

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

JASON KING, P.E.
STATE ENGINEER



LITTLE HUMBOLDT VALLEY
HYDROGRAPHIC BASIN 4-067

CROP INVENTORY

CALENDAR YEAR 2014

Prepared by: Timber Weiss
Steve del Soldato

TABLE OF CONTENTS

	Page
ABSTRACT	1
HYDROGRAPHIC BASIN SUMMARY	2
PURPOSE AND SCOPE	3
DESCRIPTION OF THE STUDY AREA	3
GROUNDWATER LEVELS	3
METHODS TO ESTIMATE IRRIGATED ACREAGE	4
METHODS TO ESTIMATE PUMPAGE	4
TABLES	5
FIGURES	6
APPENDIX A. 2014 LITTLE HUMBOLDT VALLEY CROP INVENTORY	9

LIST OF TABLES

	Page
Table 1. Little Humboldt Valley historical irrigated acreage and pumpage data.	5

LIST OF FIGURES

	Page
Figure 1. Physiographic map of Little Humboldt Valley (Hydrographic Basin 4-067).	6
Figure 2. Map showing Little Humboldt Valley farms area and water level monitoring sites.....	7
Figure 3. Graph showing Little Humboldt Valley historical irrigated acreage and pumpage.....	8

ABSTRACT

This inventory represents the status and usage of all permitted and certificated groundwater rights for irrigation purposes located within Little Humboldt Valley, Hydrographic Basin 4-067, for the year 2014. **Only those groundwater rights associated with irrigation purposes are represented in this report.** For a listing and summary of all other manners of use within the basin please refer to the [Nevada Division of Water Resources Hydrographic Basin Summary](#).

The data presented are valid for the time period of this report and may vary from previously published figures as water rights within the basin are subject to administrative action, such as certification, cancellation, forfeiture or withdrawal on a continuing basis.

For the year 2014, the permitted and certificated groundwater rights for irrigation purposes totaled **2,031 acres** with a total duty of 9,124 acre-feet within Little Humboldt Valley. An estimated **2,294 acres** were irrigated and 7,448 acre-feet were pumped during 2014.

HYDROGRAPHIC BASIN SUMMARY

HYDROGRAPHIC BASIN NUMBER	067, REGION 4
HYDROGRAPHIC BASIN NAME	LITTLE HUMBOLDT VALLEY
COUNTIES	HUMBOLDT & ELKO
MAJOR COMMUNITIES	N/A
DESIGNATED BASIN	DESIGNATED
DENIALS BASED UPON WATER AVAILABILITY	N/A
ESTIMATED IRRIGATION PUMPAGE 2014 (ACRE-FEET)	7,448*

STATE ENGINEER'S ORDERS

[NO. 1242 – DESIGNATION](#)

OCTOBER 3, 2014

COMMITTED GROUNDWATER RESOURCE FOR IRRIGATION PURPOSES: 9,124 ACRE-FEET
DATE: DECEMBER 2014

NOTE: Committed groundwater resource data are accurate for December 2014. Rights may be subject to change applications, certification, withdrawals, forfeiture and cancellations; each of these circumstances could impact the duty, diversion rate and acreage associated with a given right. Be advised this report acknowledges that other manner of uses may be present in the basin; however, only those groundwater rights associated with irrigation purposes are represented in this report.

* Acreage represented in this report may have surface water rights appurtenant. This report acknowledges those acres with surface water rights but is not intended to quantify, nor present any definitive use of those surface water rights. The data represent only the pumping of groundwater and the acreage to which it is applied.

PURPOSE AND SCOPE

The purpose of this report is to inventory all of the groundwater resources allocated to irrigation and described by the Office of the State Engineer, Nevada Division of Water Resources, and to estimate the amount of groundwater pumped for irrigation purposes within the Little Humboldt Valley Hydrographic Basin (4-067), for the year 2014.

DESCRIPTION OF THE STUDY AREA

The Little Humboldt Valley Hydrographic Basin is located in north central Nevada (Figure 1). Little Humboldt Valley occupies approximately 975 square miles in Humboldt and Elko Counties. The adjacent hydrographic basins are Paradise Valley (4-069) and Hardscrabble Area (4-068) to the west, Quinn River Valley (2-033B) and Little Owyhee River Area (3-034) to the north, South Fork Owyhee River Area (3-035) and Willow Creek Area (4-063) to the east, and Clovers Area (4-064), Kelly Creek Area (4-066) and Winnemucca Segment (4-070) to the south.

Little Humboldt Valley Hydrographic Basin includes the North Fork and the South Fork of the Little Humboldt River, Chimney Reservoir, and the area known as Eden Valley. This basin is bounded to the northwest by the Calico Mountains, to the southeast by the Snow Storm Mountains, to the south by the Dry Hills of the Osgood Mountains, and to the southwest by the Hot Springs Range. The Little Humboldt Valley Hydrographic Basin is approximately 27 miles wide by 30 miles long with basin elevations ranging from approximately 4,600 feet above mean sea level on the valley floor to approximately 8,200 feet in the surrounding mountains. Irrigation occurs primarily in the southwest part of the basin (Figure 2).

GROUNDWATER LEVELS

Depths to groundwater in Little Humboldt Valley are measured by multiple agencies on a semi-annual basis. Sites at which water level measurements are made or reported to NDWR include:

<u>067 N39 E41 01CBDD1</u>	<u>067 N39 E41 09ACAA1</u>	<u>067 N39 E41 09DCAA1</u>
<u>067 N39 E41 11BBCC1</u>	<u>067 N39 E41 11CBDD1</u>	<u>067 N39 E41 14ADAB1</u>
<u>067 N39 E41 15BBDD1</u>	<u>067 N39 E41 15DBDD1</u>	<u>067 N39 E41 21BBDD1</u>
<u>067 N39 E41 21DBDD1</u>	<u>067 N39 E42 08DCDB1</u>	<u>067 N39 E42 18ACBA1</u>
<u>067 N40 E41 10BDBC1</u>	<u>067 N40 E41 21BCAB1</u>	<u>067 N40 E42 15BCCC1</u>
<u>067 N40 E43 05CBAB1</u>	<u>067 N40 E43 20BBDD1</u>	<u>067 N40 E43 33BADC1</u>
<u>067 N40 E43 36BCCC1</u>	<u>067 N41 E41 36CAAD1</u>	<u>067 N41 E42 34ADCD1</u>
<u>067 N41 E43 11CCDB1</u>		

Groundwater level data have also been collected by the U.S. Geological Survey (USGS) and can be accessed through their website (<http://nevada.usgs.gov>).

METHODS TO ESTIMATE IRRIGATED ACREAGE

This report estimates the number of acres irrigated by the groundwater pumped under permits, certificates, and claims of vested right issued by the State Engineer. Table 1 and Figure 3 present the current and historic irrigated acreage and pumpage; Appendix A presents estimates detailed by certificate, permit, or vested claim number. The following methods were used to arrive at the estimated acreage:

- Field inspection of the place of use was conducted to estimate the number of acres under cultivation.
- In cases where field inspection of the place of use was not practical, aerial and/or satellite imagery were analyzed to determine acreages.

METHODS TO ESTIMATE PUMPAGE

This report estimates the amount of groundwater pumped under the permits and certificates issued by the Nevada State Engineer as well as claims of vested right in the Little Humboldt Valley Hydrographic Basin. The following methods were used to arrive at the estimated use:

- Where totalizing meters were in place, meter readings were taken and compared with previous data (if available).
- Where meters were not in place and the use was irrigation, pumpage was estimated by multiplying the number of hours the well was operated during the past year (determined from an hour meter reading or asking the water user) by the certificated diversion rate.
- Where there are no flow meters or other reliable options for estimating pumpage and the use was irrigation, pumpage was estimated by dividing the Net Irrigation Water Requirement (NIWR) for the crop grown by the efficiency of the irrigation method used, then multiplying by the number of acres irrigated. Irrigation efficiencies associated with three types of irrigation methods are: pivot at 85%; wheel line or other hand moved sprinklers at 75%; and flood at 60%. The pumpage amount estimated by this method was limited by the duty of the permit. For places where the groundwater rights are supplemental to surface water, groundwater use was estimated using the NIWR method above, but adjusted based on available surface water for the year. Evapotranspiration and NIWR data by basin can be found on the NDWR website at: http://water.nv.gov/mapping/et/et_general.cfm. This approach using the NIWR to estimate pumpage was not used in previous inventories, and pumpage estimates for 2014 may differ significantly from estimates of previous years.
- Where lands were irrigated by both surface water and groundwater, the surface water supply for the irrigation season was considered in estimating groundwater pumpage.

TABLES

Table 1. Little Humboldt Valley historical irrigated acreage and pumpage data.

Year	2010	2011	2012	2013	2014
Acres Irrigated	2,294	2,294	2,294	2,294	2,294
Acre-Feet Pumped	9,070	9,070	9,070	9,177	7,448

* The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

FIGURES

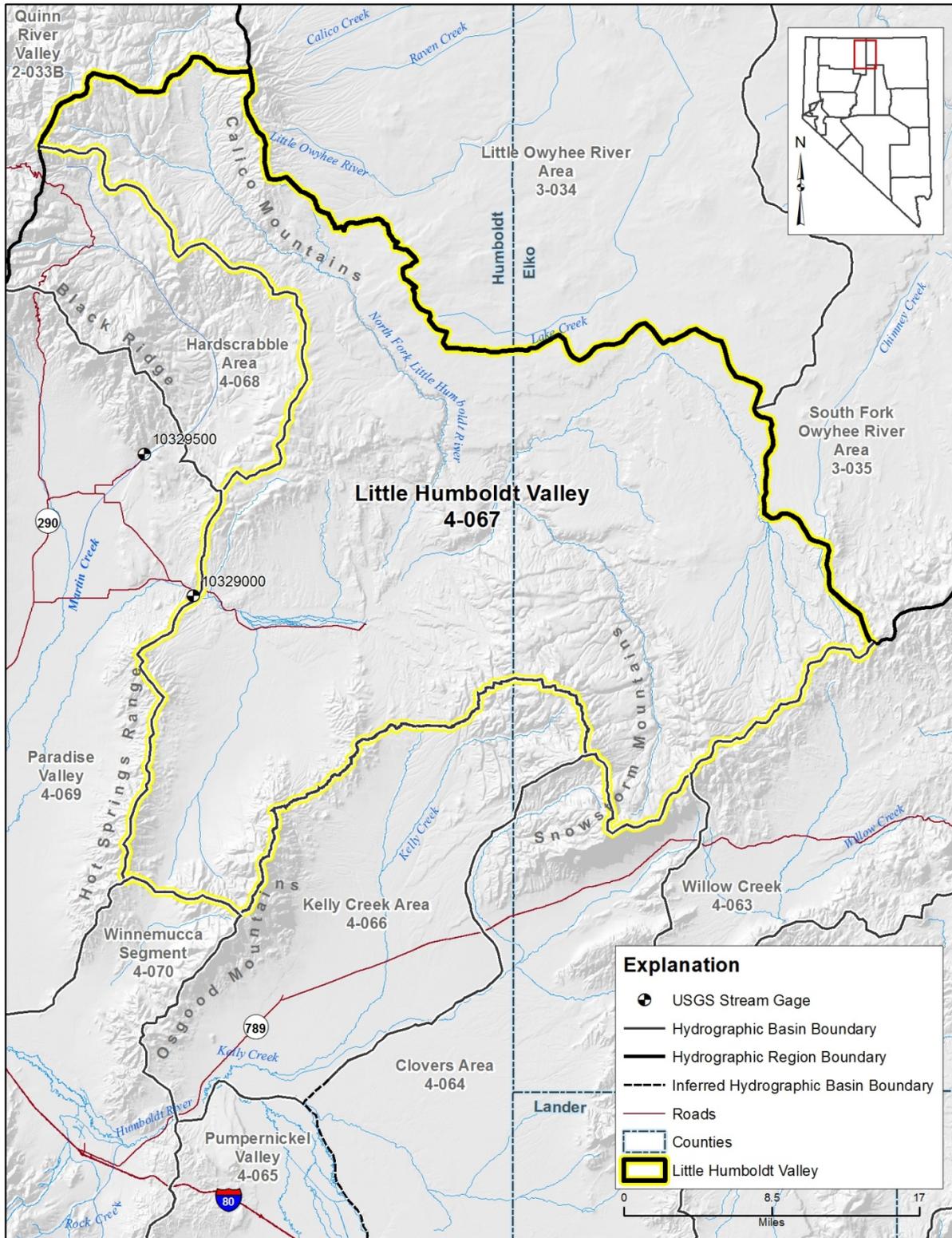


Figure 1. Physiographic map of Little Humboldt Valley (Hydrographic Basin 4-067).

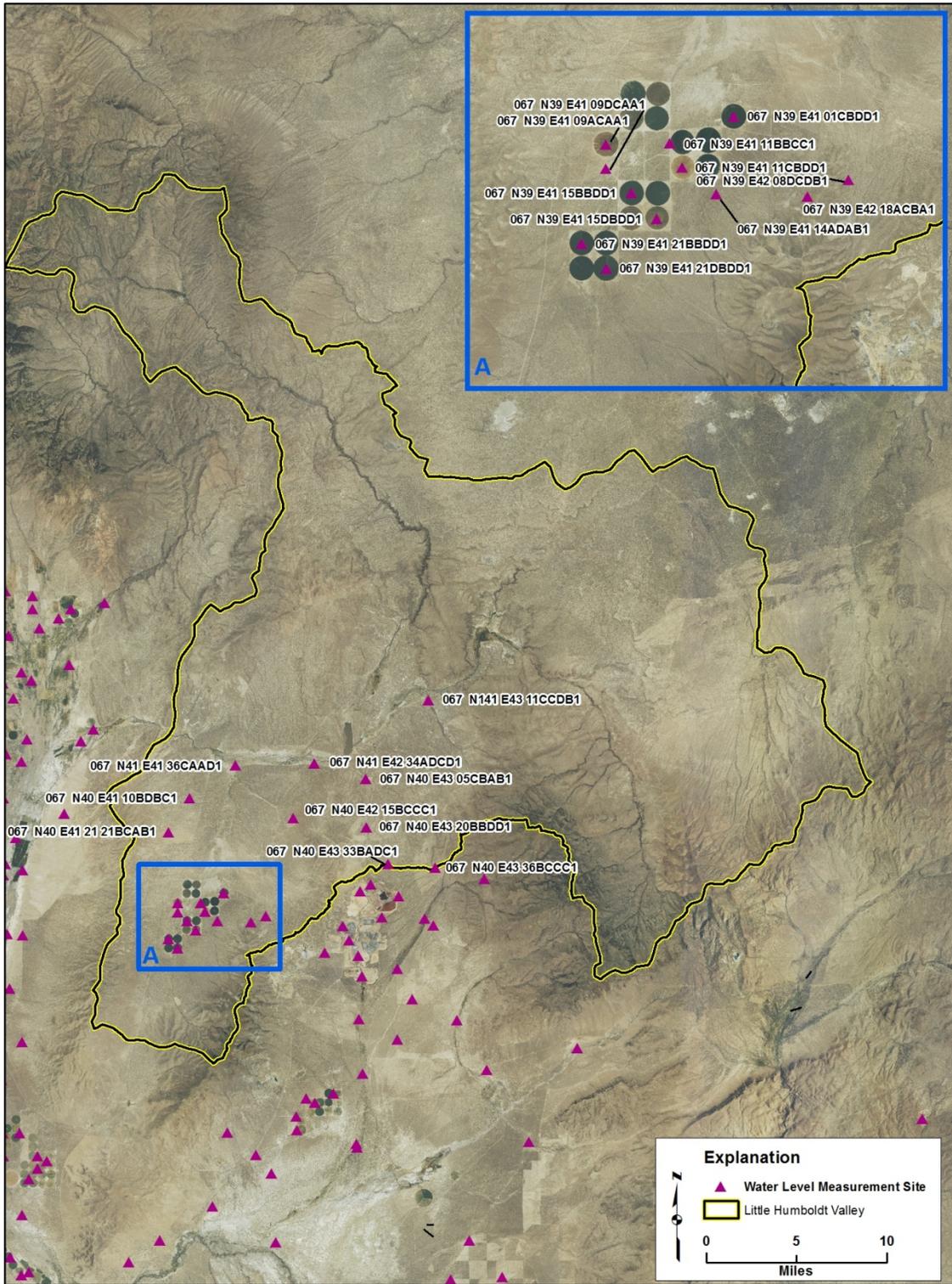


Figure 2. Map showing Little Humboldt Valley farms area and water level monitoring sites.



Figure 3. Graph showing Little Humboldt Valley historical irrigated acreage and pumpage. The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

APPENDIX A. 2014 LITTLE HUMBOLDT VALLEY CROP INVENTORY.

EXPLANATION OF COLUMN HEADINGS

App No	The file number of the Application to Appropriate/Change Water or the Claim of Vested Right.
Status	Indicates the status of an application: Permit (PER), Certificated (CER), or a Claim of Vested Right (VST).
QQ	The quarter-quarter of the Section in which the point of diversion is located.
Q	The quarter of the Section in which the point of diversion is located.
Sec	The Section in which the point of diversion is located.
Twn	The Township in which the point of diversion is located.
Rng	The Range in which the point of diversion is located.
Sup	Indicates whether the groundwater right is part of a group of groundwater rights used to irrigate all or a portion of the same acreage (supplemental). A “Y” in this column signifies the groundwater right is supplemental to other groundwater rights.
Supplemental Application Number	The application number(s) of the water right(s) that are supplemental to one another.
Permitted Acres	The number of acres defined by the permit or certificate that is eligible to be irrigated.
Supplementally Adjusted Permitted Acres	The supplementally adjusted, total number of acres that is eligible to be irrigated under a supplemental group of water rights.
Permitted Duty Acre-Feet	The amount of water that may be pumped in a given year, or season, as defined by the permit, certificate, or claim of vested right. If there is a supplemental group, the total combined duty is listed as a supplementally adjusted duty.
Supplementally Adjusted Duty Acre-Feet	The supplementally adjusted, total combined duty that may be pumped in a given year, or season, for a supplemental group of water rights, expressed in acre-feet. The supplementally adjusted, total combined duty is listed at the end of a supplemental group in bold .
Owner of Record	The owner of the water right as recorded in the records of the State Engineer. A water right may have more than one owner of record. Only the first, alphabetically, is listed in this table.
Crop Type	Indicates whether or not a crop was in production during the water year. If a crop was in production, the common name description of the plants under cultivation if given (e.g. alfalfa).

NIWR (ft)	Net Irrigation Water Requirement, defined to be equal to the annual crop evapotranspiration less the effective precipitation entering the root zone that is available for evaporation or transpiration.
Irrigation Method	The method by which the water is applied to the crop and ground (e.g. pivot).
Irrigation Efficiency	The estimated efficiency of the desired irrigation method used.
Irrigated Acreage	The estimate of the number of acres irrigated associated with a particular water right.
Acreage Estimation Method	The method by which the number of acres irrigated was determined. F – Field inspection. I – Aerial or satellite imagery.
Acre-Foot Pumped	The estimate of the amount of water pumped under a particular water right, expressed in acre-feet. One acre-foot equals 325,851 gallons.
Pumpage Estimation	The method used to estimate the amount of water pumped. M – Totalizing meter readings. N – NIWR Method.
Remarks	Additional information. Numbers in this column correspond to footnotes at the end of the table.

2014 LITTLE HUMBOLDT VALLEY CROP INVENTORY

App No	Status	QQ	Q	Sec	Twn	Rng	Sup	Supplemental Application Number	Permitted Acres	Supplementally Adjusted Permitted Acres	Permitted Duty Acre-Feet	Supplementally Adjusted Duty Acre-Feet	Owner of Record	Crop Type	NIWR (ft)	Irrigation Method	Irrigation Efficiency	Irrigated Acreage	Acreage Estimation Method	Acre-Feet Pumped	Pumpage Estimation Method	Remarks		
30472	CER	SW	SW	15	39N	41E	Y	30473	263.2	263.2	1,052.80	1,052.80	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	263.2	F-I	867.01	N	This well is not equipped to pump		
30473	CER	SW	SE	15	39N	41E	Y	30472	263.2	--	1,052.80	--	Crawford Family Living Trust					--	F-I	--	N			
Total Combined Duty									-- Acres			1,052.80 Acre-Feet												
30474	CER	SW	NW	15	39N	41E			131.6	131.6	526.4	526.4	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	131.6	F-I	433.51	N			
30475	CER	SW	NE	15	39N	41E			131.6	131.6	526.4	526.4	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	131.6	F-I	433.51	N			
30476	CER	SW	SW	21	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30477	CER	SW	SE	21	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30478	CER	SW	NE	21	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30479	CER	SW	NW	21	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30480	CER	SW	SW	3	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30481	CER	SW	SE	3	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30482	CER	SW	NW	3	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
35940	CER	SW	NE	3	39N	41E			134	134	482.4	482.4	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	134	F-I	441.41	N			
30486	CER	SW	SW	1	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
30488	CER	SW	SW	11	39N	41E			134	134	536	536	Crawford Family Living Trust	Grain	2.1	Pivot	85%	134	F-I	331.06	N			
30489	CER	SW	SE	11	39N	41E			134	134	536	536	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	134	F-I	441.41	N			
30491	CER	SW	NE	11	39N	41E			134	134	536	536	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	134	F-I	441.41	N			
35939	CER	SW	NW	11	39N	41E			134	134	536	536	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	134	F-I	441.41	N			
30485	CER	SW	NE	9	39N	41E			122	122	488	488	Crawford Family Living Trust	Alfalfa	2.8	Pivot	85%	122	F-I	401.88	N			
Total									2,031.20 Acres			9,124.00 Acre Feet												
Total															2,294.40 Acres					7,447.67 Acre Feet				