotation along with changing the timing of the grazing has resulted in a mid-season 2014 utilization in the South River Field of14%, and all livestock have been moved for the rest of the grazing season. There will be no further management changes.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Independence Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Pasture 1	84	X	X	96	X	X	86
Pasture 2	84	X	X	92	X	X	86
Pasture 3	96	X	X	84	X	X	84
South Pasture	88	X	X	94	X	X	94
Horse Field	90	X	X	90	X	X	94
Elk Field	82	X	X	90	X	X	86
North Feedlot	84	X	X	98	X	X	94
NW Feedlot	90	X	X	92	X	X	94
Stewart Wiper	X	Planted	X	92	X	X	100

X indicates no evaluation made.

Summary Irrigated Pastures

All irrigated pastures on the lease are doing well regardless of drought conditions. This is the result of irrigation water that is provided by the Big Pine canal. Not having to rely on perennial stream flow for irrigation, has helped maintain good condition on these pastures.

Stockwater Sites

Stockwater is provided by irrigation diversions or the Owens River.

Fencing
No fencing projects are planned beyond normal maintenance.

Salt and Supplement Sites
Cake blocks that contain trace minerals and protein are distributed for supplement on the lease.

4.1.20 Rockin DM Ranch Lease (RLI-420)

The 110-acre Rockin DM Ranch Lease west, of Big Pine, is leased to Dink Morton and managed by Dink and Bev Morton. The lease is a cow/calf operation in Big Pine. Only a portion of the grazing for the entire ranch occurs on LADWP property the remainder of the ranch is located on Inyo County owned land on the North side of Baker Creek Road. This part of the ranch is irrigated and is the location of the ranch headquarters. The LADWP portion of the ranch is located on the south side of the Baker Creek Road, and is comprised of irrigated pasture and dry grazing all located within the same pasture.
Dry grazing on the lease is comprised of shrubs and annuals no utilization monitoring is needed.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Rockin DM Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
Whistler	70	82	X	86	X	X	80

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pasture on the lease has improved slightly since 2007 to maintain the minimum score of 80%. Lack of forage on the Inyo County portion of the ranch has increased grazing pressure on the Whistler Pasture for the last year. Along with drought conditions the lessee has had to decrease cattle numbers and remove them from the ranch completely. If the Whistler Pasture continues to be rested it should recover.

Baker Road Ranch Lease (RLI-475)

Mr. Murton Stewart manages the Baker Road Ranch Lease, which is managed in conjunction with the lessee's other LADWP ranch leases in the LORP Project area. The lease grazes horses and mules that are used in a commercial packer operation. The Baker Road Ranch Lease (680 acres) is comprised of four irrigated pastures and two mountain meadows. The 185-acre Intake Pasture lies to the west of the Owens River and the Los Angeles Aqueduct (LAA) at the LAA Intake. The 104-acre Big Meadow Pasture lies to the east of the Owens River, north of the LAA Intake and east of the LAA below the Intake. The remaining 495 acre Baker Road Ranch portion is located in Big Pine, Fuller, and Saulk Meadows. The Big Pine portion of the lease is comprised of five irrigated pastures that are grazed during the winter months. The Fuller and Saulk portions of the lease are located at the base of Kid and Birch Mountain's and are naturally irrigated by annual spring flows. These meadows are also grazed by pack stock during the summer.

Table 1. Grazing Utilization for Fields/Pastures on the Baker Road Ranch Lease, RLI-475, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
*Intake Field	15%	0%	20%	20%	28%	0%	0%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Baker Road Ranch Lease, RLI-475 ,2007- 2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
*Intake Field	Stewart_01	15%	0%	20%	20%	28%	0%	0%

**Riparian Utilization, 40%*

Summary of Utilization

Utilization on the Intake portion of the Baker Road Ranch has been well below the allowable riparian utilization standard of 40%. There will be no management changes on the lease.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Baker Road Ranch 2007-13

Pasture	2007	2008	2009	2010	2011	2012	2013
North H Way	88	X	X	84	X	X	88
South H Way	88	X	X	88	X	X	88
West County	80	X	X	92	X	X	88
East County	80	X	X	98	X	X	88
West Poplar	80	X	X	92	X	X	88
East Poplar	78	X	X	90	X	X	88
Fuller Meadow	92	X	X	86	X	X	94
Saulk Meadow	X	X	X	X	X	X	X

X indicates no evaluation made.

Summary Irrigated Pastures

All irrigated pastures on the lease have remained in good condition since 2007. The Saulk Meadow has not been rated for several years due to lack of irrigation due to drought conditions. Improved precipitation in the future will allow for more spring output and better irrigation. There are no management changes recommended for the lease.

Stockwater

Stockwater is provided by irrigation diversions, springs and the Owens River on the lease.

Fencing

No fencing projects are scheduled for the lease beyond general maintenance.

Salt and Supplement

No salt are supplement is used by the lessee.

4.1.21 Aberdeen Pack Lease (RLI-479)

The Aberdeen Lease is managed by Mr. Dennis Winchester. The lease is used to graze horses and mules used in a commercial packer operation. The lease (3,314 acres) is made up of the Hines Spring and Haystack Parcels. The Bairs Parcel is a use permit and is managed in conjunction with this ranch lease. The Hines Spring Parcel includes the area from the Blackrock Fish Hatchery north to Hines Spring. This is an upland area and utilization is set at 65% for all fields. There are two fields in this portion of the lease. The Haystack Parcel borders the east side of the town of Independence. The Independence sewer treatment facilities border the northeast corner of the parcel. The lessee uses the parcel to raise alfalfa and graze pack stock. There are 16 pastures and operating structures in the parcel.

Hines Spring Exclosure
ABERDEEN_30
ABERDEEN_30 is situated on the Winnedumah Silt Loam 0-2% slopes, which corresponds to a Sodic Fan ecological site.

Frequency ABERDEEN_30

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012
Annual Forb	2FORB	37	0	0	0	0	0	0
	ATPH	0	3	0	0	0	0	0
	ATTR	0	82	76	0	0	0	0
	CLOB	0	2	0	0	0	0	0
	GILIA	0	8	0	0	0	0	0
Perennial Forb	OENOT	0	12	4	0	0	0	0
Perennial Graminoid	SPAI	82	57	68	59	60	60	70
Shrubs	ATTO	9	51	51	34	64	58	48
	SAVE4	0	0	3	0	0	0	0
Nonnative Species	BAHY	0	3	3	0	0	0	0
	SCAR	0	58	3	0	0	0	0
	SATR12	7	122	127	0	0	4	0

Cover (%) ABERDEEN_30

Life Forms	Species	2002	2003	2004	2007	2009	2010

Annual Forb	ATTR	0	15	1	0	0	0
Perennial Graminoid	SPAI	11	9	8	4	2	3
	SCAR	0	1	0	0	0	0
	SATR12	0	22	10	0	0	0

Shrub Cover (%) ABERDEEN_30

Species code	2003	2004	2007	2009	2010	2012
ATCA	0	0	0.4	0.8	0.7	0.7
ATTO	2.6	6.3	37.3	40.8	46.7	42.1
SAVE4	6.2	7.3	6.9	5.3	8.9	5.5
Total	8.8	13.7	44.5	46.8	56.3	48.3

Ground cover (%) ABERDEEN_30

Substrate	2002	2003	2004	2007	2009	2010
Bare soil	56	46	22	57	22	35
Dung	4	2	1	1	1	2
Litter	21	45	69	42	74	59
Rock	4	3	2	0	1	2
Standing Dead	0	0	2	1	6	9

Pipeline Field

ABERDEEN_33

ABERDEEN_33 is on the Pokonahbe Loamy fine Sand, 0-2% slopes which corresponds to the Saline Bottom ecological site.

Frequency ABERDEEN_33

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012
Annual Forb	2FORB	0	0	3	0	0	0	0
	ERIAS	0	3	18	0	0	0	0
	GILIA	0	0	6	0	0	0	0
Perennial Forb	STEPH	3	3	4	0	0	0	0
	STPA4	0	0	0	2	0	0	0
Perennial Graminoid	DISP	0	6	8	5	6	6	8
	ELEL5	0	8	4	0	0	0	0
	SPAI	104	111	111	111	103	90	96
Shrubs	ARTRW8	0	0	0	0	0	0	0
	ATCO	2	14	9	24	13	12	12
	ATTO	3	0	0	0	0	0	0
	EPNE	5	1	2	0	1	0	0
	ERNA10	0	5	3	5	2	0	0
	MACA17	0	0	0	0	2	0	0
	ARTR2	37	45	36	34	35	29	26
Nonnative Species	BRTE	0	0	0	0	4	0	0
	BRRU2	0	0	0	0	2	0	0

Cover (%) ABERDEEN_33

Life Forms	Species	2002	2003	2004	2007	2009	2010

Perennial Graminoid	JUBA	0	T	0	0	0	0
	SPAI	3	13	5	4	1	4
Nonnative Species	BRTE	0	0	0	0	0	0
	BRRU2	0	0	0	0	0	0

Shrub Cover (%) ABERDEEN_33

Species code	2003	2004	2007	2009	2010	2012
ATCO	1.7	0.6	3.5	1.9	2.6	1.2
EPVI	0.4	0	0	0	0	0
ERNA10	0.4	0	0	0	0	0
ARTR2	17.3	7.5	13.6	13.9	14.2	12.1
EPNE	0	0	0	0.4	0	0.2
Total	19.9	8.1	17.0	16.2	16.8	13.5

Ground cover (%) ABERDEEN_33

Substrate	2002	2003	2004	2007	2009	2010
Bare soil	81	0	0	0	0	0
Dung	2	1	1	2	1	2
Litter	9	17	15	10	16	16
Rock	2	2	1	1	1	1
Standing Dead	0	0	3	2	3	0
Bare Ground	0	72	82	87	84	80

Table 1. Grazing Utilization for Fields/Pastures on the Aberdeen Ranch Lease, RLI-479, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Hines Spring Exclosure	63%	75%	45%	31%	41%	35%	34%
Pipeline Field	4%	19%	19%	14%	26%	39%	50%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Aberdeen Ranch Lease, RLI-479 ,2007- 2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
Hines Spring Exclosure	ABERDEEN_30	63%	75%	48%	49%	44%	66%	66%
	HINES_SPRING_02	0%	0%	44%	27%	45%	20%	35%
	HINES_SPRING_03	0%	35%	44%	5%	33%	20%	32%
Pipeline Field	ABERDEEN_33	5%	22%	29%	26%	5%	57%	40%
	PIPELINE_02	0%	14%	19%	7%	19%	35%	50%
	PIPELINE_03	0%	14%	23%	0%	13%	26%	51%

**Riparian Utilization, 40%*

Summary of Utilization

Utilization on the Aberdeen lease has been maintained at allowable level since 2007 the only year utilization was over the 65% was 2008. Since that time utilization has been low, with livestock

distribution being affected by water spreading from the Hines Spring mitigation project. The increase water spreading has produced more forage for the pack stock and changed the location where they are grazing. Future monitoring may include the addition of several new utilization transects in the new grazing areas if needed.

Irrigated Pastures
The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Aberdeen Ranch Lease RLI-479, 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
One Acre	80	76	84	82	76	90	88
North	80	82	X	86	X	X	88
Middle	84	92	X	84	X	X	80
South	84	96	X	70	X	X	80
Hay Stack	84	92	X	86	X	X	88

X indicates no evaluation made.

Summary Irrigated Pastures
The irrigated pastures on the Aberdeen lease have varied throughout the years with the scores ranging above and below the allowable standard of 80%. However for the past several years better management has maintained scores. The 2013 scores dropped due to drought conditions. No management changes are recommended for this lease.

Stockwater Sites
Stock has begun to use the water that is coming from the Hines Spring mitigation project for the past few years. Stock does to not have to travel to Aberdeen ditch in order to get water.

Fencing
An exclosure fence is planned for the Hines Spring mitigation project and should be completed by the end of 2014.

Salt and Supplement Sites
Pack stock is supplemented with hay and trace mineral blocks if needed by the lessee.

4.1.22 Coloseum Ranch Lease (RLI-407)

The Coloseum Ranch Lease lies West of Lone Pine in the Alabama hills, and south of the Blackrock Fish Hatchery and Eight Mile Ranch on the west and east side U.S. Highway 395. The ranch grazes horses on the Lone Pine portion of the lease (Movie Field) and cattle on the Blackrock portion of the lease (South East Field). Cattle graze the South East Field in the fall and winter and summer on federal grazing allotments.

South East Pasture
Coloseum _38 is located on the Shondow Loam 0-2% slopes soil unit, on a Saline Meadow. The transect is in the South East Pasture in the Sawmill parcels of RLI-407.

Frequency Coloseum_38

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012
Annual Forb	2FORB	0	39	0	0	0	0	0
	ATPH	0	0	3	0	8	13	0
	CORA5	0	0	10	0	0	0	0
	ERIAS	0	21	15	0	0	0	0

	ERSP3	0	0	0	0	2	0	0
Perennial Forb	STEPH	17	11	16	0	0	0	0
	STPA4	0	0	0	0	3	12	10
	STEX	0	0	0	0	0	0	3
Perennial Graminoid	DISP	14	21	29	6	27	25	27
	SPAI	107	136	123	126	133	136	138
Shrubs	ARTRW8	0	0	0	0	0	0	0
	ATCO	0	5	2	0	0	0	0
	ATPA3	0	10	0	0	0	0	0
	ATTO	9	7	5	0	0	0	1
	ERNA10	10	13	21	5	19	3	2
	MACA17	0	0	0	0	3	0	3
	SAVE4	3	0	0	0	1	0	1
	ARTR2	43	30	31	5	0	0	1
Nonnative Species	FESTU	0	2	0	0	0	0	0
	SATR12	0	0	0	0	10	1	2
	BRRU2	0	0	0	0	9	0	0

Cover (%) Colseum_38

Life Forms	Species	2002	2003	2004	2007	2009	2010
Annual Forb	2FORB	0	1	0	0	0	0
	ERIAS	0	1	0	0	0	0
Perennial Forb	STEPH	1	1	0	0	0	0
Perennial Graminoid	DISP	1	1	1	0	0	1
	SPAI	8	18	5	3	9	9
Shrubs	ARTRW8	9	0	0	0	0	0
	ATTO	3	0	0	0	0	0
	ERNA10	2	0	0	0	0	0
	SAVE4	1	0	0	0	0	0

Shrub Cover (%) Coluseum_38

Species code	2003	2004	2007	2009	2010	2012
ATCO	0.1	0.0	0.0	0.0	0.0	0.0
ATTO	1.8	2.1	0.0	0.0	0.0	0.2
ERNA10	1.1	0.8	0.5	0.3	0.0	1.3
SAVE4	0.0	0.0	0.0	0.3	0.2	0.2
ARTR2	9.3	4.2	0.0	0.0	0.0	0.1
STPA4	0.0	0.0	0.0	0.0	1.6	0.0
Total	12.3	7.0	0.5	0.6	1.8	1.9

Ground cover (%) Coluseum_38

Substrate	2002	2003	2004	2007	2009	2010
Bare soil	54	0	0	0	0	0
Dung	2	3	1	1	0	0
Litter	33	35	27	8	5	23
Rock	0	0	0	0	0	0
Standing Dead	0	0	1	0	1	1

Bare Ground	0	61	66	89	94	78

Movie Field

Coloseum_02 is located in the Movie Filed on the Mt. Whitney Parcels of RLI-407. The transect is on a Dehy-Conway-Lubkin association, 0-9% slopes. The site most closely corresponds to a Saline Meadow ecological site.

Frequency Coloseum_2

Life Forms	Species	2003	2004	2007	2009	2010	2012
Annual Forb	ATPH	36	0	0	0	31	3
	CLEOM2	7	0	0	0	0	0
	CLOB	2	3	0	0	0	0
	CORA5	0	0	0	0	2	0
	PSRA	4	0	0	0	0	0
Perennial Forb	MACA2	0	0	0	0	9	0
	PYRA	4	14	0	0	0	0
	STEPH	11	0	0	0	0	0
	PSATH	0	0	0	3	0	0
Perennial Graminoid	DISP	93	116	110	93	100	98
	JUBA	16	26	25	18	27	17
	POSE	0	0	5	0	0	0
	SPAI	27	24	35	41	41	40
Shrubs	ATCO	0	2	0	0	0	0
	ATTO	0	0	1	0	0	0
	ERNA10	0	19	0	3	4	0
	LEFR2	0	0	1	2	0	0
	MACA17	0	0	13	10	0	10
	SAVE4	3	17	7	8	1	5
	ARTR2	0	2	0	1	0	0
Nonnative Species	PHAU7	0	0	0	0	1	0
	POA	3	0	0	0	0	0

Cover (%) Colseum_2

Life Forms	Species	2003	2004	2007	2009	2010	2012
Annual Forb	ATPH	6	0	0	0	1	0
Perennial Graminoid	DISP	16	15	8	10	8	0
	JUBA	0	0	2	1	1	0
	SPAI	6	9	4	5	4	0
Shrubs	MACA17	0	0	1	0	1	0

Shrub Cover (%) Coluseum_2

Species code	2003	2004	2007	2009	2010	2012
ATCO	0.8	0.0	0.4	0.6	1.4	0.3
ATPA3	0.0	0.0	0.3	0.0	0.0	0.0
ERNA10	5.5	3.2	6.0	4.4	7.5	5.2
SAVE4	3.3	51.9	4.2	3.9	3.3	4.6
ARTR2	0.7	0.4	0.3	0.4	0.7	0.2
Total	10.3	55.5	11.2	9.2	12.8	10.2

Ground cover (%) Coluseum_2

Substrate	2003	2004	2007	2009	2010
Dung	0	1	1	0	0
Litter	48	32	51	61	41
Rock	0	2	0	0	0
Standing Dead	0	15	6	6	2
Bare Ground	42	38	48	39	59

Table 1. Grazing Utilization for Fields on the Coloseum Ranch Lease, RLI-407, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Movie Field	70%	12%	16%	0%	0%	3%	0%
South East Field	77%	0%	36%	54%	44%	72%	0%
North East Field	72%	7%	29%	38%	32%	48%	0%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Coloseum Ranch Lease, RLI-407, 2007- 2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
Movie Field	COLOSEUM_01	65%	8%	14%	0%	0%	0%	0%
	COLOSEUM_02	70%	0%	19%	0%	0%	0%	0%
	COLOSEUM_03	74%	29%	16%	0%	0%	0%	0%
South East Field	COLOSEUM_38	77%	0%	9%	0%	0%	70%	
	COLOSEUM_T1			20%	42%	42%	40%	
	COLOSEUM_T2			69%	40%	58%	74%	
	COLOSEUM_T3			32%	39%	25%	79%	
	COLOSEUM_T4			45%	62%	57%	64%	
	COLOSEUM_T5			39%	85%	51%	0%	
North East Field	NORTHEAST_01	72%	7%	29%	38%	32%	48%	

**Riparian Utilization, 40%*

Summary of Utilization

Utilization on the Coloseum has been below the allowable standard of 65% for the past seven years. However for the past few years use has increased in the North and South East Fields due to drought conditions that have decreased forage production on the lessees federal grazing allotments. The lessee has been bringing cattle sooner and leaving them longer increasing utilization. In 2013 cattle arrived during the growing season before ungrazed plant heights where collected. Watershed Resources staff had to estimate utilization for the growing season. The 2014 season for the lease will not be monitored because the lessee has sold all of his livestock.

Irrigated Pastures

There are no irrigated pastures on the Coloseum Ranch Lease.

Stockwater Sites

Stockwater is provided by a diversion coming off Sawmill Creek.

Fencing

No new fencing in planned for the lease beyond normal maintenance.

Salt and Supplement Sites

Hay is fed during the winter, no other supplement is used.

4.1.23 Three Corner Round Ranch Lease (RLI-464)

The Three-Corner-Round Ranch Lease (1792 acres) is east of Aberdeen, between new and old U.S. Highway 395, and is leased to the Three-Corner-Round Pack Outfit, managed by Mrs. Jennifer Roeser. The ranch grazes burros that are used during the summer months for youth camp, pack trips in the Sierra Nevada Mountains. The fields consist entirely of upland vegetation.

Summary of Utilization

There are no utilization transects for this lease due the composition of the vegetation. There are no perennial grasses and the bulk of the vegetation is made up of Sage Brush, Nevada Salt Bush and annuals. The burros forage on the shrubs and annuals when available in the spring. If needed they are supplemented with hay during the winter. The lease condition was evaluated in 2013 and was found to be in good condition with current stocking rates.

Fencing
The lessee had a private contractor replace the western boundary fence in 2010. No other fence projects are planned for the lease.

4.1.24 Eight Mile Ranch Lease (RLI-408)

The 770-acre Eight-Mile Lease is leased annually under seasonal prescriptions to Mr. and Mrs. Roeser. The lessee operates a commercial packer operation and uses the ranch to graze pack stock during winter and grow alfalfa hay during the summer. The lease is located south of Aberdeen, bordered on the east by U.S. Highway 395. Horses and mules graze the hay stubble in the fall and winter, if precipitation allows spring grazing will occur on the upland portions of the lease. The lease includes a small partially irrigated field (Tree Lot), two small fields (Yearling and Feed Lot) and five large fields (Upper North, Lower North, West, South and Willow Fields) that are not irrigated. A corral and a stock yard complete the lease

Summary of Utilization
There is no utilization data for the upland fields on the lease. All of the fields on the lease used to consist of shrubs and annuals currently they are recovering from the Inyo Complex fire that occurred in 2007. The only field that did not totally burn and has a perennial grass component is the South Field. Utilization transects have been established in the South Field and monitoring of this field is planned when it is grazed.

Irrigated Pastures
The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Eight Mile Ranch , 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
House	84	X	X	80	86	X	84

X indicates no evaluation made.

Summary Irrigated Pasture
The House pasture has rated at or just above the allowable standard of 80%. The scores on the pasture could be improved if it was replanted.

Fencing

All of the boundary fences to the west of the lease were burned in 2007. They have been replaced, and no other new fencing projects are planned.

Salt and Supplement

Hay is fed to livestock when needed during the winter months.

4.1.25 Fort Independence Ranch Lease (RLI-406,489)

The Ft. Independence Lease includes 3849 acres covered by RLI-406, leased to Keith and Eleanor Bright, Donald Bright, and Scott Kemp; and 1526 acres covered by RLI-489, leased to Scott Kemp and W. F. Marshall. Both are managed by Scott Kemp in conjunction with the Islands (north of Lone Pine); Delta (south of Lone Pine); Georges Creek (northwest of Lone Pine); Archie Adjunct (south of Owens Lake); and Lubkin Adjunct (south of Lone Pine) grazing leases. The livestock program is a commercial cow/calf operation.

The Fort Independence lease is comprised entirely of irrigated pastures and has no grazing utilization transects. The lease is monitored using the irrigated pasture condition scoring.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Fort Independence 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
Zucco	96	X	X	98	X	X	92
D&D	96	X	X	96	X	X	92
Bardoff	94	X	X	96	X	X	92
Plot	100	X	X	100	X	X	96
Heifer Heaven	96	X	X	96	X	X	90
Garden	94	X	X	96	X	X	90
Orchard	100	X	X	100	X	X	82
Pampa	96	X	X	100	X	X	90
Cane	100	X	X	100	X	X	92
L&L	100	X	X	100	X	X	90
Willow	94	X	X	100	X	X	84
Clover	94	X	X	96	X	X	92
Horse Heaven	90	X	X	94	X	X	84
Hectare	92	X	X	96	X	X	90
Dessert	94	X	X	96	X	X	96

X indicates no evaluation made.

Summary Irrigated Pastures

All of the pastures in the Fort have done well every year. They are irrigated well and managed to keep shrubs out. This is done by actively spraying and mowing during the growing season. The species composition of the pastures is high giving variable options for high quality forage for livestock. There will be no management changes recommended for this lease.

Stockwater Sites

Stockwater is provided via irrigation ditches and diversions.

Fencing

No new fencing is planned for this lease beyond general maintenance.

Salt and Supplement Sites
Mineral tubs or cake blocks are used to supplement feed in designated areas.

4.1.26 Georges Creek Parcel (RLI-489)

The Georges Creek Parcel (4,000 acres) is managed in conjunction with the Islands Lease (RLI- 489) by Scott Kemp. The lease is a cow/calf operation in conjunction with a surrounding BLM grazing allotment. This parcel borders BLM land to the west, U.S. Highway 395 to the east, the Moffat Ranch to the south, and the Shepherd Creek alfalfa field to the north. The parcel is presently managed as four pastures.

Georges Pastures #1 and #2 are irrigated and the perimeters are fenced. The North Field, north and west of Manzanar, is not fenced separate from BLM lands. This pasture is grazed only in conjunction with the adjacent BLM grazing allotment and has no utilization transects in it. The South Field is located between Moffat Ranch and Georges Creek irrigated pastures. It also borders BLM land and has no fences, so it is managed the same as the North Field. The only portion of the parcel presently fenced is around the irrigated pasture in the center and western edge of the parcel. A small corral near Georges Creek along the west boundary of the parcel is used to work cattle.

South Field

ISLAND_59 is located in the South Field on the Georges Creek Parcel. The transect is on the Reinhackle Sand, 0-2% slopes which corresponds to a Saline Bottom ecological site.

Frequency ISLAND_59

Life Forms	Species	2003	2004	2007	2009
Annual Forb	2FORB	0	13	0	0
	CLOB	1	0	0	0
	CRCI2	0	35	0	0
	ERIAS	14	80	0	0
	ERIOG	0	19	0	0
Perennial Forb	SUMO	15	28	21	23
Perennial Graminoid	SPAI	6	6	6	7
Shrubs	ATCO	26	32	14	20
	ATTO	9	6	3	3
	SAVE4	5	2	6	7
Nonnative Species	BRTE	0	0	0	2
	SATR12	0	0	0	1

* indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period

Cover (%) ISLAND_59

Life Forms	Species	2003	2004	2007	2009
	ERIAS	0	1	0	0
Perennial Graminoid	SPAI	1	1	0	1

Shrub Cover (%) ISLAND_59

Species code	2003	2004	2007	2009
ATCO	3.2	1.5	3.0	2.3
ATTO	4.8	3.8	1.9	2.9
SAVE4	6.2	2.5	2.8	3.4
SUMO	9.1	2.9	1.0	2.4
Total	23.2	10.5	8.6	11.0

Ground cover (%) ISLAND_59

Substrate	2003	2004	2007	2009
Dung	0	0	1	1
Litter	52	26	35	45
Rock	0	0	1	0
Standing Dead	0	12	14	19
Bare Ground	46	60	63	54

ISLAND_02

ISLAND_02 is located in the South Field on a disturbed Dehy-Conway-Lubkin-Association, 0-9% slopes. Because of the complexity of different soil units, ecological sites associated with the unit vary from Wet Meadow, Saline Meadow, to Gravelly Loamy Sand. The actual site appears to be a xeric oriented Saline Meadow transitioning to a Gravelly Loamy Sand site.

Frequency ISLAND_02

Life Forms	Species	2002	2003	2004	2007	2009
Annual Forb	CORA5	0	31	0	0	13
	ERIAS	0	23	0	0	0
	PSRA	0	7	3	0	0
Perennial Forb	ANCA10	3	2	0	2	0
	GLLE3	2	4	9	9	7
	STEPH	0	6	6	0	0
	STPA4	0	0	0	2	0
Perennial Graminoid	CADO2	3	18	11	16	0
	DISP	32	34	42	44	52
	JUBA	51	30	35	25	44
	LETR5	0	3	1	10	7
	SPAI	94	76	96	89	100
Shrubs	ATCO	0	2	0	0	4
	ATTO	0	0	3	2	0
	ERNA10	14	13	19	14	18
	FOPU2	0	0	3	0	0
	GUSA2	2	4	4	2	0
	MACA17	0	0	0	0	1
	SAEX	15	0	17	0	15
	SALIX	0	7	0	8	0
	ARTR2	22	20	13	18	15
Nonnative Species	MEOF	0	2	0	0	0

Cover (%) ISLAND_02

Life Forms	Species	2002	2003	2004	2007	2009
Annual Forb	CORA5	0	2	0	0	0
Perennial Forb	GLLE3	0	0	1	1	1
Perennial Graminoid	CADO2	0	3	2	1	0
	DISP	2	2	2	2	3
	JUBA	1	1	3	0	1
	SPAI	11	13	13	11	17
Shrubs	ARTRW8	6	0	0	0	0
	ERNA10	6	0	0	0	0

	FOPU2	2	0	0	0	0
	SAEX	8	0	0	0	0

Shrub Cover (%) ISLAND_02

Species code	2003	2004	2007	2009
ATTO	0.1	0.0	0.1	0.3
ERNA10	11.7	7.6	6.3	10.7
FOPU2	4.5	3.6	3.1	0.0
GUSA2	1.4	0.0	0.7	0.0
SAEX	0.0	7.2	6.1	8.0
SALIX	7.6	0.0	1.1	0.0
ARTR2	5.2	2.7	2.7	4.8
Total	30.7	20.9	20.2	23.9

Ground cover (%) ISLAND_02

Substrate	2002	2003	2004	2007	2009
Bare soil	27	0	0	0	0
Dung	1	1	1	1	1
Litter	63	59	52	52	58
Rock	4	1	0	2	0
Standing Dead	0	0	13	11	14
Bare Ground	0	30	43	42	42

Table 1.Grazing Utilization for Fields/Pastures on the Georges Creek Parcel, RLI-489, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
South Field	43%	26%	6%	6%	12%	7%	6%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Georges Creek Parcel, RLI-489,2007- 2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
South Field	ISLAND_02	40%	15%	8%	0%	24%	19%	10%
	ISLAND_59	74%	47%	18%	0%	23%	10%	14%
	SOUTHFIELD_02	0%	0%	3%	7%	0%	0%	0%
	SOUTHFIELD_03	0%	0%	0%	0%	0%	0%	0%

**Riparian Utilization, 40%*

Summary of Utilization

Utilization on the Georges Creek Parcel has been within the upland standard of 65%. As the tables above show grazing has been light to moderate for the past seven years with no changes being recommended in management. If precipitation increases this spring grazing could decrease on the parcel as livestock move up to the adjacent fans to graze on spring annuals or native perennial grasses.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Georges Creek Parcel 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
Olive	88	X	X	88	X	X	82
Georges	84	X	X	90	X	X	82

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pastures on this parcel have been above the minimum score of 80% since the monitoring has started. Score dropped in 2013 due to the drought conditions which affect the water supply to the pastures from Georges Creek. Condition should improve when a normal irrigation season occurs. Grazing on the irrigated pastures was minimal due to the lack of forage production.

Stockwater Sites

Stockwater is provided by Georges Creek and irrigation ditches and diversions on the lease.

Fencing

There is no fencing planned for the lease beyond general maintenance.

Salt and Supplement Sites

Mineral tubs and cake blocks are used to supplement cattle in designated areas.

4.1.27 JR Ranch Lease (RLI-436)

The JR Ranch Lease (976 acres) lies to the north and west of Lone Pine and is managed by Ralph Ruiz. Until 2001, the lessee grazed 25 cow/calf pairs on the lease. Now, the lessee grazes only horses.

Summary of Utilization

There upland grazing on the lease is currently in non-use, no utilization data is collected.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores JR Ranch 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
EM	84	80	68	68	70	90	86

Olivia	78	68	62	62	82	88	86
Lone Pine	84	78	68	68	74	92	88

X indicates no evaluation made.

Summary Irrigated Pastures
The irrigated pastures on this lease have had trouble maintaining the minimum score of 80% for several years. The main reason for the low scores is a lack of irrigation management. For the past few years the lessee has made some changes and the scores have increased above the minimum. This lease will continue to be monitored annually until the scores become stable.

Stockwater Sites
Stockwater is provided by irrigation diversions and ditches.

Fencing
No fencing is planned beyond general maintenance.

Salt and Supplement Sites
Hay is fed during the winter if needed in designated areas.

4.1.28 Lone Pine Dairy Lease (RLI-452)

The Lone Pine Dairy Lease (80 acres) is south of Lone Pine, north of the Lone Pine Golf Course, and west of U.S. Highway 395. The lease is owned by Lewis Schou, Dan Munis, and Phyllis Munis, and managed by Mr. Schou. The Lone Pine Dairy Lease grazes between 35 and 45 purebred Red Angus cows.

Summary of Utilization
The Lone Pine Dairy lease is comprised entirely by irrigated pastures no utilization is measured on the lease.

Irrigated Pastures
The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Lone Pine Dairy Lease 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
Calving	84	X	X	98	X	X	96
Oystye	84	X	X	98	X	X	96
Golf Field	96	X	X	96	X	X	98
Middle Back	96	X	X	96	X	X	96
North Back	96	X	X	94	X	X	98

X indicates no evaluation made.

Summary Irrigated Pastures
Pastures on the lease are in excellent condition and have never decreased in score since monitoring has started. There are no management changes recommended for the lease.

Stockwater Sites

There were no stockwater sites implemented on the Mount Whitney Lease. Stockwater is provided by irrigation diversion and water troughs.

Fencing
There was no new fencing, nor are there any plans to construct any new fences on the lease.

Salt and Supplement Sites
All salt and supplemental feeding is in designated areas away from any riparian areas.

4.1.29 Mount Whitney Pack Lease (RLI-495)

The Mount Whitney Ranch (626 acres) consists of the Diaz Parcel (146 acres), south of Diaz Lake and Lone Pine; and the Tuttle Parcel (480 acres), west of Lone Pine. The ranch is leased to and managed by Craig London, to periodically graze horses/mules.

Tuttle Field

TUTTLE_01 is located in the Tuttle Field on a Dehy-Conway-Lubkin-Association, 0-9% slopes. Because of the complexity of different soil units in association ecological sites associated with the unit vary from Wet Meadow, Saline Meadow, to Gravelly Loamy Sand. The actual site appears to be a xeric oriented Saline Meadow transitioning to a Gravelly Loamy Sand site.

Frequency TUTTLE_01

Life Forms	Species	2003	2004	2005	2007	2009
Annual Forb	ATPH	12	0	37	0	0
	CLPA4	0	0	6	0	0
	CORA5	22	0	27	0	0
	ERIAS	1	0	0	0	0
	ERWI	0	0	33	0	0
	GITR	0	0	2	0	0
	MEAL6	0	0	5	0	0
	PHFR2	0	0	51	0	0
Perennial Forb	STPA4	0	0	4	0	0
Perennial Graminoid	DISP	111	107	117	124	117
Shrubs	ATTO	2	8	7	1	0
	ERNA10	6	24	11	0	3
	SAVE4	5	20	8	8	7
	ARTR2	1	13	6	0	0
Nonnative Species	SCAR	0	0	27	0	0

Cover (%) TUTTLE_01

Life Forms	Species	2003	2004	2005	2007	2009
Annual Forb	ATPH	1	0	2	0	0
	CORA5	2	0	1	0	0
	ERWI	0	0	1	0	0
	PHFR2	0	0	4	0	0
Perennial Forb	STPA4	0	0	1	0	0
Perennial Graminoid	DISP	15	10	13	10	9
Nonnative Species	SCAR	0	0	2	0	0

Shrub Cover (%) TUTTLE_01

Species code	2003	2004	2005	2007	2009
ATCO	0.0	0.0	0.0	0.0	0.5
ATTO	4.7	1.0	1.3	2.2	3.8
ERNA10	11.9	26.0	12.0	10.5	12.0
SAVE4	6.1	0.2	6.9	6.3	7.9
ARTR2	8.7	3.5	4.3	5.5	6.5
Total	31.4	30.7	24.5	24.4	30.6

Ground cover (%) TUTTLE_01

Substrate	2003	2004	2005	2007	2009
Dung	2	1	0	1	0
Litter	87	62	82	75	81
Rock	0	0	0	0	0
Standing Dead	0	9	15	18	25
Bare Ground	8	20	17	25	19

Table 1. Grazing Utilization for Tuttle Field, Mount Whitney Pack Lease, RLI-495, 2007-2013

Field	2007	2008	2009	2010	2011	2012	2013
Tuttle Field	61%	0%	0%	0%	0%	27%	0%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Mount Whitney Pack Lease, RLI-495,2007-2013

Fields/Pastures	Transects	2007	2008	2009	2010	2011	2012	2013
Tuttle Field	TUTTLE_01	61%	0%	0%	0%	0%	27%	0%

**Riparian Utilization, 40%*

Summary of Utilization

The Tuttle Field is rarely grazed. Most use typically occurs from wildlife. Monitoring will continue regardless if grazing occurs or not.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Mount Whitney Pack Lease 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
East Diaz	80	80	78	80	82	88	88
West Diaz	80	80	72	80	78	88	82

X indicates no evaluation made.

Summary Irrigated Pastures

In 2007 the Diaz irrigated pastures were at the minimum with condition looking as though it would decline the next year. This was due to the presence of weeds and over grazing. Over the past seven years the lessee has worked to reduce the amount of weeds and reduce the grazing intensity on the pasture. This has helped to improve the condition of the pastures and increase the scores.

Stockwater Sites
There were no stockwater sites implemented on the Mount Whitney Lease. Stockwater is provided by the irrigation ditches and diversions.

Fencing
There is no new fencing, nor are there any plans to construct any new fences on the lease.

Salt and Supplement Sites
All salt and supplemental feeding is in designated areas.

4.1.30 Horse Shoe Ranch Lease (RLI-480)

Mr. John Hunter manages the livestock on the 2,966-acre Horseshoe Grazing Lease (RLI-480). The lease contains the Lake and Cottonwood Parcels (Figures 2 and 3). The Cottonwood Parcel, located on the Kern Plateau at 10,000 feet elevation, is being grazed under USDA Forest Service grazing prescriptions. The lower elevation Lake Parcel borders the southwest side of Owens Lake.

6.1. Lake Parcel

The Lake Parcel includes a portion of what was once the Owens lakebed and later the shoreline of Owens Lake. The 1,956-acre parcel lies west and east of U.S. Highway 395, about 24 miles south of Lone Pine near lower Cottonwood Creek. Most of the lease lies west of U.S. Highway 395 (West Field), while most of the forage lies east of U.S. Highway 395, in the East Field. Only very dry vegetation types (i.e., creosote bush) survive on the east side. The eastern part of the lease lies along a remnant wind wave-formed shoreline of Owens Lake.

The majority of the livestock forage occurs along a north-south running fault that forces underground water to the surface along an old lakeshore contour. Springs emerge from the fault forming open water ponds, marshes, and wet and dry meadows. The springs all drain eastward and disappear in the "old" lakebed. Charcoal Kiln Pond, near the border of the parcel, contains 5 acres of standing water and could support pupfish and/or Tui chubs. The pond is completely isolated from all other fish species. Remnants of old charcoal production kilns occur within the parcel that may have significant historic value. The remains of an old railroad bed, with tracks and ties removed runs south to north through the parcel.

Utilization is not measured on this portion of the lease, due to species composition of the vegetation around the spring. Annual checks of the seeps and springs are made to assess health each year.

6.2. Cottonwood Parcel

The Cottonwood Parcel lies in rolling high elevation hills with topography heavily modified by snow and ice during past glacial periods. These rolling hills enclose grassy, high elevation meadows. A Forest Service trailhead and camping area borders the parcel on the north and

serves as a "jump-off" point for recreationists to the Golden Trout Wilderness. LADWP lands, totaling 1,011 acres, abut the south end of the trailhead parking and camping area. LADWP lands are scattered in separate sub-parcels surrounded by Forest Service lands. These

sub-parcels lie in and around Horseshoe Meadows—two parcels are in or around Round Valley Meadows, and the last and largest sub-parcel is in Last Chance Meadow, with Cottonwood Creek flowing through it. The Last Chance Meadow area is classified as a "Research Natural Area." All LADWP meadows being grazed are about 10,000 feet in elevation.

Horseshoe and Round Valley Creeks flow through LADWP lands and merge downstream with Cottonwood Creek. The Golden Trout Wilderness, created under the Endangered American Wilderness Act, surrounds LADWP lands.

Since these parcels are surrounded by the national forest and there are no fences, the parcels are managed under federal grazing guide lines.

4.1.31 Archie Adjunct (RLI-489)

The Archie Adjunct Lease comprises about 627 acres, and is managed by Scott Kemp, in conjunction with their LADWP leases at Islands, Delta, Georges Creek, Fort Independence, and Lubkin, as well as their own private land. The Archie Adjunct Lease is just north of Olancha, lying on both sides of U.S. Highway 395 and is south of the Crystal Geyser Bottling Plant. The lease borders the Homeplace Lease to the south and BLM land to the west and north. The lease is divided into one pasture, two fields, a corral, and holding pen. The Archie Pasture east of U.S. Highway 395 is irrigated exclusively from Cartago Creek through a water delivery pipeline. A 17-acre marsh along the east side of the Archie Pasture has formed in response to irrigation run-off.

In 1989, mudslides covered large parts of the North Field and eliminated large forage areas. The North Field is used in the spring to hold livestock prior to going to a Forest Service grazing allotment for summer grazing and again in the fall when they return from the Forest Service grazing allotment.

The Archie Adjunct is comprised primarily of irrigated pastures and has no utilization transects.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Archie Adjunct 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
Lake Field	84	X	X	90	X	X	74
Bolin	84	X	X	X	X	X	90
Archie	82	X	X	88	X	X	90

X indicates no evaluation made.

Summary Irrigated Pastures

Irrigated pastures on this lease have always rated well since 2007. Irrigation water on the lease is managed well by the lessees. The pastures have good species composition and are not over grazed. The Lake Fields score dropped in 2013 and the condition of the field will be evaluated again in 2014. There are no recommended changes for this lease.

Stockwater Sites

There are no new stockwater sites planned for the lease.

Fencing

No new fencing is planned for the lease beyond general maintenance.

Salt and Supplement Sites

Supplement is used in designated sites and is composed of cake tubs.

4.1.32 Olancha Creek Adjunct (RLI-427)

The Olancha Creek Adjunct Lease (RLI–427) is managed in conjunction with the Lone Pine Lease (RLI–456) in the Lower Owens River area. One of the owners of the Spainhower Anchor Ranch near Lone Pine (Gabe Fohgerty) manages the lease. The lessee also manages the Lone Pine Lease surrounding the town of Lone Pine. Mr. Fohgerty manages the Olancha Creek Adjunct Lease in combination with the Ash Creek BLM allotment located between Cartago and Lone Pine, and the Monache Meadows Forest Service allotment in the southern Sierras.

The lease has been used as a staging area for cattle coming to and from the Lower Owens River area on their way to graze Forest Service lands in the southern Sierras. The lessee typically sends cows with calves to the Forest Service's Monache Meadows on July 1 and grazes this allotment until about October 1. Animals are taken to the Lone Pine area to winter.

The lease lies in Olancha and is bisected by U.S. Highway 395. Saltgrass-sacaton meadow, irrigated pasture, and semi-desert shrub vegetation types are prominent. The lease shares a common boundary with the Homeplace Lease to the north. The Olancha Creek Adjunct Lease is made up of seven fields and pastures.

There are 56 acres on the lease irrigated with water diverted from Olancha Creek. Both Olancha Creek and the diversion ditch need frequent cleaning to allow sufficient water to reach irrigated lands. The irrigated pastures are used to grow livestock forage. No grass hay or alfalfa hay is produced on the lease. All four Esta fields and most of the two Oesta Fields are irrigated. The West Field, east of the Olancha Creek Diversion Ditch, is abandoned agricultural land that is not grazed except for two days in October and one day in the spring for weed control. The West Field, west of the diversion ditch, is semi-desert shrub land.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Olancha Creek Adjunct , 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
Esta 1	84	X	X	88	X	X	92
Esta 2	92	X	X	90	X	X	92
Esta 3	X	X	X	88	X	X	92
Esta 4	X	X	X	88	X	X	86
Oesta 1	72	84	78	82	80	86	86
Oesta 2	58	74	78	82	80	86	86

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pastures on the Olancha Creek lease have rated well for the past seven years except the Oesta 1&2 pastures. These pastures have continual trouble with irrigation water and shrub encroachment. The pastures are sandy and require a lot of water. Over the past several years irrigation management has improved and some of the shrubs have been removed, which has increased the pastures scores. If management continues in this direction there should be not problems with the condition of the pastures in the future.
\
Stockwater Sites

Stockwater is provided by irrigation ditches and troughs located in the pastures.

Fencing

There are no fencing projects planned for this lease other than general maintenance.

Salt and Supplement Sites

Cake mineral and protein tubs are put out during the winter. The locations of these tubs are rotated around in the pastures.

4.1.33 Home Place Adjunct (RLI-428A)

The Homeplace Adjunct Lease (Figure 2) is just north of Olancha, between the Olancha Creek Lease to the south and the Archie Lease to the north. The lease consists of 11 pastures and fields (Table 1). The lease is bisected by U.S. Highway 395. Two small fields (Little Bull and South Fields) are west of the highway. About a third of the lease is irrigated grass pasture (199 acres) east of the highway. No irrigated grass hay or alfalfa hay is harvested on the lease.

The Homeplace Adjunct Lease (644 acres) is managed as part of the 32,641-acre Blackrock Lease (RLI-428). The lease is managed by Mark Lacey and John Lacey, in combination with their Blackrock Lease in the Lower Owens River area. The Homeplace Adjunct Lease was a pivotal part of the Lacey grazing operation in the past. Historically, the lease was used as a holding area for cattle herds going to and from Forest Service lands in the southern Sierras. During this holding period, the lease was nearly vacant of livestock most of the summer and fall (a 90-day period) when the herd was on Forest Service lands. The lessees sold their Forest Service permits and cattle must now either remain on the Homeplace Adjunct Lease year-round or go to some other grazing property.

The lease is mainly grazed as a cow-calf operation. Olancha Creek provides irrigation and stockwater. LADWP Well 404 supplies supplemental water when Olancha Creek flows are inadequate for irrigation and stockwater.

Livestock are fed supplements when needed. Supplemental feeding sites are rotated around the pastures to reduce trampling effects. Feeding sites are mainly on the more alkali portions of the

pastures where less grass is produced. One hired person manages the grazing and irrigation on the lease year-round.

Pastures and fields are flood irrigated from April 1 to October 1 to increase livestock forage production. Most pastures are sub-irrigated by the elevated water table resulting from irrigation. Because Gus Walker Creek recently washed out and changed channels, the stream no longer delivers water to the lease. Olancha Creek, in combination with well water, delivers water year-round for livestock drinking purposes. All irrigated pastures have ditches to carry the necessary livestock drinking water. Water troughs are present in all pastures that are supplemented by irrigation water. All pastures and fields are completely fenced. Fences are in good to fair condition. The lessees maintain all exterior and interior fences.

A proposed California Department of Transportation plan for the reconstruction and widening of U.S. Highway 395 might take the eastern side of this lease for construction of a new roadway. Most of the land identified for the proposed roadway is now irrigated pasture. This grazing plan assumes that highway relocation will not take place and there will be no infringement on the lease. If, in the future, the highway construction project takes part of the lease, this plan will be modified. Cattle numbers, grazing duration, and timing will all need to be adjusted to match the lesser amount of forage available on the remaining grazing lands.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Home Place Adjunct, 2007-2013

Pasture	2007	2008	2009	2010	2011	2012	2013
L Pasture	80	88	X	94	X	X	94
Hay	80	90	X	94	X	X	94
East Stud	92	X	X	96	X	X	96
West Stud	80	88	X	96	X	X	94
Store	80	90	X	92	X	X	98
Woven	80	90	X	94	X	X	80

X indicates no evaluation made.

Summary Irrigated Pastures

For the past seven years the irrigated pastures on the Home Place portion of RLI-428 have rated well, maintaining pasture condtion. There are no recommended management changes for this lease.

Stockwater Sites

Stockwater is provided by irrigation ditches and troughs located in the pastures.

Fencing

In 2014 the main corrals are going to be demolished and re-built using a new design. Once construction is complete, no fencing projects are planned for this lease other than general maintenance.

Salt and Supplement Sites
Supplement is comprised of hay and liquid molasses. Feeding locations are designated and used each year.

Blackrock Lease (RLI-428)

The Blackrock Lease is a cow/calf operation consisting of 32,674 acres divided into 24 management units or pastures. Blackrock is the largest LADWP grazing lease within the LORP area. The pastures/leases on the Blackrock Lease provide eight months of fall through spring grazing, which can begin any time after 60 continuous days of rest. A normal grazing season begins in early to mid-October and ends in mid-May or June.

There are twenty pastures on the Blackrock Lakes lease within the LORP boundary: South Blackrock Holding, White Meadow Field, White Meadow Riparian Field, Reservation Field, Reservation Riparian Field, Little Robinson Field, Robinson Field, East Robinson Field, North Riparian Field, Russell Field, Locust Field, East Russell Field, South Riparian Field, West Field, Wrinkle Field, Wrinkle Riparian Field, Spring Field, Wrinkle Holding, Horse Holding, and North Blackrock Holding. Twelve of these pastures are monitored using range trend and utilization. The other eight pastures are holding pastures for cattle processing or parts of the actual operating facilities.

Summary of Utilization
The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the Blackrock Ranch Lease, RLI-428, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Horse Holding	67%	13%	1%	36%	29%	31%	0%
Locust Field	68%	15%	14%	34%	15%	32%	32%
*North Riparian	72%	51%	21%	29%	31%	10%	35%
Reservation Field	68%	34%	38%	37%	29%	26%	30%
Robinson Field	76%	55%	14%	23%	6%	28%	25%
Russell	85%	49%	15%	39%	6%	26%	26%
*South Riparian Field	35%	25%	26%	21%	23%	23%	19%
Springer Field	77%	43%					
White Meadow Field	3%	9%	19%	10%	9%	19%	19%
*White Meadow Riparian	87%	0%	75%	0%	57%	32%	21%
Wrinkle Field	51%	33%	27%	44%	24%	20%	22%
*Wrinkle Riparian Field	8%	13%	29%	41%	18%	24%	29%
West Field				22%	38%	41%	36%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Blackrock Ranch Lease, RLI-428, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
Horse Holding	BLKROC_9	67%	13%	1%	36%	29%	31%	0%

Locust Field	BLKROC_06	68%	15%	14%	34%	13%	32%	32%
*North Riparian Field	BLKROC_12	0%	67%	6%	16%	0%	0%	0%
	BLKROC_22	72%	36%	36%	43%	31%	31%	35%
Reservation Field	BLKROC_02	69%	31%	0%	36%	0%	18%	35%
	BLKROC_03	81%	44%	54%	46%	53%	27%	33%
	BLKROC_44	72%	37%	49%	45%	0%	28%	40%
	BLKROC_49	41%	10%	12%	16%	0%	11%	0%
	BLKROC_51	80%	46%	48%	33%	41%	39%	44%
	RESERV_06	0%	0%	29%	48%	23%	34%	30%
Robinson Field	BLKROC_04	76%	58%	14%	22%	8%	38%	24%
	ROBNSON_2	0%	52%	15%	23%	4%	18%	25%
Russell Field	BLKROC_05	85%	43%	19%	48%	13%	24%	22%
	RUSSELL_02	0%	55%	12%	31%	0%	28%	31%
South Riparian Field	BLKROC_13	45%	29%	28%	10%	31%	23%	15%
	BLKROC_23	25%	8%	43%	20%	22%	0%	0%
	SOUTHRIP_3		39%	5%	33%	19%	10%	10%
	SOUTHRIP_4					20%	36%	31%
	SOUTHRIP_5						0%	18%
White Meadow Field	BLKROC_01	7%	2%	4%	4%	0%	9%	18%
	BLKROC_39	0%	4%	0%	0%	0%	0%	0%
	WMEAD_03	0%	15%	37%	12%		29%	43%
	WMEAD_04	0%	7%	0%	0%	0%	3%	0%
	WMEAD_05	05	17%	52%	34%	36%	54%	32%
*White Meadow Riparian	BLKROC_11	0%	0%	75%	0%	68%	55%	30%
	BLKROC_14	87%	0%					
	BLKROC_26					45%		6%
	WMRIP_T5						23%	29%
	WMRIP_T4						23%	21%
	WMRIP_T1						26%	0%
Wrinkle Field	BLKROC_07	51%	28%	26%	40%		7%	28%
	WRINKL_03		37%	28%	48%	24%	34%	17%
Wrinkle Riparian Field	BLKROC_18	30%	21%	43%	46%	48%		30%
	BLKROC_19	0%	10%	12%	26%	8%	15%	28%
	BLKROC_20	0%	11%	34%	53%	12%	33%	38%
	BLKROC_21	0%	9%	28%	38%	6%		21%
West Field	WRINKLE_2				22%	38%	41%	36%

**Riparian Utilization, 40%*

Summary of Utilization

Riparian

Utilization on the Blackrock lease has shown a steady decline in utilization in the riparian pastures on the lease since 2007. This has been due to the implementation of the Lower Owens River Project (LORP) and the 40% grazing utilization standard. Since the beginning of the project there has been a need to add or drop transects in the riparian pastures, this can be seen in the tables above. There has also been some grazing trials done using animal impacts to remove shrubs and annual weeds in 2010-2011. During these times utilization was waived in the pastures. These trials have had some beneficial effects on the riparian meadow habitat but, the overall benefit to the riparian pastures has been the re-introduction of flows to the river channel.

Summary of Range Trend Data and Condition Blackrock Lease

There are twenty-six range trend sites on the Blackrock Lease. Fourteen are located on Moist Floodplain ecological sites. Six of these sites are located along the historical 'dry reach' of the river (BLKROC_10, 11, 14, 15, 16, and 17). The similarity index for these six sites ranged between 4-47% averaged across all sampling periods.

The similarity index on BLKROC_11 averaged 47% across the entire baseline period indicating the site is in fair condition. All other sites in the former dry reach averaged less than 20%, indicating the sites are in poor condition. The similarity index for BLKROC_11 is higher due to persistence of perennial grasses at the site. At other dry reach sites, there was a loss of perennial grasses on the floodplain resulting from Los Angeles Aqueduct diversions.

The similarity indices for Moist Floodplain sites, which were not dried by Aqueduct diversions, have historically received perennial flow, ranged from 45-80%. Similarity indices for the eight sites located on Saline Meadow ecological sites ranged from 10-86%. With the exception of BLKROC_01 and BLKROC_02, the remaining six sites were in good to excellent condition. The three range trend sites on Sodic Fan, BLKROC_09, BLKROC_51, and BLKROC_44, have been in good condition while the one Sandy Terrace site BLKROC_49, is in fair condition. In general there have been no departures outside of the typical range of variability observed since monitoring has begun on all sites with the exception of a spike in sacaton on BLKROC_19 and increases Nevada saltbush on BLKROC_16. Therefore similarity to site potentials in 2010 are likely very similar to what was calculated during the baseline period.

Significant changes in 2013 frequency beyond what had previously been observed during the baseline period occurred on two of the 24 sites. This was an increase in beardless wildrye on BLKROC_21 and an increase cattail on BLKROC_18.

Significant increases when compared to 2010 on Moist Floodplain sites for saltgrass occurred two sites and decreased on two sites, alkali sacaton decreased on two sites, Nevada saltbush decreased on three sites, bassyia decreased on three sites, beardless wildrye increased on one site and decreased on another, Mohave seablite decreased on one site, Baltic rush decreased on one site and cattail increased on one site.

Significant changes on Saline Meadow sites in 2013 compared to 2010 were a decrease in saltgrass on one site, and an increase in alkali sacaton on two sites and a decrease on one site.

Significant changes on Sodic Fan sites in 2013 compared to 2010 were an increase in saltgrass one site and an increase in alkali sacaton on another site.

Description of Monitoring Transects by Pasture

White Meadow Riparian Field

BLKROC_10 is located in the White Meadow Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The transect is located within the historical dry reach of the river. The similarity index has ranged between 6-25% during baseline period. Utilization estimates have not been conducted during the past three years because of the dense stands of bassia has prevented access by livestock. An increase in Nevada saltbush and bassia frequency outside baseline parameters were detected during the monitoring year 2009 but in 2010 frequency for both species decreased. Nevada saltbush continues to have a high frequency when compared to 2002-2007, which coincided with the pre-watering years. As waters raise, the soil profile along the floodplain, Nevada saltbush has responded with only 2.8 m of canopy cover in 2003 to 59.7 m of cover in 2010 and is now beginning to decline in 2013. Nevada saltbush density has also declined. The site has begun to show an increase in saltgrass while sacaton has remained stable as well as the perennial forb, mallow (MALE3). Fire would not improve the site, because of the small perennial grass component in the area.

Frequency (%), BLKROC_10

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	ATTR	0	4	0	0	0	0	0	0
	CHBR	0	2	3	0	0	0	0	0
	CHIN2	0	14	28	0	0	0	0	0
	MENTZ	0	14	0	0	0	0	0	0
Perennial Forb	HECU3	0	0	0	0	0	0	0	0
	MALE3	0	3	7	11	21	20	27	18
	SUMO	0	0	0	0	10	0	0	0
	STPI	0	0	4	0	0	0	0	0
Perennial Graminoid	DISP	0	3	0	0	0	0	2	7
	SPAI	0	12	18	18	21	22	17	18
Shrubs	ARTRW8	0	0	0	0	0	0	0	0
	ATTO	2	6	14	25	92	74	74	65
	SAVE4	0	0	0	0	0	3	0	0
	ARTR2	0	2	0	2	2	3	0	0
Nonnative Species	AMARA	0	6	0	0	3	0	0	0
	BAHY	0	3	64	0	47	24	2	4
	DESO2	0	0	1	0	4	0	0	0
	SATR12	0	0	48	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_10

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	2.8	5.2	16.4	52.9	59.7	51.8	46.2
ERNA10	1.0	0.8	0	0	0	0	0
ARTR2	1.2	1.3	2.0	2.5	0	0	0
ATTR	0	0	0	0	2.3	0	0
Total	4.9	7.3	18.3	55.4	62.0	51.8	46.2

BLKROC_11

BLKROC_11 is located in a riparian management area in the White Meadow Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The transect is located within the historical dry reach of the river. The similarity index has ranged between 36-64% during the baseline period. Inkweed, Nevada saltbush, and bassia frequency increased in 2009 and have subsequently stabilized with the exception of inkweed which did decrease in 2010 but remained within levels typically seen for the site. Perennial grass frequency did not change in 2013. Nevada saltbush remains higher than pre-implementation of LORP flows.

Frequency (%), BLKROC_11

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	ATPH	0	0	2	0	0	0	0	0
	ATSES	0	5	0	0	0	0	0	0
	ATTR	0	19	7	0	2	0	0	0
	CHENO	0	1	0	0	0	0	0	0
	CHIN2	0	0	3	0	0	0	0	0
	GILIA	0	9	0	0	0	0	0	0
	MENTZ	0	2	0	0	0	0	0	0
Perennial Forb	MALE3	0	3	4	4	0	0	0	0
	SUMO	32	28	42	49	76	66	20	10
Perennial Graminoid	DISP	114	107	112	103	110	110	105	106
	SPAI	22	39	41	36	42	40	29	33
Shrubs	ATTO	37	95	101	53	70	72	21	22
	ERNA10	3	10	16	8	5	6	0	0
Nonnative Species	BAHY	0	42	38	0	59	44	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_11

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	13.6	16.5	18.3	18.9	18.7	28.3	27.6
ERNA10	3.2	5.0	8.1	3.1	2.6	1.6	1.1
SUMO	10.5	4.9	13.4	16.2	6.1	2.3	na
Total	27.3	26.4	39.7	38.2	27.4	32.1	28.7

BLKROC_14

BLKROC_14 is located within the historical dry reach of the Owens River in the White Meadow Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index for this site ranged between 9% and 25% during the baseline period. The site is in poor condition when compared to its corresponding ecological site description. Nevada saltbush significantly increased in 2009 and saltgrass significantly decreased to 0 in 2009 and remained so in 2010, in 2013 saltgrass frequency began to increase again. Nevada saltbush is increasing on the site with canopy cover increasing from 8.8 m to 31.3 m. These increases are likely a result from rewatering this portion of the Owens River. In 2010 frequency for bassia was at its highest seen on the site since 2004 (prior to the 2008 burn) but has subsequently dropped. Utilization was not sampled on this transect due to the lack of measurable forage.

Frequency (%), BLKROC_14

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	ATTR	0	0	5	0	0	0	0	0
	CHENO	0	0	0	0	0	0	0	0
	CHIN2	0	3	3	0	0	0	0	0
Perennial Forb	HECU3	0	5	0	0	0	0	0	0
	MALE3	0	4	4	6	7	0	7	10
	SUMO	0	0	0	0	4	0	0	0
Perennial Graminoid	DISP	14	21	14	10	0	0	7	13
Shrubs	ATTO	0	4	8	11	24	27	24	24
Nonnative Species	BAHY	0	14	67	0	2	71**	3	4
	DESO2	0	0	2	0	0	0	0	0
	SATR12	0	20	90	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_14

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	8.8	0.4	10.1	27.3	34.4	42.8	31.3

White Meadow Field

BLKROC_01

BLKROC_01 is located on an upland site in the White Meadow Field. The soils are mapped as the Division-Numu Complex, 0-2% slopes soil series, which corresponds to a Saline Meadow ecological site. The similarity index at the monitoring site has ranged between 12-18% during the baseline period. Herbaceous production for the site is much lower than potential, while shrub production is much higher than typical for a Saline Meadow site at its potential. In 1968-69, this entire area was scraped to store runoff. This type of activity significantly altered the area's ability to resemble a Saline Meadow in high ecological condition. Frequency trend was static in 2013 when compared to baseline years.

Frequency (%), BLKROC_01

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Perennial Forb	HECU3	7	4	8	2	16	10	4
	MALE3	20	26	21	26	21	13	6
	PYRA	0	3	2	1	0	0	0
	SEVE2	0	0	0	0	16	0	0
Perennial Graminoid	DISP	39	59	69	52	57	49	53
	JUBA	27	39	35	24	21	18	20
	SPAI	0	4	3	4	4	4	4
Shrubs	ATTO	29	36	35	36	13	17	12
	ERNA10	65	61	57	53	52	47	32

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_01

Species Code	2003	2004	2007	2009	2010	2013
ATTO	12.6	3.5	12.2	3.8	4.6	3.0
ERNA10	26.1	11.4	20.6	10.5	13.2	12.7
Total	38.7	14.8	32.7	14.3	17.7	15.7

BLKROC_39

BLKROC_39 is located on an upland site in the White Meadow Field. The soils are Division-Numu Complex, 0 to 2% slopes, which corresponds to the Saline Meadow ecological site. The similarity index ranged between 55-64% during the baseline period. However, based on ocular estimates, production is far less than typical for a Saline Bottom site. The site was scraped during the wet winter of 1968-69. The loss of the 'A horizon' during this period has likely contributed to the poor productivity of the site. Frequency in 2012 did not depart from previous sampling periods and has not shifted beyond baseline frequency values.

Frequency (%), BLKROC_39

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Perennial Forb	NIOC2	0	0	3	0	4	6	0
	SUMO	7	12	5	8	4	6	4
Perennial Graminoid	DISP	104	94	88	87	98	95	85
	JUBA	7	0	0	0	0	0	0
Shrubs	ALOC2	5	8	11	13	13	12	14
	ATCO	3	9	3	9	13	8	0
	ATTO	17	3	3	3	0	0	4
	ERNA10	0	4	0	1	0	0	0
	SAVE4	3	0	4	4	3	5	5
Nonnative Species	BAHY	0	2	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_39

Species Code	2003	2004	2007	2009	2010	2013
ALOC2	0.1	0.2	0	0	1.0	0
ATCO	0.1	0.5	0.4	1.7	6.4	0
ATTO	3.4	1.9	2.4	1.3	0.0	0.6
ERNA10	0.1	0	0.3	0	0.3	0.3
SAVE4	1.4	0	0.1	0	1.2	0.7
SUMO	0.2	0.4	0.5	0.4	0.6	0
Total	5.3	3.0	3.6	3.5	9.5	1.6

Reservation Field

BLKROC_02 is located in the Reservation Field, which is designated as an upland pasture. The soils are mapped as Manzanar-Winnedumah Association, 0-2% slopes soil series, which corresponds to the Saline Meadow ecological site. The similarity index has varied widely during the baseline period ranging between 28-55%, largely because of fluctuations in alkali sacaton production. The site is dominated by shrubs and may not be able to reach site potential unless shrub densities are reduced. There was no significant change in frequency in 2013 when compared to 2007, 2009 and 2010. The general trend for the area is static. Cover has remained static since 2003.

Frequency (%), BLKROC_02

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ATTR	0	3	0	0	0	0	0
Perennial Forb	GLLE3	7	2	5	4	7	8	7
Perennial Graminoid	DISP	53	49	55	49	55	48	57
	JUBA	3	11	6	6	4	8	6
	LECI4	0	4	1	2	2	3	3
	SPAI	71	95	92	91	86	78	82
Shrubs	ATTO	43	35	41	30	27	20	26
	ERNA10	12	27	13	16	22	19	13
Nonnative Species	BAHY	0	5	0	0	0	0	0
	SATR12	0	0	1	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_02

Species Code	2003	2004	2007	2009	2010	2013
ATTO	22.3	10.3	13.4	9.7	8.3	9.2
ERNA10	6.0	25.1	3.4	6.4	5.4	4.9
Total	28.3	35.4	16.9	16.1	13.7	14.1

BLKROC_03

BLKROC_03 is located in the Reservation Field on the Shondow Loam 0-2% slopes soil series. The transect is on a Saline Meadow ecological site in an upland pasture. The site has ranged between 63%-72% similarity to the site's potential, placing the area in good to excellent condition. The site produces large quantities of alkali sacaton. Frequency results indicate the site has been relatively stable over the past five monitoring periods with the exception of an increase in rubber rabbitbrush cover. Saltgrass has decreased steadily over all years. Increases in frequency, cover, and density for rubber rabbitbrush have markedly risen during the past three sampling periods. As mentioned in 2009, because this site is experiencing an increase in shrub abundance while maintaining high grass cover, this area should be considered a candidate for a prescribed burn in the near future before sacaton cover starts to be replaced by even greater amounts of rubber rabbitbrush. Presently, the site is in excellent condition but not stable due to the rising abundance of woody species.

Frequency (%), BLKROC_03

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	CHHI	0	18	6	0	0	0	0
Perennial Forb	GLLE3	0	0	0	0	1	0	0
Perennial Graminoid	ARPU9	0	0	0	2	0	0	0
	DISP	53	47	59	42	36	18	14
	JUBA	0	0	0	0	2	0	0
	SPAI	100	112	117	122	128	122	124
Shrubs	ATTO	0	0	0	1	2	2	0
	ERNA10	0	6	7	4	17	8	13
Nonnative Species	LASE	0	3	3	0	0	0	0
	POMO5	0	2	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_03

Species Code	2003	2004	2007	2009	2010	2013
ATTO	0.0	0.0	0.3	0.0	0.0	0
ERNA10	1.5	1.3	5.3	9.5	9.8	16.4
Total	1.5	1.3	5.6	9.5	9.8	16.4

BLKROC_44

BLKROC_44 is located in an upland site in the Reservation Field. The soils are Manzanar-Winnedumah Association, 0-2% slopes, which corresponds to the Sodic Fan ecological site. Similarity index has ranged between 62-87%. There was no significant difference between 2010 and 2013; however, JUBA has not been present on the site since 2009. The site is static and in good condition. Manzanar-Winnedumah soils will not support large amounts of perennial grass; therefore, burns on the soil types should not occur if the goal is to increase perennial grass production.

Frequency (%), BLKROC_44

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ATPH	0	1	0	0	0	0	0
	ATSES	0	35	0	0	0	0	0
	CORA5	0	1	0	0	0	0	0
Perennial Forb	SUMO	3	7	7	8	15	15	9
Perennial Graminoid	DISP	104	96	104	113	114	102	108
	JUBA	20	14	16	7	11	0	0
	SPAI	80	87	83	83	82	82	93
Shrubs	ATTO	32	70	83	28	35	20	20
	ERNA10	17	30	32	10	24	32	30
Nonnative Species	BAHY	0	1	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_44

Species Code	2003	2004	2007	2009	2010	2013
ATTO	19.4	11.9	10.7	10.7	9.6	9
ERNA10	7.7	6.0	11.4	10.1	8.7	10.4
SUMO	1.4	0.9	1.8	0.2	0.6	0
Total	28.5	18.8	23.9	21.0	19.0	19.4

BLKROC_49

BLKROC_49 is located in an upland site in the Reservation Field. The soils are Mazourka Hard Substratum-Mazourka-Eclipse Complex, 0-2% slopes, which corresponds to the Sandy Terrace ecological site. The similarity index ranged between 14%-38% during the baseline period. The poor similarity index was a result of having too much saltgrass and alkali sacaton in the plant community composition. Sandy Terrace ecological sites are shrub dominant sites with low annual aboveground biomass production. The ecological site description does not account for instances with large abundances of perennial grasses. There were no significant changes in frequency values. **Materials previous**

Cover (m) Shrubs BLKROC_49

Species Code	2003	2004	2007	2009	2010	2013
ATCO	0.4	0	0.2	0.7	0.2	0.5
ERNA10	1.1	1.1	2.3	1.7	0.6	1.4
MACA2	0	0.6	0	0	0	0
SAVE4	1.0	0.6	1.9	1.4	1.2	1.0
Total	2.5	2.3	4.4	3.8	2.0	2.9

Frequency (%), BLKROC_49

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ERIAS	0	3	0	0	0	0	0
	PSRA	0	0	2	0	1	0	0
Perennial Forb	MACA2	0	0	0	0	0	3	0
	OENOT	0	3	0	0	0	0	0
	STEPH	5	2	17	0	0	0	0
	STPA4	0	0	0	6	3	0	0
Perennial Graminoid	DISP	78	56	63	53	52	45	57
	SPAI	29	24	25	27	29	31	22
Shrubs	ATCO	20	15	19	21	30	24	19
	ATPA3	3	4	1	0	1	6	5
	ATTO	0	0	0	0	0	0	0
	ERNA10	14	10	7	4	10	16	15
	SAVE4	3	0	4	2	4	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

BLKROC_51

BLKROC_51 is located in an upland site in the Reservation Field. The soils are Winnedumah Silt Loam, 0-2% slopes, which corresponds to the Sodic Fan ecological site. The similarity index for the site during baseline period ranged between 46-78%. The site has a higher grass component and lower shrub component than expected for Sodic Fan site, thus lowering the similarity index. The only significant change in frequency was an increase in sacaton. Saltgrass is exhibiting a downward trend on the site.

Frequency (%), BLKROC_51

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Perennial Forb	GLLE3	32	2	12	27	8	5	7
	SUMO	0	0	0	2	0	0	0
Perennial Graminoid	DISP	100	85	70	114	73	58	51
	SPAI	34	21	27	45	18	43	36
Shrubs	ALOC2	0	0	0	1	0	0	3
	ATTO	15	56	42	38	8	3	4
	ERNA10	9	2	0	11	1	5	4
	SAVE4	0	0	0	0	0	0	2

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_51

Species Code	2003	2004	2007	2009	2010	2013
ATTO	25.9	6.2	11.8	7.9	4.6	5.4
ERNA10	2.1	0.5	4.1	4.1	3.3	5.3
SAVE4	0.0	0.0	0.4	0.3	0.0	0
Total	28.0	6.8	16.3	12.3	7.9	10.6

Reservation Riparian Field

BLKROC_15

BLKROC_15 is in a riparian management area, located in the Reservation Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The site is located on the historical 'dry reach' of the Owens and has not begun to show signs of recovery since the return of flows in December 2006. The similarity index is poor for the site ranging between 8-11%. Tamarisk slash was burned at the site in the winter months of 2008 and subsequently invaded by bassia in 2010 with frequency at its highest seen on the site. Although there were no statistically significant changes from 2010 compared to 2013, there appears to be several general trends when looking at estimates across all sampling periods. There is a disappearance of all annual forbs that is a result of the increased canopy cover of Nevada saltbush and bassia. Saltgrass had slowly decreased on the site but has since increased in 2013. Shrub cover has more than doubled on the site. Similar to other sites along the rewatered riparian corridor litter has increased while bare soil has decreased.

Frequency (%), BLKROC_15

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATTR	0	0	16	0	0	0	0
	CHIN2	14	4	29	0	0	0	0
	ERAM2	0	0	5	0	0	0	0
	GITR	0	0	4	0	0	0	0
	LEFL2	0	0	3	0	0	0	0
	MEAL6	0	0	21	0	0	0	0
	NADE	0	0	1	0	0	0	0
Perennial Forb	SUMO	15	18	39	31	32	37	18**
Perennial Graminoid	DISP	25	21	19	14	3	11	24*
Shrubs	ATTO	48	35	80	29	47	58	39*
	SAVE4	2	9	2	6	5	8	13
Nonnative Species	BAHY	6	2	17	0	23	35	0*
	DESO2	0	3	10	0	0	0	0
	SATR12	0	1	2	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_15

Species Code	2003	2004	2005	2007	2009	2010	2013
ATTO	25.4	15.1	19.3	32.9	34.8	39.9	54.7
SAVE4	10.1	8.0	6.6	7.6	9.1	9.8	4.7
SUMO	1.8	1.2	0.9	20.3	23.7	32.2	Na
Total	37.3	24.3	26.8	60.8	67.6	81.9	59.4

BLKROC_16

BLKROC_16 is located in a riparian management area on the Reservation Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. Similar to BLKROC_17, BLKROC_15, BLKROC_14, BLKROC_10 and BLKROC_11 the site is on the historical 'dry reach' of the Owens River. The similarity index is poor for the site ranging between 6-10%. The site is shrub dominated with no perennial grass component. Frequency of Nevada saltbush and bassia increased in 2010, both species exceeding what has been previously observed for the site. Resulting from the rewatering adjacent to the site, Nevada saltbush increased from 5.2 m in 2005 to 44.5 m in 2010 to 46.3 in 2013. Greasewood disappeared in 2013, possibly because of a rising water table. Litter has increased while bare soil has decreased.

Frequency (%), BLKROC_16

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATSES	4	0	0	0	0	2	0
	ATTR	0	0	18	0	0	0	0
	CHIN2	13	16	37	0	0	0	0
	CRYPT	0	0	3	0	0	0	0
	ERAM2	0	0	0	0	0	0	0
	ERIOG	10	0	0	0	0	0	0
	ERMA2	0	11	23	0	0	0	0
	GITR	0	0	20	0	0	0	0
Perennial Forb	MACA2	0	0	59	0	0	0	0
	SUMO	0	0	7	0	0	1	0
Shrubs	ATCO	7	0	3	4	9	8	9
	ATTO	19	23	33	31	39	55	51
	SAVE4	5	12	6	8	11	6	15
Non-native Species	BAHY	3	7	4	0	17	40	0**
	SATR12	11	41	44	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_16

Species Code	2003	2004	2005	2007	2009	2010	2013
ATCO	0.4	0.5	0.0	0.0	0.4	3.8	0
ATTO	6.5	2.9	5.2	16.8	44.2	44.5	46.3
SAVE4	11.0	10.4	9.8	13.3	12.4	14.9	0
Total	17.9	13.8	15.0	30.1	56.9	63.2	46.3

BLKROC_17

BLKROC_17 is located in a riparian management area on the Reservation Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index ranged between 3-5% for the site. Similar to other sites on the historical 'dry reach' of the Owens River, BLKROC_17 has not begun to respond from returned river flows. The site is shrub dominated (Nevada saltbush) with little to no perennial grass component. Frequency did not differ between 2010 and 2013. Canopy cover of Nevada saltbush increased substantially in 2010 and decreased slightly in 2013.

Frequency (%), BLKROC_17

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATSES	12	0	8	0	0	5	0
	ATTR	3	0	31	0	0	0	0
	CHIN2	13	10	40	0	0	0	0
	CHLE4	0	0	1	0	0	0	0
	CRCI2	0	0	4	0	0	0	0
	ERIOG	0	0	0	0	0	3	0
	ERWI	0	0	7	0	0	0	0
	GITR	0	0	32	0	0	0	0
	LEFL2	0	0	54	0	0	0	0
	MEAL6	0	0	29	0	0	0	0
Perennial Forb	HECU3	0	0	0	0	0	0	2
Perennial Graminoid	HOJU	0	0	2	0	0	0	0
Shrubs	ATTO	70	34	74	45	49	54	52
Nonnative Species	BAHY	0	0	0	0	0	5	0
	DESO2	0	0	6	0	0	0	0
	SATR12	9	10	6	0	3	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_17

Species Code	2003	2004	2005	2007	2009	2010	2013
ATTO	37.5	5.7	5.6	28.0	37.7	69.3	66.1

Robinson Field

BLKROC_04

BLKROC_04 is located on an upland site within the Robinson Pasture. The soil series is Manzanar Silt Loam, 0-2% slopes and is a Saline Meadow ecological site. Similarity index during the baseline period ranged between 52-74%. The site has a high diversity of perennial grasses and low shrub composition. In 2009, Baltic rush and creeping wildrye frequency significantly increased while alkali sacaton significantly decreased when compared to 2007, neither of these changes were significantly different from baseline sampling ranges (2002-2004). However, these increases were short-lived and in 2010 creeping wildrye and Baltic rush decreased to levels typically observed for the site and continued to increase again in 2013. Alkali sacaton frequency decreased while saltgrass remained static on the site. Short term trends have fluctuated with 2013 appearing to be wetter than 2010 but when factored into what has previously been observed on the site, current trends remain within historic ranges.

Frequency (%), BLKROC_04

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	CHHI	0	2	0	0	0	0	0
	COMAC	0	23	0	0	0	3	0
	HEAN3	0	8	0	4	6	12	0
Perennial Forb	ANCA10	12	18	17	22	22	16	21
	HECU3	0	0	0	1	3	0	0
	MALE3	14	3	8	10	1	0	1
	PYRA	41	50	44	23	28	15	18
Perennial Graminoid	CADO2	5	18	0	5	0	0	0
	CAREX	0	0	0	0	14	1	12
	DISP	83	77	70	76	62	62	65
	JUBA	88	113	93	73	95	89	98
	LETR5	27	65	43	48	70	26	35
	SPAI	70	30	73	59	27	56	42
Shrubs	ALOC2	5	0	0	0	2	1	1
	ATTO	0	5	0	0	4	3	0
	ERNA10	0	3	2	2	3	2	6
Nonnative	BAHY	0	12	6	0	20	30	1
	POMO5	0	2	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_04

Species Code	2003	2004	2007	2009	2010	2013
ALOC2	0.0	0.0	0.0	0.0	0.4	0
ATTO	0.3	0.0	0.0	0.7	0.1	0
ERNA10	3.4	2.8	5.6	7.9	2.3	5.8
Total	3.6	2.8	5.6	8.6	2.9	5.8

North Riparian Field

BLKROC_22

BLKROC_22 is located in a riparian management area in the North Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. Similarity index has been at 57% for 2006-07. There were no significant departures in frequency when compared to previous years and the site remains static.

Frequency (%), BLKROC_22

Life Forms	Species	2006	2007	2009	2010	2013
Perennial Forb	SUMO	3	6	2	5	3
Perennial Graminoid	DISP	124	111	125	132	123
	SPAI	4	4	3	2	5
Shrubs	ALOC2	4	4	10	9	8
	ATTO	21	7	19	20	7*
	ERNA10	5	4	11	8	2
Nonnative Species	BAHY	11	0	9	1	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_22

Species Code	2006	2007	2009	2010	2013
ALOC2	3.3	2.3	0	5.0	0
ATTO	11.4	9.9	9.6	5.5	9.1
ERNA10	8.0	9.1	6.9	7.0	3.9
SUMO	0.9	0.5	0.6	0.1	0
Total	23.6	21.9	17.1	17.6	13.6

South Riparian Field

BLKROC_13

BLKROC_13 is in a riparian management area located in the South Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity of the site to potential is high, ranging from 76-83% during the time period of 2002-2007. Saltgrass frequency declined significantly in 2013. Creeping wildrye (LETR5) has increased since 2004 and continues to increase in 2013. The relative abundance of creeping wildrye when compared to the total plant community is still minor with cover for the grass ranging from trace to 4%.

Frequency (%), BLKROC_13

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	HEAN3	0	0	0	1	2	7	3
Perennial Forb	ANCA10	7	5	11	13	13	16	14
	GLLE3	0	0	0	0	0	0	1
Perennial Graminoid	DISP	129	139	128	128	121	120	103*
	JUBA	22	6	13	22	19	19	0*
	LETR5	7	0	0	14	20	23	30
	SPAI	34	40	36	37	34	28	23
Shrubs	ATTO	0	12	5	8	1	5	3
	ERNA10	0	0	4	3	0	0	3

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_13

Species Code	2003	2004	2007	2009	2010	2013
ATTO	4.0	3.1	8.7	7.6	8.1	6.0
ERNA10	0.0	0.4	2.4	2.5	2.8	4.2
Total	4.0	3.5	11.1	10.1	10.9	10.2

BLKROC_23

BLKROC_23 is in a riparian management area located in the South Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index ranged between 78-79%. The site is in excellent condition with a minimal shrub component. Frequency values have not varied significantly over the five sampling periods with the exception of Nevada saltbush in 2010.

Frequency (%), BLKROC_23

Life Forms	Species	2006	2007	2009	2010	2013
Annual Forb	ATSES	18	0	0	0	3
Perennial Graminoid	DISP	139	133	139	135	127
	SPAI	25	28	28	24	35
Shrubs	ATTO	0	0	0	32	1
Nonnative Species	BAHY	4	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_23

Species Code	2006	2007	2009	2010	2013
ATTO	1.0	0.8	0.6	1.6	1.3
ERNA10	0	0	0	0	0.2

Russell Field

BLKROC_05

BLKROC_05 is located on an upland site in the Russell Field. The soil series is Manzanar Silt Loam, 0-2% slopes. The site is a Saline Meadow ecological site. The similarity index ranged between 75-88% during the baseline period, indicating that the site is in excellent condition. Frequency results appear static. Shrub cover (rubber rabbitbrush) and density at the study plot continues to show a gradual decline in 2010.

Frequency (%), BLKROC_05

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ATPH	0	3	0	0	0	0	0
	ATSES	0	11	0	2	0	0	0
	CLEOM2	0	16	0	0	0	0	0
	COMAC	0	17	0	3	0	0	0
	HEAN3	3	11	0	6	0	2	0
Perennial Forb	GLLE3	0	0	0	0	0	0	4
	PYRA	32	45	37	5	8	3	10
	SICO2	0	2	0	0	0	0	0
Perennial Graminoid	DISP	49	63	49	49	78	52	55
	JUBA	7	14	14	10	10	6	9
	LECI4	0	0	0	0	4	0	0
	LETR5	0	0	0	0	0	4	4
	SPAI	124	125	115	123	111	131	124
Shrubs	ATTO	0	2	0	0	0	4	0
	ERNA10	7	4	1	0	1	0	0
Nonnative Species	BAHY	0	0	0	11	3	0	0
	POMO5	0	4	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_05

Species Code	2003	2004	2007	2009	2010	2013
ERNA10	7.6	6.3	2.1	0.8	0.5	0.3

Wrinkle Field

BLKROC_07

BLKROC_07 is located on an upland site in the Wrinkle Field. The soil series is Manzanar Silt Loam, 0-2% slopes and is a Saline Meadow ecological site. The similarity index ranged between 79-93% during the baseline sampling period indicating the site is in excellent condition. Frequency values remain static. Shrub cover and density appear to be stable on the site.

Frequency (%), BLKROC_07

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	2FORB	0	0	0	0	0	0	6
	ATPH	0	32	0	0	0	18	0*
	CLOB	0	9	0	0	0	6	0
	ERPR4	0	0	0	3	0	0	0
Perennial Forb	SUMO	0	0	0	0	3	0	0
Perennial Graminoid	DISP	70	59	71	61	75	73	78
	JUBA	17	6	12	1	4	6	1
	SPAI	92	68	64	76	84	67	76
Shrubs	ATTO	5	0	0	0	0	2	1
	ERNA10	5	4	3	3	4	5	4
Nonnative Species	POMO5	0	0	0	9	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_07

Species Code	2003	2004	2007	2009	2010	2013
ATTO	0	0	0.5	0.2	0.3	0
ERNA10	3.6	2.9	3.0	1.9	1.6	2.6
SUMO	0	0.4	0.7	0.3	0	0
Total	3.6	3.2	4.2	2.3	1.9	2.6

Locust Field

BLKROC_06

BLKROC_06 is located on an upland site in the Locust Field. The soil series is Manzanar Silt Loam, 0-2% slopes and the ecological site is a Saline Meadow. The similarity index ranged between 73-85% during the baseline sampling period indicating the site is in excellent condition. Frequency values have remained static.

Frequency (%), BLKROC_06

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ATPH	0	30	0	0	0	19	0*
	CHHI	0	8	0	0	0	0	0
	CLEOM2	0	3	0	0	0	0	0
	COMAC	0	26	0	0	0	5	0
Perennial Forb	ANCA10	5	4	4	2	4	2	2
	PYRA	19	4	0	2	1	0	0
Perennial Graminoid	DISP	73	80	75	77	66	70	69
	JUBA	17	26	37	27	13	9	16
	SPAI	95	78	71	76	76	85	80
Shrubs	ATTO	0	8	9	4	10	6	2
	ERNA10	20	19	6	8	9	14	9
	SAEX	0	0	0	2	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_06

Species Code	2003	2004	2007	2009	2010	2013
ATTO	3.3	0.7	1.0	2.1	1.3	3.1
ERNA10	17.3	9.1	9.9	9.5	9.8	6.9
SAEX	2.3	7.5	3.3	0.7	0.1	0.5
SALIX	0.0	0.6	0.0	0.0	0.0	0
Total	23.0	18.0	14.2	12.3	11.2	10.5

Wrinkle Riparian Field

BLKROC_18

BLKROC_18 is a riparian management area located in the Wrinkle Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index has ranged between 53-75%. Saltgrass frequency decreased significantly between 2007 and 2009 and continued to drop in 2010 to a level beyond what has been seen on the site previously, in 2013 values rose to the highest seen on the site. Conversely, sacaton increased beyond the historical range for the site in 2010 and has since decreased in 2013.

Utilization by Weighted Average and Species, BLKROC_18

	Weighted Average	DISP	SPAI
2007	29%	28%	30%
2008	21%	18%	25%
2009	39%	40%	37%
2010	46%	59%	18%

Frequency (%), BLKROC_18

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATSES	3	0	0	0	0	0	0
	ATTR	0	0	0	0	0	0	0
	CHLE4	0	0	5	0	0	0	0
	GITR	0	0	4	0	0	0	0
Perennial Forb	GLLE3	3	6	9	4	1	4	0
Perennial Graminoid	DISP	119	104	114	118	102	86	120**
	SPAI	4	16	20	12	21	37	8
	TYLA	0	0	0	0	3	3	17**
Shrubs	ATTO	33	12	24	19	20	13	0**
	ERNA10	1	2	10	1	0	5	6
Nonnative Species	BAHY	14	10	45	0	0	0	0
	SATR12	0	0	3	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_18

Species Code	2003	2004	2005	2007	2009	2010	2013
ATTO	17.0	3.5	5.5	29.1	15.2	11.1	3.8
ERNA10	4.9	2.8	3.5	5.7	4.0	5.5	6.6
Total	21.9	6.3	9.0	34.8	19.2	16.6	10.4

BLKROC_19

BLKROC_19 is located in a riparian management area in the Wrinkle Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index on the site has ranged between 71-79%. Saltgrass frequency decreased in 2010 when compared to 2009 and has continued to decrease in 2013. Sacaton frequency rose to its highest level since sampling has begun in 2010 and has subsequently decreased in 2013, although its contribution to the total plant community is not significant. All other plant frequencies were static. Shrub cover has increased over time at the site.

Frequency (%), BLKROC_19

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATSES	4	0	0	0	0	0	0
	ATTR	0	0	2	0	0	0	0
	CHLE4	0	0	6	0	0	0	0
	GITR	0	0	5	0	0	0	0
Perennial Graminoid	DISP	139	147	139	127	143	132	122
	JUBA	13	20	6	26	21	14	24
	LETR5	3	0	1	0	0	0	0
	SPAI	9	8	12	10	10	26	9**
Shrubs	ATTO	0	6	31	24	18	12	15
	ERNA10	0	3	5	0	3	3	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_19

Species Code	2003	2004	2005	2007	2009	2010	2013
ATPO	0.7	0	0	0	0	0	0
ATTO	3.6	1.5	2.9	8.8	13.6	11.8	8.1
ERNA10	2.0	2.1	0.9	1.8	3.1	4.5	3.2
Total	6.3	3.6	3.8	10.6	16.7	16.3	11.2

BLKROC_20

BLKROC_20 is located in the Wrinkle Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index has ranged between 63-74% for the site. Creeping wildrye continued to increase beyond baseline parameters in 2010 but then dropped significantly in 2013. Nevada saltbush cover and density have steadily increased since 2005 until 2013 where a decrease in cover occurred.

Frequency (%), BLKROC_20

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATTR	0	0	7	0	0	0	0
Perennial Graminoid	DISP	127	147	143	126	123	123	118
	LETR5	18	29	30	31	59	70	27**
	SPAI	5	4	5	5	5	0	1
Shrubs	ATTO	6	2	27	19	18	15	9
	ERNA10	0	1	1	0	3	1	1
Nonnative Species	BAHY	5	0	6	0	16	33	0**

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_20

Species Code	2003	2004	2005	2007	2009	2010	2013
ATTO	8.8	6.8	17.0	27.1	30.3	27.9	9.6
ERNA10	8.6	8.3	6.4	6.5	6.4	11.8	7.2
SAVE4	0.0	0.1	0.0	0.3	0.7	0.4	1.3
SUMO	0.1	0	0	0	0	0	0
Total	17.5	15.3	23.4	33.8	37.3	40.1	18.1

BLKROC_21

BLKROC_21 is in a riparian management area located in the Wrinkle Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. Similarity index has ranged between 58-68% during the baseline period. The site's shrub component is greater than what would be expected for a Moist Floodplain site at its potential. In general plant frequency did not differ in 2013 from 2010 with the exception of a significant increase in creeping wildrye.

Frequency (%), BLKROC_21

Life Forms	Species	2003	2004	2005	2007	2009	2010	2013
Annual Forb	ATSES	3	0	0	0	0	0	0
	ATTR	0	0	2	0	0	0	0
Perennial Forb	SUMO	4	0	3	0	0	0	0
Perennial Graminoid	DISP	135	133	142	136	130	131	126
	LETR5	0	2	5	5	8	6	66**
	SPAI	1	4	3	1	4	3	0
Shrubs	ATTO	23	13	42	10	10	3	7
	ERNA10	3	1	0	1	0	0	6

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period.*

Cover (m) Shrubs BLKROC_21

Species Code	2003	2004	2005	2007	2009	2010	2013
ATTO	29.4	20.2	29.0	23.7	16.8	15.7	11.3
ERNA10	2.2	4.3	3.0	8.0	1.2	0.0	0.8
SUMO	2.2	0.0	0.2	0.0	0.0	0.0	0
Total	33.7	24.5	32.2	31.7	18.0	15.7	12.1

Horse Holding Field

BLKROC_09

BLKROC_09 is located on an upland site in the Horse Holding Field, on the Winnedumah Fine Sandy Loam 0-2% slopes soil unit. The transect is located on a Sodic Fan ecological site, the similarity index for the transect ranged between 56-82% during the baseline period. The decline in similarity index occurred in response to a decline in Nevada saltbush. Saltgrass frequency in 2013 increased to its highest level. There is a declining trend in Nevada saltbush.

Frequency (%), BLKROC_09

Life Forms	Species	2002	2003	2007	2009	2010	2013
Annual Forb	2FORB	0	2	0	0	0	0
	COMAC	0	2	0	0	0	0
	ERAM2	0	0	2	0	0	0
Perennial Forb	APCA	0	0	4	0	0	3
	ASTER	0	0	0	0	0	0
	GLLE3	2	7	1	4	2	1
	STEPH	0	0	0	0	0	0
Perennial Graminoid	DISP	114	102	85	99	104	124*
	JUBA	56	55	57	65	65	59
	LECI4	0	0	4	0	0	0
	LETR5	5	5	7	10	9	5
	SPAI	87	66	80	68	69	74
Shrubs	ATTO	34	46	16	24	15	9
	ERNA10	26	36	39	44	36	44
	MACA17	0	0	4	1	0	0
	PSAR4	0	3	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs BLKROC_09

Species Code	2003	2007	2009	2010	2013
ATTO	25.2	9.1	8.9	2.9	0.6
ERNA10	10.1	9.5	10.3	8.8	8.8
Total	35.3	18.7	19.2	11.7	9.4

Irrigated Pastures

There are no irrigated pastures on the Blackrock Lease.

Stockwater Sites

All the wells for the Blackrock lease have been drilled and have been fitted for solar pumps and necessary plumbing for the troughs. The lessee will be responsible for water troughs and installation. There are also three other stockwater sites that have been developed as part of the *1997 Memorandum of Understanding Between the City of Los Angeles Department of Water and Power, the County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, the Owens Valley Committee, and Carla Scheidlinger*, (MOU), which required additional mitigation (1600 Acre-Foot Mitigation Projects). The "North of Mazourka Project" will provide stockwater in the Reservation Field and the "Well 368/Homestead Project" will provide stockwater in the Little Robinson Field and East Robinson Field.

Fencing

There was no new fencing constructed on the lease beyond general maintenance.

Salt and Supplement Sites

Many of the supplement sites located on the Blackrock Lease have been in place for many years and are located in upland management areas. Some of these sites have been moved in order to adapt to the installation of new fencing. These new locations were selected as to better distribute cattle within and near the newly created riparian pastures.

4.1.1 Twin Lakes Lease (RLI-491)

The Twin Lakes Lease is a 4,912-acre cow/calf operation situated just south of the Los Angeles Aqueduct Intake. It includes a reach of the Owens River that lies mainly north of Twin Lakes, which is located at the southern end of the Twin Lakes Lease. Of the 4,912 acres, approximately 4,200 acres are used as pastures for grazing; the other 712 acres are comprised of riparian/wetland habitats and open water. In all but dry years, cattle usually graze the lease from late October or early November to mid-May.

There are four pastures on the Twin Lakes Lease within the LORP boundary: Lower Blackrock Riparian Field, Upper Blackrock Field, Lower Blackrock Field, and the Holding Field. The Lower Blackrock Riparian, Upper Blackrock Riparian, and Lower Blackrock Fields contain both upland and riparian vegetation. The Holding Field contains only upland vegetation. There are no irrigated pastures on the Twin Lakes Lease. Range trend and utilization transects exist in all fields except the Holding Field. Range Trend transects were last read on this lease in 2012.

Summary of Utilization

The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the Twin Lakes Lease, RLI-491, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Lower Blackrock Field	40%	14%	0%	0%	1%	5%	9%
*Lower Blackrock Riparian	89%	44%	37%	6%	38%	54%	BURN
*Upper Blackrock Field	45%	41%	43%	17%	26%	61%	BURN

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Twin Lakes Lease, RLI-491, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
Lower Blackrock Field	BLKROC_37	40%	9%	0%	0%	0%	5%	15%
	BLKROC_F_4		10%		0%	0%		23%
	TWNLAKE_02	16%	17%	BURN	0%	4%		0%
	TWNLAKE_05	65%	23%	BURN	0%	0%		0%
*Lower Blackrock Riparian	BLKROC_RIP_7		61%	53%		34%	72%	BURN
	TWNLAKE_03	82%	28%	21%	6%	42%	36%	BURN
	TWNLAKE_04	85%						BURN
	TWNLAKE_06	87%						BURN
*Upper Blackrock Field	BLKROC_RIP_5			52%	21%	25%	51%	BURN
	BLKROC_RIP_6			53%	19%	29%	74%	BURN
	BLKROC_RIP_8		41%	42%	17%	18%	70%	BURN
	INTAKE_01	45%		25%	13%	30%	49%	BURN

**Riparian Utilization, 40%*

Summary of Utilization

The Twin Lakes lease has also decreased utilization overall since the implementation of the LORP. The only years utilization was high was in 2007 and 2012. In 2007 this was the first year of adhering to the new riparian utilization standard of 40% and there was a three year grace period post project implementation to become compliant for the lessees. Over grazing in 2012 was a result of drought and the lessee failing to move livestock to the Lower Blackrock Field earlier in the season. In 2013 it a range burn was conducted in the Upper and Lower Blackrock Riparian fields. The burn had good results and meadow in the fields responded well.

Summary of Range Trend Data and Conditions

Significant changes in plant frequencies in 2012 on the Twin Lakes Lease were decreases in fivehorn smotherweed (BAHY) on three sites (TWINLAKE_04, TWINLAKE_03, INTAKE_01) closest to the river and a decrease in Nevada saltbush (ATTO) on another river site (TWINLAKE_06). Saltgrass (DISP) increased on three sites (TWINLAKE_06, TWINLAKE_03, INTAKE_01) significantly and alkali sacaton (TWINLAKE_02) on one upland site. Line intercept results also showed a decrease of Nevada saltbush on the river sites.

Significant Changes in Frequency for Twin Lakes Transects Between 2009 and 2010

	No Change	DISP	SPAI	ATTO	BAHY	SPGR
Moist Flood Plain						
TWINLAKE_04*	↔					
TWINLAKE_06*		↓**	↓			
TWINLAKE_03		↓		↓		
Saline Meadow						
TWINLAKE_05	↔					
INTAKE_01	↔					
TWINLAKE_05	na					
SALINE BOTTOM						
TWINLAKE_02						↑
BLKROC_37	↔					

**Sites located along historical dry reach, ** Sites where change extends outside historical ranges for the transect. α<0.05, ↑=increase, ↓=decrease,↔=no change*

Significant Changes in Frequency for Twin Lakes Transects Between 2010 and 2012

	No Change	DISP	SPAI	ATTO	BAHY	SPGR
Moist Flood Plain						
TWINLAKE_04*					↓	
TWINLAKE_06*		↑		↓		
TWINLAKE_03		↑			↓	
Saline Meadow						
INTAKE_01		↑			↓	
TWINLAKE_05	na					
SALINE BOTTOM						
TWINLAKE_02			↑			

**Sites located along historical dry reach, ** Sites where change extends outside historical ranges for the transect. α<0.05, ↑=increase, ↓=decrease,↔=no change*

Upper Blackrock Field

INTAKE_01 is located in the Upper Blackrock Field. The soils are mapped as Torrifluvents-Fluvaquentic Endoaquolls Complex; but the majority of the study plot is located on the adjacent soil unit, Torrifluvents, 0-2% slopes, which is associated with the Saline Meadow ecological site. Site similarity to the potential ranged during the baseline monitoring period between 71-77%, placing the site in high ecological condition. Frequency for saltgrass significantly increased in 2009 when compared to 2007 and subsequently decreased in 2010, and then rose again to the highest level for the site in 2012. Utilization on this transect was 49%, the highest seen for the site.

Utilization by Weighted Average and Species, INTAKE_01

	Weighted Average	DISP	SPAI

2007	44%	29%	55%
2009	19%	15%	21%
2010	13%	5%	20%
2011	30%	5%	50%
2012	49%	18%	66%

Frequency (%), INTAKE_01

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012
Annual Forb	2FORB	0	0	1	0	0	0	0
	ATPH	0	18	5	0	0	0	0
	ATTR	0	0	2	0	0	0	0
	CHST	0	2	0	0	0	0	0
	CLEOM2	0	2	0	0	0	0	0
	CLOB	0	3	0	0	0	0	0
	CRCI2	0	0	7	0	0	0	0
	ERIAS	0	23	0	0	0	0	0
	ERIOG	0	5	0	0	0	0	0
	ERMA2	0	0	2	0	0	0	0
	MEAL6	0	0	10	0	0	0	0
Perennial Forb	MACA2	17	0	0	0	0	11	0
	MALAC3	0	2	1	0	0	0	0
	STEPH	0	18	16	0	0	0	0
	SUMO	3	4	4	2	2	2	0
Perennial Graminoid	DISP	60	54	67	52	82	59	92**
	JUBA	14	19	15	11	11	8	14
	SPAI	97	117	103	105	109	118	115
Shrubs	ATCO	24	15	23	19	25	11	25*
	ATPA3	0	0	0	1	1	2	0
	ATTO	0	10	8	6	3	11	3
	ERNA10	9	22	27	26	28	17	12
	MACA17	0	0	0	14	18	0	10**
Nonnative Species	BAHY	0	0	0	0	10	10	0**
	BRTE	0	0	1	0	0	0	0
	POMO5	0	3	0	0	0	0	0
	BRRU2	0	0	0	0	1	0	0

** indicates a significant difference, α≤0.1, **≤0.05 between 2010 and 2012*

Cover (%) Shrubs INTAKE_01

Species Code	2003	2004	2007	2009	2010	2012
ATCO	1.1	0.9	0.9	0.8	0.7	1.5

ATTO	0.8	1.3	1.6	1.0	2.3	1.1
ERNA10	1.2	3.6	3.5	4.5	2.6	2.5
SAVE4	0.0	0.0	0.3	0.2	0.0	0
SUMO	0.0	0.0	0.0	0.1	0.0	0.2
Total	3.1	5.8	6.3	6.5	5.6	5.2

Lower Blackrock Field

TWINLAKES_02 is located in the Lower Blackrock Field on the Pokonahbe-Rindge Family Association soil series, which corresponds to the Saline Bottom Wetland ecological site. Presently there is no ecological site description for Saline Bottom Wetland ecological site. Referencing the site to a Saline Bottom ecological site, the similarity index ranged between 42%-62%. The site would be in a higher ecological condition if the wetland component was accounted for in the ecological site description because of the greater abundance of mesic graminoids such as *Juncus balticus* (JUBA) and *Spartina gracilis* (SPGR) present on the site, which are typically minor components on the more xeric Saline Bottom ecological site.

The transect was burned in mid-February, 2009. Shrub cover prior to the burn was moderate which resulted in a cooler burn when compared to similar areas further south in Drew Slough. Because of the cool fire, a decrease in shrub frequency, shrub cover, and shrub recruitment were observed in 2009 and 2010. Alkali cordgrass (*Spartina gracilis)* significantly increased in 2010 and continued to increase in 2012. Alkali sacaton (SPAI) also increased markedly in 2012. There was no utilization on this transect in 2010.

Utilization by Weighted Average and Species, TWINLAKES_02

	Weighted Average	**DISP**	**LECI4**	**SPAI**	**SPGR**
2007	17%	25%	43%	11%	5%
2008	17%	16%		30%	
2009	100%	100%	100%	100%	100%
2010	0%	0%	0%	0%	0%
2011	4%	2%		10%	
2012	2%	2%		2%	

Frequency (%), TWINLAKES_02

Life Forms	**Species**	**2002**	**2003**	**2004**	**2007**	**2009**	**2010**	**2012**
Annual Forb	ATPH	0	2	1	0	0	2	0

	CHENO	0	2	0	0	0	0	0
	CHHI	0	0	2	0	0	0	0
	CLOB	0	8	3	0	0	0	0
	COMAC	0	0	0	0	0	1	0
Perennial Forb	NIOC2	3	4	2	3	5	15	14
	PYRA	0	6	2	7	9	12	2
	STEPH	0	3	0	0	0	0	0
Perennial Graminoid	DISP	75	61	65	60	73	80	81
	JUBA	73	96	103	78	72	72	76
	LECI4	0	4	16	0	0	1	0
	LETR5	3	4	0	0	0	0	0
	POSE	0	0	0	0	2	11	0
	SPAI	60	53	69	44	36	39	68**
	SPGR	34	20	19	65	57	76	89
Shrubs	ATTO	0	6	5	5	0	0	0
	ERNA10	12	28	24	27	1	0	0
Nonnative Species	FESTU	0	3	1	0	0	0	0
	POA	0	0	0	11	0	0	0

** indicates a significant difference, α≤0.1, **≤0.05 between 2010 and 2012*

Cover (m) Shrubs TWINLAKES_02

Species Code	2003	2004	2007	2009	2010	2012
ATTO	6.4	5.9	4.3	0.3	1.1	1.2
ERNA10	18.3	15.9	13.5	0.0	0.0	0
Total	24.7	21.8	17.8	0.3	1.1	1.2

Lower Blackrock Field

TWINLAKES_05 is located in Lower Blackrock Field on the Manzanar-Division Association, 0-2% slopes soil unit which corresponds to the Saline Meadow ecological site. The transect was burned in late January 2009 and was subsequently submerged when the Drew Unit of the BWMA was flooded. Because of this, range trend sampling and utilization estimates are currently not available.

Lower Blackrock Riparian Field

TWINLAKES_03 is located in the Lower Blackrock Riparian Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, which corresponds to the Moist Floodplain ecological site. The similarity index during baseline period ranged between 63%-65%, placing it in good ecological condition, explained by the dominance of saltgrass on the site. Nevada saltbush is much greater than the described potential for the site. The site also lacks in diversity of perennial grasses. Frequency for saltgrass and Nevada saltbush increased between 2009-07. Saltgrass frequency was significantly higher than all previous sampling events in 2009 while in 2010 saltgrass decreased to its lowest value since monitoring has begun on the site

and in 2012 rose to one of the highest levels for the transect. Utilization was minimal for this transect with all of the utilization occurring on saltgrass.

Utilization by Weighted Average and Species, TWINLAKES_03

	Weighted Average	DISP	SPAI
2007	82%	82%	
2008	28%	25%	50%
2009	19%	21%	21%
2010	6%	7%	0%
2011	42%	40%	58%
2012	36%	35%	58%

Frequency (%), TWINLAKES_03

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012
Perennial Forb	SUMO	0	0	5	11	15	2	14**
Perennial Graminoid	DISP	145	144	141	153	163	127	158**
	SPAI	0	1	5	1	2	0	0
Shrubs	ATTO	48	0	64	18	31	10	11
Nonnative Species	BAHY	0	37	27	0	26	38	0**

** indicates a significant difference, α≤0.1, **≤0.05 between 2010 and 2012*

Cover (m) Shrubs TWINLAKES_03

Species	2003	2004	2007	2009	2010	2012
ATTO	17.0	17.0	6.4	8.4	12.1	8.6
SUMO	0.0	0.1	2.4	0.6	0.9	1.1
Total	17.0	17.1	8.8	9.0	13	9.7

TWINLAKES_04 is located in the Lower Blackrock Riparian Field in the former dry reach. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, which corresponds to the Moist Floodplain ecological site. The similarity index is poor, ranging between 4-5%. Unlike TWINLAKES_03, which has historically benefitted from a shallow water table, TWINLAKES_04 has yet to respond favorably from returned flows into the Lower Owens River. The site is predominantly Nevada saltbush, inkweed, and fivehorn smotherweed. Frequency significantly increased for bassia and inkweed in 2009 and 2010 when compared to 2007 and disappeared in 2012. Inkweed frequency in 2009 and 2010 was greater than baseline parameters (2002-04 and 2007) but dropped significantly in 2012. Inkweed cover has also substantially increased from trace amounts prior to returning flows to the river to over 37 m of canopy along the transect in 2010 and then dropping to 12.5 m in 2012. No utilization estimates exist for the site due to the absence of key forage species.

Frequency (%), TWINLAKES_04

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012
Annual Forb	ATTR	0	0	9	0	0	0	0
	CHIN2	0	0	2	0	0	0	0
	CRCI2	0	0	3	0	0	0	0
Perennial Forb	SUMO	2	0	1	9	24	33	4**
Perennial Graminoid	DISP	17	4	12	0	0	0	0
Shrubs	ATTO	5	8	27	18	13	9	3
Nonnative Species	BAHY	0	6	41	0	15	24	0**
	DESO2	0	0	7	0	0	0	0
	SATR12	0	4	82	0	0	0	0

** indicates a significant difference, α≤0.1, **≤0.05 between 2010 and 2012*

Cover (m) Shrubs TWINLAKES_04

Species Code	2003	2004	2007	2009	2010	2012
ATTO	13.6	22.4	11.2	17.9	15.7	12.5
SUMO	T	T	20.0	27.3	37.2	12.5
Total	13.6	22.4	31.2	45.1	52.9	25

TWINLAKES_06 is located in the Lower Blackrock Riparian Field. Soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, which corresponds to the Moist Floodplain ecological site. Similarity index to the site's potential was 19% between 2006-07. As with TWINLAKES_04, the site is dominated by shrubs, invasive annual forbs, and a scant amount of perennial grasses as the understory. Because of this, and the fact that the area is inaccessible to livestock, utilization is not estimated on this site. Plant frequency in 2009 indicated a significant increase in Nevada saltbush and bassia. In 2010 saltgrass decreased to its lowest level for the site. Shrub cover for Nevada saltbush continues to increase on the site rising from 5.4 m in 2006 to 66.6 m in 2010. In 2012 there was a slight decrease in Nevada saltbush cover and an increase in saltgrass frequency. At the same time SUMO has steadily decreased on the site.

Frequency (%), TWINLAKES_06

Life Forms	Species	2006	2007	2009	2010	2012
Perennial Forb	HECU3	0	0	8	8	11
	SUMO	48	30	29	16	10

Perennial Graminoid	DISP	57	38	32	13	30**
	SPAI	0	0	10	0	0
Shrubs	ATTO	23	20	63	71	51*
Nonnative Species	BAHY	0	0	22	29	0**
	SATR12	11	0	0	0	0

** indicates a significant difference, α≤0.1, **≤0.05 between 2010 and 2012*

Cover (m) Shrubs TWINLAKES_06

Species Code	2006	**2007**	**2009**	**2010**	**2012**
ATTO	5.4	11.3	50.2	66.6	62.8
SUMO	30.5	44.8	14.9	13.4	3.4
Total	35.9	56.1	65.0	80.0	66.2

The following table presents the summarized utilization data for each field for the current year.

End of Grazing Season Utilization on the Twin Lakes Lease, RLI-491, 2013

Field	**Utilization**
Lower Blackrock Field	13%
Lower Blackrock Riparian Field*	Burned
Upper Blackrock Field*	Burned

*Riparian Utilization 40%**

Fencing
There was no new fencing constructed on the lease in 2013.

Salt and Supplement Sites
Supplement is composed of a liquid mix that is put in large tubs with rollers that the cattle consume. These tubs are placed in established supplement sites and are used every year.

Burning
A range burn was conducted in March resulting in 190 acres of riparian pasture being burned. This burn was not scheduled in 2012 but, the location had previously been selected by Watershed Resources staff. The purpose of the burn was to remove existing saltcedar slash piles and shrubs that had encroached in to existing perennial grass meadows. Prior to the burn, California Department of Forestry (CDF) and LADWP prepared fire breaks and created buffers around existing riparian vegetation, resulting in complete fire containment, with very little loss to riparian vegetation. Overall the burn resulted in the improvement of the meadow habitat on the Twin Lakes lease.

Intake Lease (RLI-475)
The Intake Lease is used to graze horses and mules employed in a commercial packer operation. The lease is comprised of three fields: Intake, Big Meadow Field, and East Field (approximately 102 acres). The Intake Field contains riparian vegetation and an associate range trend transect. The Big Meadow Field contains upland and riparian vegetation; however, it is not within the LORP project boundaries. There are no utilization or range trend transects in

the Big Meadow Field due to a lack of adequate areas to place a transect that would meet the proper range trend/utilization criteria. Much of the meadow in the Big Meadow Field has been covered with dredged material from the LORP Intake. The East Field consists of upland and riparian vegetation. The Big Meadow and Intake Fields were not used by livestock during the construction of the Intake structure, which lasted until the 2008-09 grazing season. There are no irrigated pastures on the Intake Lease. There are no identified water sites needed for this pasture and no riparian exclosures planned due to the limited amount of riparian area within the both pastures.

The following table presents the summarized utilization data for each field for the current year.

End of Grazing Season Utilization on the Intake Lease, RLI-475, 2013

Field	Utilization	Transect	Utilization
Intake Field*	0%	*STEWART_01	0%

**Riparian Utilization, 40%*

Summary of Utilization
Utilization for the Intake Lease is well below the allowable 40% utilization standard.

Summary of Range Trend Data and Conditions
STEWART_01 is located in the riparian Intake Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, which corresponds to the Moist Floodplain ecological site. The site was sampled for the first time in 2009. The site appears stable with both alkali sacaton (SPAI) and saltgrass (DISP) abundant on the site. Nevada saltbush (ATTO) frequency decreased slightly yet canopy cover for the same species has doubled. Bassia was not present on the plot in 2013.

Frequency (%), STEWART_01

Life Forms	Species	2009	2010	2013
Annual Forb	COMAC	0	5	0
Perennial Forb	GLLE3	2	3	0
Perennial Graminoid	DISP	133	134	136
	JUBA	11	8	12
	SPAI	47	46	38
Shrubs	ATTO	4	11*	7
	ERNA10	2	0	0
Nonnative Species	BAHY	18	4**	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs STEWART_01

Species Code	2009	2010	2013
ATTO	7.6	6.4	13.0
ERNA10	0.2	0.5	0
Total	7.7	6.9	13.0

4.1.2 Thibaut Lease (RLI-430)

The 5,259-acre Thibaut Lease is utilized by three lessees for wintering pack stock. Historically, the lease was grazed as one large pasture by mules and horses. Since the implementation of the LORP and installation of new fencing, four different management areas have been created on the lease. These areas are the Blackrock Waterfowl Management Area, Rare Plant Management Area, Thibaut Field, and the Thibaut Riparian Exclosure. Management differs among these areas. The Blackrock Waterfowl Management Area can be grazed every other year. During the wetted cycle of the Blackrock Waterfowl Management Area management has a utilization standard of 40%. While in dry cycles the utilization standard is 65%. The irrigated pasture portion located in Thibaut Field was assessed using irrigated pasture condition scoring and the upland portions of the field were evaluated using range trend and utilization transects. The Rare Plant Management Area is evaluated using range trend and utilization transects. The Riparian Exclosure has been excluded from grazing for 11 years.

Summary of Utilization

The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the Thibaut Lease, RLI-430, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Rare Plant Management	87%	46%	61%	2%	38%	39%	20%
Thibaut Field	85%	37%	22%	17%	25%	12%	4%
Waterfowl Management	57%	OFS	FLOOD	19%	38%	BURN	0%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Thibaut Lease, RLI-430, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
Rare Plant Management	RAREPLANT_2	76%	32%	77%	0%	48%		
	RAREPLANT_3	98%	52%	58%	7%	46%	45%	4%
	THIBAUT_2	88%	55%	49%	0%	19%	34%	36%
Thibaut Field	THIBAUT_3	89%	65%	36%	65%	74%	15%	20%
	THIBAUT_8		15%	8%	4%	0%	14%	0%
	THIBAUT_9		3%	6%	0%	0%	0%	0%
	THIBFIELD_2	81%	64%	62%	31%	76%	30%	0%
	THIBFIELD_3			13%	3%	0%		5%
	THIBFIELD_4			6%	0%	0%	0%	0%
Waterfowl Management	THIBAUT_1	80%	OFS	FLOOD	3%		BURN	OFS
	WATERFOWL_2	15%	OFS	FLOOD	40%	30%	BURN	OFS
	WATERFOWL_3		OFS	FLOOD	21%	33%	BURN	OFS
	WATERFOWL_4	57%	OFS	FLOOD	11%	51%	BURN	OFS
	WATERFOWL_5	77%	OFS	FLOOD		39%	BURN	OFS

**Riparian Utilization, 40%*

Summary of Utilization

Utilization on the Thibaut lease has been within the upland standard of 65% in the Thibaut Field. There has been some problems in the Rare Plant Field and Waterfowl Management Area due to the special grazing parameters, that have been placed on the fields. These issues have been resolved by adjusting stocking rates and timing in the fields. Other management changes have been to feeding livestock in different locations and the use of a stockwater well to help better distribute livestock in the Thibaut Field. There are no planned management changes for the lease.

Summary of Range Trend Data and Conditions

2012 was an off-year for Range Trend analysis on the Thibaut lease. However, there were four transects read in the Thibaut Riparian pasture.

Significant Changes in Frequency for Thibaut transects Between 2010 and 2013

	No Change	DISP	JUBA	ATTO	BAHY	HECU	MALE
Moist Flood Plain							
THIBAUT_04*				↑			
THIBAUT_05*	↔						
THIBAUT_06*						↓	
THIBAUT_07*	↔						

**Sites located along historical dry reach, ** Sites where change extends outside historical ranges for the transect. α<0.05, ↑=increase, ↓=decrease,↔=no change*

Thibaut Riparian Exclosure

THIBAUT_04 is in a riparian management area in the Thibaut Riparian Exclosure. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. This site is located in the historical 'dry reach' of the Owens River. Similarity indices were consistently at 3%, with community composition dominated by Nevada saltbush and nonnative bassia and Russian thistle. Low precipitation during the winters of 2012 and 2013, have prevented bassia from germinating on the site. Nevada saltbush cover expanded from 10m in 2003, to 48m in 2010, but have subsequently decreased to 23m in 2013. Nevada saltbush appears to be dying off as a result of a rising water table. Many of the shrubs were exuding large amounts of sap in 2012 and 2013. Shrubs that exhibit these signs most are located in the lower regions of the flood plain, presumably closer to the rising water table. Livestock are currently excluded from the Thibaut Riparian Pasture.

Frequency (%), THIBAUT_04

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	ATTR	0	0	15	0	0	0	0	0
	CHHI	0	7	5	0	0	0	0	0
Perennial Forb	MALE3	0	0	5	0	0	0	0	0
Perennial Gramanoid	DISP	0	0	0	0	0	0	0	1
Shrubs	ATTO	9	13	19	37	43	48	16	38**
Nonnative Species	BAHY	0	2	30	0	0	58	0	0
	SATR12	0	10	15	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (%) Shrubs THIBAUT_04

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	10.2	6.7	34.6	46.8	48.2	25.4	22.9

THIBAUT_05 is in a riparian management area in the Thibaut Riparian Exclosure. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0 to 2% slopes, which corresponds to the Moist Floodplain ecological site. This site is located in the historical 'dry reach' of the Owens River. The similarity index was 3% during baseline sampling. Frequency in 2009 indicated an increase *Heliotropium curassavicum* (salt heliotrope), plant symbol HECU3 and *Malvella leprosa* (alkali mallow), plant symbol MALE3; two native perennials. This increase has continued into

2013, with salt heliotrope occupying the largest amount of live plant cover on the site. The increase of these early seral forbs and the presence of some trace amounts of perennial saltgrass are encouraging signs that return flows may be initiating successional changes on the site. As with all other floodplain areas in the former dry reach, bassia covered the site in 2008. No new growth of bassia was noted in 2013. Unlike most riparian transects in the former dry-reach section Nevada saltbush occupies a small niche in the plant community within the Thibaut_05 macroplot. Livestock are currently excluded from the Thibaut Riparian Exclosure.

Frequency (%), THIBAUT_05

Life Forms	Species	2002	2003	2004	2005	2007	2009	2010	2012	2013
Annual Forb	CHHI	0	0	0	1	0	0	0	0	0
	CHIN2	0	6	3	0	0	0	0	0	0
Perennial Forb	HECU3	0	0	0	2	2	24	37	89	103
	MALE3	0	0	0	0	0	10	28	38	38
Perennial Graminoid	DISP	0	0	0	0	4	3	0	0	0
Shrubs	ATTO	0	7	3	4	2	1	0	0	0
Nonnatives	AMAL	0	0	0	2	0	0	0	0	0
	BAHY	0	19	9	42	0	2	29	6	0
	DESO2	0	0	16	6	0	0	0	0	0
	TARA	0	0	3	0	0	0	0	0	0
	SATR12	0	16	24	19	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (%) Shrubs THIBAUT_05

Species Code	2003	2004	2005	2007	2009	2010	2012	2013
ATTO	0.5	0.5	0.3	1.4	0	0	0	0
TARA	0.0	0.0	0.4	0.0	0	0	0	0
Total	0.5	0.5	0.7	1.4	0	0	0	0

THIBAUT_06 is in the Thibaut Riparian Exclosure, soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index during baseline sampling ranged between 10-16%. The site is located within the historical dry reach of the river. Tamarisk slash piles were burned at this site in 2008. As with all other floodplain areas in the former dry reach, bassia covered the site in 2008. No new growth of bassia was noted in 2009, but the site remained covered by decadent stands of this invasive weed. In 2013 bassia disappeared from the site. Frequency results in 2009 and 2010 indicate that return flows may be initiating changes at the site; salt heliotrope and saltgrass significantly increased compared to previous years in 2009 and remained at similar levels in 2010. In 2013 saltgrass continues to expand while salt heliotrope declined to 2010 levels.

Frequency (%), THIBAUT_06

Life Forms	Species	2003	2004	2005	2007	2009	2010	2012	2013
Annual Forb	ATRIP	0	0	1	0	0	0	0	0
	ATSES	0	3	9	0	0	0	0	0
	ATTR	5	1	3	0	0	0	0	0
	CHENO	2	0	0	0	0	0	0	0
	CHHI	0	0	4	0	0	0	0	0
	CHIN2	0	0	3	0	0	0	0	0
	GITR	0	0	5	0	0	0	0	0
	MEAL6	0	14	72	0	0	0	0	0
Perennial Forb	HECU3	1	0	0	0	51	46	69	47*
Perennial Graminoid	DISP	2	2	2	3	15	14	28	39
	SPAI	2	3	3	5	4	2	1	6
Shrubs	ATTO	11	8	9	3	0	1	2	0
Nonnative	BAHY	0	2	1	0	10	88	16	0**
	DESO2	0	19	3	0	0	0	0	0
	SATR12	17	60	52	0	0	0	5	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (%) Shrubs THIBAUT_06

Species Code	2003	2004	2005	2007	2009	2010	2012	2013
ATTO	0.7	1.1	1.8	11.1	1.7	2.4	4.3	4.5

THIBAUT_07 is in a riparian management area in the Thibaut Riparian Exclosure. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The site is located within the historical dry reach of the Lower Owens River. Similarity index was 5% during the baseline sampling period. Slash piles were burned adjacent to the transect but not directly on the transect. Nevada saltbush frequency dropped significantly on the site when compared to 2004-2010. Cover reflects a similar pattern.

Frequency (%), THIBAUT_07

Life Forms	Species	2003	2004	2005	2007	2009	2010	2012	2013
Annual Forb	2FORB	0	1	0	0	0	0	0	0
	ATSES	2	24	81	0	0	0	0	0
	ATTR	26	15	49	0	0	0	0	0
	GITR	0	0	3	0	0	0	0	0
Perennial Forb	HECU3	1	0	1	0	0	0	0	0
	MALE3	7	2	0	9	2	0	6	12
Perennial Graminoid	DISP	3	3	0	4	0	0	0	0
Shrubs	ATTO	7	16	20	8	18	17	7	1
Nonnative	BAHY	12	34	37	0	0	95	3	0
	DESO2	0	15	34	0	0	0	0	0
	SATR12	16	47	45	0	0	0	3	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (%) Shrubs THIBAUT_07

Species Code	2003	2004	2005	2007	2009	2010	2012	2013
ATTO	1.1	1.3	1.0	5.0	14.5	17.0	7.1	2.5

Irrigated Pastures

Irrigated Pasture Condition Scores 2011-13

Pasture	2011	2012	2013
Thibaut Field	82%	81%	78%

The northern portion of the Thibaut Pasture (85 acres) comprises the area managed as irrigated pasture for the Thibaut Lease. A result of the completion of the waterfowl management area to the north and the rare plant field to the south is a grazing corridor, which puts heavy pressure on the irrigated pasture. Grazing prescriptions were reinstated for the waterfowl management area this year. This put pressure on the irrigated portion of the lease decreasing its irrigated pasture condition rating to 78%.

LADWP Watershed Resources staff recommends that livestock be moved out of the area periodically during the grazing season to allow the area to rest. This may be achieved by supplemental feeding further south in the Thibaut Field, electric fencing, or turning the livestock out in the southern end of Thibaut Field instead of the corral area. This irrigated pasture will be re-evaluated in the 2013-14 grazing season.

Stockwater Sites

There is one developed water site in the Thibaut Field, which consists of a flowing well that has a stockwater well drilled next to it, located in the uplands east of the irrigated pastures in the Thibaut Field. Currently, the flowing well is still creating a small puddle area for livestock and wildlife. The lessee has also installed a trough near the well.

Fencing

There was no new fence constructed on the lease in 2013.

Rare Plant Management Area Thibaut

This pasture contains both Owens valley Checkerbloom and Inyo County star tulip populations. Trend plots for Rare Plant Management Area 1 and Rare Plant Management Area 4 are within an exclosure that is restricted from grazing from early March through early October per the LORP EIR during the rare plants' flowering, fruiting, and seeding period. The pasture was grazed with end-of-season utilization at 38%. In 2012, phenology included individuals that were vegetative to individuals that were in flower.

Rare Plant Management Area, Thibaut Lease

Plot Number	Year	Species	Seedling	Juvenile	Mature	Total
Rare Plant Management Area 1	2009	*Inyo County star tulip*	0	0	3	3
	2010		0	0	12	12
	2011		0	0	4	4
	2012*		2	0	7	9
Rare Plant Management Area 1	2009	*Owens Valley checkerbloom*	0	9	21	30
	2010		1	0	24	25
	2011		15	5	32	52
	2012*		34	0	42	76
Rare Plant Management Area 4	2009	*Inyo County star tulip*	0	0	2	2
	2010		0	0	4	4
	2011		0	0	2	2
	2012*		0	0	1	1
Rare Plant Management Area 4	2009	*Owens Valley checkerbloom*	0	7	32	39
	2010		0	0	38	38
	2011		9	12	40	61
	2012*		31	0	44	75
**Some grazing by elk or livestock.*						

Salt and Supplement Sites

Hay is spread in locations of the lessees choosing using a truck or a trailer pulled by a truck. Feeding areas had been changed during the 2012-13 grazing season resulting in decreased utilization in the Thibaut Field.

4.1.3 Islands Lease (RLI-489)

The Islands Lease is an 18,970-acre cow/calf operation divided into 11 pastures. In some portions of the lease, grazing occurs year round with livestock rotated between pastures based on forage conditions. Other portions of the lease are grazed October through May. The Islands Lease is managed in conjunction with the Delta Lease. Cattle from both leases are moved from one lease to the other as needed throughout the grazing season.

There are eight pastures located within the LORP boundary of the Islands Lease:

- Bull Field
- Reinhackle Field
- Bull Pasture
- Carasco North Field
- Carasco South Field
- Carasco Riparian Field
- Depot Riparian Field
- River Field

Summary of Utilization

The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the Islands Lease, RLI-489, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Carasco Riparian South	28%	18%	11%	0%	0%	26%	21%
Depot Riparian Field	82%	29%	30%	30%	20%	53%	43%
Lubkin	48%	0%	14%	0%	0%	5%	6%
River Field	42%	11%	27%	4%	15%	50%	17%
South Field	52%	31%	8%	3%	23%	10%	0%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Islands Lease, RLI-489, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
*Carasco Riparian South	ISLAND_6	28%	18%	11%	0%	0%	26%	21%
*Depot Riparian Field	ISLAND_8	72%	18%	12%	20%	0%	68%	27%
	ISLAND_9	92%	40%	49%	49%	25%	67%	39%
	RIVERF_7				26%	29%	52%	47%
	RIVERF_9				9%	8%	9%	
	RIVERF_12				44%	41%	71%	58%

Lubkin	Lubkin_1	48%	0%	14%	0%	0%	5%	6%
*River Field	ISLAND_7	63%		46%	0%	0%		0%
	ISLAND_10	63%	16%	3%	28%	0%	40%	44%
	ISLAND_11	0%	6%	22%		11%	6%	0%
	ISLAND_12			25%	0%	34%	31%	0%
	RIVERF_8			47%	3%	0%	71%	52%
	RIVERF_11				0%	58%	89%	0%
	RIVERF_6				0%	0%	31%	
	ISLAND_14						81%	20%
South Field	ISLAND_2	31%	15%	8%	0%	23%	0%	0%
	ISLAND_59	74%	47%	18%	0%	0%	0%	0%
	SOUTHF_2			3%	7%	24%	19%	0%

**Riparian Utilization, 40%*

Summary or Utilization

The Depot Riparian Field and River Field had exceeded utilization rates in the 2011-12 grazing season. In 2012-13 they were below the allowable standard of 40%. The use on the west side of the river, specifically the Islands was low. The Carasco Riparian Field and South Field were well below the utilization standards. Supplement was observed in a few locations on the floodplain in the Depot Riparian and River Fields. Overall ,supplement had been moved off of the floodplains in all fields, having a direct result in the decreased utilization in the River Field and Depot Riparian Field.

All fields on the lease were in good condition except the large meadow portion of the River Field located southeast of the Alabama Gates. This location had been previously burned by LADWP in an effort to remove perennial shrubs, saltcedar slash, and improve forage production. This burn was successful meeting the previously mentioned goals. Despite the beneficial effects of the burn, the prolonged inundation from flow augmentation, has had a negative effect on this area. Currently a shift in vegetation composition has been occurring, accompanied by visually stressed perennial grasses and spreading of aquatic vegetation such as bull rush, that thrive in flooded and saturated locations. Continued inundation of this area will result in the loss of meadow habitat and the creation of marsh.

Summary of Range Trend Data in Islands Exclosure

2013 was an off year for Range Trend on the Islands Lease, sites will be read in 2014.

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Islands Lease RLI-489, 2007-13

Pastures	2007	2008	2009	2010	2011	2012	2013
B Pasture	96	X	X	90	X	X	90%
D Pasture	96	X	X	94	X	X	90%

X indicates no evaluation made.

Summary Irrigated Pastures

The B and D Pastures located near Reinhackle Spring were rated in 2013 and received an irrigated pasture condition score of 90%. These pastures will be rated again in 2016.

Stockwater Sites
There are two stockwater sites located 1-1.5 miles east of the river in the River Field uplands near the old highway. These wells were drilled in 2010 and are now operational. The lessee has not yet installed the water troughs at the wells.

Fencing
There was no new fence constructed on the lease in 2013. An old section of fence located on the east side of the Owens River across from the Carasco Riparian Field was removed by the lessee during the winter of 2013.

Salt and Supplement Site:
Cake blocks and molasses tubs that contain trace minerals and protein are distributed for supplement on the lease. The blocks and tubs are dispersed randomly each time and if uneaten they are collected to be used in other areas.

4.1.4 Lone Pine Lease (RLI-456)

The Lone Pine Lease is an 8,274-acre cow/calf operation divided into 11 pastures and adjacent private ranch land. Grazing on the lease occurs from January 1 to March 30 and then again in late May to early June. In early June the cattle are moved south to Olancha and then driven to Forest Service Permits in Monache.

There are 11 pastures on the Lone Pine Lease located within the LORP project boundary:

- East Side Pasture
- Edwards Pasture
- Richards Pasture
- Richards Field
- Johnson Pasture
- Smith Pasture
- Airport Field
- Miller Pasture
- Van Norman Pasture
- Dump Pasture
- River Pasture

Summary of Utilization
The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the Lone Pine Lease, RLI-456, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Johnson Field	44%	0%	34%	63%	14%	0%	WAIVED
River Field	77%	49%	55%	36%	32%	37%	BURNED

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Lone Pine Lease, RLI-456, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
Johnson Field	LONEPINE_5	44%	0%	34%	63%	14%	0%	WAIVED
*River Field	LONEPINE_1	80%	45%	61%	49%	28%	22%	BURNED
	LONEPINE_2	79%	47%	48%	25%	30%	32%	BURNED
	LONEPINE_3	81%	49%	70%	37%	52%	63%	BURNED
	LONEPINE_4	67%	55%	47%	32%	45%	45%	BURNED
	LONEPINE_6	78%	44%	EX	EX	EX	EX	BURNED
	LONEPINE_7		52%	51%	38%	8%	21%	BURNED
	LONEPINE_8						42%	BURNED

**Riparian Utilization, 40%*

Summary of Utilization

Utilization was waived in the Johnson Pasture during the 2012-13 grazing season to provide the lessee a location to move livestock, due to the Lone Pine Fire, that burned the River Pasture at the end of February. Livestock entered the River Riparian pasture a few weeks prior to the fire. By doing this, much of the summer's production had not yet been harvested by the cattle. This provided a large fuel source for the fire which burned extremely hot and fast. Over 90% (525 acres) of the River Field was burned with a loss of several cattle and much of the riparian forest. Overall utilization on the lease has decreased over time and no management changes are needed.

The end of the current growing season has resulted in a recovered forage base, with ungrazed heights reaching or exceeded previous year's measurements. There will be no grazing restrictions for the lessee during the 2013-14 grazing season. A more in depth discussion of the fires effects will be provided in the range trend and woody recruitment portions of the report.

Summary of Range Trend Data

On February 24, 2013, approximately 525 acres in the River Pasture on the Lone Pine Lease were burned. The fire consumed nearly all of the Owens River floodplain on the Lone Pine Lease and was halted north of the Keeler Bridge. The Lone Pine range trend transects were read in 2012. Six of these transects were inside the blackline of the Lone Pine Fire. Although these transects were not scheduled to be read again until 2015, the plots were revisited in August 2013, in order to document post fire response. Sites with some pre-burn shrub cover (Lone Pine_03, Lone Pine_04, Lone Pine_02) declined to zero cover following the fire. Plant vigor was examined by comparing ungrazed perennial grass heights from this year's burned sites to previous year's plant heights for the same species (Table 10). Plant heights appear to show no consistent response to the fire. Saltgrass has its greatest mean height on LP_07 in 2013 and its lowest plant height on LP_04 in 2013. Sacaton is similar in its lack of any obvious relationship to fire and plant heights. Plant frequency of alkali sacaton (SPAI) made significant declines on two sites and remained static on all others. At LONEPINE_06 frequency declined to the lowest level observed since sampling began in 2003. LONEPINE_06 is located inside a livestock grazing exclosure the large amount of accumulated litter (fine fuel) likely contributed to increased fire temperatures and killed subsurface intercalary meristems, reducing the plants ability to expand during the subsequent growing season. Saltgrass shows no consistent pattern in post fire recovery. Its rhizomatous root structure likely served to benefit the plant in occupying vacant niches during the subsequent growing season if rhizomes were deep enough to avoid impacts from the fire. The appearance of yerba mansa (*Anemopsis californica*) on Lonepine _08 is evidence of postfire recovery. The plant is an aggressive occupier of impacted saturated areas such as post burn locales or heavily grazed areas.

The arrival of Chairmaker's bulrush (*Schoenoplectus americanus*) is an indication of changes in surface hydrology.

Land Management Table 1.

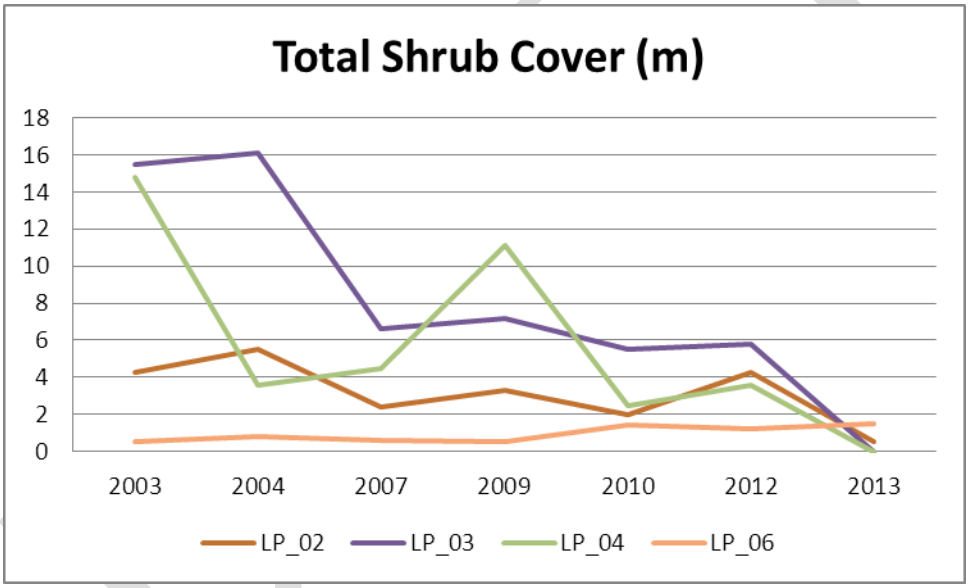
Mean end of growing season plant heights (cm) between 2005 and 2013 for saltgrass (DISP) and alkali sacaton (SPAI) on four rangetrend transects.

		2005	2006	2007	2008	2009	2010	2011	2012	2013
LP_01	DISP	16	25		33				28	20
LP_03	DISP	16	27		34					27
LP_04	DISP		17	20	19	17	17	19	18	14
LP_07	DISP			22			20	17	20	25
LP_01	SPAI					31				49
LP_03	SPAI	106	115	105	106	98	101			99

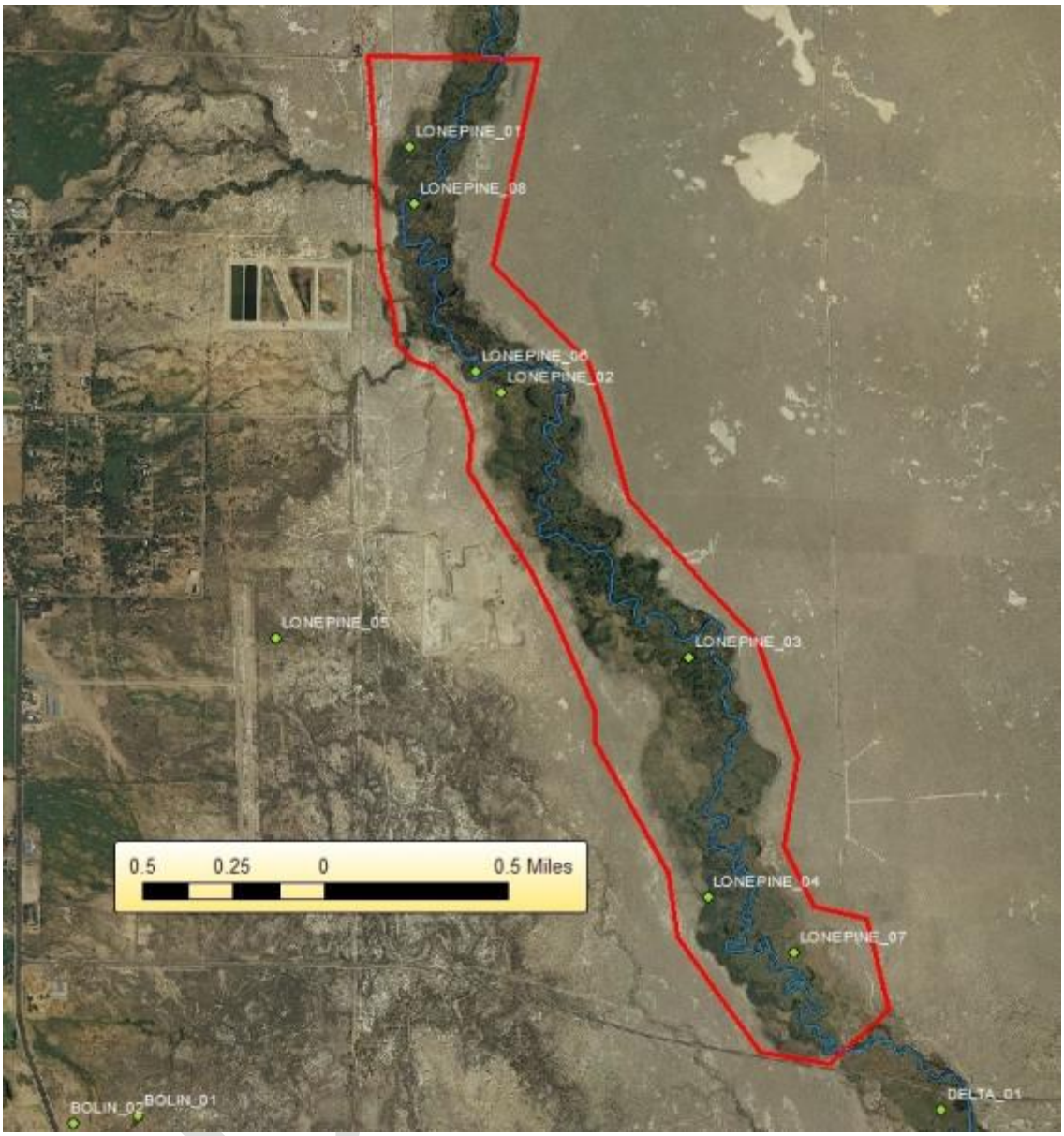
Land Management Table 2. Significant changes in plant frequencies for Lone Pine transects between 2012 and 2013.

	Static	DISP	SPAI	ATTO	BAHY	LETR5	ANCA10	SCAM6	JUBA
Moist Flood Plain									
LONEPINE_01 (unburned in 2013)		↑							
LONEPINE_02		↓	↓						
LONEPINE_03						↓			↓
LONEPINE_04	↔								
LONEPINE_06		↑	↓**						
LONEPINE_07	↔								
LONEPINE_08							↑**	↑**	

*** Sites where change extends outside historical ranges for the transect.*
α<0.1, ↑=increase, ↓=decrease,↔=no change



Land Management Figure 1. Total shrub cover for selected transects on the Lone Pine Lease between 2003-2013.



Land Management Figure 2. Approximate area of Lone Pine Wildfire, February 24, 2013

LONEPINE_01

This site is in a riparian management area on the west side of the Owens River, just north of Lone Pine Creek in the River Pasture. The soil series associated with the transect is Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, and is on a Moist Floodplain ecological site. During the baseline period from 2002-07, similarity index has ranged between 76% and 79%. Annual aboveground production at this riparian site has exceeded typical quantities found in the Moist Floodplain ecological site description. This site supports four perennial graminoid species and is dominated by saltgrass (*Distichlis spicata* [DISP]). The overall biomass of shrubs is typical for a Moist Floodplain ecological site. No nonnative species were detected at the site. Creeping wildrye (LETR) significantly increased in 2009 and continues to remain stable. Saltgrass increased on the site in 2013. The upper two thirds of the transect was not burned in the Lone Pine fire of 2013.

Frequency (%), LONEPINE_01

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	HEAN3	0	0	0	0	2	0	0	0
Perennial Forb	ANCA10	0	0	0	0	2	0	0	0
Perennial Graminoid	DISP	143	133	155	147	136	139	135	150**
	JUBA	5	4	0	25	13	16	18	10
	LETR5	12	29	18	32	50	47	48	49
	SPAI	10	13	17	19	14	15	10	12
Shrubs	ATTO	2	4	7	3	3	0	0	0
	ERNA10	0	0	4	0	0	0	0	0

** indicates a significant difference, α≤0.1, **≤0.05*

Cover (%) Shrubs LONEPINE_01

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	7.1	5.2	4.7	1.8	3.0	3.2	2.9
ERNA10	2.2	2.6	2.1	0.0	0.1	0.7	0.6
SUMO	0.1	0.0	0.8	0.0	0.0	0	0
Total	9.5	7.8	7.5	1.8	3.0	3.8	3.5

LONEPINE_02

This site is in a riparian management area on the west side of the Owens River, east of the Lone Pine Dump in the River Pasture. The soil series is Torrifluvents-Fuvaquentic Endoaquolls complex, 0-2% slopes, and is on a Moist Floodplain ecological site. The similarity index ranged between 65% and 87% from 2002 to 2007. The site is in excellent condition. The site is grass-dominated with saltgrass comprising the bulk of the biomass. Saltgrass frequency significantly increased in 2009, outside its historic range from 2002-07 and in 2010-13 returned to levels typically observed on the site. This site was burned in 2013, which have contributed to the decline in alkali sacaton seen this year. No nonnative species were detected at the site.

Frequency (%), LONEPINE_02

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Perennial Graminoid	DISP	146	125	142	143	164	141	152	132**
	JUBA	9	13	20	17	14	15	15	14
	LETR5	0	0	0	3	0	1	4	1
	SPAI	65	78	65	64	52	65	69	48**
Shrubs	ATTO	0	0	3	0	0	0	0	0
	ERNA10	0	1	4	3	1	2	3	0

** indicates a significant difference, α≤0.1, **≤0.05*

Cover (m) Shrubs LONEPINE_02

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	2.2	2.2	0.6	0.9	0.0	1.0	0.0
ERNA10	2.1	3.3	1.8	2.4	2.0	3.3	0.5
Total	4.3	5.5	2.4	3.3	2.0	4.3	0.5

LONEPINE_03

This site is in a riparian management area on the west side of the Owens River in the River Pasture. The soil series is Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, and is on a Moist Floodplain ecological site.

The similarity index has ranged between 74% and 87% during sampling periods between 2002-07, indicating the site is in excellent condition. Site production has exceeded the expected based on the ecological site description in all years of sampling. The site is grass-dominated with saltgrass comprising the bulk of the biomass and creeping wildrye closely reaching the potential described for the site at 13% in 2007. Frequency for creeping wildrye increased significantly in 2009 and remained significantly higher in 2010 when compared to all sampling periods during the baseline period. There were no changes in frequency for all species between 2009-10 and 2012. Following the fire in the early spring of 2013 there appears to be an increase in creeping wildrye and Baltic rush. Overall shrub cover was reduced to zero by the fire. No nonnative species were detected at the site.

Frequency (%), LONEPINE_03

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	HEAN3	0	2	1	0	0	0	5	0
Perennial Forb	ANCA10	0	0	0	3	0	7	10	7
	GLLE3	12	0	7	0	5	3	2	3
	HECU3	0	0	0	0	0	0	0	2
	MALE3	7	3	5	2	5	3	0	5
	PYRA	7	0	0	0	0	0	0	0
Perennial Graminoid	DISP	151	148	152	152	142	137	137	130
	JUBA	39	59	52	41	43	34	42	29*
	LETR5	34	33	31	34	52	48	54	26**

	SPAI	9	0	10	5	4	4	5	0
Shrubs	ATTO	14	2	13	0	1	3	0	0
	ERNA10	0	0	2	0	4	1	0	0

** indicates a significant difference, α≤0.1, **≤0.0*

Cover (m) Shrubs LONEPINE_03

Species Code	2003	2004	2007	2009	2010	2012	2013
ATTO	13.5	13.4	6.0	0.8	4.9	5.6	0
ERNA10	2.0	2.7	0.6	2.7	0.6	0.2	0
SAVE4	0.0	0.0	0.0	3.6	0.0	0	0
Total	15.5	16.1	6.6	7.2	5.5	5.8	0

LONEPINE_04

This site is in a riparian management area on the west side of the Owens River in the River Pasture. The transect is located at the edge of the floodplain and currently incorporates a portion of the transition zone to upland vegetation. The soil series is Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes at the beginning of the transect and transitions to the Mazourka-Eclipse complex, 0-2% slopes. The transition in ecological sites is from a Moist Floodplain ecological site to a Sodic Terrace ecological site. Because of the mixed soils and associated ecological sites found across the transect evaluating trend for this site will concentrate on changes on trend rather than how well the site matches ecological site descriptions.

The similarity index has ranged widely between 59% and 73% from 2002-07. When compared to the Moist Floodplain ecological site description, the site has less than the expected biomass of forage species such as creeping wild rye and Baltic rush. This is explained by the transition from mesic conditions on the Moist Floodplain to more xeric conditions of the uplands which results in a decreasing abundance of creeping wildrye, Baltic rush, and riparian trees and the disproportionate amount of alkali sacaton which can better thrive in both the mesic and xeric transitional zones. The site is grass-dominated with saltgrass and alkali sacaton comprising the bulk of the biomass. The shrub component of the site is dominated by rubber rabbitbrush. As flows on the Lower Owens continue, soil moisture may rise towards the upland zone of the transect and future changes in species composition may be observed. However, frequency data indicates that there is an inverse trend, with decreasing saltgrass, and increasing alkali sacaton which is a typical gradient in zones moving from wet to dry areas. No nonnative species were detected at the site. There were no changes in frequency from 2010 to 2012. Alkali sacaton is trending back to pre-2007 levels. This site was burned, which reduced shrub cover to zero in 2013.

Frequency (%), LONEPINE_04

Life Forms	Species	2002	2003	2004	2007	2009	2010	2012	2013
Annual Forb	2FORB	0	0	1	0	0	0	0	0
	ATPH	0	29	12	0	0	10	0	0
Perennial Forb	ANCA10	5	7	8	8	7	6	6	4
	MACA2	0	0	0	0	0	2	0	0
	NIOC2	3	0	0	2	2	0	0	0
	STEPH	5	0	11	0	5	0	0	0
	SUMO	3	4	6	2	3	0	0	0
Perennial Graminoid	DISP	105	101	114	97	88	77	87	88
	JUBA	15	18	25	11	15	15	23	14
	SPAI	48	63	56	69	79	84	72	60
Shrubs	ATCO	0	0	4	0	0	0	0	0
	ATTO	0	2	0	0	0	0	0	0
	ERNA10	0	2	0	0	0	0	0	0
	MACA17	0	0	0	4	0	0	0	1
Nonnative Species	BAHY	0	0	0	0	2	0	0	0

** indicates a significant difference, α<0.1, **<0.05 when compared to prior sampling period.*

Cover (m) Shrubs LONEPINE_04

Species Code	2003	2004	2007	2009	2010	2012	2013
ATCO	0.1	0.5	0	0	0	0.4	0
ATTO	0	0	0	10.0	0.2	0	0
ERNA10	2.3	2.1	4.5	1.1	1.0	1.4	0
SUMO	12.4	1.0	0	0	1.3	1.9	0
Total	14.8	3.6	4.5	11.1	2.5	3.6	0

LONEPINE_06

This site is in a riparian management area on the east side of the Owens River in the River Pasture. This monitoring transect is located inside a riparian exclosure, constructed in February 2009. Over time the site will be used as a non-grazed reference site. The soil series is Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes on a Moist Floodplain ecological site.

The similarity index has ranged between 66% and 84% between 2003 and 2007. Site production has varied during the baseline period from above to below the expected based on the ecological site description. Compared to the potential outlined in the ecological site description, this site lacks the forb and woody riparian species component. The forage base is dominated by saltgrass and alkali sacaton. Other forage species such as creeping wild rye and Baltic rush are lacking at this site. One nonnative species, Bassia, has been detected at the site. There was a significant decrease in salt grass in 2012 and then a rise in frequency in 2013. Alkali sacaton decreased significantly on the site in 2013 (see earlier discussion). Shrub cover was reduced to zero as a result of the 2013 fire. The exclosure was completed in February 2009.

Frequency (%), LONEPINE_06

Life Forms	Species	2003	2004	2005	2007	2009	2010	2012	2013
Perennial Forb	ANCA10	0	0	0	5	3	0	0	0
Perennial Graminoid	DISP	124	136	132	149	145	147	130	145*
	JUBA	0	0	0	0	0	0	0	0
	SPAI	25	28	29	16	20	16	16	3**
Nonnative Species	BAHY	0	0	5	0	0	3	0	3

** indicates a significant difference, α≤0.1, **≤0.05*

Cover (m) Shrubs LONEPINE_06

Species Code	2003	2004	2005	2007	2009	2010	2012	2013
ATTO	0.5	0.6	0.4	0.5	1.4	1.2	1.5	0
SUMO	0.1	0.3	0.2	0	0	0	0	0
Total	0.5	0.8	0.6	0.5	1.4	1.2	1.5	0

LONEPINE_07
This site is in a riparian management area on the east side of the Owens River in the River Pasture. This site was first established in the summer of 2007. The soil series is Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes on a Moist Floodplain ecological site.

The similarity index was 60% in 2007. Site production was similar to that expected based on the ecological site description. There is little diversity of perennial graminoids as the only species detected was saltgrass while other forage species such as alkali sacaton and creeping wild rye are lacking on the transect but are present in the area. The biomass of forbs and riparian woody species is less than expected as compared to the desired plant community. No nonnative species were detected at the site. Baseline utilization is not available for this site since it was not established until the summer of 2007. Between 2007 and 2013 frequency has not changed significantly on the site.

Frequency (%), LONEPINE_07

Life Forms	Species	2007	2009	2010	2012	2013
Perennial Graminoid	DISP	150	157	160	151	140

** indicates a significant difference, α≤0.1, **≤0.05*

No shrubs present on site. The site was burned in 2013.

LONEPINE_08
This site is in a riparian management area on the east side of the Owens River in the River Pasture. This site was first established in the summer of 2011. The soil series is Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes on a Moist Floodplain ecological site. The spike in yerba mansa is in response to areas opened up by the 2013 fire.

Frequency (%), LONEPINE_08

	Species	2012	2013
Annual Forb	2FORB	**0**	4
	HEAN3	**0**	7
Perennial Forb	ANCA10	**3**	83**
	NIOC2	**3**	0
Perennial Graminoid	CADO2	**0**	1
	DISP	**155**	144*
	SCAM6	**0**	22**

LONEPINE_05
This site is in an upland management area in the Winnedumah fine sandy loam, 0-2% slopes soil series which is associated with a Sodic Fan ecological site, just east of the Lone Pine Airport in the Johnson Pasture. In 2004 the site flooded and was not sampled. An increase from 0 to 14 juvenile *Salix exigua* species in 2007 is evidence of this flooding.

The similarity index has ranged between 69% and 77% between 2002-07. Nevada saltbrush (*Atriplex torreyi* [ATTO]) has trended down over time. Frequency of saltgrass significantly increased in 2009 and decreased in 2010 to similar levels to that seen during the baseline period. There were no other significant changes on the site. End-of-season utilization on this transect has consistently remained low except for 2010.

Utilization by Weighted Average and Species, LONEPINE_05

	Weighted Average	DISP	SPAI
2007	44%	23%	49%
2008	2%	9%	0%
2009	34%	na	34%
2010	63%		63%
2011	14%		14%
2012	0%		0%

Frequency (%), LONEPINE_05

Life Forms	Species	2002	2003	2007	2009	2010	2012
Annual Forb	ATSES	0	3	0	0	0	0
	ATTR	0	3	0	0	0	0
	ERPR4	0	0	3	0	0	0
	LACO13	0	0	5	0	0	0
	COCA5	0	0	0	0	0	4
Perennial Forb	ARLU	0	0	5	0	0	0
	GLLE3	36	26	49	29	37	43
	MALE3	15	11	16	8	0	7
Perennial Graminoid	ARPU9	0	0	5	0	0	0
	DISP	34	40	23	42	24	26
	JUBA	7	4	1	0	3	0
	SPAI	53	69	73	77	71	73
Shrubs	ATTO	43	40	24	21	13	9
	SAEX	3	0	16	8	4	9
	ARTR2	0	0	0	0	2	0
Nonnative Species	BAHY	0	16	0	0	0	0

** indicates a significant difference, α≤0.1, **≤0.05*

Cover (m) Shrubs LONEPINE_05

Species Code	2003	2007	2009	2010	2012
ATTO	32.8	28.9	9.6	13.2	13.4
SAEX	1.5	14.5	21.1	1.5	4.0
Total	34.4	43.3	30.8	14.7	17.4

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Islands Lease RLI-489, 2007-13

Pastures	2007	2008	2009	2010	2011	2012	2013
Edwards	80	80	80	90	X	X	84
Richards	64	82	82	84	X	X	84
Van Norm	X	X	X	80	X	X	84
Old Place	86	X	X	90	X	X	84
Smith	88	X	X	96	X	X	84
Miller	94	X	X	86	X	X	86

X indicates no evaluation made.

Summary Irrigated Pastures

The irrigated pastures within the LORP project area for the Lone Pine Lease are the Edwards, Richards, Smith, Old Place, Miller and Van Norman Pastures. All of the pastures were rated in 2013 and were above the required minimum irrigated pasture condition score of 80%, despite a dry year and lack of irrigation water.

Stockwater Sites

One stockwater well was drilled on the Lone Pine Lease located in the River Pasture uplands. The approximate location is two miles east of the river on an existing playa. The lessee had made an effort to install a trough but, the well had a silting problem that plugged the pipes and floats. Watershed Resources staff and pump mechanics have assessed the condition of the well and it has been determined that the well is not operable. A new well location is going to be selected and a new well will be drilled.

Fencing

There was no new fencing constructed on the lease during 2013. Repairs have been made to the existing exclosure due to the fire in February.

Salt and Supplement Site:

All supplement tubs were situated outside of the flood plain.

4.1.5 Delta Lease (RLI-490)

The Delta Lease is a cow/calf operation and consists of 7,110 acres divided into four pastures. There are four fields located with the LORP project boundary: Lake Field, Bolin Field, Main Delta Field, and the East Field. Grazing typically occurs for 6 months, from mid-November to April. Grazing in the Bolin Field may occur during the growing season. The Delta and Islands Leases are managed as one with state lands leases.

Grazing utilization is currently only conducted in the Main Delta Field which contains the Owens River. The Lake Field is evaluated using irrigated pasture condition scoring. The East Field, located on the upland of Owens Lake, supports little in the way of forage and has no stockwater.

Summary of Utilization

The following tables present the summarized utilization data for each pasture/field, and each transect within the pasture.

Table 1. Grazing Utilization for Fields/Pastures on the Delta Lease, RLI-490, 2007-2013

Fields/Pastures	2007	2008	2009	2010	2011	2012	2013
Bolin Field						65%	26%
Main Delta	58%	58%	53%	51%	38%	43%	31%

**Riparian Utilization, 40%*

Table 2. Grazing Utilization for Transects on the Delta Lease, RLI-490, 2007-2013

Fields/Pastures	Transect	2007	2008	2009	2010	2011	2012	2013
Bolin Field	BOLIN_1						0%	25%
	BOLIN_2						65%	26%
*River Field	DELTA_1	58%	56%	59%	70%	38%	30%	19%
	DELTA_2	61%	49%	EX	EX	EX	EX	EX
	DELTA_3	72%	60%	54%	71%	12%	45%	26%
	DELTA_4	83%	50%	55%	62%	33%	44%	38%
	DELTA_5	50%	73%	54%	29%	50%	42%	40%
	DELTA_6	26%	50%	35%	23%	42%	41%	26%
	DELTA_7	60%	65%	61%	49%	51%	58%	36%

**Riparian Utilization, 40%*

Summary of Utilization

Utilization in the Main Delta was has tended to be high over the years. The data at the transect level shows, that use is usually higher in the northern and southern portions of the lease. However, since the construction of drift fence west of the Pump Back Station 2010 management has changed. Cattle are now put on the Owens Lake Delta at the beginning of the season. With the construction of the drift fence, this has kept cattle from drifting to the main Delta until later in the grazing season. Since the implementation of the LORP, forage production in the Owens Lake Delta has increased substantially allowing livestock to remain on the Delta for a longer period of the grazing season.

Summary of Range Trend Data and Conditions

Range trend transects on the Delta Lease are located on Moist Floodplain ecological sites. Monitoring site photos are presented in Appendix 3 – Section 7. The similarity index averaged at each transect, over the four baseline sampling periods ranged between 48-70%. All sites lack a diversity of perennial grasses, and are dominated by saltgrass. The presence of alkali sacaton appears to follow a gradient with decreasing abundance following a decrease in elevation. Soil salinity appears to increase along this same gradient as soils transition from stream deposition to lacustrine deposition from the Owens Dry Lake. Alkali sacaton and beardless wildrye are both known to not have as high a tolerance for saline soils as saltgrass

(USDA, NRCS 2009). These variables may be influencing species composition on the Moist Floodplain zones on the Delta Lease. There were no significant changes in plant frequencies between 2010 and 2013 with the exception of a decline in saltgrass on DELTA_02 which dropped below all previous levels.

Significant changes in plant frequencies for Delta transects between 2009 and 2013.

	No Change	DISP	JUBA	ATTO	BAHY
Moist Flood Plain					
DELTA_01	↔				
DELTA_02		↓**			
DELTA_03	↔				
DELTA_04	↔				
DELTA_05	↔				
DELTA_06	↔				
DELTA_07	↔				

*** Sites where change extends outside historical ranges for the transect.*
α<0.1, ↑=increase, ↓=decrease,↔=no change

DELTA_01

DELTA_01 is located in the Delta Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index varied between 67-72% during the baseline period. The site is dominated by saltgrass with a small alkali sacaton component. The site has remained static during all six sampling periods.

Frequency (%), DELTA_01

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	CORA5	0	0	0	0	0	0	2
Perennial Forb	ANCA10	5	12	5	7	11	9	10
	NIOC2	10	5	7	4	3	8	5
	SUMO	7	0	1	0	0	0	0
Perennial Graminoid	DISP	156	152	149	152	155	151	150
	JUBA	0	7	11	10	9	6	6
	LETR5	0	1	0	0	0	0	0
	SPAI	3	0	13	11	16	11	10
Shrubs	ATTO	2	5	1	5	0	0	0
Nonnative Species	BAHY	0	0	2	0	2	1	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs DELTA_01

Species Code	2003	2004	2007	2009	2010	2013
ATTO	3.1	1.8	3.9	1.1	0.2	0.1
SUMO	0.9	0.8	0.2	0.1	0.0	0
Total	4.0	2.7	4.1	1.2	0.2	0.1

DELTA_02

DELTA_02 is located in a grazing exclosure in the Delta Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes which corresponds to the Moist Floodplain ecological site. Similarity index ranged between 59-66% during the baseline period. Plant frequencies in 2013 did not change when compared to 2010 with the exception of saltgrass. Rubber rabbitbrush cover appears to be trending downwards. Frequency values in 2010 did not statistically differ from the five prior sampling periods. Because the transect is now within an exclosure, utilization was not sampled in 2009-10.

Utilization by Weighted Average and Species, Delta_02

	Weighted Average	DISP	SPAI
2007	52%	48%	70%
2008	49%	49%	

Frequency (%), DELTA_02

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Perennial Graminoid	DISP	109	118	131	103	115	114	89**
Shrubs	ATTO	10	13	0	0	4	8	8
	ERNA10	10	9	12	0	1	4	3
Nonnative Species	BAHY	0	3	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs DELTA_02

Species Code	2003	2004	2007	2009	2010	2013
ATTO	16.3	9.7	10.1	8.3	3.8	11.6
ERNA10	16.0	12.3	11.7	10.8	8.9	6.6
SUMO	0.4	0.0	0.0	0.0	0.0	0.0
Total	32.6	22.0	21.8	19.0	12.8	18.1

DELTA_03

DELTA_03 is located in the Delta Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, which corresponds to the Moist Floodplain ecological site. The site is predominantly saltgrass. Frequency values did not vary from 2007-13.

Utilization by Weighted Average and Species, Delta_03

	Weighted Average	DISP	SPAI
2007	59%	59%	57%
2008	51%	50%	69%
2009	54%	54%	
2010	71%	71%	

Frequency (%), DELTA_03

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Perennial Forb	SUMO	15	15	19	0	15	22	12
Perennial Graminoid	DISP	114	118	129	104	119	112	122
	SPAI	5	0	0	1	0	0	2
Shrubs	ATTO	12	13	8	0	8	8	2
	ERNA10	0	0	0	0	2	0	0
	SAVE4	0	0	10	0	0	0	1
Nonnative Species	BAHY	0	1	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs DELTA_03

Species Code	2003	2004	2007	2009	2010	2013
ATTO	11.0	7.7	10.9	7.3	4.8	5.2
ERNA10	0.7	0.4	1.1	0.8	0.8	0.4
SAVE4	6.6	6.3	5.9	5.9	5.1	4.0
SUMO	17.2	5.2	3.7	9.5	11.3	5.1
Total	35.4	19.7	21.7	23.4	21.9	14.7

DELTA_04

DELTA_04 is located in the Delta Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. Similarity index ranged between 63-71% during the baseline period. The site has remained relatively stable since vegetative sampling began, there were no significant changes in frequency values between 2007-10.

Frequency (%), DELTA_04

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ATPH	0	7	0	0	4	4	0
Perennial Forb	SUMO	0	7	0	0	1	0	5
Perennial Graminoid	DISP	139	128	150	103	115	124	116
	SPAI	0	5	6	0	0	0	0
Shrubs	ATTO	3	2	6	0	0	4	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs DELTA_04

Species Code	2003	2004	2007	2009	2010	2013
ATTO	3.6	2.3	3.1	5.3	6.1	1.7
SAVE4	0.3	0.6	0.2	0.2	0.9	0
SUMO	1.9	0.9	1.8	2.6	1.4	1.3
Total	5.9	3.8	5.1	8.1	8.3	3

DELTA_05 is located in the Delta Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes, which corresponds to the Moist Floodplain ecological site. The similarity index ranged between 66-72% during the baseline period. The site has remained relatively stable since vegetative sampling began and there were no significant changes in frequency values between 2007-13.

Frequency (%), DELTA_05

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	HEAN3	0	2	0	0	0	0	0
Perennial Forb	ANCA10	0	0	1	3	8	4	7
	NIOC2	7	0	2	0	0	2	6
	SUMO	14	2	23	19	16	20	11
Perennial Graminoid	CADO2	0	2	5	0	0	0	0
	CAREX	0	0	0	0	4	0	0
	DISP	155	146	163	135	144	146	135
	JUBA	9	9	12	13	23	23	13
	SCAM6	0	0	0	0	0	5	3
Shrubs	ATTO	0	6	5	0	1	0	0
Nonnative Species	BAHY	0	1	3	0	1	0	0
	LASE	0	10	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) shrubs DELTA_05

Species Code	2003	2004	2007	2009	2010	2013
ATTO	6.5	3.4	4.8	5.9	6.1	2.6
ERNA10	0	0	0.6	1.2	1.0	0
SUMO	12.7	7.2	6.9	6.7	9.4	3.2
Total	19.2	10.6	12.2	13.8	16.6	5.8

DELTA_06

DELTA_06 is located in the Delta Field. The soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, which corresponds to the Moist Floodplain ecological site. The similarity index ranged between 54-73% during the baseline period, this variation is a result of annual fluctuations in saltgrass production. Saltgrass frequency followed a similar decline in 2003 but has remained stable for all other sampling periods. There were no significant changes in frequency values between 2007-13.

Frequency (%), DELTA_06

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Annual Forb	ATPH	0	0	0	0	5	0	0
Perennial Forb	ANCA10	9	5	5	7	6	10	7
	HECU3	9	7	8	2	0	0	0
	NIOC2	0	0	0	0	0	1	3
	SUMO	15	14	27	6	18	17	18
Perennial Graminoid	DISP	122	94	120	125	120	105	101
	JUBA	17	12	14	12	11	9	5
Shrubs	ATTO	3	4	0	2	2	0	1
	ERNA10	0	3	0	0	0	0	0
	SAVE4	0	1	15	0	4	3	2
Nonnative Species	BAHY	0	5	0	0	0	0	0
	XAST	0	2	0	0	0	0	0

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs DELTA_06

Species Code	2003	2004	2007	2009	2010	2013
ATTO	8.2	4.5	5.9	4.9	4.0	1.0
ERNA10	0.4	0.6	0.6	0	0	0
SAVE4	8.3	6.6	6.5	8.7	8.0	7.7
SUMO	9.4	3.9	10.6	7.0	7.6	7.9
Total	26.2	15.6	23.6	20.6	19.6	16.5

DELTA_07

DELTA_07 is located in the Delta Field, soils are Torrifluvents-Fluvaquentic Endoaquolls Complex, 0-2% slopes which corresponds to the Moist Floodplain ecological site. The similarity index during the baseline period ranged between 35-60%, responding to declines in saltgrass production on the site. This site has remained static.

Frequency (%), DELTA_07

Life Forms	Species	2002	2003	2004	2007	2009	2010	2013
Perennial Forb	SUMO	32	16	15	12	15	18	9
Perennial Graminoid	DISP	114	93	116	102	121	121	107

** indicates a significant difference, α<0.1, **<0.05 compared to previous sampling period*

Cover (m) Shrubs DELTA_07

Species Code	2003	2004	2007	2009	2010	2013
SUMO	25.1	10.3	27.0	32.8	33.1	17.9

Irrigated Pastures

The following table shows Irrigated Pasture Condition scores.

Irrigated Pasture Condition Scores Islands Lease RLI-490, 2007-13

Pastures	2007	2008	2009	2010	2011	2012	2013
Lake Field	92	X	X	84	X	X	74

X indicates no evaluation made.

The Lake Field is located west of U.S. Highway 395 north of Diaz Lake. This irrigated pasture was evaluated in 2013 and received a score of 74%. This is below the allowable score of 80%. The reason for the decreased condition of this pasture is due to drought conditions that impeded water distribution over the field. Watershed Resources staff do not believe that changes are necessary at this time. A normal precipitation year will improve pasture conditions. This pasture will be re-evaluated in 2014.

Stockwater Sites

The Bolin Field was supposed to receive a stockwater site supplied by the Lone Pine Visitors Centers well in 2010. After a more in-depth analysis of water availability was undertaken, it was ascertained that there was not an adequate amount of water to sustain both uses. The resulting analysis has stockwater being supplied from a diversion that runs from the LAA. The status of this stockwater situation has not changed in 2013.

Fencing

There was no new fencing on the lease for lease planned beyond general maintenance.

Salt and Supplement Sites

Cake blocks that contain trace minerals and protein are distributed for supplement on the lease. The blocks are dispersed randomly each time and if uneaten they biodegrade within one grazing season. There are also supplement tubs that are used in established supplement sites.

7.6.2 Monitoring and Reporting for OVLMP Recreation Management Component

Chapter 4 of the OVLMP describes LADWP's goals, objectives, policies, and guidelines for future management with respect to recreation in the project area. Section 4.4 outlines several projects to address areas of specific concern that had experienced resource damage as a result of recreational use. These projects are described below with a status update provided.

Monitoring

Monitoring for this project will include a series of photo points based in this vicinity that were established prior to project implementation. Photos in these locations will be recaptured for the first three years following the completion of the project, as well as every five years thereafter for 10 years. Reporting for this project will be based on

photo point documentation of changes over time, and reports are to include photos from monitoring locations, general information on noted changes, and any further information regarding modification to management prescription, if applicable. Monitoring and reporting for this project will be in the way of periodic patrols by Watershed Resources Staff in their daily tasks. Goals in monitoring will simply be for notification of vandalism and success of the management measures in the field.

The Owens Valley Land Management Plan Recreation sites were visited by LADWP on August 26, 2013. LADWP conducted photo point monitoring and assessed fence and signage condition (where applicable) and has generated recommendations for the projects where necessary. Photo points were established in April 2011 and were recaptured at the peak of the growing seasons in 2011, 2012 and 2013. These photos can be made available upon request.

Owens River: Pleasant Valley Reservoir to Highway 6

Description: LADWP implemented a riparian fencing project between Pleasant Valley Reservoir and Highway 6 to improve the riparian health along the Owens River. Fencing was installed parallel to Chalk Bluffs Road. Boulders were used in lieu of fencing where the river is adjacent to the road. Designated parking areas, walkthrough access points (handicap and otherwise), and informational signs were also established along the new fence line. The size of the parking areas varied depending on the location. Walkthrough and/or other handicap access were provided at each parking area, and at supplemental locations along Chalk Bluffs Road. This project has been coordinated in conjunction with LADWP's Grazing Management Plans to meet grazing management and recreational use goals along the river. This project will also benefit species protection efforts under LADWP's Conservation Strategy for the Southwestern Willow Flycatcher.

Pleasant Valley (Former Boat Ramp)

Photo Point Monitoring: LADWP installed fencing along this section of the river in 2008. Parking areas outside the riparian corridor were established and walkthroughs were installed. The photos below show conditions following implementation of riparian fencing and the past two growing seasons (both locations shown below are now fenced off from vehicular access). Saltgrass *(Distichlis spicata)* and Baltic rush (*Juncus balticus)* recruitment looks healthy and is becoming established in the disturbed road areas.

Pleasant Valley #1, April 2011


Pleasant Valley #1, August 2013

Pleasant Valley #2, April 2011


Pleasant Valley #2, August 2013

Fence and Sign Condition: The fence and sign are in good condition.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Pleasant Valley (Handicap Access 1 & 2)

Photo Point Monitoring: Saltgrass and alkali sacaton (*Sporobolus airoides)* recruitment looks healthy and has established well over the old road at handicap access area 1. No photo points have been established at handicap access area 2.

Pleasant Valley handicap access April 2011

Pleasant Valley handicap access August 2013

Fence and Sign Condition: The fence and sign are in good condition at the Handicap access area 1. However, the restoration sign had been vandalized at Handicap access area 2. This sign was replaced in the fall of 2013.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Pleasant Valley (Bank by Burned Cottonwood)

Photo Point Monitoring: Saltgrass and alkali sacaton (*Sporobolus airoides)* recruitment looks healthy and has established well over disturbed areas. As depicted below, narrow leaf willows (*salix exigua)* have grown and extended further out on the south bank.

Pleasant Valley Cottonwood April 2011

Pleasant Valley Cottonwood August 2013

Fence and Sign Condition: The fence is in good condition. However, the restoration sign had been vandalized. This sign was replaced in the fall of 2013.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Pleasant Valley (bank/pasture-access from boulder lot)

Photo Point Monitoring: Vegetation recruitment is not as prominent as the other managed recreation sites but the saltgrass seed source is abundant. Vegetation depicted in photo points in the summer of 2013 appears similar to those taken in the summer of 2011. As a consequence, LADWP tilled compacted soil in this area in the fall of 2013 to promote growth of saltgrass that is currently present on site.

Pleasant Valley Boulder Lot, April 2011


Pleasant Valley Boulder lot, August 2013

Fence and Sign Condition: 2013 monitoring revealed that the fence in this parking lot needed to be repaired and the pedestrian walk-through was swinging and was not stable. In fall 2013, LADWP repaired the bottom strand of the fence and stabilized the pedestrian walk-through.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Owens River: Highway 6 to Tinemaha Reservoir

Description: The Owens River between Highway 6 and Tinemaha Reservoir has several areas that have resource damage due to high levels of recreational use. These problem areas occur where the river intersects Highway 6, East Line Street, Warm Springs Road, Highway 168, and Stewart Lane.

LADWP used boulders and may use other barrier devices if necessary, to obstruct direct vehicular access to the banks of the river. The Department may also install designated parking areas with walkthrough access points as well as signage in key locations where appropriate.

Highway 6 and the Owens River

Description: LADWP installed boulders to restrict vehicular access to the banks of the Owens River and to define parking areas in 2010. The photos below show conditions following the placement of boulders as well as conditions this past growing season from the Highway 6 bridge.

Photo Point Monitoring: Vegetation looks healthy and vigorous. There are no signs of vandalism.

Fence and Sign Condition: N/A

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Highway 6 (from bridge), April 2011


Highway 6 (from bridge), August 2013

Highway 6 and the Owens River (North Parking Area)

Photo Point Monitoring: Broadleaf pepperweed (*Lepidium latifolium*) is a very invasive and prolific plant and is present on the east bank. Recruitment of salt heliotrope (*Heliotropium curassavicum*) has established along the east bank and fivehorn smotherweed (*Bassia hyssopifolia)* is dying back. Torrey's saltbush *(Atriplex Torreyi) and* rubber rabbitbrush *(Ericameria nauseosa*) are abundant and healthy throughout the site. No signs of vandalism were observed.

Hwy 6 & Owens River N Parking, April 2011

Hwy 6 & Owens River N Parking, August 2013

Fence and Sign Condition: N/A

Recommendations: Pepperweed needs to be treated before it spreads and will be eradicated as resources are available. Monitoring will continue for riparian vegetation recruitment, weed encroachment, and any signs of vandalism.

Highway 6 and the Owens River (South Parking Area)

Photo Point Monitoring: Fivehorn smotherweed is dying back. Torrey's saltbush and American licorice have established where fivehorn smotherweed was previously dominant. No signs of vandalism are present.

Hwy 6 & Owens River S Parking, April 2011

Hwy 6 & Owens River S Parking, August 2013

Fence and Sign Condition: Not Applicable

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

East Line Street and the Owens River

Description: LADWP installed boulders to restrict vehicular access to the banks of the Owens River and to define a parking area in 2010.

Photo Point Monitoring: The photos below show conditions following the placement of boulders at East Line Street as well as conditions this past growing season. Overall vegetation looks healthy and is comparable to last year. No signs of vandalism are present.

East Line Street, April 2011


East Line Street, August 2013

Fence and Sign Condition: The fence and sign are in good condition.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

East Line Street and the Owens River (Bank)

Photo Point Monitoring: Baltic rush has become more prominent and fivehorn smotherweed has died back. No signs of vandalism are present; however, the rubber rabbitbrush that lined the guardrail is absent (Inyo County may have removed it when replacing the guardrail).

East Line & Owens River Bank, April 2011

East Line & Owens River Bank, August 2013

Fence and Sign Condition: The fence and sign are in good condition.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Warm Springs Road and the Owens River

Description: LADWP installed fencing and pedestrian walkthroughs to control access to this location that had endured heavy recreational use.

Photo Point Monitoring: The photos below were taken inside the area that has been restricted from vehicular use following placement of controls. There are no signs of vandalism. The site does not appear to be impacted any further by cattle or humans. The photo on the right depicts vegetation recruitment that has established over vehicular tracks from the past two growing seasons.

Warm Springs (toward river), April 2011

Warm Springs (toward river), August 2013

Fence and Sign Condition: The fence is in good condition.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Highway 168 and the Owens River

Description: LADWP installed boulders and telephone poles to restrict vehicular access to the banks of the Owens River and to define a parking area in 2010 where the river intersects Highway 168.

Photo Point Monitoring: The photos below are taken from the designated parking area after vehicular controls were installed. The site does not appear to be impacted any further by humans. Vegetation has established outside the parking area boundaries post implementation of boulders and telephone poles.

Hwy 168 & the Owens River, April 2011

Hwy 168 & the Owens River, August 2013

Fence and Sign Condition: The sign on the entrance to the site has been vandalized.

Recommendations: The sign was replaced in the fall of 2013 and monitoring will continue for any signs of vandalism as well as riparian vegetation recruitment.

Highway 168 and the Owens River (Bank)

Photo Point Monitoring: The photos below depict the Owens River bank after telephone poles were installed to restrict vehicular access to a designated parking area. The photo on the right depicts vegetation recruitment from the past two growing seasons. The site does not appear to be impacted any further by humans. Saltgrass recruitment has increased along the wood posts.

Hwy 168 & Owens River Bank, April 2011

Hwy 168 & Owens River Bank, August 2013

Fence and Sign Condition: The wood posts are present and in good condition.

Recommendations: Monitoring will continue for riparian vegetation recruitment and any signs of vandalism.

Stewart Lane and the Owens River

Status: Bank condition and riparian vegetation has improved at Stewart Lane since the OVLMP was written, so treatment in this area was deemed unnecessary.

Owens River: Tinemaha Reservoir to Los Angeles Aqueduct intake

Description: The section of the Owens River directly south of Tinemaha Reservoir receives high use for fishing and other types of recreation. Currently, there is a parking area just below the dam that accommodates a number of vehicles and allows walking access to the river upstream of this location. There is a network of roads along the river banks, which is unnecessary if primary roads are maintained.

To manage for current and future uses in this area, LADWP will install boulders or railroad ties along the north and east side of the existing parking area to discourage vehicles from driving directly up to the stream banks. The designated parking area will continue to accommodate many vehicles, and will provide additional walkthrough access to the river east of this parking area. Signage will be installed in key locations as needed.

Status: Controls had not yet been implemented in this area due to other LADWP staff commitments, so the project was reassessed in 2013. Resource impacts appear to be reduced from past use, therefore LADWP is not imposing any additional controls at this time. LADWP will continue to monitor use in this area and will respond as necessary if resource concerns arise.

Motocross Use off of Reata Lane:

Description: City land southwest of Bishop off of Reata Lane is a popular location for motocross. This area is not currently leased and is used by OHV enthusiasts at their own risk. The Department will sign the area as City property to notify users of restrictions and that LADWP will not assume liability for this use of the area. LADWP will remain open to leasing this area to private entities as it has in the past, with the understanding that interested parties can provide a proposal along with the appropriate insurance to cover activities conducted on Department lands. For special motocross events, the Department will make the area available with the understanding that interested parties must submit their request in writing to use the area and a Letter of Permission will be granted if approved by the appropriate LADWP staff. All requests for use must be made in writing and have proof of insurance. This strategy promotes the

use of this area by OHV enthusiasts over in order to curtail the impacts to more sensitive resource areas in other locations.

Status: This area is signed as City property. While some entities have expressed interest, there have been no formal requests to host motocross events at Reata.

Buttermilk

Description: LADWP will continue to coordinate with the Inyo National Forest (INF) and the Bureau of Land Management (BLM) to discourage dispersed camping on Department lands. If necessary, boulders or other barrier devices will be placed to prevent vehicle access to the waterways and prevent unauthorized camping. LADWP will increase signage in the area to educate visitors about the camping policies on LADWP property and proper use of the land. Fire rings will be removed, as fires are only allowed in the Department's thirteen designated campgrounds. LADWP will also place a permanent informational kiosk in the Buttermilk Country to educate the public about recreation policies as well as property boundaries between private (LADWP) and public (INF and BLM) lands. LADWP will work jointly with these agencies on the content of the information provided at the kiosk and explore cost sharing opportunities.

Status: The INF installed a kiosk in the Buttermilk that shows access roads and camping/campfire policies on federal lands.

Starlight residents met with LADWP Management in Spring 2012 regarding their concern of fire danger due to unauthorized campfires that were occurring in the Buttermilk and the proximity of their homes to this potential danger. As a result, LADWP installed signage in Spring 2012 at the beginning and end of City property on Buttermilk Road and other access roads (shown below). Additionally, fire rings were removed from City property by Calfire in the Spring of 2012. Fire rings are periodically removed from City land when noted in patrols.

Example of sign posted in the Buttermilk to remind users of fire restrictions.

Klondike Lake

Description: The Klondike Lake Project is an Enhancement/Mitigation Project that was adopted in 1986 to enhance an alkali sink north of Big Pine that was intermittently filled with water throughout the year. The project used water management to provide and enhance nesting and feeding habitat for waterfowl, while maintaining a lake level to support a variety of recreational activities such as boating, water skiing, swimming, and other water sports.

LADWP will coordinate with Inyo County to explore options for waste management at Klondike Lake and may pursue trash and toilet facilities (operation and maintenance would be the responsibility of Inyo County).

Status: Beginning in 2010, LADWP began requiring inspections of watercraft to prevent the infestation of quagga and zebra mussels LADWP facilities. As a consequence, watercraft access to Klondike Lake is permitted each summer from Memorial Day to Labor Day and is regulated by LADWP. Vehicles without watercraft can still access the lake unrestricted year-round. To date, there has been no progress on improving sanitation facilities in this area through Inyo County.

Projects Applicable to the Entire Management Area

Description: Many roads are in need of repair, closing and/or rerouting on City lands were multiple roads lead to the same destination. LADWP will implement changes in road networks on LADWP lands that are financially feasible and can be conducted with current Department Watershed Resources and Construction personnel. In some cases,

ripping and seeding reclaimed road surfaces is recommended in order to achieve particular goals; in other cases, simply blocking access to a road is more appropriate. These changes will be implemented on a priority basis, and will be monitored periodically by LADWP personnel.

Status: In progress. Road closures have been/will be completed on an as-needed basis.

7.7 OVLMP Mitigation Monitoring and Reporting Program

Owens Valley Land Management Plan Initial Study / Mitigated Negative Declaration
SCH# 2010031098

Introduction

This Mitigation Monitoring and Reporting Program (MMRP) has been developed to ensure implementation of the mitigation measures outlined in the Initial Study/Mitigated Negative Declaration (IS/MND) for the Owens Valley Land Management Plan (State Clearinghouse No. 2010031098). The MMRP has been prepared by the City of Los Angeles Department of Water and Power (LADWP), the lead agency for the OVLMP under the California Environmental Quality Act (CEQA), in conformance with Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097. Adoption of a MMRP is required for projects in which the Lead Agency has required changes or adopted mitigation to avoid significant environmental effects.

Mitigation Monitoring and Reporting Responsibility

LADWP shall have primary responsibility for administrating the MMRP activities to staff, consultants, or contractors. LADWP has the responsibility of ensuring that monitoring is documented through periodic reports and that deficiencies are promptly corrected. LADWP's designated environmental monitor will track and document compliance with mitigation measures, note any problems that may result, and take appropriate action to remedy problems. Specific responsibilities of LADWP include:

- Coordination of all mitigation monitoring activities
- Management of the preparation, approval, and filing of monitoring or permit compliance reports
- Maintenance of records concerning the status of all approved mitigation measures
- Coordination with MOU Parties and other agencies

Mitigation Monitoring and Reporting Plan Matrix

The Mitigation Monitoring and Reporting Plan Matrix (MMRP) is organized in a matrix format and includes: mitigation measure by number, text of the mitigation measures, time frame for monitoring, agency responsible (in this case, LADWP), and space to indicate verification the measures were implemented. This last column will be used by LADWP to document the person who verified the implementation of the mitigation measure, the date on which this verification occurred, and any other notable remarks.

Table 31. Mitigation Monitoring and Reporting for Owens Valley Land Management Plan

No.	Impact	Mitigation Measure	Time Frame	Responsible Monitoring Agency	Verification of Compliance	
Biological Resources						
BIO-1	Installation of project facilities could result in disturbance of sensitive plants.	• Where present, areas of Owens Valley checkerbloom, Inyo County star-tulip, or other sensitive plant species will be flagged and access restricted during earth disturbing activities (mowing, fence post installation, stockwater well installation, roadway barrier installation, herbicide use, and/or vegetation removal) to prevent impacts to rare plant species. • Work within areas known for sensitive plants will be done by hand, including pounding fence posts by hand. Vehicles and larger construction equipment will be excluded from areas containing rare plant populations.	Prior to and during construction During construction	LADWP	3/8/13	LADWP has completed approximately 18 miles of new fencing, which completes all fencing required under the OVLMP. LADWP has installed recreation controls along Chalk Bluffs Road, and at junctions of the Owens River and Highway 6, East Line Street, Warm Springs, and Highway 168. To date, all stockwater wells have been drilled and ground disturbing activities are complete. LADWP has not installed any project facilities in areas where rare plants are known to occur. Therefore, there was no need for flagging, restricted access, and handwork to avoid impacts to rare plants.
BIO-2	Installation of project facilities could result in disturbance of sensitive animals.	Prior to earth disturbing activities (mowing, fence post installation, stockwater well installation, roadway barrier installation, herbicide use and/or vegetation removal), LADWP biologists shall survey for active bird nests of sensitive species and active vole burrows. If nests are present, work shall be redirected or suspended in the immediate area until the nest is no longer active. If active vole burrows are observed, work will be redirected	Prior to and during construction	LADWP	3/8/13	Fencing and recreation controls were installed outside the bird nesting season. In addition, no evidence of Owens Valley Vole or bats was encountered during installation of these facilities.

		around the area. If a bat roost is identified during project fence or well installation, the situation will be evaluated and appropriate action taken to avoid impacts such as exclusion measures or providing an alternative roost site.				
BIO-3	Installation of project facilities could result in disturbance of sensitive riparian plant communities.	Installation of project-related facilities (e.g., fences, stockwater wells, roadway barriers) and vegetation-disturbing activities within sensitive plant communities (e.g., exotics removal) will be done under the supervision of LADWP biologists.	During construction	LADWP	3/8/13	The installation of project-related facilities has not disturbed sensitive plant communities but was conducted under the supervision of LADWP biologists. Treatment for Invasive species by LADWP is described in Section 6.8. These efforts were conducted under the supervision of an LADWP biologist.
Cultural Resources						
CUL-1	Installation of the proposed facilities has the potential to disturb surface and subsurface archaeological materials.	• If ground disturbances are proposed within the boundaries of, or in close proximity to: – The 19 sites located in 2006 and considered eligible, potentially eligible, or not fully evaluated for listing in the CRHP (McCombs, 2006) – The previously recorded archaeological sites described in McCombs, 2006 – Sites identified during the 2010 survey of stockwater well locations (Garcia and Associates, 2010a) A qualified archaeologist shall delineate an approximately 50-foot buffer, using flagging tape, around each archaeological site where	Prior to construction	LADWP	3/8/13	No fencelines or recreation controls were installed in the vicinity of any archeological sites documented by McCombs Archeology (2006) and Garcia and Associates (GANDA 2010). Garcia and Associates conducted a field survey on January 12, 2010 (GANDA 2010). No paleontological material was observed on the ground surface at any of the eight well locations. All stockwater well locations were verified to be absent of surface paleontological and cultural materials or were moved to areas that were absent of these resources. No unrecorded cultural sites were encountered during the installation of project facilities.

		ground disturbances are proposed prior to the start of project construction. Specifically, Site 1309-03H (located in 2010) shall be clearly marked prior to ground disturbance for the Cashbaugh Ears stockwater well. • Mowing, minor vegetation removal, fence installation, well installation, or other construction activity within the flagged buffer zones shall be monitored by an archaeologist. Stockwater well installation at Cashbaugh South, Warmsprings, Cashbaugh Ears, Mendiburu North, and Mendiburu South shall be monitored by an archaeologist. If ground disturbing activities are planned within the Pawona Witsu Archaeological District, an archaeological monitor shall be present. • Based on the NAHC contact list, Native American representatives shall be notified of project construction schedules at locations where an archaeological monitor will be present, and invited to be present during construction activity at these locations on a volunteer basis. • If previously unrecorded cultural resources are encountered during the project, all work shall cease within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist.	During construction Prior to construction During construction			
CUL-2	Installation of the	• Prior to the start of construction or ground disturbing activities,	Prior to construction	LADWP	3/8/13	LADWP Construction and other field staff receive annual training on archeological and

	proposed facilities has the potential to disturb surface and subsurface archaeological materials.	construction personnel shall be trained by a qualified archaeologist regarding the possibility of encountering previously unidentified or buried cultural materials, including both prehistoric and historic resources, during construction. Worker education will focus on the rationale for cultural resources monitoring; regulatory policies protecting resources; basic identification of cultural resources; and the protocol to follow in case of discovery, including Native American burials.				paleontological resources. This training was given to Bishop Construction and other field staff on February 26, 2013. LADWP Independence Construction Staff received this training on February 28, 2013.
CUL-3	Excavation for installation of project facilities could result in the disturbance of paleontological resources.	• Prior to the start of construction, a qualified paleontologist or paleontologically trained archaeologist will conduct training for construction personnel to review the procedures to be followed upon the discovery of paleontological materials. Worker education will focus on the rationale for paleontological resources monitoring; regulatory policies protecting fossils; a basic identification of fossils; and the protocol to follow in case of discovery.	Prior to construction	LADWP	3/8/13	LADWP Construction Staff receives annual training on archeological and paleontological resources. This training was given to Bishop Construction and other field staff on February 26, 2013. LADWP Independence Construction Staff received this training on February 28, 2013.
CUL-4	Excavation for installation of project facilities could result in the disturbance of paleonto-logical	• A paleontologist shall develop and implement a monitoring protocol for stockwater well installation. If fossil materials are discovered, the monitor shall redirect or halt construction activities within 50 feet of the discovery, in accordance with the guidelines of the Society of Vertebrate Paleontology, to 1) evaluate the resource, and 2) make recommendations regarding their treatment. If relevant, data recovery,	Prior to and during construction	LADWP	3/8/13	Garcia and Associates (GANDA) prepared a paleontological identification and evaluation report for the installation of stockwater wells for the OVLMP in March 2010. Section 6.0 (Mitigation Measures) of this report outlines a protocol for unanticipated discovery, monitoring, data recovery, reporting, and curation of paleontological resources. This task is complete.

	resources.	reporting, and curation would then be conducted as outlined in Garcia and Associates (2010b).				
CUL-5	Excavation for installation of project facilities could result in the disturbance of human remains.	In the unexpected event that human remains are discovered, the Inyo County Coroner would be contacted, the area of the find would be protected, and provisions of State CEQA Guidelines Section 15064.5 would be followed. If the remains are determined to be of Native American origin, both the Native American Heritage Commission and any identified descendants shall be notified (Health and Safety Code Section 7050.5, Public Resources code Section 5097.94 and 5097.98).	During construction	LADWP	3/8/13	No human remains were discovered during the installation of facilities for the OVLMP to date.

7.8 Owens Valley Land Management Plan References

City of Los Angeles Department of Water and Power (LADWP), the County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, the Owens Valley Committee. 1997. *Memorandum of Understanding between the City of Los Angeles Department of Water and Power the County of Inyo, the California Department of Fish and Game, the California State Lands Commission, the Sierra Club, the Owens Valley Committee. Los Angeles Department of Water and Power, Bishop, California.*

City of Los Angeles Department of Water and Power (LADWP) and Ecosystem Sciences. *2010. Final Owens Valley Land Management Plan.* City of Los Angeles Department of Water and Power, Bishop, CA.

City of Los Angeles Department of Water and Power (LADWP). 2010. *Initial Study and Mitigated Negative Declaration for Owens Valley Land Management Plan.* Environmental Document prepared for CEQA compliance. Los Angeles, California, March 2010.

Garcia and Associates. 2010. Final Report. *Paleontological Identification and Evaluation Report and Recommended Mitigation Measures for the Los Angeles Department of Water and Power's Stockwater Wells Installation for the Owens Valley Land Management Plan, Inyo County, California.* Prepared for the Los Angeles Department of Water and Power by Garcia and Associates, subcontractor of MWH. San Anselmo, CA. March 2010.

McCombs Archaeology. 2006. Class III Heritage Resources Survey for the Riparian Corridor of the Middle Owens River Project. McCombs Archaeology, Taylorsville, CA.

Appendix 1

Species Lists and Sub-habitat Types for the Additional Mitigation Projects Developed by the MOU Ad Hoc Group

Freeman Creek (7/17/13-7/18/13)

Habitat Type:	**Sagebrush Scrub**
USDA Code	**Species**
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ERNA10	*Ericameria nauseosa*
ATCA2	*Atriplex canescens*
ERDE2	*Eriastrum densifolium*
EPNE	*Ephedra nevadensis*
AMSA7	*Ambrosia salsola*
MIPI8	*Mimulus pilosus*
LACO13	*Laennecia coulteri*
HECU3	*Heliotropium curassavicum*
NIAT	*Nicotiana attenuata*
ERSP3	*Eriastrum sparsiflorum*
MAVU	*Marrubium vulgare*
GRSP	*Grayia spinosa*
Shrub habitat with a high proportion of Sagebrush along with other xeric addapted species and some annual species where water has been spread	

Habitat Type:	**Blackbrush Scrub**
USDA Code	**Species**
CORA	*Coleogyne ramosissima*
ERTE18	*Ericameria teretifolia*
EPNE	*Ephedra nevadensis*
STSP3	*Stipa speciosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ERFA2	*Eriogonum fasciculatum*
ERNA10	*Ericameria nauseosa*
ATPO	*Atriplex polycarpa*
TEAX	*Tetradymia axillaris*
AMSA7	*Ambrosia salsola*
Drought tolorant shrub habitat with a high proportion of Blackbrush	

Habitat Type:	**Mojave Mixed Scrub**
USDA Code	**Species**
EPNE	*Ephedra nevadensis*
ERFA2	*Eriogonum fasciculatum*
AMSA7	*Ambrosia salsola*
ERTE18	*Ericameria teretifolia*
STSP	*Stipa speciosa*
ERNA10	*Ericameria nauseosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
CORA	*Coleogyne ramosissima*
Mojave shrub habitat with more or less equal proportions of most species	

Habitat Type:	**Riparian Woodland**
USDA Code	**Species**
POFR2	*Populus fremontii*
SALA6	*Salix lasiolepis*
SAEX	*Salix exigua*
SALA3	*Salix laevigata*
DAGL2	*Datisca glomerata*
CIDO	*Cicuta douglasii*
EPGI	*Epipactis gigantea*
JUTO	*Juncus torreyi*
PAVI5	*Parthenocissus vitacea*
STAL	*Stachys albens*
EUOC4	*Euthamia occidentalis*
MEAL2	*Melilotus albus*
EPCI	*Epilobium ciliatum*
JUBA	*Juncus balticus*
MESP3	*Mentha spicata*
MIGU	*Mimulus guttatus*
MICA3	*Mimulus cardinalis*
XAST	*Xanthium strumarium*
OEEL	*Oenothera elata*
VITIS	*Vitis* sp.
Woodland habitat along creek, with a high proportion of woody riparian species along with other riparian adapted forbs and graminoides	

Freeman Creek (7/17/13-7/18/13)

Habitat Type:	**Ditch (Hot Ditch)**
USDA Code	**Species**
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
SAEX	*Salix exigua*
HEAN3	*Helianthus annuus*
MEAL2	*Melilotus albus*
OEEL	*Oenothera elata*
PADI6	*Paspalum distichum*
LYCA4	*Lythrum californicum*
LACO13	*Laennecia coulteri*
POFR2	*Populus fremontii*
AMAC2	*Ambrosia acanthicarpa*
RUSA	*Rumex salicifolius*
Ditch used to send water elsewhere, various wetland addapted species	

Habitat Type:	**Berm**
USDA Code	**Species**
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ERDE2	*Eriastrum densifolium*
ATCA2	*Atriplex canescens*
Man made disturbance, sparsely vegetated	

Habitat Type:	**Mixed Xeric Scrub**
USDA Code	**Species**
ATCA2	*Atriplex canescens*
ERNA10	*Ericameria nauseosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
EPNE	*Ephedra nevadensis*
OPPOE	*Opuntia polyacantha* var. *erinacea*
ERCO23	*Ericameria cooperi*
Drought tollorant shrub habitat with more or less equal proportions of most species	

Habitat Type:	**Alkali Meadow**
USDA Code	**Species**
JUBA	*Juncus balticus*
SPAI	*Sporobolus airoides*
HEAN3	*Helianthus annuus*
DISP	*Distichlis spicata*
MEAL2	*Melilotus albus*
LELA2	*Lepidium latifolium*
ASFA	*Asclepias fascicularis*
ERNA10	*Ericameria nauseosa*
MUAS	*Muhlenbergia asperifolia*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
Meadow with a low proportion of shrub species and a mixture of meadow species	

Freeman Creek (7/17/13-7/18/13)

Habitat Type:	Wash
USDA Code	**Species**
POFR2	*Populus fremontii*
SALA3	*Salix laevigata*
MEAL2	*Melilotus albus*
MEAR4	*Mentha arvensis*
XAST	*Xanthium strumarium*
SAEX	*Salix exigua*
MIGU	*Mimulus guttatus*
EUOC4	*Euthamia occidentalis*
ERCI6	*Erodium cicutarium*
MIPI8	*Mimulus pilosus*
LACO13	*Laennecia coulteri*
LASE	*Lactuca serriola*
OEEL	*Oenothera elata*
SOAS	*Sonchus asper*
HECU3	*Heliotropium curassavicum*
AMARA	*Amaranthus* sp.
TARA	*Tamarix ramosissima*
JUBA	*Juncus balticus*
SALA6	*Salix lasiolepis*
ERNA10	*Ericameria nauseosa*
NIAT	*Nicotiana attenuata*
ELTR	*Elymus tritocoides*
Highly variable ground water dependent habitat	
species range from woody riparian to annuals	

Habitat Type:	Cottonwood/Sagebrush
USDA Code	**Species**
POFR2	*Populus fremontii*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
LACO13	*Laennecia coulteri*
ASFA	*Asclepias fascicularis*
ERNA10	*Ericameria nauseosa*
SALA6	*Salix lasiolepis*
SALA3	*Salix laevigata*
Open habitat with equal proportions of cottonwood	
& sagebrush with other species mixed in	

Habitat Type:	Nevada Saltbush Scrub
USDA Code	**Species**
ATTO	*Atriplex torreyi*
ERNA10	*Ericameria nauseosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ATPO	*Atriplex polycarpa*
SAVE4	*Sarcobatus vermiculatus*
Shrub dominated habitat with a hight proportion of	
Nevada saltbush along with other ground water	
dependent shrubs	

Habitat Type:	Rabbitbrush Meadow
USDA Code	**Species**
DISP	*Distichlis spicata*
ERNA10	*Ericameria nauseosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
LACO13	*Laennecia coulteri*
ELTR	*Elymus tritocoides*
ATTO	*Atriplex torreyi*
HEAN3	*Helianthus annuus*
HECU3	*Heliotropium curassavicum*
JUBA	*Juncus balticus*
Meadow with a high proportion of rabbitbrush	
along with other meadow species	

Freeman Creek (7/17/13-7/18/13)

Habitat Type:	Sagebrush & Weeds	Habitat Type:	Saltgrass Meadow	Habitat Type:	Sagebrush Meadow
USDA Code	**Species**	**USDA Code**	**Species**	**USDA Code**	**Species**
ARTRT	*Artemisia tridentata* ssp. *tridentata*	DISP	*Distichlis spicata*	ARTRT	*Artemisia tridentata* ssp. *tridentata*
BRTE	*Bromus tectorum*	SPAI	*Sporobolus airoides*	DISP	*Distichlis spicata*
BRMAR	*Bromus madritensis* ssp. *rubens*	ERNA10	*Ericameria nauseosa*	LACO13	*Laennecia coulteri*
AMAC2	*Ambrosia acanthicarpa*	ARTRT	*Artemisia tridentata* ssp. *tridentata*	ERNA10	*Ericameria nauseosa*
LEPIDa	*Lepidium* sp. Annual	POMO5	*Polypogon monspeliensis*	RUSA	*Rumex salicifolius*
CAREX	*Carex* sp.	LACO13	*Laennecia coulteri*	XAST	*Xanthium strumarium*
OEEL	*Oenothera elata*	JUBA	*Juncus balticus*	HECU3	*Heliotropium curassavicum*
ERCA20	*Erigeron canadensis*	HECU3	*Heliotropium curassavicum*	ERCA20	*Erigeron canadensis*
ASFA	*Asclepias fascicularis*	ACAM4	*Acmispon americanum*	MIPI8	*Mimulus pilosus*
HECU3	*Heliotropium curassavicum*	ATTR	*Atriplex truncata*	SATR12	*Salsola tragus*
NIAT	*Nicotiana attenuata*	AMARA	*Amaranthus* sp.	AMAC2	*Ambrosia acanthicarpa*
XAST	*Xanthium strumarium*	CHBE4	*Chenopodium berlandieri*	AMARA	*Amaranthus* sp.
MEAL2	*Melilotus albus*	SALA3	*Salix laevigata*		
ACAM4	*Acmispon americanum*	SALA6	*Salix lasiolepis*	Meadow with a high proportion of sagebrush	
HEAN3	*Helianthus annuus*			along with other meadow species	
RUSA	*Rumex salicifolius*	Meadow with a high proportion of saltgrass			
		along with other meadow species			
Disturbed sagebrush scrub with many exotic and					
native weedy species					

Freeman Creek (7/17/13-7/18/13)

Habitat Type:	**Nevada Saltbush Meadow**
USDA Code	**Species**
ATTO	*Atriplex torreyi*
DISP	*Distichlis spicata*
HECU3	*Heliotropium curassavicum*
ERNA10	*Ericameria nauseosa*
LACO13	*Laennecia coulteri*
AMAC2	*Ambrosia acanthicarpa*
ERCA20	*Erigeron canadensis*
ELTR	*Elymus tritocoides*
SPAI	*Sporobolus airoides*
XAST	*Xanthium strumarium*
ACAM4	*Acmispon americanum*
ERCI6	*Erodium cicutarium*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
Meadow with a high proportion of Nevada Saltbush along with other meadow species	

Habitat Type:	**Rush/Sedge Meadow**
USDA Code	**Species**
JUBA	*Juncus balticus*
DISP	*Distichlis spicata*
CAREX	*Carex* sp.
ERNA10	*Ericameria nauseosa*
SPAI	*Sporobolus airoides*
JUME	*Juncus mexicanus*
ELEOC	*Eleocharis* sp.
HEAN3	*Helianthus annuus*
ATTR	*Atriplex truncata*
ELTR	*Elymus tritocoides*
ACAM4	*Acmispon americanum*
LOCO6	*Lotus corniculatus*
EUOC4	*Euthamia occidentalis*
MUAS	*Muhlenbergia asperifolia*
Meadow with a high proportion of Rushes & Sedges along with other meadow species	

Habitat Type:	**Weedy Alkali Meadow**
USDA Code	**Species**
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
BRTE	*Bromus tectorum*
AMAC2	*Ambrosia acanthicarpa*
OEEL	*Oenothera elata*
ERCA20	*Erigeron canadensis*
ASFA	*Asclepias fascicularis*
MEAL2	*Melilotus albus*
HEAN3	*Helianthus annuus*
LOCO6	*Lotus corniculatus*
XAST	*Xanthium strumarium*
Meadow with a high proportion of weedy species along with other meadow species	

Freeman Creek (7/17/13-7/18/13)

Habitat Type:	Cottonwood Tree
USDA Code	Species
POFR2	*Populus fremontii*

Habitat Type:	Willow Tree
USDA Code	Species
SALA3	*Salix laevigata*

Habitat Type:	Pond
USDA Code	Species
JUBA	*Juncus balticus*
HEAN3	*Helianthus annuus*
MEAL2	*Melilotus albus*
OEEL	*Oenothera elata*
AMAC2	*Ambrosia acanthicarpa*
SAEX	*Salix exigua*
DISP	*Distichlis spicata*

Pond along Hot Ditch with wetland adapted species along edge

Habitat Type:	Road
USDA Code	Species
	No vegetation

Habitat Type:	Pullout/Staging Area
USDA Code	Species
	No vegetation

Habitat Type:	Slash Pile
USDA Code	Species
	No vegetation

Habitat Type:	Cleared
USDA Code	Species
	No vegetation

Warren Lake (7/18/13-7/22/13)

Habitat Type:	Dry Ditch (Warren Lake Ditch)
USDA Code	**Species**
JUBA	*Juncus balticus*
MUAS	*Muhlenbergia asperifolia*
JUTO	*Juncus torreyi*
HEAN3	*Helianthus annuus*
ANCA10	*Anemopsis californica*
POMO5	*Polypogon monspeliensis*
MEAL2	*Melilotus albus*
SOHA	*Sorghum halepense*
PEMA24	*Persicaria maculosa*
XAST	*Xanthium strumarium*
CIVU	*Cirsium vulgare*
ASFA	*Asclepias fascicularis*
PEHY6	*Persicaria hydropiper*
ELEOC	*Eleocharis* sp.
CAREX	*Carex* sp.
LEFUF	*Leptochloa fusca* ssp. *fascicularis*
BAHY	*Bassia hyssopifolia*
LASE	*Lactuca serriola*
FOPU2	*Forestiera pubescens*
Formerly used ditch with species component similar	
to adjacent habitats along with some wetland adapted spe	

Habitat Type:	Anemopsis Meadow
USDA Code	**Species**
ANCA10	*Anemopsis californica*
JUBA	*Juncus balticus*
CAREX	*Carex* sp.
SPAI	*Sporobolus airoides*
MUAS	*Muhlenbergia asperifolia*
ERNA10	*Ericameria nauseosa*
ELTR	*Elymus tritocoides*
ASSP	*Asclepias speciosa*
DISP	*Distichlis spicata*
NIOC2	*Nitrophila occidentalis*
GLLE3	*Glycyrrhiza lepidota*
CAPR5	*Carex praegracilis*
SYAS3	*Symphyotrichum ascendens*
LOCO6	*Lotus corniculatus*
MEAL2	*Melilotus albus*
FOPU2	*Forestiera pubescens*
ZEEX	*Zeltnera exaltata*
PYRA	*Pyrrocoma racemosa*
SCAM6	*Schoenoplectus americanus*
ATPR	*Atriplex prostrata*
LASE	*Lactuca serriola*
CIDO	*Cicuta douglasii*
EPCI	*Epilobium ciliatum*
CAMIM6	*Castilleja minor* ssp. *minor*
STAL	*Stachys albens*
ELEOC	*Eleocharis* sp.
Meadow with a high proportion of Anemopsis	
california , along with other meadow species	

Habitat Type:	Nevada saltbush Meadow
USDA Code	**Species**
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
ATTO	*Atriplex torreyi*
CHMAC	*Chloropyron maritimum* ssp. *canesce*
BAHY	*Bassia hyssopifolia*
ERNA10	*Ericameria nauseosa*
HEAN3	*Helianthus annuus*
HECU3	*Heliotropium curassavicum*
SAVE4	*Sarcobatus vermiculatus*
JUBA	*Juncus balticus*
CIMO	*Cirsium mohavense*
LELA2	*Lepidium latifolium*
Meadow with a high proportion of Nevada Saltbush	
along with other meadow species	

Warren Lake (7/18/13-7/22/13)

Habitat Type:	Alkali Meadow
USDA Code	**Species**
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
ANCA10	*Anemopsis californica*
CIMO	*Cirsium mohavense*
ERNA10	*Ericameria nauseosa*
ATTO	*Atriplex torreyi*
CAREX	*Carex* sp.
CRRUH	*Crepis runcinata* ssp. *hallii*
LOCO6	*Lotus corniculatus*
LELA2	*Lepidium latifolium*
HEAN3	*Helianthus annuus*
JUME	*Juncus mexicanus*
NIOC2	*Nitrophila occidentalis*
BAHY	*Bassia hyssopifolia*
THCR	*Thelypodium crispum*
PYRA	*Pyrrocoma racemosa*
Meadow with a low proportion of shrub species	
and a mixture of meadow species	

Habitat Type:	Rabbitbrush Meadow
USDA Code	**Species**
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
JUBA	*Juncus balticus*
ERNA10	*Ericameria nauseosa*
NIOC2	*Nitrophila occidentalis*
SAVE4	*Sarcobatus vermiculatus*
ELTR	*Elymus tritocoides*
CIMO	*Cirsium mohavense*
PYRA	*Pyrrocoma racemosa*
ELCI	*Elymus cinereus*
CAREX	*Carex* sp.
SALA3	*Salix laevigata*
TARA	*Tamarix ramosissima*
ERAL23	*Ericameria albida*
CRRUH	*Crepis runcinata ssp. hallii*
ANCA10	*Anemopsis californica*
CHMAC	*Chloropyron maritimum* ssp. *canescens*
SAEX	*Salix exigua*
ATSE2	*Atriplex serenana*
Meadow with a high proportion of Rabbitbrush	
along with other meadow species	

Habitat Type:	Greasewood Meadow
USDA Code	**Species**
SAVE4	*Sarcobatus vermiculatus*
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
NIOC2	*Nitrophila occidentalis*
SUNI	*Suaeda nigra*
ERNA10	*Ericameria nauseosa*
ATPA3	*Atriplex parryi*
ARCA51	*Arida carnosa*
ATCO	*Atriplex confertifolia*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
TEGL	*Tetradymia glabrata*
EPNE	*Ephedra nevadensis*
ALOC2	*Allenrolfea occidentalis*
HECU3	*Heliotropium curassavicum*
Meadow with a high proportion of Greasewood	
along with other meadow species	

Warren Lake (7/18/13-7/22/13)

Habitat Type:	Dry Rabbitbrush Meadow
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
ELCI	*Elymus cinereus*
ATCO	*Atriplex confertifolia*
SAVE4	*Sarcobatus vermiculatus*
ARCA51	*Arida carnosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
Open meadow with a high proportion of Rabbitbrush	
along with other meadow species	

Habitat Type:	Saltgrass Meadow
USDA Code	**Species**
DISP	*Distichlis spicata*
SAVE4	*Sarcobatus vermiculatus*
SUNI	*Suaeda nigra*
NIOC2	*Nitrophila occidentalis*
PELU5	*Peritoma lutea*
ATCO12	*Atriplex covillei*
BAHY	*Bassia hyssopifolia*
HECU3	*Heliotropium curassavicum*
ATPA3	*Atriplex parryi*
MALE3	*Malvella leprosa*
CAPR5	*Carex praegracilis*
ATTO	*Atriplex torreyi*
CLPL2	*Cleomella plocasperma*
JUBA	*Juncus balticus*
Meadow with a high proportion of Saltgrass	
along with other meadow species	

Habitat Type:	Mixed Xeric Scrub
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
SAVE4	*Sarcobatus vermiculatus*
TEGL	*Tetradymia glabrata*
EPNE	*Ephedra nevadensis*
SPAI	*Sporobolus airoides*
ATCO	*Atriplex confertifolia*
Shrub habitat with many species drought tollorant	
or addapted to very deep water tables, few grasses	

Warren Lake (7/18/13-7/22/13)

Habitat Type:	**Rush/Sedge Meadow**
USDA Code	**Species**
JUBA	*Juncus balticus*
HOJU	*Hordeum jubatum*
CAPR5	*Carex praegracilis*
CADO2	*Carex douglasii*
HEAN3	*Helianthus annuus*
LOCO6	*Lotus corniculatus*
CIIN	*Cichorium intybus*
POMO5	*Polypogon monspeliensis*
MEAL2	*Melilotus albus*
POSEJ	*Poa secunda* spp. *juncifolia*
DISP	*Distichlis spicata*
MALE3	*Malvella leprosa*
MUAS	*Muhlenbergia asperifolia*
TRVA	*Trifolium variegatum*
CIDO	*Cicuta douglasii*
MIGU	*Mimulus guttatus*
RUCR	*Rumex crispus*
ELEOC	*Eleocharis* sp.
Meadow with a high proportion of Rushes & Sedges	
along with other meadow species	

Habitat Type:	**Glycyrhiza Meadow**
USDA Code	**Species**
GLLE3	*Glycyrrhiza lepidota*
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
ANCA10	*Anemopsis californica*
SPAI	*Sporobolus airoides*
CAPR5	*Carex praegracilis*
ERNA10	*Ericameria nauseosa*
Meadow with a high proportion of Glycyrhiza	
along with other meadow species	

Habitat Type:	**Willow Tree**
USDA Code	**Species**
SALA3	*Salix laevigata*
Habitat Type:	**Cottonwood Tree**
USDA Code	**Species**
POFR2	*Populus fremontii*
Habitat Type:	**Rose Patch**
USDA Code	**Species**
ROWO	*Rosa woodsii*
Habitat Type:	**Road**
USDA Code	**Species**
	No vegetation
Habitat Type:	**Playa**
USDA Code	**Species**
	No vegetation

Hines Spring Well 355 and Aberdeen Ditch (7/17/13)

Habitat Type:	**Nevada Saltbush Meadow**
USDA Code	**Species**
ATTO	*Atriplex torreyi*
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
ERNA10	*Ericameria nauseosa*
ELCI	*Elymus cinereus*
SAVE4	*Sarcobatus vermiculatus*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
SAGO	*Salix gooddingii*
Meadow with a high proportion of Nevada Saltbush	
along with other meadow species	

Habitat Type:	**Rabbitbrush Meadow**
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
ELCI	*Elymus cinereus*
SAVE4	*Sarcobatus vermiculatus*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
SATR12	*Salsola tragus*
HECU3	*Heliotropium curassavicum*
ATSE2	*Atriplex serenana*
CHLE4	*Chenopodium leptophyllum*
JUBA	*Juncus balticus*
HEAN3	*Helianthus annuus*
CORA5	*Cordylanthus ramosus*
STPA4	*Stephanomeria pauciflora*
ATCA2	*Atriplex canescens*
ELTR	*Elymus tritocoides*
SAEX	*Salix exigua*
NIOC2	*Nitrophila occidentalis*
ROWO	*Rosa woodsii*
CALI4	*Castilleja linariifolia*
Meadow with a high proportion of rabbitbrush	
along with other meadow species	

Habitat Type:	**Ditch**
USDA Code	**Species**
TYDO	*Typha domingensis*
POMO5	*Polypogon monspeliensis*
RUCR	*Rumex crispus*
SCMA	*Scirpus maritimus*
BAHY	*Bassia hyssopifolia*
MUAS	*Muhlenbergia asperifolia*
VEAN2	*Veronica anagallis-aquatica*
ELEOC	*Eleocharis* sp.
PEHY6	*Persicaria hydropiper*
MIGU	*Mimulus guttatus*
SOAM	*Solanum americanum*
JUBA	*Juncus balticus*
LACO13	*Laennecia coulteri*
LEMNA	*Lemna* sp.
EPGL	*Epilobium glaberrimum*
HEAN3	*Helianthus annuus*
ELTR	*Elymus tritocoides*
ASFA	*Asclepias fascicularis*
ROWO	*Rosa woodsii*
Ditch used to send water elsewhere, various wetland addapted species	

Hines Spring Well 355 and Aberdeen Ditch (7/17/13)

Habitat Type:	**Nevada Saltbush Scrub**
USDA Code	**Species**
ATTO	*Atriplex torreyi*
SAVE4	*Sarcobatus vermiculatus*
SPAI	*Sporobolus airoides*
ERNA10	*Ericameria nauseosa*
Shrub dominated habitat with a hight proportion of	
Nevada saltbush along with other ground water	
dependent shrubs	
Habitat Type:	**Rabbitbrush Scrub**
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ATTO	*Atriplex torreyi*
Shrub dominated habitat with a hight proportion of	
Rabbitbrush along with other shrubs	

Habitat Type:	**Wild Rye Meadow**
USDA Code	**Species**
ELTR	*Elymus tritocoides*
MALE3	*Malvella leprosa*
HECU3	*Heliotropium curassavicum*
ERNA10	*Ericameria nauseosa*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ASFA	*Asclepias fascicularis*
DISP	*Distichlis spicata*
SATR12	*Salsola tragus*
ATSE2	*Atriplex serenana*
BAHY	*Bassia hyssopifolia*
Meadow with a high proportion of Creeping Wild Rye	
along with other meadow species and some	
weedy species	

Habitat Type:	**Saltgrass Meadow**
USDA Code	**Species**
DISP	*Distichlis spicata*
ELTR	*Elymus tritocoides*
HECU3	*Heliotropium curassavicum*
ERNA10	*Ericameria nauseosa*
Meadow with a high proportion of saltgrass	
along with other meadow species	
Habitat Type:	**Alkali Sacaton, sparse**
USDA Code	**Species**
SPAI	*Sporobolus airoides*
ATTO	*Atriplex torreyi*
ATCA2	*Atriplex canescens*
Sparsely vegetated meadow habitat with very low	
species diversity	

Hines Spring Well 355 and Aberdeen Ditch (7/17/13)

Habitat Type:	**Sagebrush Meadow**
USDA Code	**Species**
ARTRT	*Artemisia tridentata* ssp. *tridentata*
SPAI	*Sporobolus airoides*
ERNA10	*Ericameria nauseosa*
ATCA2	*Atriplex canescens*
ELCI	*Elymus cinereus*
STPA4	*Stephanomeria pauciflora*
PSARM	*Psorothamnus arborescens var. minutifoli*
EPNE	*Ephedra nevadensis*
SATR12	*Salsola tragus*
Meadow with a high proportion of sagebrush	
along with other meadow and shrub species	

Habitat Type:	**Alkali Heilotrope Stand**
USDA Code	**Species**
HECU3	*Heliotropium curassavicum*
ASFA	*Asclepias fascicularis*
BAHY	*Bassia hyssopifolia*
Previously disturbed areas with a high proportion of	
Alkali Heliotrope	

Habitat Type:	**Glycyrhiza Meadow**
USDA Code	**Species**
GLLE3	*Glycyrrhiza lepidota*
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
Meadow with a high proportion of Glycyrhiza	
along with other meadow species	

Habitat Type:	**Alakli Meadow with Shrubs**
USDA Code	**Species**
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
SAVE4	*Sarcobatus vermiculatus*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ATTO	*Atriplex torreyi*
ERNA10	*Ericameria nauseosa*
STPA4	*Stephanomeria pauciflora*
SAEX	*Salix exigua*
SATR12	*Salsola tragus*
BAHY	*Bassia hyssopifolia*
ELTR	*Elymus tritocoides*
STEPH	*Stephanomeria* sp.
CORA5	*Cordylanthus ramosus*
ROWO	*Rosa woodsii*
ATCA2	*Atriplex canescens*
Alkali meadow with a high proportion of shrubs	
species mixed in	

Hines Spring Well 355 and Aberdeen Ditch (7/17/13)

Habitat Type:	**Weeds**
USDA Code	**Species**
SATR12	*Salsola tragus*
HECU3	*Heliotropium curassavicum*
MALE3	*Malvella leprosa*
DISP	*Distichlis spicata*
BAHY	*Bassia hyssopifolia*
TARA	*Tamarix ramosissima*
HEAN3	*Helianthus annuus*
LACO13	*Laennecia coulteri*
MEAL2	*Melilotus albus*
LELA2	*Lepidium latifolium*
PELU5	*Peritoma lutea*
Previously disturbed area with a high proportion of	
weedy species exotic and native	

Habitat Type:	**Cattail**
USDA Code	**Species**
TYDO	*Typha domingensis*
JUBA	*Juncus balticus*
SALA3	*Salix laevigata*
MUAS	*Muhlenbergia asperifolia*
SPAI	*Sporobolus airoides*
VEAN2	*Veronica anagallis-aquatica*
POMO5	*Polypogon monspeliensis*
MIGU	*Mimulus guttatus*
EPCI	*Epilobium ciliatum*
DISP	*Distichlis spicata*
SIAL2	*Sisymbrium altissimum*
EUOC4	*Euthamia occidentalis*
ZEEX	*Zeltnera exaltata*
HEAN3	*Helianthus annuus*
Wetland habitat with a high proportion of cattail	

Habitat Type:	**Greasewood Scrub**
USDA Code	**Species**
SAVE4	*Sarcobatus vermiculatus*
ATTO	*Atriplex torreyi*
SPAI	*Sporobolus airoides*
ERNA10	*Ericameria nauseosa*
Shrub dominated habitat with a high proportion of greasewood	

Habitat Type:	**Four-winged Saltbush Scrub**
USDA Code	**Species**
ATCA2	*Atriplex canescens*
SPAI	*Sporobolus airoides*
Shrub dominated habitat with a high proportion of four-winged saltbush	

Hines Spring Well 355 and Aberdeen Ditch (7/17/13)

Habitat Type:	**Barren**		**Habitat Type:**	**Pond**		**Habitat Type:**	**Alakli Meadow**
USDA Code	**Species**		**USDA Code**	**Species**		**USDA Code**	**Species**
ATCA2	*Atriplex canescens*		TYDO	*Typha domingensis*		DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*		SALA3	*Salix laevigata*		SPAI	*Sporobolus airoides*
ROWO	*Rosa woodsii*		POMO5	*Polypogon monspeliensis*		ELTR	*Elymus tritocoides*
			LEMNA	Lemna sp.		JUBA	*Juncus balticus*
			VEAN2	*Veronica anagallis-aquatica*		ATTO	*Atriplex torreyi*
Areas with little or no perennial vegetation with a few			ATSE2	*Atriplex serenana*		ERNA10	*Ericameria nauseosa*
species in very low numbers			LACO13	*Laennecia coulteri*		MALE3	*Malvella leprosa*
			HECU3	*Heliotropium curassavicum*		HECU3	*Heliotropium curassavicum*
			DESO2	*Descurainia sophia*		ROWO	*Rosa woodsii*
			ELEOC	*Eleocharis* sp.		JUME	*Juncus mexicanus*
			ELTR	*Elymus tritocoides*		ELCI	*Elymus cinereus*
			Open water with wetland adapted vegetation around pond edge			Alkali meadow with a low proportion of shrubs species mixed in	

Hines Spring Well 355 and Aberdeen Ditch (7/17/13)

Habitat Type:	**Dry Ditch**
USDA Code	**Species**
DISP	*Distichlis spicata*
ERNA10	*Ericameria nauseosa*
JUBA	*Juncus balticus*
SPAI	*Sporobolus airoides*
ATTO	*Atriplex torreyi*
SAEX	*Salix exigua*
SAVE4	*Sarcobatus vermiculatus*

Formerly used ditch with species component similar to adjacent habitats along with some wetland adapted spe

Habitat Type:	**Willow Tree**
USDA Code	**Species**
SALA3	*Salix laevigata*
SAGO	*Salix gooddingii*

Habitat Type:	**Desert Olive**
USDA Code	**Species**
FOPU2	*Forestiera pubescens*

Habitat Type:	**Rose Patch**
USDA Code	**Species**
ROWO	*Rosa woodsii*

Habitat Type:	**Road**
USDA Code	**Species**
	No vegetation

Habitat Type:	**7/17/2013**
USDA Code	**Species**
	No vegetation

North of Mazourka (7/16/13)

Habitat Type:	**Fence Clearing**
USDA Code	**Species**
DISP	*Distichlis spicata*
GLLE3	*Glycyrrhiza lepidota*
ATTO	*Atriplex torreyi*
HECU3	*Heliotropium curassavicum*
SPAI	*Sporobolus airoides*
ELCI	*Elymus cinereus*
DAWR2	*Datura wrightii*
MEAL2	*Melilotus albus*
BAHY	*Bassia hyssopifolia*
TARA	*Tamarix ramosissima*
Disturbed area cleared for installation of fence	
exclosure, species composition similar to adjacent	
habitats	

Habitat Type:	**Ditch**
USDA Code	**Species**
DISP	*Distichlis spicata*
POMO5	*Polypogon monspeliensis*
HECU3	*Heliotropium curassavicum*
GLLE3	*Glycyrrhiza lepidota*
ELCI	*Elymus cinereus*
TYDO	*Typha domingensis*
MIGU	*Mimulus guttatus*
TARA	*Tamarix ramosissima*
CIDO	*Cicuta douglasii*
EPCI	*Epilobium ciliatum*
Ditch used to send water elsewhere, various wetland	
addapted species	

Habitat Type:	**Rabbitbrush Meadow**
USDA Code	**Species**
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
ERNA10	*Ericameria nauseosa*
ATTO	*Atriplex torreyi*
GLLE3	*Glycyrrhiza lepidota*
ELCI	*Elymus cinereus*
HECU3	*Heliotropium curassavicum*
TARA	*Tamarix ramosissima*
JUBA	*Juncus balticus*
SAVE4	*Sarcobatus vermiculatus*
CIVU	*Cirsium vulgare*
TYDO	*Typha domingensis*
JUME	*Juncus mexicanus*
RACY	*Ranunculus cymbalaria*
EPCI	*Epilobium ciliatum*
LACO13	*Laennecia coulteri*
BAHY	*Bassia hyssopifolia*
ELAN	*Elaeagnus angustifolia*
Meadow with a high proportion of Rabbitbrush	
along with other meadow species	

North of Mazourka (7/16/13)

Habitat Type:	**Alkali Meadow**
USDA Code	**Species**
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
ATTO	*Atriplex torreyi*
SPAI	*Sporobolus airoides*
ELCI	*Elymus cinereus*
MUAS	*Muhlenbergia asperifolia*
LOCO6	*Lotus corniculatus*
EPCI	*Epilobium ciliatum*
SAVE4	*Sarcobatus vermiculatus*
JUME	*Juncus mexicanus*
ANCA10	*Anemopsis californica*
Meadow with a low proportion of shrub species	
and a mixture of meadow species	

Habitat Type:	**Tule/Cattail**
USDA Code	**Species**
TYDO	*Typha domingensis*
AMNE3	*Amphiscirpus nevadensis*
POMO5	*Polypogon monspeliensis*
ELTR	*Elymus tritocoides*
EPCI	*Epilobium ciliatum*
DISP	*Distichlis spicata*
MIGU	*Mimulus guttatus*
CIDO	*Cicuta douglasii*
ELEOC	*Eleocharis* sp.
CIVU	*Cirsium vulgare*
XAST	*Xanthium strumarium*
PSLU6	*Pseudognaphalium luteoalbum*
SCMA	*Scirpus maritimus*
PHAU7	*Phragmites australis*
ELAN	*Elaeagnus angustifolia*
Wetland habitat with a high proportion of tule and	
cattail species	

Habitat Type:	**Saltgrass Meadow**
USDA Code	**Species**
DISP	*Distichlis spicata*
GLLE3	*Glycyrrhiza lepidota*
ATTO	*Atriplex torreyi*
SAVE4	*Sarcobatus vermiculatus*
ZEEX	*Zeltnera exaltata*
ALOC2	*Allenrolfea occidentalis*
ERNA10	*Ericameria nauseosa*
Meadow with a high proportion of Saltgrass	
along with other meadow species	

North of Mazourka (7/16/13)

Habitat Type:	Nevada Saltbush Meadow
USDA Code	**Species**
ATTO	*Atriplex torreyi*
DISP	*Distichlis spicata*
SAVE4	*Sarcobatus vermiculatus*
GLLE3	*Glycyrrhiza lepidota*
ERNA10	*Ericameria nauseosa*
SPAI	*Sporobolus airoides*
TARA	*Tamarix ramosissima*
TYDO	*Typha domingensis*
BAHY	*Bassia hyssopifolia*
PHAU7	*Phragmites australis*
ALOC2	*Allenrolfea occidentalis*
PYRA	*Pyrrocoma racemosa*
CIVU	*Cirsium vulgare*
ELCI	*Elymus cinereus*
LACO13	*Laennecia coulteri*
HECU3	*Heliotropium curassavicum*
CHMAC	*Chloropyron maritimum* ssp. *canescens*
Meadow with a high proportion of Nevada Saltbush along with other meadow species	

Habitat Type:	Alkali Meadow w/ Shrubs
USDA Code	**Species**
DISP	*Distichlis spicata*
ERNA10	*Ericameria nauseosa*
ATTO	*Atriplex torreyi*
SPAI	*Sporobolus airoides*
JUBA	*Juncus balticus*
SAVE4	*Sarcobatus vermiculatus*
ANCA10	*Anemopsis californica*
Alkali meadow with a high proportion of shrubs species mixed in	

Habitat Type:	Tule/Cattail Dry
USDA Code	**Species**
TYDO	*Typha domingensis*
SCMA	*Scirpus maritimus*
DISP	*Distichlis spicata*
PHAU7	*Phragmites australis*
ERNA10	*Ericameria nauseosa*
EPCI	*Epilobium ciliatum*
ELEOC	*Eleocharis* sp.
POMO5	*Polypogon monspeliensis*
AMNE3	*Amphiscirpus nevadensis*
RACY	*Ranunculus cymbalaria*
ZEEX	*Zeltnera exaltata*
ASFA	*Asclepias fascicularis*
Wetland habitat with a high proportion of tule and cattail species, but with no surface water	

North of Mazourka (7/16/13)

Habitat Type:	**Glycyrhiza Meadow**
USDA Code	**Species**
GLLE3	*Glycyrrhiza lepidota*
DISP	*Distichlis spicata*
ELTR	*Elymus tritocoides*
ATTO	*Atriplex torreyi*
ERNA10	*Ericameria nauseosa*
SPAI	*Sporobolus airoides*
ALOC2	*Allenrolfea occidentalis*

Meadow with a high proportion of Glycyrhiza along with other meadow species

Habitat Type:	**Nevada Saltbush Scrub**
USDA Code	**Species**
ATTO	*Atriplex torreyi*
ATCO	*Atriplex confertifolia*
SAVE4	*Sarcobatus vermiculatus*
ERNA10	*Ericameria nauseosa*
SUNI	*Suaeda nigra*
DISP	*Distichlis spicata*
GLLE3	*Glycyrrhiza lepidota*
ARCA51	*Arida carnosa*
ALOC2	*Allenrolfea occidentalis*

Shrub dominated habitat with a high proportion of Nevada saltbush along with other ground water dependent shrubs

Habitat Type:	**Cottonwood, Willow & Mesquite**
USDA Code	**Species**
POFR2	*Populus fremontii*
SALA3	*Salix laevigata*
SAGO	*Salix gooddingii*
PRPU	*Prosopis pubescens*
ERNA10	*Ericameria nauseosa*

Woodland of mixed tree species

Habitat Type:	**Tule/Cattail/Saltgrass**
USDA Code	**Species**
TYDO	*Typha domingensis*
SCMA	*Scirpus maritimus*
DISP	*Distichlis spicata*
PHAU7	*Phragmites australis*
AMNE3	*Amphiscirpus nevadensis*
EPCI	*Epilobium ciliatum*
ELEOC	*Eleocharis* sp.

Boarderline wetland/ saltgrass meadow

North of Mazourka (7/16/13)

Habitat Type:	**Willow Tree**
USDA Code	**Species**
SALA3	*Salix laevigata*
SAGO	*Salix gooddingii*
Habitat Type:	**Screwbean Mesquite**
USDA Code	**Species**
PRPU	*Prosopis pubescens*
Habitat Type:	**Alkali Meadow, sparse**
USDA Code	**Species**
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
JUBA	*Juncus balticus*
ATTO	*Atriplex torreyi*
ELCI	*Elymus cinereus*
SAVE4	*Sarcobatus vermiculatus*
Open meadow with a low proportion of shrub species	
and a mixture of meadow species	

Habitat Type:	**Ditch, dry**
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
DISP	*Distichlis spicata*
ATTO	*Atriplex torreyi*
SAVE4	*Sarcobatus vermiculatus*
SUNI	*Suaeda nigra*
Formerly used ditch with species component similar	
to adjacent habitats along with some wetland adapted species	

Habitat Type:	**Berm**
USDA Code	**Species**
DISP	*Distichlis spicata*
ERNA10	*Ericameria nauseosa*
ATTO	*Atriplex torreyi*
Man made disturbance, sparsely vegetated	

North of Mazourka (7/16/13)

Habitat Type:	**Saltgrass Meadow with dead shrubs**
USDA Code	**Species**
DISP	*Distichlis spicata*
GLLE3	*Glycyrrhiza lepidota*
ZEEX	*Zeltnera exaltata*
Meadow with a high proportion of Saltgrass and no living shrubs	

Habitat Type:	**Alkali Meadow with dead shrubs**
USDA Code	**Species**
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
SPAI	*Sporobolus airoides*
ELCI	*Elymus cinereus*
MUAS	*Muhlenbergia asperifolia*
LOCO6	*Lotus corniculatus*
EPCI	*Epilobium ciliatum*
JUME	*Juncus mexicanus*
ANCA10	*Anemopsis californica*
Meadow with no living shrubs	

Habitat Type:	**Road**
USDA Code	**Species**
	No vegetation

Habitat Type:	**Playa**
USDA Code	**Species**
	No vegetation

Homestead (7/15/13)

Habitat Type:	**Ditch**	**Habitat Type:**	**Alkali Meadow, flooded**	**Habitat Type:**	**Ditch, dry**
USDA Code	**Species**	**USDA Code**	**Species**	**USDA Code**	**Species**
TYDO	*Typha domingensis*	DISP	*Distichlis spicata*	TARA	*Tamarix ramosissima*
ELEOC	*Eleocharis* sp.	JUBA	*Juncus balticus*	DISP	*Distichlis spicata*
MIGU	*Mimulus guttatus*	ELTR	*Elymus tritocoides*	HECU3	*Heliotropium curassavicum*
CAREX	*Carex* sp.	MUAS	*Muhlenbergia asperifolia*	SALA3	*Salix laevigata*
JUBA	*Juncus balticus*	ELEOC	*Eleocharis* sp.	CIDO	*Cicuta douglasii*
EPILO	*Epilobium sp.*	ANCA10	*Anemopsis californica*	ARCA51	*Arida carnosa*
CIDO	*Cicuta douglasii*	BAHY	*Bassia hyssopifolia*	SEVU	*Senecio vulgaris*
MUAS	*Muhlenbergia asperifolia*	CHMAC	*Chloropyron maritimum* ssp. *canescens*		
HEAN3	*Helianthus annuus*	SPAI	*Sporobolus airoides*		
GLLE3	*Glycyrrhiza lepidota*	POMO5	*Polypogon monspeliensis*	Formerly used ditch with species component similar	
NAOF	*Nasturtium officinale*	HECU3	*Heliotropium curassavicum*	to adjacent habitats along with some wetland	
POMO5	*Polypogon monspeliensis*			adapted species	
ROWO	*Rosa woodsii*				
		Wet meadow with no shrub species			
		and a mixture of meadow species			
Ditch used to send water elsewhere, various wetland					
addapted species					

Homestead (7/15/13)

Habitat Type:	Alkali Meadow
USDA Code	**Species**
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
ATTO	*Atriplex torreyi*
PYRA	*Pyrrocoma racemosa*
ANCA10	*Anemopsis californica*
SPGR	*Spartina gracilis*
ALOC2	*Allenrolfea occidentalis*
BAHY	*Bassia hyssopifolia*
MALE3	*Malvella leprosa*
NIOC2	*Nitrophila occidentalis*
ELTR	*Elymus tritocoides*
HECU3	*Heliotropium curassavicum*
ATPR	*Atriplex prostrata*
JUME	*Juncus mexicanus*
POFR2	*Populus fremontii*
FOPU2	*Forestiera pubescens*
LASE	*Lactuca serriola*
ATTR	*Atriplex truncata*
CIMO	*Cirsium mohavense*
Meadow with a low proportion of shrub species	
and a mixture of meadow species	

Habitat Type:	Saltgrass Meadow
USDA Code	**Species**
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
ELTR	*Elymus tritocoides*
PYRA	*Pyrrocoma racemosa*
SPGR	*Spartina gracilis*
ANCA10	*Anemopsis californica*
ATTO	*Atriplex torreyi*
ERNA10	*Ericameria nauseosa*
HECU3	*Heliotropium curassavicum*
ALOC2	*Allenrolfea occidentalis*
MALE3	*Malvella leprosa*
SPAI	*Sporobolus airoides*
Meadow with a high proportion of Saltgrass	
along with other meadow species	

Habitat Type:	Anemopsis Meadow
USDA Code	**Species**
ANCA10	*Anemopsis californica*
SPAI	*Sporobolus airoides*
GLLE3	*Glycyrrhiza lepidota*
PYRA	*Pyrrocoma racemosa*
ATTO	*Atriplex torreyi*
JUBA	*Juncus balticus*
ELTR	*Elymus tritocoides*
NIOC2	*Nitrophila occidentalis*
BAHY	*Bassia hyssopifolia*
HEAN3	*Helianthus annuus*
ELAN	*Elaeagnus angustifolia*
HOJU	*Hordeum jubatum*
LOCO6	*Lotus corniculatus*
SCAM6	*Schoenoplectus americanus*
ERNA10	*Ericameria nauseosa*
TRVA	*Trifolium variegatum*
Meadow with a high proportion of Anemopsis	
californica , along with other meadow species	

Homestead (7/15/13)

Habitat Type:	**Glycyrrhiza Meadow**
USDA Code	**Species**
GLLE3	*Glycyrrhiza lepidota*
SPAI	*Sporobolus airoides*
ATTO	*Atriplex torreyi*
ALOC2	*Allenrolfea occidentalis*
ANCA10	*Anemopsis californica*
JUBA	*Juncus balticus*
PYRA	*Pyrrocoma racemosa*
Meadow with a high proportion of Glycyrhiza	
along with other meadow species	

Habitat Type:	**Rush/Sedge Meadow**
USDA Code	**Species**
CAREX	*Carex* sp.
JUBA	*Juncus balticus*
ELEOC	*Eleocharis* sp.
POMO5	*Polypogon monspeliensis*
HEAN3	*Helianthus annuus*
MALE3	*Malvella leprosa*
DISP	*Distichlis spicata*
TYPHA	*Typha sp.*
SCMA	*Scirpus maritimus*
ZEEX	*Zeltnera exaltata*
ELAN	*Elaeagnus angustifolia*
PYRA	*Pyrrocoma racemosa*
Meadow with a high proportion of rush & sedge	
along with other meadow species	

Habitat Type:	**Saltgrass/Rush Meadow**
USDA Code	**Species**
DISP	*Distichlis spicata*
JUBA	*Juncus balticus*
ANCA10	*Anemopsis californica*
NIOC2	*Nitrophila occidentalis*
ELTR	*Elymus tritocoides*
HEAN3	*Helianthus annuus*
BAHY	*Bassia hyssopifolia*
CHMAC	*Chloropyron maritimum* ssp. *canescens*
SPAI	*Sporobolus airoides*
ZEEX	*Zeltnera exaltata*
POMO5	*Polypogon monspeliensis*
ELAN	*Elaeagnus angustifolia*
ATCO12	*Atriplex covillei*
PYRA	*Pyrrocoma racemosa*
ERNA10	*Ericameria nauseosa*
Meadow with a high proportion of saltgrass and rush	

Homestead (7/15/13)

Habitat Type:	**Willow Scrub**
USDA Code	**Species**
SAEX	*Salix exigua*
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
MALE3	*Malvella leprosa*
ERNA10	*Ericameria nauseosa*
ELTR	*Elymus tritocoides*
JUBA	*Juncus balticus*
GLLE3	*Glycyrrhiza lepidota*
ATTO	*Atriplex torreyi*

Shrub dominated habitat with a high proportion of willow

Habitat Type:	**Pond**
USDA Code	**Species**
SCMA	*Scirpus maritimus*
TYLA	*Typha latifolia*
SCAC3	*Schoenoplectus acutus*
LEMNA	Lemna sp.

Open water with wetland adapted vegetation around pond edge

Habitat Type:	**Cattail**
USDA Code	**Species**
TYDO	*Typha domingensis*
SCAM6	*Schoenoplectus americanus*
TYLA	*Typha latifolia*

Wetland habitat with a high proportion of cattail species

Habitat Type:	**Cattail, dry**
USDA Code	**Species**
TYDO	*Typha domingensis*
SCAM6	*Schoenoplectus americanus*
JUBA	*Juncus balticus*
DISP	*Distichlis spicata*

Wetland habitat with a high proportion of cattail species without surface water

Homestead (7/15/13)

Habitat Type:	**Allenrolfia Scrub**
USDA Code	**Species**
ALOC2	*Allenrolfea occidentalis*
SPAI	*Sporobolus airoides*
ATTO	*Atriplex torreyi*
JUBA	*Juncus balticus*
TARA	*Tamarix ramosissima*
PYRA	*Pyrrocoma racemosa*
HECU3	*Heliotropium curassavicum*
ERNA10	*Ericameria nauseosa*
MALE3	*Malvella leprosa*
Shrub dominated habitat with a high proportion of Allenrolfia	

Habitat Type:	**Rabbitbrush Scrub**
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
SAVE4	*Sarcobatus vermiculatus*
PSPO	*Psorothamnus polydenius*
ATCO	*Atriplex confertifolia*
HECU3	*Heliotropium curassavicum*
ATTO	*Atriplex torreyi*
DISP	*Distichlis spicata*
HEAN3	*Helianthus annuus*
JUBA	*Juncus balticus*
Shrub dominated habitat with a hight proportion of Rabbitbrush along with other shrubs	

Habitat Type:	**Alakli Meadow with Shrubs**
USDA Code	**Species**
DISP	*Distichlis spicata*
ELTR	*Elymus tritocoides*
ATTO	*Atriplex torreyi*
ALOC2	*Allenrolfea occidentalis*
JUBA	*Juncus balticus*
SPAI	*Sporobolus airoides*
ERNA10	*Ericameria nauseosa*
TARA	*Tamarix ramosissima*
Alkali meadow with a high proportion of shrubs species mixed in	

Habitat Type:	**Willow/Saltgrass/Alkali Sacaton**
USDA Code	**Species**
SAEX	*Salix exigua*
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
MALE3	*Malvella leprosa*
JUBA	*Juncus balticus*
ERNA10	*Ericameria nauseosa*
Shrub and grass habitat with dominant proportions of coyote willow, saltgrass & alkali sacaton with other species in low proportions	

Homestead (7/15/13)

Habitat Type:	**Dead Rabbitbrush Meadow**
USDA Code	**Species**
ELTR	*Elymus tritocoides*
TYPHA	*Typha sp.*
HECU3	*Heliotropium curassavicum*
JUNCU	*Juncus sp.*
DISP	*Distichlis spicata*
ATTR	*Atriplex truncata*
ATPR	*Atriplex prostrata*
HEAN3	*Helianthus annuus*
ANCA10	*Anemopsis californica*
TARA	*Tamarix ramosissima*
SEVE2	*Sesuvium verrucosum*
NIOC2	*Nitrophila occidentalis*
MALE3	*Malvella leprosa*
GLLE3	*Glycyrrhiza lepidota*
Meadow with a high proportion of dead Rabbitbrush	
along with other meadow species	

Habitat Type:	**Tule/Cattail**
USDA Code	**Species**
TYDO	*Typha domingensis*
SCAM6	*Schoenoplectus americanus*
MEAL2	*Melilotus albus*
EPILO	*Epilobium sp.*
CIDO	*Cicuta douglasii*
XAST	*Xanthium strumarium*
DISP	*Distichlis spicata*
JUNCU	*Juncus sp.*
SAGO	*Salix gooddingii*
HEAN3	*Helianthus annuus*
JUME	*Juncus mexicanus*
JUBA	*Juncus balticus*
Wetland habitat with a high proportion of tule and cattail species	

Habitat Type:	**Bullrush**
USDA Code	**Species**
SCAC3	*Schoenoplectus acutus*
LEMNA	*Lemna sp.*
Wetland habitat with a dominant proportion of bullrush	
Habitat Type:	**Phragmites**
USDA Code	**Species**
PHAU7	*Phragmites australis*
Wetland habitat with a dominant proprotion of Phragmites	

Homestead (7/15/13)

Habitat Type:	**Nevada Saltbush Meadow**
USDA Code	**Species**
ATTO	*Atriplex torreyi*
ERNA10	*Ericameria nauseosa*
SUNI	*Suaeda nigra*
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
SAGO	*Salix gooddingii*
Meadow with a high proportion of Nevada Saltbush along with other meadow species	

Habitat Type:	**Greasewood/Parry Saltbush Scrub**
USDA Code	**Species**
SAVE4	*Sarcobatus vermiculatus*
ATPA3	*Atriplex parryi*
Shrub dominated habitat with an equal proportion of greasewood and parry saltbush	

Habitat Type:	**Rabbitbrush Meadow**
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
SPAI	*Sporobolus airoides*
DISP	*Distichlis spicata*
ELTR	*Elymus tritocoides*
JUBA	*Juncus balticus*
SALA3	*Salix laevigata*
SAGO	*Salix gooddingii*
GLLE3	*Glycyrrhiza lepidota*
TARA	*Tamarix ramosissima*
POMO5	*Polypogon monspeliensis*
MALE3	*Malvella leprosa*
PYRA	*Pyrrocoma racemosa*
ATCO	*Atriplex confertifolia*
SAVE4	*Sarcobatus vermiculatus*
SUNI	*Suaeda nigra*
ROWO	*Rosa woodsii*
ATTO	*Atriplex torreyi*
ASFA	*Asclepias fascicularis*
HECU3	*Heliotropium curassavicum*
MUAS	*Muhlenbergia asperifolia*
SOAM	*Solanum americanum*
CIVU	*Cirsium vulgare*
TYDO	*Typha domingensis*
LACO13	*Laennecia coulteri*
EPILO	*Epilobium sp.*
HOJU	*Hordeum jubatum*
Meadow with a high proportion of Rabbitbrush along with other meadow species	

Habitat Type:	**Nevada Saltbush Scrub**
USDA Code	**Species**
ATTO	*Atriplex torreyi*
SUNI	*Suaeda nigra*
SAVE4	*Sarcobatus vermiculatus*
ERNA10	*Ericameria nauseosa*
ATCO	*Atriplex confertifolia*
DISP	*Distichlis spicata*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
ARCA51	*Arida carnosa*
Shrub dominated habitat with a high proportion of Nevada saltbush along with other ground water dependent shrubs	

Habitat Type:	**Greasewood Scrub**
USDA Code	**Species**
SAVE4	*Sarcobatus vermiculatus*
ATCO	*Atriplex confertifolia*
ATPA3	*Atriplex parryi*
Shrub dominated habitat with a large proportion of greasewood	

Homestead (7/15/13)

Habitat Type:	**Shadscale Scrub**
USDA Code	**Species**
ATCO	*Atriplex confertifolia*
SAVE4	*Sarcobatus vermiculatus*
ERNA10	*Ericameria nauseosa*
ATPA3	*Atriplex parryi*
DISP	*Distichlis spicata*
Shrub dominated habitat with a high proportion of	
shadscale	

Habitat Type:	**Parry Saltbush Scrub**
USDA Code	**Species**
ATPA3	*Atriplex parryi*
SAVE4	*Sarcobatus vermiculatus*
ARCA51	*Arida carnosa*
DISP	*Distichlis spicata*
Shrub dominated habitat with a high proportion of	
parry's saltbush	

Habitat Type:	**Old Saltcedar, cut**
USDA Code	**Species**
DISP	*Distichlis spicata*
MALE3	*Malvella leprosa*
JUBA	*Juncus balticus*
SATR12	*Salsola tragus*
MUAS	*Muhlenbergia asperifolia*
SPAI	*Sporobolus airoides*
ELAN	*Elaeagnus angustifolia*
HEAN3	*Helianthus annuus*
ERNA10	*Ericameria nauseosa*
HECU3	*Heliotropium curassavicum*
TARA	*Tamarix ramosissima*
ATCO	*Atriplex confertifolia*
SAVE4	*Sarcobatus vermiculatus*
ATPA3	*Atriplex parryi*
ATTO	*Atriplex torreyi*
Areas of cut tamarisk with a mixture of species	

Habitat Type:	**Berm**
USDA Code	**Species**
DISP	*Distichlis spicata*
BAHY	*Bassia hyssopifolia*
ATTO	*Atriplex torreyi*
SAVE4	*Sarcobatus vermiculatus*
SUNI	*Suaeda nigra*
ARCA51	*Arida carnosa*
POFR2	*Populus fremontii*
Man made disturbance, sparsely vegetated	

Homestead (7/15/13)

Habitat Type:	Willow Tree
USDA Code	Species
SALA3	*Salix laevigata*
SAGO	*Salix gooddingii*

Habitat Type:	Cottonwood Tree
USDA Code	Species
POFR2	*Populus fremontii*

Habitat Type:	Willow Tree & Desert Olive
USDA Code	Species
SALA3	*Salix laevigata*
SAGO	*Salix gooddingii*
FOPU2	*Forestiera pubescens*

Habitat Type:	Road
USDA Code	Species
	No vegetation

Habitat Type:	Pullout/Staging Area
USDA Code	Species
	No vegetation

Habitat Type:	Feed Supplement Site
USDA Code	Species
	No vegetation

Habitat Type:	Slash Pile
USDA Code	Species
	No vegetation

Habitat Type:	Playa
USDA Code	Species
	No vegetation

Habitat Type:	Dead
USDA Code	Species
	No vegetation

Well 368 (7/15/13)

Habitat Type:	Rush/Sedge Meadow
USDA Code	**Species**
JUBA	*Juncus balticus*
LOCO6	*Lotus corniculatus*
MUAS	*Muhlenbergia asperifolia*
EUOC4	*Euthamia occidentalis*
HEAN3	*Helianthus annuus*
SCAM6	*Schoenoplectus americanus*
CIVU	*Cirsium vulgare*
EPCI	*Epilobium ciliatum*
CAREX	*Carex* sp.
ANCA10	*Anemopsis californica*
XAST	*Xanthium strumarium*
PSLU6	*Pseudognaphalium luteoalbum*
SALA3	*Salix laevigata*
ASFA	*Asclepias fascicularis*
DAGL	*Dactylis glomerata*
STAL	*Stachys albens*
PACA6	*Panicum capillare*
LASE	*Lactuca serriola*
ELTR	*Elymus tritocoides*
POMO5	*Polypogon monspeliensis*
ERNA10	*Ericameria nauseosa*
CUSCU	*Cuscuta* sp.
SAGO	*Salix gooddingii*
ELEOC	*Eleocharis* sp.
ZEEX	*Zeltnera exaltata*
Meadow with a high proportion of rush & sedge along with other meadow species	

Habitat Type:	Rabbitbrush Scrub
USDA Code	**Species**
ERNA10	*Ericameria nauseosa*
JUBA	*Juncus balticus*
PSPO	*Psorothamnus polydenius*
SAVE4	*Sarcobatus vermiculatus*
ATCO	*Atriplex confertifolia*
DISP	*Distichlis spicata*
SPAI	*Sporobolus airoides*
Shrub dominated habitat with a hight proportion of Rabbitbrush along with other shrubs	

Habitat Type:	Willow Scrub
USDA Code	**Species**
SAEX	*Salix exigua*
SALA3	*Salix laevigata*
JUBA	*Juncus balticus*
SPAI	*Sporobolus airoides*
MUAS	*Muhlenbergia asperifolia*
EUOC4	*Euthamia occidentalis*
MEAL2	*Melilotus albus*
LOCO6	*Lotus corniculatus*
PLMA2	*Plantago major*
ELTR	*Elymus tritocoides*
HOJU	*Hordeum jubatum*
ANCA10	*Anemopsis californica*
ASFA	*Asclepias fascicularis*
ELEOC	*Eleocharis* sp.
CUSCU	*Cuscuta* sp.
DISP	*Distichlis spicata*
ERNA10	*Ericameria nauseosa*
SAVE4	*Sarcobatus vermiculatus*
ELAN	*Elaeagnus angustifolia*
ARTRT	*Artemisia tridentata* ssp. *tridentata*
Shrub dominated habitat with a high proportion of willow	

Well 368 (7/15/13)

Habitat Type:	**Tule/Cattail**		**Habitat Type:**	**Dalea Scrub**		**Habitat Type:**	**Disturbed**
USDA Code	**Species**		**USDA Code**	**Species**		**USDA Code**	**Species**
TYDO	*Typha domingensis*		PSPO	*Psorothamnus polydenius*		SATR12	*Salsola tragus*
SCAM6	*Schoenoplectus americanus*		SAVE4	*Sarcobatus vermiculatus*		SAVE4	*Sarcobatus vermiculatus*
CIDO	*Cicuta douglasii*		ERNA10	*Ericameria nauseosa*		PSPO	*Psorothamnus polydenius*
EPCI	*Epilobium ciliatum*		ATCO	*Atriplex confertifolia*		DISP	*Distichlis spicata*
MIGU	*Mimulus guttatus*		EPNE	*Ephedra nevadensis*		MUAS	*Muhlenbergia asperifolia*
SALA3	*Salix laevigata*		TEGL	*Tetradymia glabrata*		STHY6	*Stipa hymenoides*
JUTO	*Juncus torreyi*		STHY6	*Stipa hymenoides*		HECU3	*Heliotropium curassavicum*
POMO5	*Polypogon monspeliensis*		ARSP5	*Artemisia spinescens*			
MUAS	*Muhlenbergia asperifolia*		STPI	*Stanleya pinnata*			
SCMA	*Scirpus maritimus*		ATCA2	*Atriplex canescens*		Man made disturbance, sparsely vegetated	
			ERSP3	*Eriastrum sparsiflorum*			
			XAST	*Xanthium strumarium*			
Wetland habitat with a high proportion of tule and			HECU3	*Heliotropium curassavicum*			
cattail species							
			Shrub dominated habitat with a high proportion of				
			dotted dalea				

Well 368 (7/15/13)

Habitat Type:	Ditch
USDA Code	**Species**
CIDO	*Cicuta douglasii*
PSLU6	*Pseudognaphalium luteoalbum*
EPCI	*Epilobium ciliatum*
TYPHA	*Typha sp.*
MUAS	*Muhlenbergia asperifolia*
LACO13	*Laennecia coulteri*
JUTO	*Juncus torreyi*
SAEX	*Salix exigua*
TRIFO	*Trifolium* sp.
ELEOC	*Eleocharis* sp.
Ditch used to send water elsewhere, various wetland adapted species	

Habitat Type:	Alkali Meadow
USDA Code	**Species**
MUAS	*Muhlenbergia asperifolia*
DISP	*Distichlis spicata*
LOCO6	*Lotus corniculatus*
SAEX	*Salix exigua*
SALA6	*Salix lasiolepis*
SAGO	*Salix gooddingii*
EUOC4	*Euthamia occidentalis*
ANCA10	*Anemopsis californica*
PSLU6	*Pseudognaphalium luteoalbum*
JUBA	*Juncus balticus*
SPAI	*Sporobolus airoides*
ERNA10	*Ericameria nauseosa*
SAVE4	*Sarcobatus vermiculatus*
ATCO	*Atriplex confertifolia*
TEGL	*Tetradymia glabrata*
PSPO	*Psorothamnus polydenius*
HECU3	*Heliotropium curassavicum*
STPA4	*Stephanomeria pauciflora*
TARA	*Tamarix ramosissima*
LACO13	*Laennecia coulteri*
CIVU	*Cirsium vulgare*
STPI	*Stanleya pinnata*
ATPA3	*Atriplex parryi*
ARCA51	*Arida carnosa*
Meadow with a low proportion of shrub species and a mixture of meadow species	

Habitat Type:	Dried Pond
USDA Code	**Species**
DISP	*Distichlis spicata*
HECU3	*Heliotropium curassavicum*
EPILO	*Epilobium sp.*
TARA	*Tamarix ramosissima*
SAVE4	*Sarcobatus vermiculatus*
LACO13	*Laennecia coulteri*
Pond bottom with species from nearby habitats	

Well 368 (7/15/13)

Habitat Type:	**Shadscale Scrub**
USDA Code	**Species**
ATCO	*Atriplex confertifolia*
SAVE4	*Sarcobatus vermiculatus*
ATPA3	*Atriplex parryi*
ARCA51	*Arida carnosa*
ERNA10	*Ericameria nauseosa*
PSPO	*Psorothamnus polydenius*
SUNI	*Suaeda nigra*
ARSP5	*Artemisia spinescens*
EPNE	*Ephedra nevadensis*

Shrub dominated habitat with a high proportion of shadscale

Habitat Type:	**Greasewood Scrub**
USDA Code	**Species**
SAVE4	*Sarcobatus vermiculatus*
ATCO	*Atriplex confertifolia*
ATPA3	*Atriplex parryi*
ERNA10	*Ericameria nauseosa*
EPNE	*Ephedra nevadensis*

Shrub dominated habitat with a high proportion of greasewood

Habitat Type:	**Greasewood/Shadscale Scrub**
USDA Code	**Species**
SAVE4	*Sarcobatus vermiculatus*
ATCO	*Atriplex confertifolia*
PSPO	*Psorothamnus polydenius*
ERNA10	*Ericameria nauseosa*
SUNI	*Suaeda nigra*
EPNE	*Ephedra nevadensis*
TEGL	*Tetradymia glabrata*
DISP	*Distichlis spicata*
GRSP	*Grayia spinosa*
ARCA51	*Arida carnosa*

Shrub dominated habitat with a high proportion of greasewood and shadscale

Habitat Type:	**Road**
USDA Code	**Species**
	No vegetation

Habitat Type:	**Playa**
USDA Code	**Species**
	No vegetation

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COUNTY OF INYO
WATER DEPARTMENT

July 30, 2013

Mr. James G. Yannotta
Manager, Aqueduct Business Group
300 Mandich Street
Bishop, California 93514

Dear James:

Please find enclosed 5 copies of the Final Bishop Cone Audit for the 2012-2013 runoff year for your staff.

Please contact Randy Jackson with any questions at (760) 870-0006.

Sincerely,

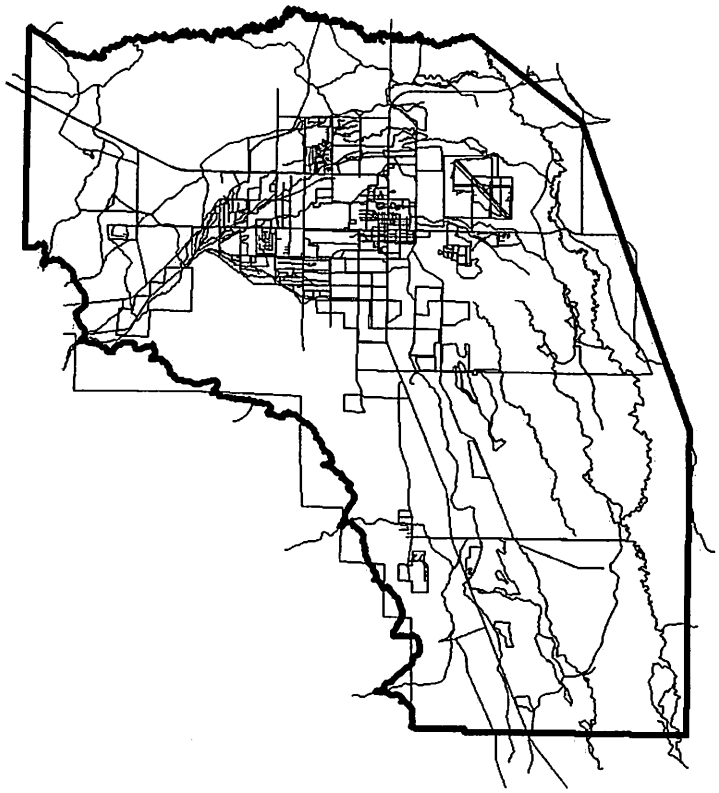
Robert Harrington
Director

Cc: William Jones

RECEIVED
AUG 02 2013
AQUEDUCT MANAGER
BISHOP ADMINISTRATIVE OFFICE

Final

THE BISHOP CONE AUDIT FOR THE 2012-2013 RUNOFF YEAR



Randy Jackson
Senior County Hydrologist

Inyo County Water Department
Report 2013-1
July 30, 2013

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TABLES

ILLUSTRATIONS

INTRODUCTION

The Bishop Cone audit is an annual accounting of Los Angeles Department of Water and Power's (LADWP) groundwater extraction and water usage on Los Angeles-owned lands on the Bishop Cone. Section VII.A of the Inyo County/Los Angeles long-term groundwater management agreement provides that, "Before the Department may increase groundwater pumping above present levels, or construct any new wells on the [Bishop] Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses." (Appendix A).

At its October 17, 1995 meeting, the Technical Group agreed to recommend to the Inyo County/Los Angeles Standing Committee the description of a Bishop Cone audit procedure to be incorporated into the Green Book. That audit procedure is attached (See Appendix A of this report for section IV.D of the Green Book). The Green Book is the technical appendix to the long-term agreement. The Inyo County/Los Angeles Standing Committee adopted the procedure on November 7, 1996 as section IV.D of the Green Book.

WATER USES ON LADWP-OWNED LAND ON THE BISHOP CONE

Section IV.D.1.a. of the Green Book states, "For the purposes of the Bishop Cone audit, water usage on Los Angeles-owned land on the Bishop Cone is defined as the quantity of water supplied to such land, including conveyance losses, less any return flow to the aqueduct system" (See Appendix A). Table 1, below, is a compilation of water usage in acre-feet (AF) on LADWP-owned land on the Bishop Cone for the runoff years of 2011-2012 and 2012-2013.

Map 1 attached, shows the location of the Bishop Cone, the pumping and flowing wells on the Bishop Cone and the location of selected Bishop Cone accounts. Account information on the map is not complete and it will be updated in the future as data become available. In general, there was a decrease in water use, on most accounts from runoff years 2011-2012 to 2012-2013 as well as an overall total decrease in water use of 4,064.93 acre-feet in 2012-2013. Several accounts were not granted credit this runoff year and await inspections (See Table 1). As of this time, stockwater has not been defined as individual accounts nor has inspection of the accounts taken place. Account BACL and the associated ditch loss measurements have not been explained to the Inyo County Water Department by LADWP. Stockwater and BACL credit is therefore denied until the above work has taken place.

TABLE 1. WATER USES ON LOS ANGELES-OWNED LAND ON THE BISHOP CONE.

LADWP ACCOUNT NUMBER	RUNOFF YEAR*[1] 2011-2012 (AF)	RUNOFF YEAR*[1] 2012-2013 (AF)
BA354B or BA362B	783.00	711.00
BA302A	133.00	149.00
BA302B	1,073.87	669.55
BA311	3,138.24	2,984.89
BA313	506.42	487.84
*[3]BA324	1,274.43	945.41
BA324A	NO DATA	NO DATA
BA324C	NO DATA	NO DATA
BA387A	694.00	641.00
BARECF	567.34	323.89
BA339	292.51	198.83
BA342	NO DATA	NO DATA
BA362C	NO DATA	NO DATA
BA362D	663.22	615.43
BA304	249.00	159.00
BA324B	NO DATA	NO DATA
BA387B	NO DATA	NO DATA
BA397 (SAME AS BA387B-NEW LEASE HOLDER)	3,197.99	2,681.40
BA361A	2,205.20	1,825.00
BA361B	2,266.16	1,926.96
BA354A or 362A	933.00	963.00
BARECA	470.00	422.00
BARECC	88.00	63.00
BARECD	2,352.00	3,965.00
BA338	3,011.39	2,000.26
BAOPRA	0.00	0.00
BAOPRB	0.00	0.00
BAGWRA	NO DATA	NO DATA
RV361	170.5	17.25
RV361B	NO DATA	NO DATA
RVRECA	2,983.00	1,042.00
LARECB	NO DATA	NO DATA
LAE&MH	0.00	292.00
BAICR	NO DATA	NO DATA
BA1478 (SAME AS BAICR-NEW LEASE HOLDER)	147.08	194.12
BA353	204.96	225.39
BA393	99.00	94.00
*[3]BA500	893.81	994.63
*[3]BA005A	38.67	33.68

LADWP ACCOUNT NUMBER	RUNOFF YEAR*1 2011-2012 (AF)	RUNOFF YEAR*1 2012-2013 (AF)
*2BA005B	69.00	56.00
*2BA006A	69.87 (No Credit) *5	66.70 (No Credit) *5
BA1479	29.00	1.00
BA392	338.55 (No Credit) *5	526.60 (No Credit) *5
BA301 (Aubrey and Moxley)	610.49	448.42
BA335 (Partridge and Johnson)	164.16	112.56
BA394 (Berner)	NO DATA	NO DATA
BA360 (Allen)	NO DATA	NO DATA
BCCL and BACL	3,648.09 (No Credit) *5	2,905.79 (No Credit) *5
TOTAL	**29,308.44**	**25,243.51**

*1 A runoff year is defined as starting April 1st and ending March 31st of the following year.

*2 Accounts were first listed in the 2002-2003 runoff year. The account BA006A is an active water use account, but in the past has been denied by Inyo for lack of measuring devices. Devices have not yet been installed at account BA006A. NO DATA –The Account was not active, no data was reported. 0.00-The account was active, no use was reported, data was 0.00 acre-feet.

*3 New accounts in years past, field inspection performed and accounts credited.

*4 Account BA1479 same as BA342. Account BA502B same as BA354B. Account BA502A same as BA354A.

*5 Accounts need field inspection or explanation to establish credit.

TOTAL LADWP GROUNDWATER EXTRACTION ON LADWP-OWNED LAND ON THE BISHOP CONE FOR RUNOFF YEARS 2011-2012 AND 2012-2013

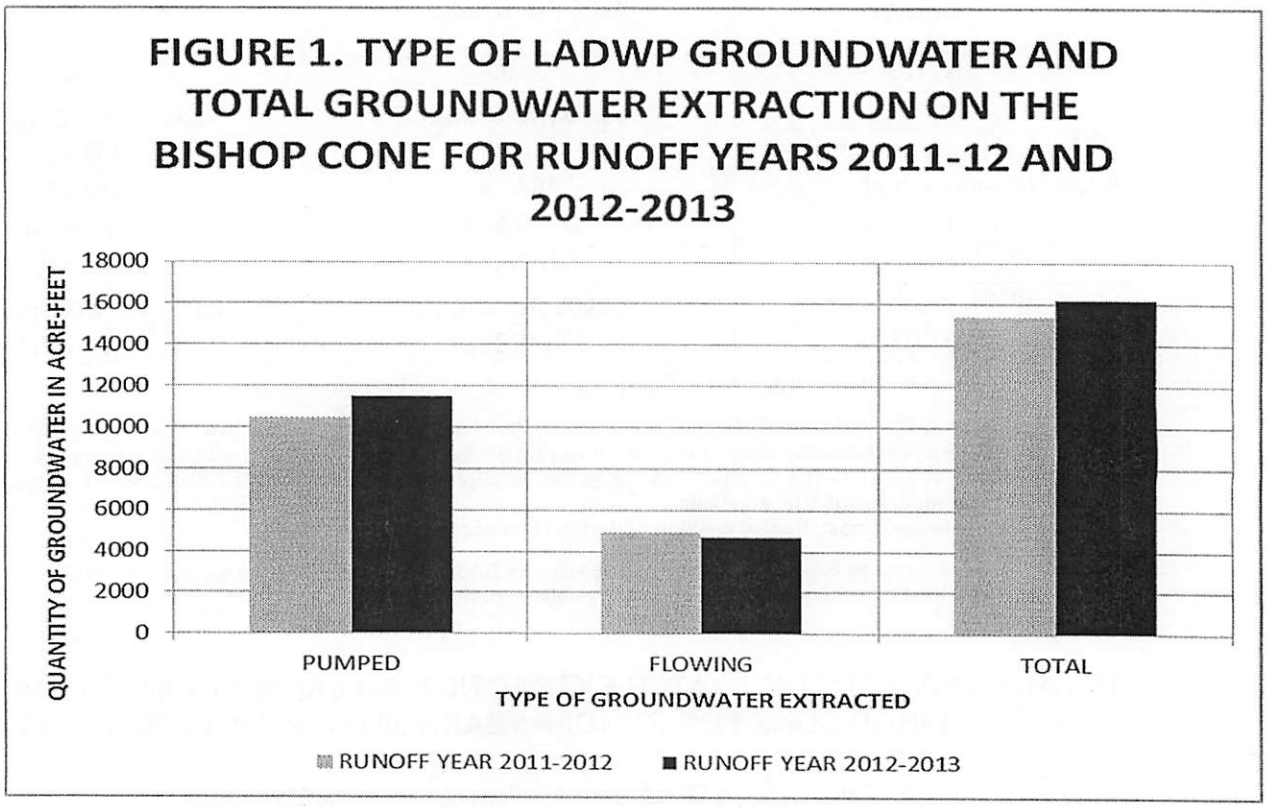
Section IV.D.1.d of the Green Book states, "Total groundwater extraction by LADWP will be compared with corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out of LADWP uncapped wells on the Bishop Cone during the runoff year."

Total LADWP groundwater extraction and groundwater extraction classified as flowing and pumped groundwater in acre-feet, on the Bishop Cone for the runoff years of 2011-2012 and 2012-2013, are shown in Table 2, below. The 2012-2013 Runoff Year groundwater extraction shows an increase compared to the previous runoff year's extraction of some 802 acre-feet.

TABLE 2. TYPE OF GROUNDWATER EXTRACTION ON LADWP LANDS ON THE BISHOP CONE

TYPE OF GROUNDWATER	RUNOFF YEAR 2011-2012 (AF)	RUNOFF YEAR 2012-2013 (AF)
PUMPED	10,475.00	11,491.00
FLOWING	4,911.00	4,697.00
TOTAL	**15,386.00**	16,188.00

Total groundwater extraction and groundwater extraction classified as flowing and pumped groundwater in acre-feet on LADWP-owned land on the Bishop Cone are shown in a bar chart in Figure 1, below.



Flowing and pumped groundwater by well on the Bishop Cone are shown in Table 3, below.

TABLE 3. FLOWING AND PUMPED GROUNDWATER BY WELL ON THE BISHOP CONE IN RUNOFF YEAR 2012-2013.

WELL	FLOWING GROUNDWATER (ACRE-FEET)	PUMPED GROUNDWATER (ACRE-FEET)
F121	36	NA
F122	110	NA
F123	118	NA
F124	0	NA
F125	975	NA
F126	265	NA
F127	384	NA
F128	260	NA
F129	154	NA
F130	296	NA
F131	796	NA
F132	305	NA
F133	344	NA
F134	558	NA
F136	96	NA

WELL	FLOWING GROUNDWATER (ACRE-FEET)	PUMPED GROUNDWATER (ACRE-FEET)
W410	NA	2,690
W406	NA	1,700
W371	NA	1,113
W411	NA	1,484
W407	NA	991
W408	NA	1,123
W140	NA	1,226
W412	NA	1,164
TOTAL	**4,697**	**11,491**

COMPLIANCE WITH THE INYO COUNTY/LOS ANGELES LONG-TERM GROUNDWATER MANAGEMENT AGREEMENT

The Inyo County/Los Angeles long-term groundwater management agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. Table 4, below, shows that LADWP was within compliance with the above provision for runoff years 2011-2012 and 2012-2013.

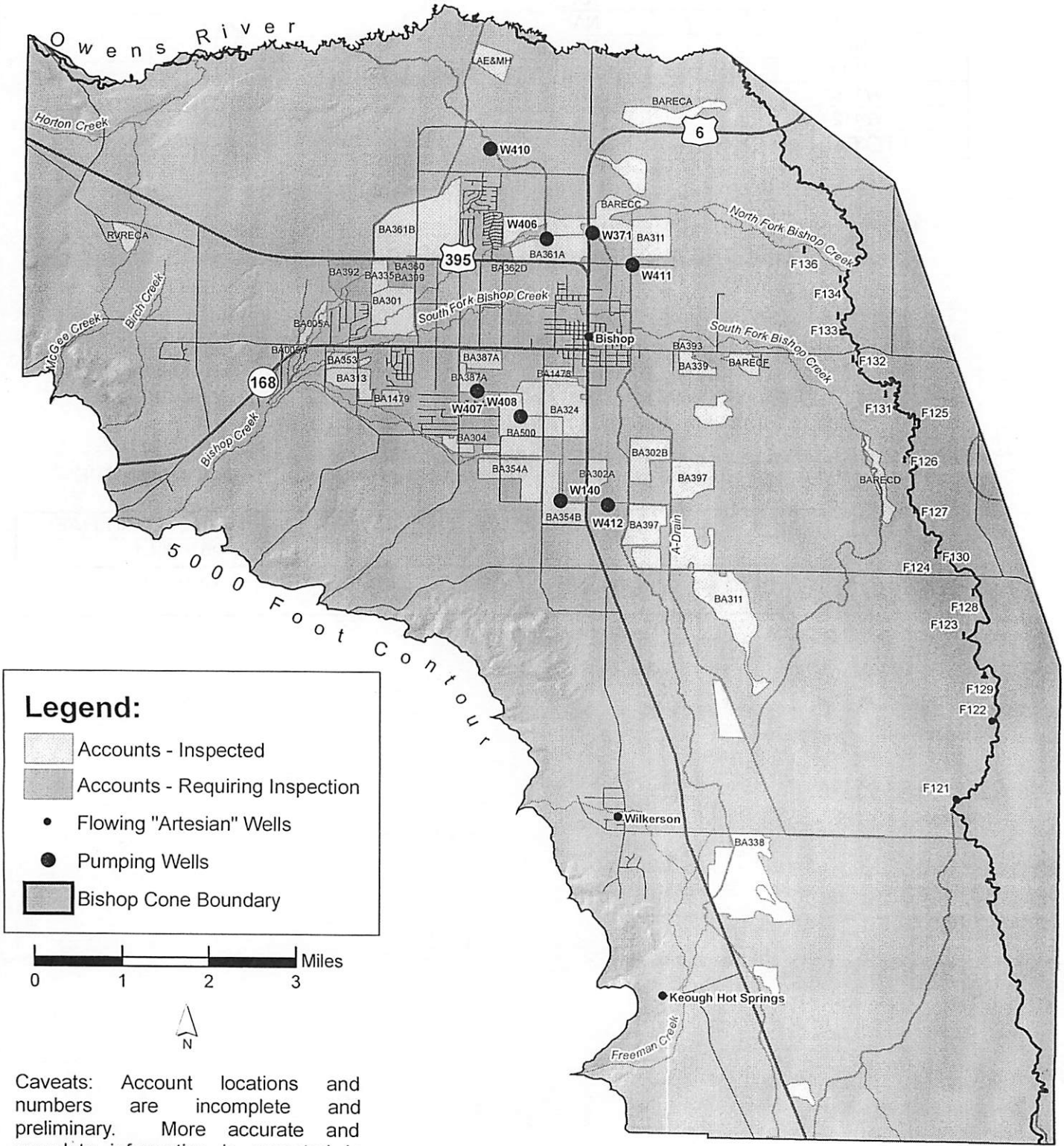
TABLE 4. LADWP USES IN COMPARISON TO LADWP GROUNDWATER EXTRACTION ON THE BISHOP CONE.

	RUNOFF YEAR 2011-2012 (AF)	RUNOFF YEAR 2012-2013 (AF)
TOTAL USES	29,308.44	25,243.51
TOTAL GROUNDWATER EXTRACTION	15,386.00	16,188.00

ATTACHMENT 1

Inyo County Water Department

Map 1. Bishop Cone Audit Features



Caveats: Account locations and numbers are incomplete and preliminary. More accurate and complete information is expected in subsequent Bishop Cone Audits.

9 Sept 2009

z:\projects\bishop_cone\bishop cone letter 9 sept 09.mxd

APPENDIX A

Section VII.A of the Inyo County/Los Angeles Long-Term Groundwater Management Agreement

Section IV.D of the Green Book

Section VII.A of the Agreement:

VII. GROUNDWATER PUMPING ON THE BISHOP CONE

A. Any groundwater pumping by the Department on the "Bishop Cone" (Cone) shall be in strict adherence to the provisions of the Stipulation and Order filed on the 26th day of August, 1940, in Inyo County Superior Court in the case of Hillside Water Company, a corporation, et al. vs. The City of Los Angeles, a Municipal Corporation, et al., ("Hillside Decree").

Before the Department may increase groundwater pumping above present levels, or construct any new wells on the Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses.

The Department's annual groundwater extractions from the Cone shall be limited to an amount not greater than the total amount of water used on Los Angeles-owned lands on the Cone during that year. Annual groundwater extractions by the Department shall be the total of all groundwater pumped by the Department on the Cone, plus the amount of artesian water that flowed out of the casing of uncapped wells on the Cone during the year. Water used on Los Angeles-owned lands on the Cone, shall be the quantity of water supplied to such lands, including conveyance losses, less any return flow to the aqueduct system.

B. The overall management goals and principles and the specific goals and principles for each vegetation classification of this Stipulation and Order apply to vegetation on

the Cone.

FROM THE GREEN BOOK

D. Bishop Cone Audit

This sub-section describes the procedures for conducting the Bishop Cone audit in accordance with Section VII.A of the Agreement. The Bishop Cone audit is an annual accounting of LADWP groundwater extraction and water usage on Los Angeles-owned land on the Bishop Cone. The Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. The area defined as the Bishop Cone is shown as Figure IV.D.1.

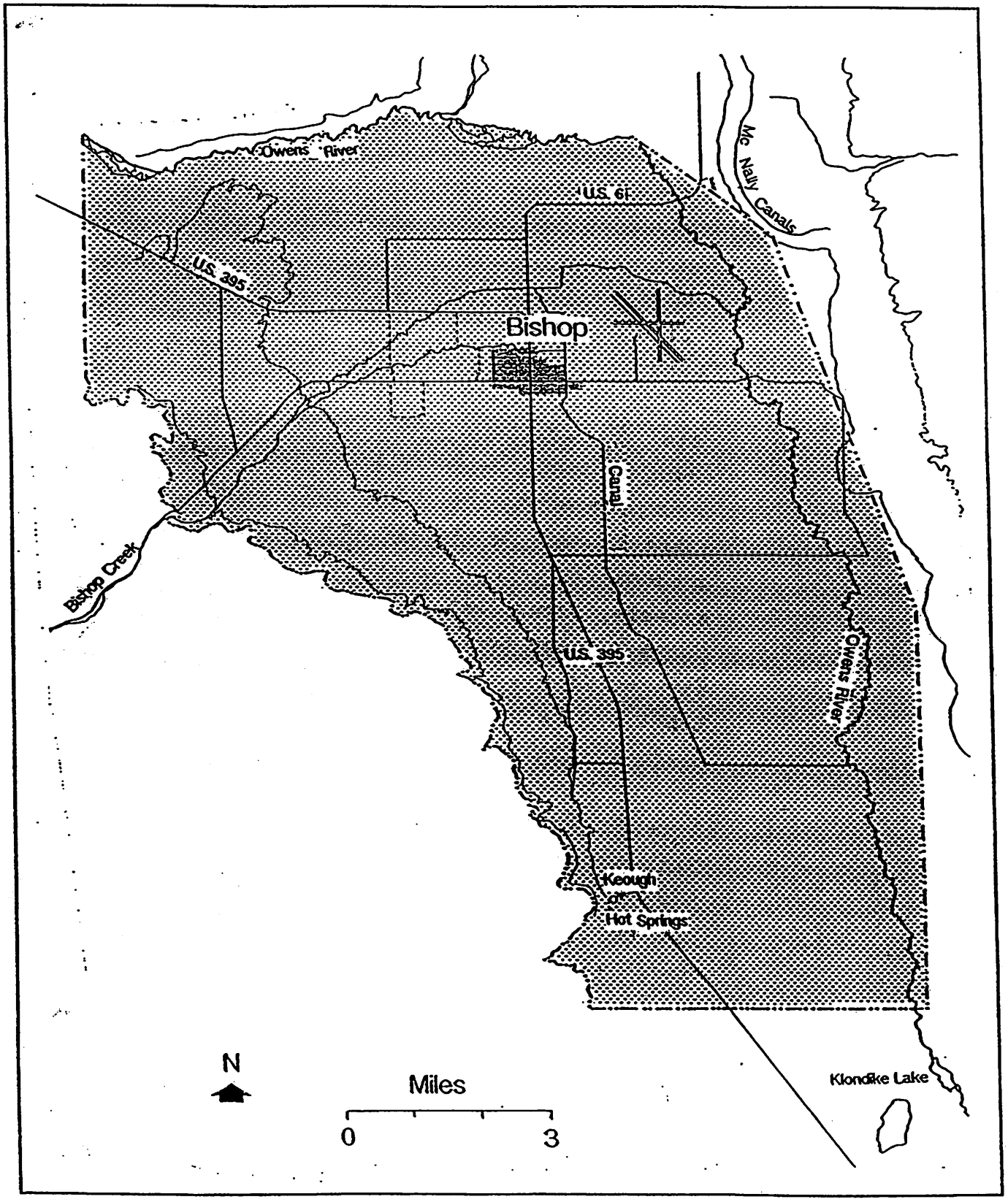
1. Procedures for Conducting the Bishop Cone Audit

a. For the purposes of the Bishop Cone audit, water usage on Los Angeles-owned land on the Bishop Cone is defined as the quantity of water supplied to such land, including conveyance losses, less any return flow to the aqueduct system. Water usage is documented on a runoff-year basis and is compiled by LADWP each May in the Bishop Area Water Use Report. At the conclusion of each runoff year, LADWP will forward the final water use report for the runoff year to Inyo County.

b. The final water use report will be compared for consistency with the previous year's report. If measuring stations have been added or removed from the water-use report during the year, or if a significant change in the pattern of water usage occurs (for example, an account that has not received water for one year receives a

FIGURE IV.D.1

Bishop Cone Boundary



considerable amount the next year), the location will be field-checked. The field-check will evaluate whether changes in water usage warrant the changes noted in the report. If a change is made in the method of delivery to or return from an account that results in an overestimation of uses on the Bishop Cone, water usage for that account will not be credited to the total uses for the audit.

c. Water usage for accounts BAIND (Bishop Indian Reservation), BA391 (outside of Bishop Cone boundary), and BAWEST (West Bishop private uses) will be subtracted from the total reported water usage.

d. Total groundwater extraction by LADWP will be compared with the corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out of uncapped wells on the Bishop Cone during the runoff year. During any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone.

e. A draft report summarizing the results of the Bishop Cone audit will be prepared annually as an Inyo County Water Department report and will be submitted to the Technical Group in June for a 30-day review.

f. A final Bishop Cone audit report will be submitted in July to the Technical Group, the Standing

Committee, the Inyo County Board of Supervisors, and the Inyo County Water Commission.

LADWP will notify Inyo County of any changes in the status, location, or operation of any measuring station used to conduct the Bishop Cone audit at the time the final Bishop Area Water Use Report is submitted to the County. LADWP will also notify the County of any changes in the boundaries of the accounts included in the audit.

Upon request by Inyo County, LADWP will provide measuring station data for accounts included in the audit to assist the County in verifying water usage for individual accounts.

APPENDIX B

Data on Uses and Total Groundwater Extracted on the Bishop Cone Supplied by LADWP

COPY

Department of Water and Power the City of Los Angeles

RECEIVED
MAY 13 2013
Inyo Co. Water Department

May 8, 2013

Dr. Robert Harrington, Director
Inyo County Water Department
P.O. Box 337
Independence, CA 93526-0337

Dear Dr. Harrington:

Subject: Bishop Cone Audit

This is in response to your letter dated March 14, 2013. Enclosed is a copy of the following:

- 2012-2013 runoff year Bishop Cone Audit Water Use Report. ✓
- 2012-2013 runoff year Flowing well discharge data from the Bishop Cone.
- 2012-2013 runoff year Pumping well discharge data for the Bishop Cone.

If you have any questions, please contact Mr. William Jones of my staff at (760) 873-0380.

Sincerely,

James G. Yannotta
Manager of Aqueduct

Enclosures
c: Mr. William Jones

Bishop, California mailing address: 300 Mandich Street • Bishop, CA 93514-3449 • Telephone: (760) 873-0208 • Fax (760) 873-0266
111 North Hope Street, Los Angeles, CA 90012-2607 • *Mailing address:* Box 51111 • Los Angeles, CA 90051-0100
Telephone: (213) 367-4211 • *Cable address:* DEWAPOLA

ACCOUNTS & STATIONS					ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
BA502B	SMITH & STICKELLS						
	A-1 DRAIN						
3031	A-1 DRAIN PUMP PLANT # 1 S/O HALL DITC				.00	.00	.00
3032	A-1 DRAIN PUMP PLANT # 3 AT WELL # 140				.00	.00	711.00
*TOTALS	ACRES= 148	ALOT= 740	LEFT= 29		.00	.00	711.00
BA302A	BOOTHE						
	HALL DITCH						
3006	HALL DITCH @ GOLF COURSE RETURN				.00	.00	150.00
B02A11	HALL DITCH @ BOOTHE				1.41	1.41	27.46
B02A21	STOCKWATER				1.41-	1.41-	27.46-
B02A32	OPERATIONS				.00	.00	1.00-
*TOTALS	ACRES= 47	ALOT= 235	LEFT= 86		.00	.00	149.00
BA302B	BOOTHE						
	BISHOP CREEK CANAL						
3161	BISHOP CREEK CANAL #16				19.62	19.62	370.60
3162	BISHOP CREEK CANAL #17				.00	.00	396.00
3164	BISHOP CREEK CANAL #20				15.00	15.00	378.00
3165	BISHOP CREEK CANAL #21				.00	.00	.00
B02B21	STOCKWATER @ #16				19.62-	19.62-	329.22-
B02B22	STOCKWATER @ #20				15.00-	15.00-	122.55-
B02B41	DITCH MAKE				.00	.00	.00
B02B31	OPERATIONS				.00	.00	23.28-
*TOTALS	ACRES= 120	ALOT= 600	LEFT= 69-		.00	.00	669.55
BA311	J.W. CASHBAUGH, ET AL						
	BISHOP CREEK CANAL						
3166	BISHOP CREEK CANAL #5				.00	.00	515.00
3022	BISHOP CREEK CANAL #5A				.00	.00	338.00
3167	BISHOP CREEK CANAL #9				.00	.00	398.00
3168	BISHOP CREEK CANAL #30				50.00	50.00	2245.00
B11201	STOCKWATER @ #30				50.00-	50.00-	482.04-
3022	CREDIT FOR TATUM RETURN @ #5A				.00	.00	.00
B11301	OPERATIONS				.00	.00	29.07-
*TOTALS	ACRES= 561	ALOT= 2805	LEFT= 179-		.00	.00	2984.89
BA313	BOYD & ONEY						
	NORTH INDIAN DITCH						
3016	NORTH INDIAN ABOVE MUMY LANE #58E				294.00	294.00	5668.00
3017	WONACOTT A-2				43.00	43.00	829.00
3015	WONACOTT A-1				55.00-	55.00-	1004.00-
3054	WONACOTT A-3 RETURN				4.00-	4.00-	292.00-
3051	WONACOTT 58F				44.00-	44.00-	476.00-
3018	NORTH INDIAN B-2				183.00-	183.00-	3481.00-
B13401	NORTH INDIAN DITCH LOSS				56.00-	56.00-	695.26-
B13402	WONACOTT DITCH LOSS				.00	.00	74.90-
B13404	WONACOTT DITCH MAKE				5.00	5.00	14.00
B13301	OPERATIONS				.00	.00	.00
*TOTALS	ACRES= 84	ALOT= 420	LEFT= 67-		.00	.00	487.84

ACCOUNTS & STATIONS		ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
BA324	DANIELS, ROSSI, HANNON			
	NORTH & SOUTH INDIAN DITCH			
3370	NORTH INDIAN DIVERSION W/O SUNLAND	.00	.00	25.00
3270	SOUTH INDIAN D-3	113.00	113.00	2158.00
3005	SOUTH INDIAN DITCH D-4	88.00-	88.00-	1163.00-
B244	DITCH LOSS	25.00-	25.00-	139.59-
B2442	DITCH MAKE	.00	.00	65.00
B243	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 163 ALOT= 815 LEFT= 130-	.00	.00	945.41
BA1478	INDIAN CREEK RANCH (BL-1478)			
	GEORGE & N. INDIAN DITCH			
3002	GEORGE DITCH WEST OF SUNLAND AVENUE	53.00	53.00	630.00
3068	GEORGE DITCH C-3	45.00-	45.00-	485.00-
BICR42	GEORGE DITCH LOSS	8.00-	8.00-	92.75-
BAICR4	DITCH MAKE	.00	.00	.00
3264	NORTH INDIAN DITCH BELOW A-1 DRAIN B3A	72.00	72.00	2013.00
3370	NORTH INDIAN DIVERSION W/O SUNLAND	.00	.00	25.00-
3364	NORTH INDIAN DITCH W/O HWY 395	55.00-	55.00-	1624.00-
BICR43	NORTH INDIAN DITCH LOSS	17.00-	17.00-	121.03-
BAICR3	OPERATIONS	.00	.00	101.10-
*TOTALS	ACRES= 41 ALOT= 205 LEFT= 10	.00	.00	194.12
BA387A	GIACOMINI			
	NORTH INDIAN DITCH			
3043	NORTH INDIAN DITCH B-3	.00	.00	466.00
3011	WEST LINE L-2	.00	.00	175.00
B87A3	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 122 ALOT= 610 LEFT= 31-	.00	.00	641.00
BARECF	RECREATION FOREST SERVICE			
	KINGSLEY DITCH			
3023	KINGSLEY DITCH C-4	29.00	29.00	976.00
3183	CEMETERY DITCH	27.00-	27.00-	496.00-
BRCF41	DITCH MAKE	.00	.00	.00
BRCF42	DITCH LOSS	2.00-	2.00-	156.11-
*TOTALS	ACRES= 43 ALOT= 215 LEFT= 108-	.00	.00	323.89
BA339	DOHNEL			
	KINGSLEY DITCH			
3170	KINGSLEY DITCH C-1	20.00	20.00	446.00
B39201	STOCKWATER @ C-1	20.00-	20.00-	246.59-
B39301	OPERATIONS	.00	.00	.58-
*TOTALS	ACRES= 39 ALOT= 195 LEFT= 3-	.00	.00	198.83
BA393	CABALLERO			
	KINGSLEY DITCH			
3061	KINGSLEY DITCH PUMP PLANT	.00	.00	46.00
3171	BISHOP CREEK DITCH # 11	.00	.00	48.00
BA933	OPERATIONS @ #11	.00	.00	.00
*TOTALS	ACRES= 18 ALOT= 90 LEFT= 4-	.00	.00	94.00

ACCOUNTS & STATIONS		ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
BA362D	JJ TATUM, LJ TATUM			
	DAIRY DITCH			
3388	INDIAN SOUTH RETURN ON SEE-VEE LANE	6.00	6.00	626.00
3389	INDIAN MIDDLE RETURN ON SEE-VEE LANE	4.00	4.00	22.00
3390	INDIAN NORTH RETURN ON SEE-VEE LANE	16.00	16.00	255.00
B62D21	DAIRY STOCKWATER	19.78-	19.78-	232.90-
B62D31	OPERATIONS DAIRY DITCH	6.22-	6.22-	54.67-
*TOTALS	ACRES= 182 ALOT= 578 LEFT= 37-	.00	.00	615.43
BA304	ANDREW & DAN BOYD			
	NEWLON DITCH			
3026	NEWLON DITCH BOYD PUMP PLANT	.00	.00	159.00
*TOTALS	ACRES= 48 ALOT= 240 LEFT= 81	.00	.00	159.00
BA500	TALBOT			
	GEORGE & S. INDIAN DITCH			
3012	GEORGE DITCH C-1	45.00	45.00	915.00
3002	GEORGE DITCH WEST OF SUNLAND AVENUE	53.00-	53.00-	630.00-
B24B41	BUHS STOCKWATER	.00	.00	29.64-
B24B44	DITCH LOSS	.00	.00	88.37-
B24B04	DITCH MAKE	8.00	8.00	22.00
3365	PARK WEST RETURN S/O A-DRAIN	.00	.00	59.00
3047	4 X - 58D	198.00	198.00	2729.00
3366	SOUTH INDIAN DITCH DIVERSION # 1 N/O S	.00	.00	43.00
3367	SOUTH INDIAN DITCH DIVERSION # 2 N/O S	.00	.00	645.00
W408	WELL # 408	.00	.00	1123.00
3046	SOUTH INDIAN RETURN AT A-1 DRAIN	92.00-	92.00-	1442.00-
3270	SOUTH INDIAN D-3	113.00-	113.00-	2158.00-
B004	DITCH LOSS	.00	.00	330.36-
B0040	DITCH MAKE	7.00	7.00	137.00
B50B31	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 171 ALOT= 890 LEFT= 104-	.00	.00	994.63
BA397	GIACOMINI			
	BISHOP CREEK CANAL			
3172	BISHOP CREEK DITCH # 16-A	.00	.00	.00
3163	BISHOP CREEK DITCH # 19	.00	.00	493.00
3173	BISHOP CREEK DITCH # 19-A	.00	.00	.00
3174	BISHOP CREEK DITCH # 22	.00	.00	436.00
3019	BISHOP CREEK CANAL DIVERSION # 24	34.00	34.00	903.00
3020	BISHOP CREEK CANAL DIVERSION # 25	.00	.00	218.00
3391	BISHOP CREEK CANAL DIVERSION 26A	.00	.00	763.00
3024	BISHOP CREEK CANAL DIVERSION # 29	56.00	56.00	594.00
3392	FORD RAWSON-DIV 1A	1.00	1.00	1.00
B9721	STOCKWATER @ #29	56.00-	56.00-	358.02-
B9722	BOOTHE STOCKWATER @ #19	.00	.00	59.58-
B9723	STOCKWATER @ #19 & #24	34.00-	34.00-	308.00-
B9731	OPERATIONS	1.00-	1.00-	1.00-
*TOTALS	ACRES= 482 ALOT= 2410 LEFT= 271-	.00	.00	2681.40

A C C O U N T S & S T A T I O N S		A C R E - F E E T PERIOD	MAR M-T-D	SINCE 4/01/12
BA361A	ST RANCH			
	NORTH FORK BISHOP CREEK			
3036	NORTH FORK BISHOP CREEK I-1	80.00	80.00	1321.00
3004	NORTH FORK BISHOP CREEK I-2	.00	.00	574.00
3042	TATUM RETURN AT HIGHWAY 6	.00	.00	40.00-
3039	TATUM RETURN AT BISHOP CREEK CANAL	17.00-	17.00-	306.00-
3022	BISHOP CREEK CANAL #5A	.00	.00	338.00-
B61A21	STOCKWATER @ I-1	.00	.00	.00
3316	WELL #406	.00	.00	1172.00
B61A41	DITCH MAKE	.00	.00	.00
B61A31	OPERATIONS	63.00-	63.00-	558.00-
*TOTALS	ACRES= 262 ALOT= 1005 LEFT= 820-	.00	.00	1825.00
BA361B	ST RANCH			
	MATLICK DITCH			
3009	MATLICK DITCH F-10	45.00	45.00	1636.00
3040	MATLICK DITCH F-13 N	133.00	133.00	1453.00
3008	MATLICK DITCH F-13 E	10.00	10.00	192.00
3007	MATLICK DITCH F-14	1.00	1.00	115.00
3035	MATLICK DITCH #154	80.00	80.00	1914.00
3154	TATUM RETURN G-2	.00	.00	81.00-
3037	MATLICK DITCH #63A	20.00-	20.00-	355.00-
3038	TATUM RETURN H-1	.00	.00	324.00-
3003	MATLICK DITCH RETURN @ B-1 DRAIN	52.00-	52.00-	340.00-
3010	MATLICK RETURN @ C DRAIN	131.00-	131.00-	1065.00-
B61B41	DITCH LOSS #154 TO RETURN @ B1	28.00-	28.00-	536.45-
B61B42	DITCH MAKE F-10 TO RETURN @ C DRAIN	.00	.00	.00
B61B21	SPENCER STOCKWATER	15.50-	15.50-	182.50-
B61B22	STOCKWATER @ F-10	22.50-	22.50-	327.44-
B61B31	OPERATIONS	.00	.00	171.65-
*TOTALS	ACRES= 412 ALOT= 2365 LEFT= 438	.00	.00	1926.96
BA502A	SMITH & STICKELLS			
	HALL DITCH			
3027	HALL DITCH PUMP PLANT # 2 @ DON TATUM	.00	.00	162.00
3028	HALL DITCH PUMP PLANT # 4 AT DON TATUM	.00	.00	801.00
*TOTALS	ACRES= 219 ALOT= 1095 LEFT= 132	.00	.00	963.00
BARECA	RECREATION FARMERS PONDS			
	BISHOP CREEK CANAL			
3155	BISHOP CREEK CANAL #5B	.00	.00	422.00
BRCA31	OPERATIONS @ #5B	.00	.00	.00
*TOTALS		.00	.00	422.00
BARECC	RECREATION SADDLE CLUB			
	BISHOP CREEK CANAL			
3021	BISHOP CREEK CANAL #67	.00	.00	63.00
BRECC3	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 13 ALOT= 65 LEFT= 2	.00	.00	63.00

ACCOUNTS & STATIONS		ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
BARECD	RECREATION BUCKLEY PONDS			
	SOUTH FORK BISHOP CREEK			
3194	S FORK BISHOP CR BELOW BISHOP CR CANAL	506.00	506.00	6742.00
3193	SANDERS POND RETURN	99.00-	99.00-	1491.00-
3066	RAWSON POND # 3 RETURN TO OWENS RIVER	40.00-	40.00-	1286.00-
BRCD31	OPERATIONS	.00	.00	.00
*TOTALS		367.00	367.00	3965.00
BA338	YRIBARREN			
	FORD-RAWSON CANAL & KEOUGH			
2003	FORD RAWSON CANAL DIVERSION #2	25.00	25.00	818.00
2024	FORD RAWSON CANAL DIVERSION #3	.00	.00	2923.00
2004	FORD RAWSON CANAL DIVERSION #7	.00	.00	745.00-
2043	YRIBARREN RETURN #2	.00	.00	.00
B38402	FORD RAWSON CANAL LOSS	.00	.00	448.36-
B38201	STOCKWATER @ #2	25.00-	25.00-	390.64-
B38401	FORD RAWSON CANAL DITCH MAKE	.00	.00	.00
3368	RAWSON & KEOUGH DITCH E/O HWY 395	70.00	70.00	460.00
3369	RAWSON & KEOUGH DITCH RETURN AT A-DRAI	65.00-	65.00-	293.00-
B38202	CASHBAUGH STOCKWATER	4.53-	4.53-	111.31-
B38403	KEOUGH DITCH LOSS	.47-	.47-	48.06-
B38301	OPERATIONS	.00	.00	164.37-
*TOTALS	ACRES= 427 ALOT= 2135 LEFT= 134	.00	.00	2000.26
BAOPRA	OPERATION FORD-RAWSON CANAL			
	FORD-RAWSON CANAL			
2026	FORD RAWSON CANAL BELOW BCC	.00	.00	.00
2024	FORD RAWSON CANAL DIVERSION #3	.00	.00	.00
BOPA31	OPERATIONS	.00	.00	.00
*TOTALS		.00	.00	.00
BAOPRB	OPERATIONS A-DRAIN			
	A-DRAIN			
2086	A-DRAIN DIVERSION TO ARKANSAS FLATS	.00	.00	.00
BOPB31	OPERATIONS	.00	.00	.00
*TOTALS		.00	.00	.00
RV361	ST RANCH			
	HORTON CREEK			
BC361	HORTON CREEK E-7	.00	.00	17.25
BC3613	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 26 ALOT= 130 LEFT= 112	.00	.00	17.25
RVRECA	RECREATION MILL POND			
	MCGEE CREEK			
3185	MCGEE CREEK @ ABELOUR RANCH	193.00	193.00	2214.00
3235	MILL POND RETURN	102.00-	102.00-	1172.00-
RRCA41	DITCH MAKE	.00	.00	.00
*TOTALS		91.00	91.00	1042.00

ACCOUNTS & STATIONS		ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
LAE&MH	FIVE BRIDGES RECHARGE			
	BISHOP CREEK CANAL			
3242	BISHOP CREEK CANAL DIVERSION #2	.00	.00	321.00
LEMGE5	MITIGATION WATER @ DIVERSION #4	.00	.00	.00
3317	BISHOP CREEK CANAL DIVERSION #6	1.00	1.00	402.00
LEMH2	STOCKWATER @ DIVERSION #2 & #6	1.00-	1.00-	431.00-
LEMH3	OPERATIONS	.00	.00	.00
*TOTALS		.00	.00	292.00
BA353	HADELER & MILORADICH			
	WONACOTT & SMITH DITCH			
3015	WONACOTT A-1	55.00	55.00	1004.00
3053	TOMMY SMITH DITCH # 162-A	.00	.00	93.00
3017	WONACOTT A-2	43.00-	43.00-	829.00-
BA3534	WONACOTT DITCH LOSS	12.00-	12.00-	53.61-
BA534	DITCH MAKE	.00	.00	11.00
BA3533	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 38 ALOT= 190 LEFT= 35-	.00	.00	225.39
BA005A	ONEY			
	OTEY DITCH			
3049	# 161 OTEY	48.00	48.00	1025.00
3377	OTEY DITCH RETURN AT MATLICK DITCH	50.00-	50.00-	968.00-
B05A4	DITCH LOSS	.00	.00	25.32-
B05A42	DITCH MAKE	2.00	2.00	2.00
*TOTALS	ACRES= 13 ALOT= 65 LEFT= 31	.00	.00	33.68
BA005B	SAFSTROM			
	MATLICK DITCH			
3378	OTEY DITCH DIVERSION ABOVE MATLICK DIT	.00	.00	56.00
B05B4	DITCH LOSS	.00	.00	.00
*TOTALS	ACRES= 20 ALOT= 100 LEFT= 44	.00	.00	56.00
BA006A	BARTON			
	MATLICK DITCH			
3064	MATLICK DITCH AT INTAKE # 61	156.00	156.00	4099.00
3377	OTEY DITCH RETURN AT MATLICK DITCH	50.00	50.00	968.00
3412	MATLICK DITCH WEST OF MCLAREN	61.00-	61.00-	1715.00-
3378	OTEY DITCH DIVERSION ABOVE MATLICK DIT	.00	.00	56.00-
B06A1	PRIVATE DIVERSION	145.00-	145.00-	3156.10-
B06A4	DITCH LOSS	.00	.00	73.20-
*TOTALS	ACRES= 14 ALOT= 70 LEFT= 3	.00	.00	66.70
BA1479	HIDDEN CREEKS RANCH			
	SOUTH INDIAN DITCH			
3025	SOUTH INDIAN DITCH DIVERSION # 3	.00	.00	1.00
B14793	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 27 ALOT= 135 LEFT= 134	.00	.00	1.00

ACCOUNTS & STATIONS		ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
BA392	LACEY LIVESTOCK			
	YOUNG & MATLICK DITCHES			
3387	MATLICK DITCH TO THE NORTH	45.00	45.00	1396.00
3398	MATLICK DITCH #1	178.00	178.00	3829.00
BA9242	DITCH LOSS	.00	.00	136.40-
3399	REINHACKLE #1	100.00	100.00	1397.00
3400	YOUNG DITCH #1	2.00	2.00	293.00
3401	YOUNG DITCH #2	58.00-	58.00-	693.00-
3406	C-DRAIN AT INTAKE	257.00-	257.00-	4288.00-
BA921	MATLICK DITCH F-10	45.00-	45.00-	1636.00-
BA924	DITCH MAKE	35.00	35.00	365.00
BA923	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 140 ALOT= 700 LEFT= 173	.00	.00	526.60
BA301	AUBREY & MOXLEY			
	NELLIGAN & YOUNG DITCHES			
3396	NELLIGAN DIV. #1	44.00	44.00	1112.00
3397	NELLIGAN BELOW DIV. #1	55.00	55.00	986.00
3401	YOUNG DITCH #2	58.00	58.00	693.00
3050	HOLLAND # 63-B	19.00-	19.00-	342.00-
3404	NELLIGAN DITCH #2	71.00-	71.00-	1371.00-
3402	YOUNG DITCH #3	56.00-	56.00-	534.00-
3407	YOUNG DITCH # 4	.00	.00	19.00-
BA014	DITCH LOSS	11.00-	11.00-	108.58-
BA0144	DITCH MAKE	.00	.00	32.00
BA013	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 99 ALOT= 495 LEFT= 46	.00	.00	448.42
BA335	PARTRIDGE & JOHNSON			
	YOUNG DITCH			
3402	YOUNG DITCH #3	56.00	56.00	534.00
3407	YOUNG DITCH # 4	.00	.00	19.00
3403	YOUNG DITCH RETURN TO NELLIGAN	52.00-	52.00-	417.00-
BA354	DITCH LOSS	4.00-	4.00-	23.44-
BA353	OPERATIONS	.00	.00	.00
*TOTALS	ACRES= 30 ALOT= 150 LEFT= 37	.00	.00	112.56
BACL	BISHOP CONE CONVEYANCE LOSS			
BCCL1	BA313 DITCH LOSS N INDIAN	56.00	56.00	695.26
BCCL2	BA313 DITCH LOSS WONACOTT	.00	.00	74.90
BCCL3	BA324 DITCH LOSS N & S INDIAN	25.00	25.00	139.59
BCCL4	BA1478 DITCH LOSS GEORGE	8.00	8.00	92.75
BCCL5	BA1478 DITCH LOSS N INDIAN	17.00	17.00	124.69
BCCL6	BARECF DITCH LOSS KINGSLEY	2.00	2.00	156.11
BCCL7	BA500 DITCH LOSS GEORGE	.00	.00	88.37
BCCL8	BA500 DITCH LOSS S INDIAN	.00	.00	330.36
BCCL9	BA361B DITCH LOSS MATLICK	28.00	28.00	536.45
BCCL10	BA338 DITCH LOSS FORD RAWSON	.00	.00	448.36
BCCL11	BA353 DITCH LOSS WONACOTT	12.00	12.00	53.61
BCCL12	BA005A DITCH LOSS OTEY	.00	.00	25.32
BCCL13	BA301 DITCH LOSS NELLIGAN	11.00	11.00	108.58

ACCOUNTS & STATIONS		ACRE-FEET PERIOD	MAR M-T-D	SINCE 4/01/12
BCCL14	BA335 DITCH LOSS YOUNG	4.00	4.00	31.44
BCCL15	TOTAL DITCH LOSS	163.00-	163.00-	2901.12-
*TOTALS		.00	.00	4.67
	AREA SUMMARY IRG	.00	.00	19728.92
	SW	284.34	284.34	3638.89
	OPER	70.22	70.22	1104.72
	E&M	.00	.00	292.00
	GWRC	.00	.00	.00
	REC	458.00	458.00	5815.89
	IND	.00	.00	.00
	DOM	.00	.00	.00
	LORP	.00	.00	.00
	TOTAL WATER USE	812.56	812.56	30580.42

TOTAL IRG AC 4009 TOTAL ALOT 19748 DUTY TO DATE 4.9 AF/AC

2012/2013 RUNOFF YEAR BISHOP CONE FLOWING WELL TOTALS

(ACRE-FEET)

	2012									2013			
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
F121	3	3	3	3	3	3	3	3	3	3	3	3	36
F122	15	16	14	8	13	7	6	6	6	7	7	5	110
F123	10	9	8	10	10	8	8	10	13	13	10	9	118
F124	0	0	0	0	0	0	0	0	0	0	0	0	0
F125	80	83	82	83	82	80	85	83	84	80	74	79	975
F126	22	23	23	22	19	20	21	23	30	22	19	21	265
F127	30	31	30	32	33	32	33	32	34	34	30	33	384
F128	20	21	22	26	23	21	24	21	21	21	19	21	260
F129	13	12	12	12	12	13	14	13	14	14	12	13	154
F130	26	26	26	26	25	24	25	24	25	24	21	24	296
F131	67	69	66	67	65	63	66	63	66	69	63	72	796
F132	25	29	27	26	26	25	29	26	27	23	20	22	305
F133	30	31	30	31	31	30	30	28	29	25	23	26	344
F134	47	50	46	44	43	42	44	47	49	49	47	50	558
F136	8	8	7	6	6	7	10	8	6	9	10	11	96
TOTAL	396	411	396	396	391	375	398	387	407	393	358	389	4697

2012/2013 RUNOFF YEAR BISHOP CONE PUMPING WELL TOTALS

(ACRE-FEET)

	2012									2013			
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
W140	200	211	203	207	205	198	2	0	0	0	0	0	1226
W207	0	0	0	0	0	0	0	0	0	0	0	0	0
W371	96	97	92	93	92	89	95	92	94	93	85	95	1113
W406	198	213	204	206	202	195	3	66	213	166	34	0	1700
W407	159	170	164	168	167	161	2	0	0	0	0	0	991
W408	185	195	186	190	186	179	2	0	0	0	0	0	1123
W410	224	231	222	229	229	220	228	221	228	227	205	226	2690
W411	208	250	244	252	265	261	4	0	0	0	0	0	1484
W412	202	190	186	186	161	181	15	13	10	4	9	7	1164
TOTAL	1472	1557	1501	1531	1507	1484	351	392	545	490	333	328	11491