

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

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KELLY CREEK AREA
HYDROGRAPHIC BASIN 4-066

CROP INVENTORY

CALENDAR YEAR 2015

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ABSTRACT

This inventory represents the status and usage of all permitted, certificated, and claims of vested right groundwater rights for irrigation purposes located within Kelly Creek Area, Hydrographic Basin 4-066, for the year 2015. **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 2015, the permitted and certificated groundwater rights for irrigation purposes totaled **1,716 acres** with a total duty of 5,582 acre-feet within Kelly Creek Area. An estimated **1,514 acres** were irrigated and 6,598 acre-feet were pumped during 2015.

HYDROGRAPHIC BASIN SUMMARY

HYDROGRAPHIC BASIN NUMBER	066, REGION 4
HYDROGRAPHIC BASIN NAME	KELLY CREEK AREA
COUNTIES	HUMBOLDT & ELKO
MAJOR COMMUNITIES	N/A
DESIGNATED BASIN	DESIGNATED
DENIALS BASED UPON WATER AVAILABILITY	N/A
ESTIMATED IRRIGATION PUMPAGE 2015 (ACRE-FEET)	6,598*

STATE ENGINEER'S ORDERS

NO. 536 – DESIGNATION OF BASIN	MAY 9, 1975
NO. 1087 - WELL SPACING	DECEMBER 30, 1993
NO. 1232 – MINE WELLS	DECEMBER 12, 2013
NO. 1251 – METER	FEBRUARY 5, 2015

COMMITTED GROUNDWATER RESOURCE FOR IRRIGATION PURPOSES: 5,582 ACRE-FEET
DATE: DECEMBER 2015

NOTE: Committed groundwater resource data are accurate for December 2015. 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 Kelly Creek Area Hydrographic Basin (4-066), for the year 2015.

DESCRIPTION OF THE STUDY AREA

The Kelly Creek Area Hydrographic Basin is located in north central Nevada (Figure 1), occupying approximately 300 square miles in Humboldt and Elko Counties. The adjacent hydrographic basins are Winnemucca Segment (4-070) to the southwest, Little Humboldt Valley (4-067) to the north and west, Clovers Area (4-064) to the east and south, and Pumpnickel Valley (4-065) to the south.

Kelly Creek Area is bounded on the north and east by the Snowstorm Mountain Range, to the south by the Humboldt River and the Red House Flat and to the west by the Dry Hills and the Osgood Mountains. The valley is approximately 13 miles wide by 32 miles long with basin elevations ranging from approximately 4,000 feet above mean sea level on the valley floor to approximately 8,000 feet in the surrounding mountains. Irrigation occurs primarily in the central part of the basin (Figure 2).

GROUNDWATER LEVELS

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

066 N36 E41 08DDBD1	066 N36 E41 08DDBD2	066 N36 E41 19BBB 1
066 N36 E42 09CDCC1	066 N37 E41 12DC 1	066 N37 E41 35DDCC1
066 N37 E42 02BADD1	066 N37 E42 02BBBB1	066 N37 E42 10BAAA1
066 N37 E42 10CADD1	066 N37 E42 20BBA 2	066 N37 E42 28BB 1
066 N37 E43 18DABB1	066 N37 E43 18DACD1	066 N38 E42 36CADD1
066 N38 E43 03DACD1	066 N38 E43 07DDAC1	066 N38 E43 15CCCC1
066 N38 E43 29CCAC1	066 N39 E42 13ADDD1	066 N39 E42 24DDDD1
066 N39 E43 03CCCC1	066 N39 E43 05BDAD1	066 N39 E43 06DDAB1
066 N39 E43 13CBBC1	066 N39 E43 14AB 1	066 N39 E43 16BBDB1
066 N39 E43 19BDGD1	066 N39 E43 30ADBA1	066 N39 E43 32BCCC1
066 N39 E43 34BBBB1	066 N40 E44 32DDGD1	

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 Kelly Creek Area 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 were 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 were 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 used starting in 2014, and pumpage estimates for this and subsequent years 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. Kelly Creek Area historical irrigated acreage and pumpage data.

Year	2010	2011	2012	2013	2014	2015
Acres Irrigated	1,106	1,106	1,562	1,508	1,514	1,514
* Acre-Foot Pumped	4,424	4,424	6,208	6,032	5,344	6,598

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

FIGURES

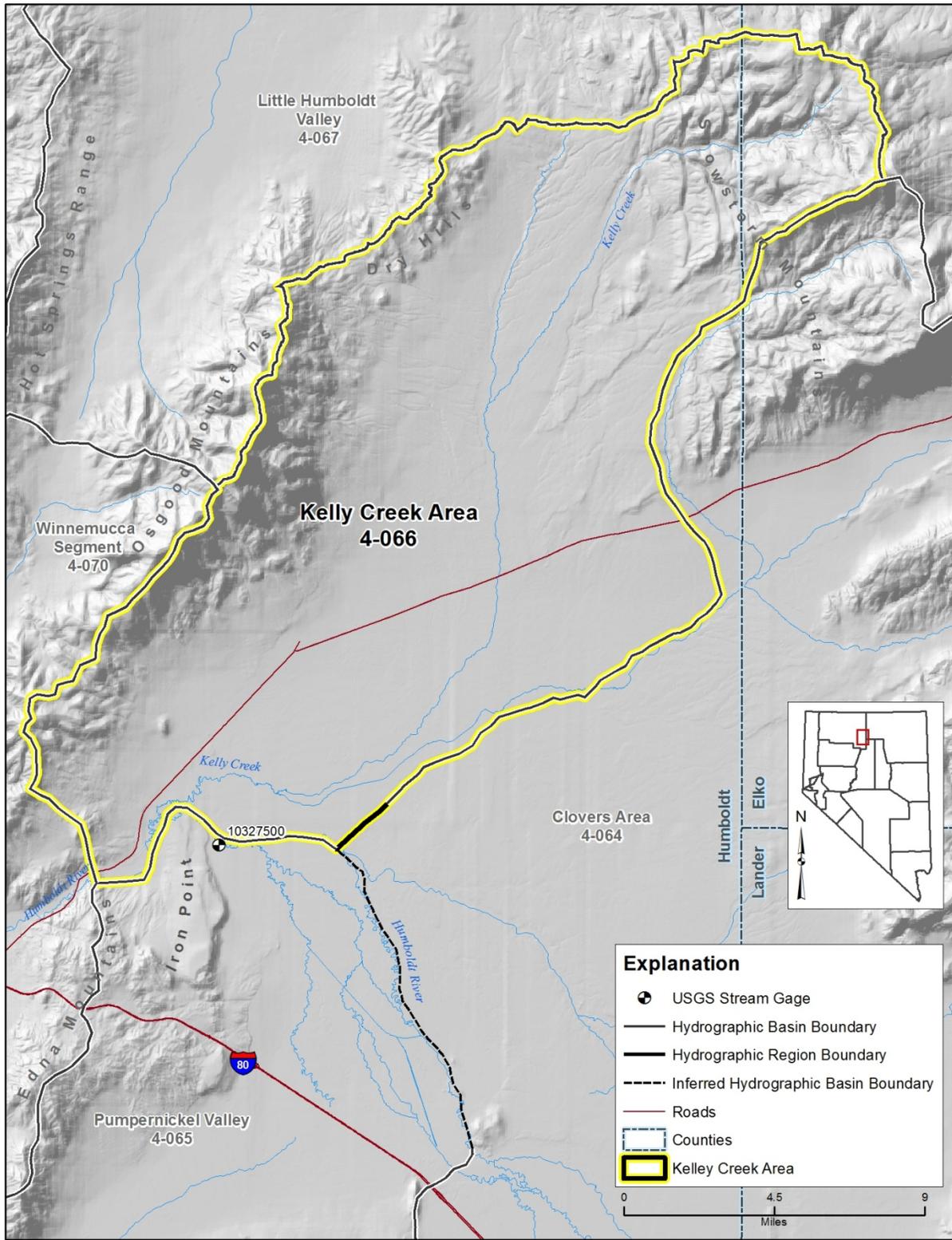


Figure 1. Physiographic map of Kelly Creek Area (Hydrographic Basin 4-066).

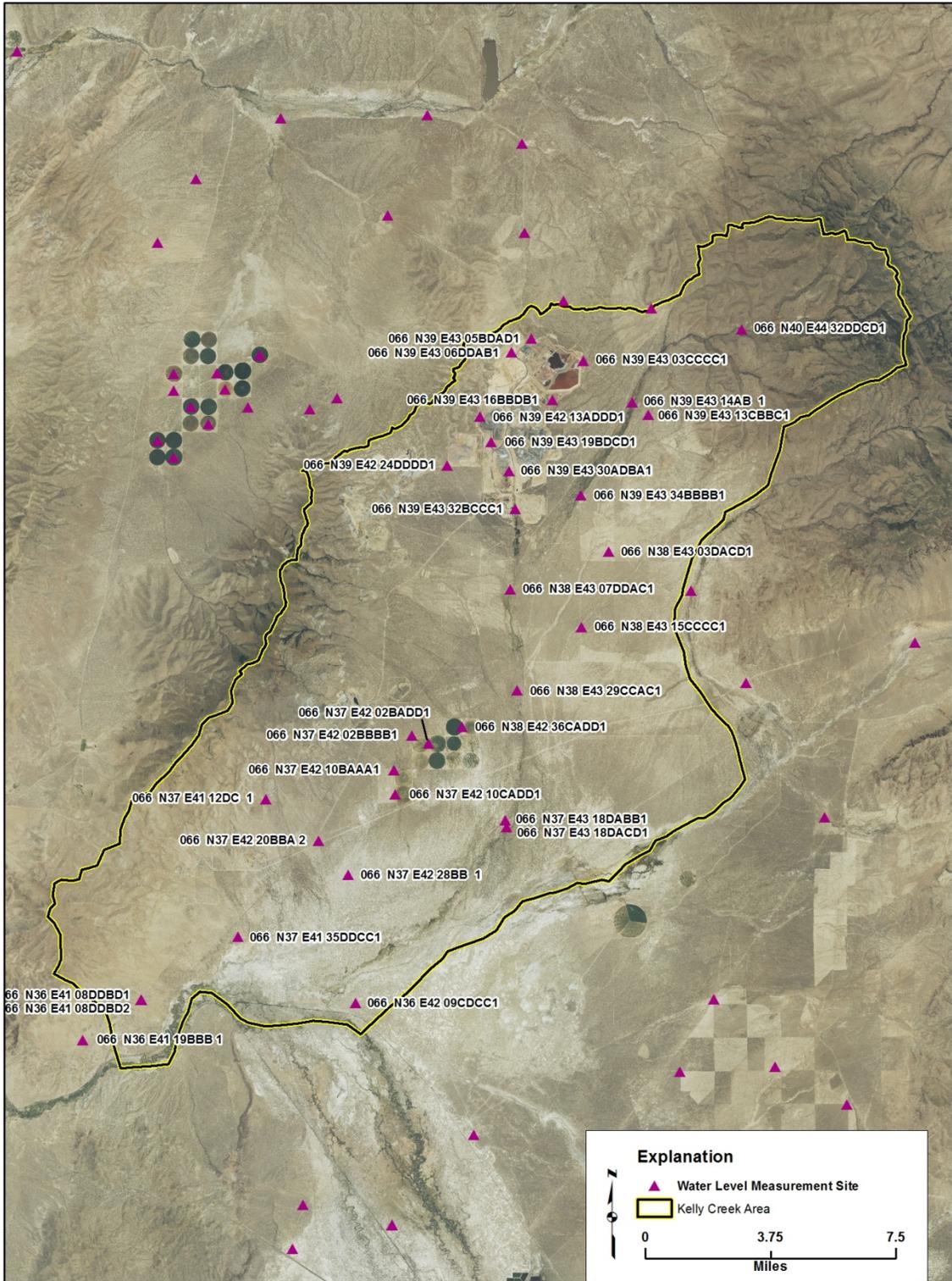


Figure 2. Map showing Kelly Creek Area irrigated acreage and water level monitoring sites.

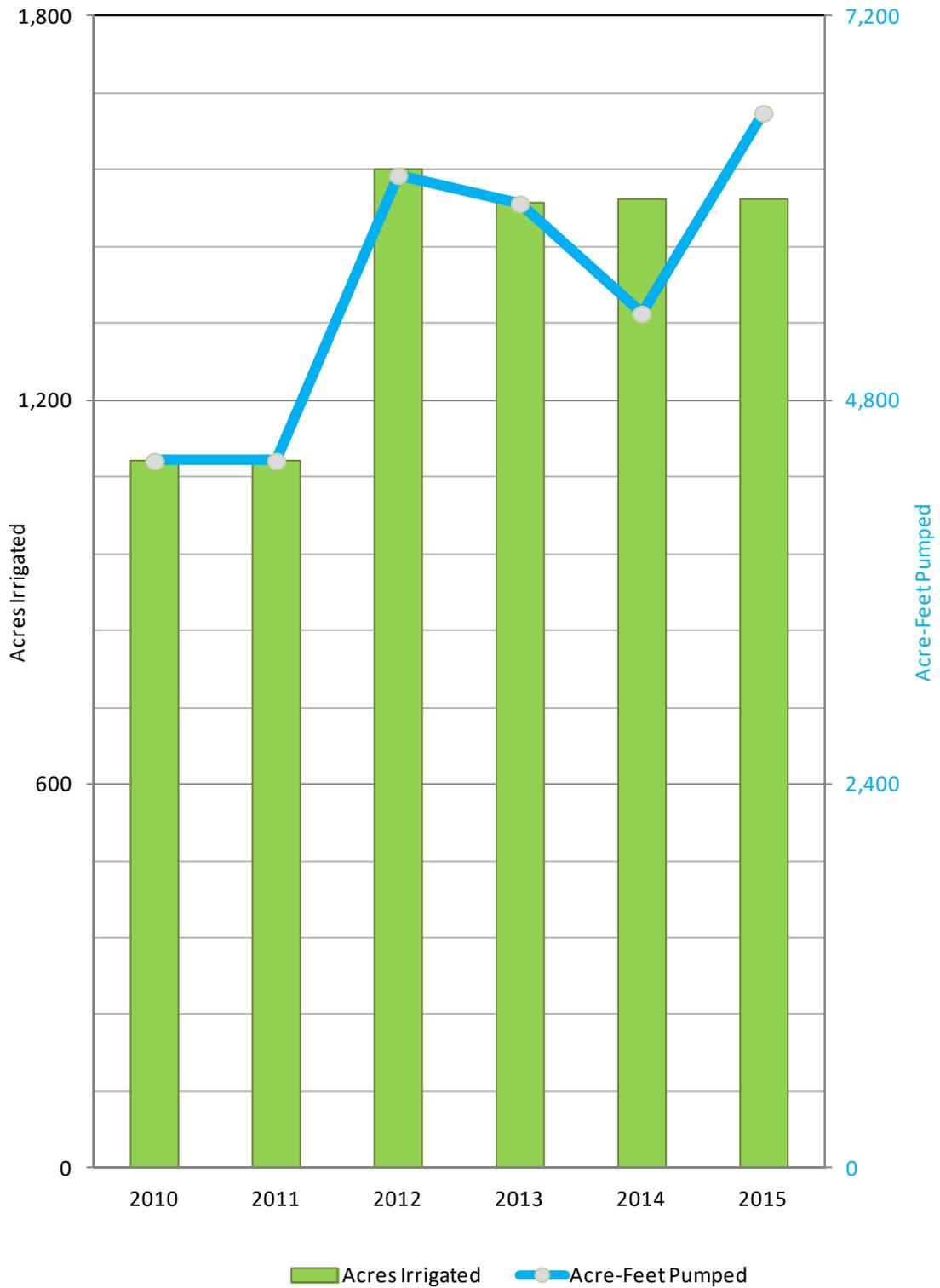


Figure 3. Graph showing Kelly Creek Area historical irrigated acreage and pumpage. The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

APPENDIX A. 2015 KELLY CREEK AREA 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-Feet 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.

2015 KELLY CREEK AREA CROP INVENTORY

App No	Status	QQ	Q	Sec	Tw	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	Irrigation Acreage	Irrigation Acreage Method	Acre-Feet Pumped	Pumpage Estimation Method	Remarks		
22652	ABR	NW	MW	2	37N	42E			0		0		Murdeck, Lavar J. & Lila Rae	Alfalfa	3.0	Pivot	85%	66	F-I	386.10	M	This permit is abrogated and is still being used. The permits in this total combined group were all irrigated out of one well and distributed throughout the combined place of use. Permit 29889 and 41522 have the same POD (acres are estimated together)		
28768	CER	NE	SW	2	37N	42E	Y	All other permits in sections 2, 10 & 36	1,094.50	1,094.50	435.33	3,098.00	Crawford FM TR & Kade & Elizabeth Crawford	Alfalfa	3.0	Pivot	85%	55	F-I	4,510.92	M			
29154	CER	NW	NW	2	37N	42E	Y	All other permits in sections 2, 10 & 36	637.10	--	1,004.55	--	Crawford FM TR & Kade & Elizabeth Crawford	Alfalfa	3.0	Pivot	85%	125	F-I	--	M			
29885	CER	NE	SW	36	38N	42E	Y	All other permits in sections 2, 10 & 36	320	--	1,000.00	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	180	F-I	--	M			
29886	CER	NW	SW	36	38N	42E	Y	All other permits in sections 2, 10 & 36	320	--	1,000.00	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	125	F-I	--	M			
29887	CER	NW	SW	2	37N	42E	Y	All other permits in sections 2, 10 & 36	1,094.50	--	870.66	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	65	F-I	--	M			
29888	CER	NE	NW	10	37N	42E	Y	All other permits in sections 2, 10 & 36	277.6	--	640	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	80	F-I	--	M			
29889	CER	NE	NW	10	37N	42E	Y	All other permits in sections 2, 10 & 36	317.4	--	640	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	80	F-I	--	M			
29890	CER	NE	SW	10	37N	42E	Y	All other permits in sections 2, 10 & 36	637.4	--	686.19	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	21	F-I	--	M			
29891	CER	NE	NW	2	37N	42E	Y	All other permits in sections 2, 10 & 36	637.1	--	1,004.55	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	125	F-I	--	M			
41522	CER	NE	NW	10	37N	42E	Y	All other permits in sections 2, 10 & 36	637.4	--	235.63	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	--	F-I	--	M			
43848	CER	SW	SW	2	37N	42E	Y	All other permits in sections 2, 10 & 36	637.1	--	653.3	--	Crawford Family Trust	Alfalfa	3.0	Pivot	85%	110	F-I	--	M			
Total									1,094.50	Acres	3,098.00	Acre-Feet												
35494	CER	NE	SE	18	37N	43E	N		36.18	36.18	144	144	Newmont USA Limited											
60154	PER	NW	SE	24	37N	41E	N		85	85	340	340	Gene and Jo Christison Family Trust											
80903	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	70	500	280	2,000	Crawford Family Trust 3/17/2004	Alfalfa	3.0	4 Pivots	85%	482	F-I	1,701.18	N	The nine permits use the same POD and are believed to be comingled with other wells in the area		
80904	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	70	--	280	--	Crawford Family Trust 3/17/2004											
80905	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	500	--	397.74	--	Crawford Family Trust 3/17/2004											
80908	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	292.9	--	583.41	--	Crawford Family Trust 3/17/2004											
80909	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	137.1	--	275.45	--	Crawford Family Trust 3/17/2004											
80910	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	137.1	--	200.33	--	Crawford Family Trust 3/17/2004											
80911	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	137.1	--	179.14	--	Crawford Family Trust 3/17/2004											
81006	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	137.1	--	275.45	--	Crawford Family Trust 3/17/2004											
81007	PER		LT04	1	37N	42E	Y	80903-05, 80908-11, 81006.07	500	--	198.87	--	Crawford Family Trust 3/17/2004											
Total									500	Acres	2,000	Acre-Feet												
Total									1,715.68	Acres	5,582.00	Acre-Feet												
														Total				482	Acres	1,701.18	Acre-Feet			
														Total				1,514.00	Acres	6,598.19	Acre Feet			