STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WATER RESOURCES

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PUEBLO VALLEY
HYDROGRAPHIC BASIN 1-001

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 groundwater rights for irrigation purposes located within Pueblo Valley, Hydrographic Basin 1-001, 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 **1,446 acres** with a total duty of 5,784 acre-feet within Pueblo Valley. An estimated **1,219 acres** were irrigated and 4,146 acre-feet were pumped during 2015.

HYDROGRAPHIC BASIN SUMMARY

HYDROGRAPHIC BASIN NUMBER	001, REGION 1
HYDROGRAPHIC BASIN NAME	PUEBLO VALLEY
COUNTIES	HUMBOLDT
MAJOR COMMUNITIES	DENIO
DESIGNATED BASIN	NON-DESIGNATED
DENIALS BASED UPON WATER AVAILABILITY	N/A
ESTIMATED IRRIGATION PUMPAGE 2015 (ACRE-FEET)	4,146*
STATE ENGINEER'S ORDERS	N/A

COMMITTED GROUNDWATER RESOURCE FOR IRRIGATION PURPOSES: 5,784 ACRE-FEET
DATE: MARCH 2016

NOTE: Committed groundwater resource data are accurate for March 2016. 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 manners of use 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 (NDWR), and to estimate the amount of groundwater pumped for irrigation purposes within the Pueblo Valley Hydrographic Basin 1-001, for the year 2015.

DESCRIPTION OF THE STUDY AREA

The Pueblo Valley Hydrographic Basin is located in north central Nevada (Figure 1). Pueblo Valley occupies approximately 118 square miles in Humboldt County. The adjacent hydrographic basins are King's River Valley – Rio King Subarea (2-030A) to the east, Pine Forest Valley (2-029) to the south and Continental Lake Valley (1-002) to the west.

Pueblo Valley is bounded on the north by the state of Oregon, to the east by The Granites, to the south and east by the Bilk Creek Mountains, to the west by Black Mountain, and to the north and west by the Pueblo Mountains. The valley is approximately 22 miles wide by 13 miles long with basin elevations ranging from approximately 4,100 feet above mean sea level on the valley floor to approximately 8,500 feet above mean sea level in the surrounding mountains. Irrigation occurs primarily in the western part of the basin (Figure 2).

GROUNDWATER LEVELS

Depths to groundwater in Pueblo Valley are measured by multiple agencies on an annual basis. Sites at which water level measurements are made or reported to NDWR include:

001 N47 E30 04BA1	001 N47 E30 04BB1	001 N47 E30 15CBAA1
001 N47 E30 15CDCD2	001 N47 E30 15DDCC1	001 N47 E30 22ABCC1
001 N47 E30 22ADDC1	001 N47 E30 22BCDD1	

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 and exempt domestic wells in the Pueblo Valley Hydrographic Basin. The following methods were used to arrive at the estimated use:

- Where totalizing meters are 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 not used in previous inventories, and pumpage estimates for 2014 and subsequent reports 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. Pueblo Valley historical irrigated acreage and pumpage data.

Year	2011	2012	2013	2014	2015
Acres Irrigated	1,167	1,155	1,155	1,188	1,219
Acre-Feet Pumped	4,669	4,619	4,623	3,887	4,146

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

FIGURES

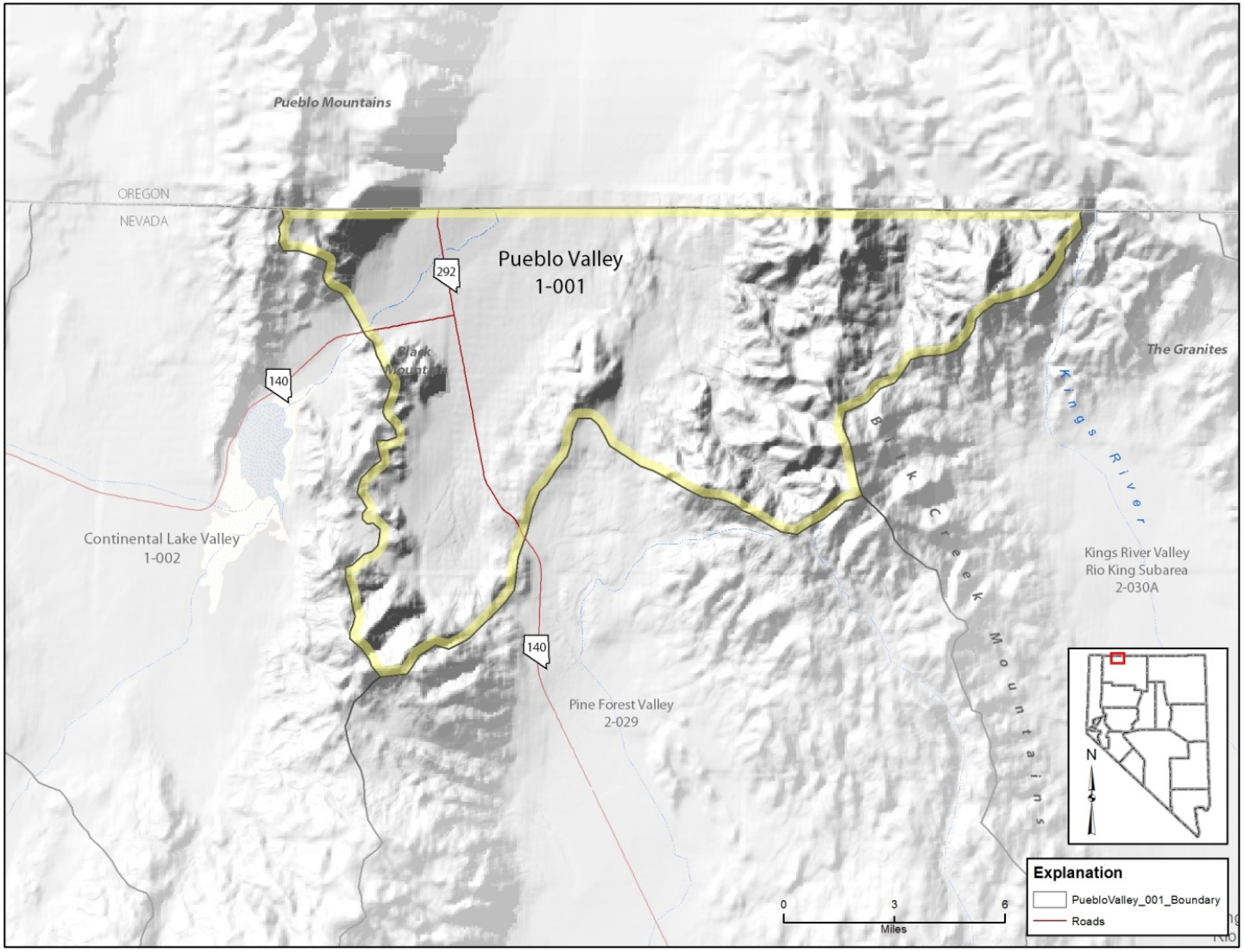

Figure 1. Physiographic map of Pueblo Valley (Hydrographic Basin 1-001).

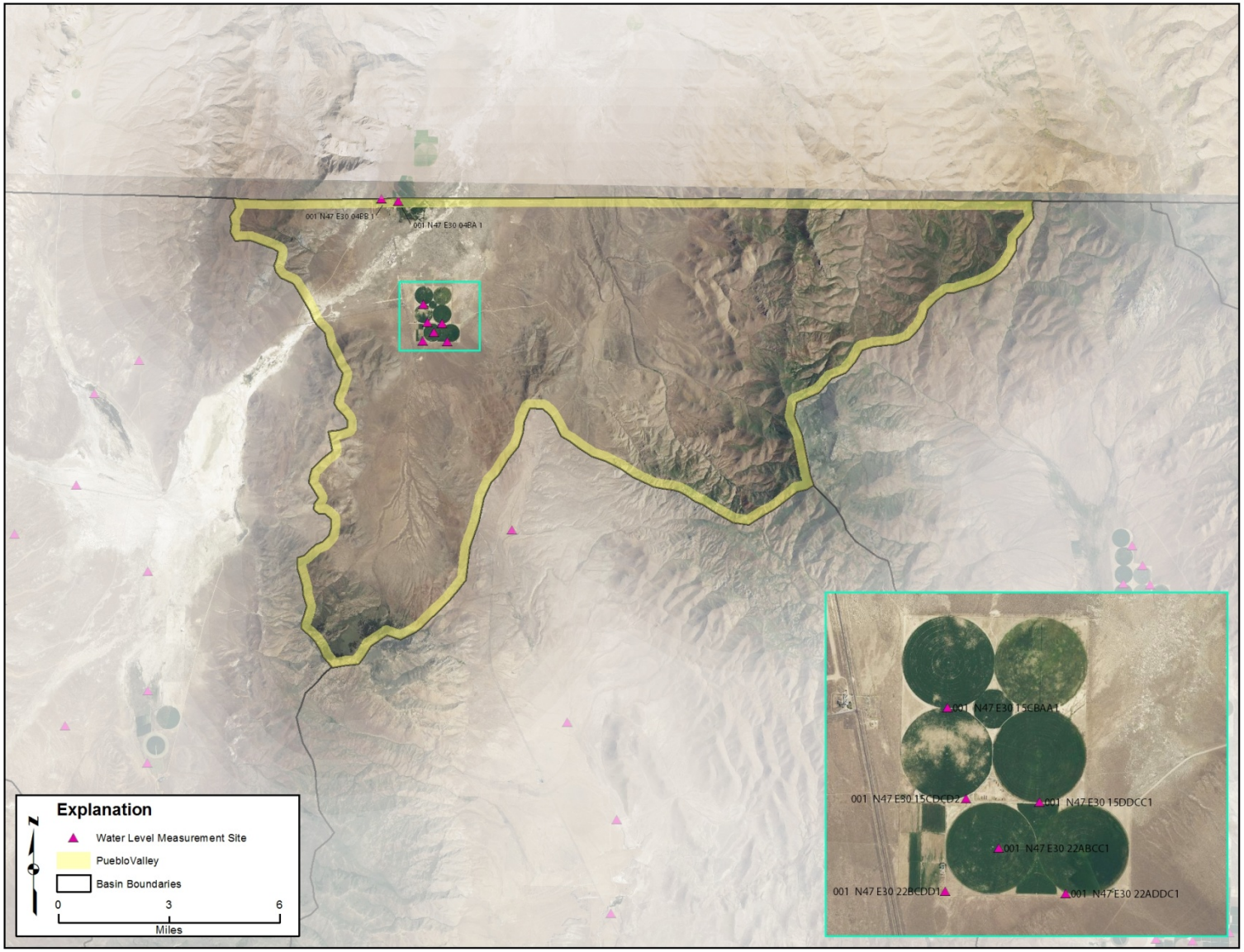

Figure 2. Map showing Pueblo Valley irrigated acreage and water level measurement sites.

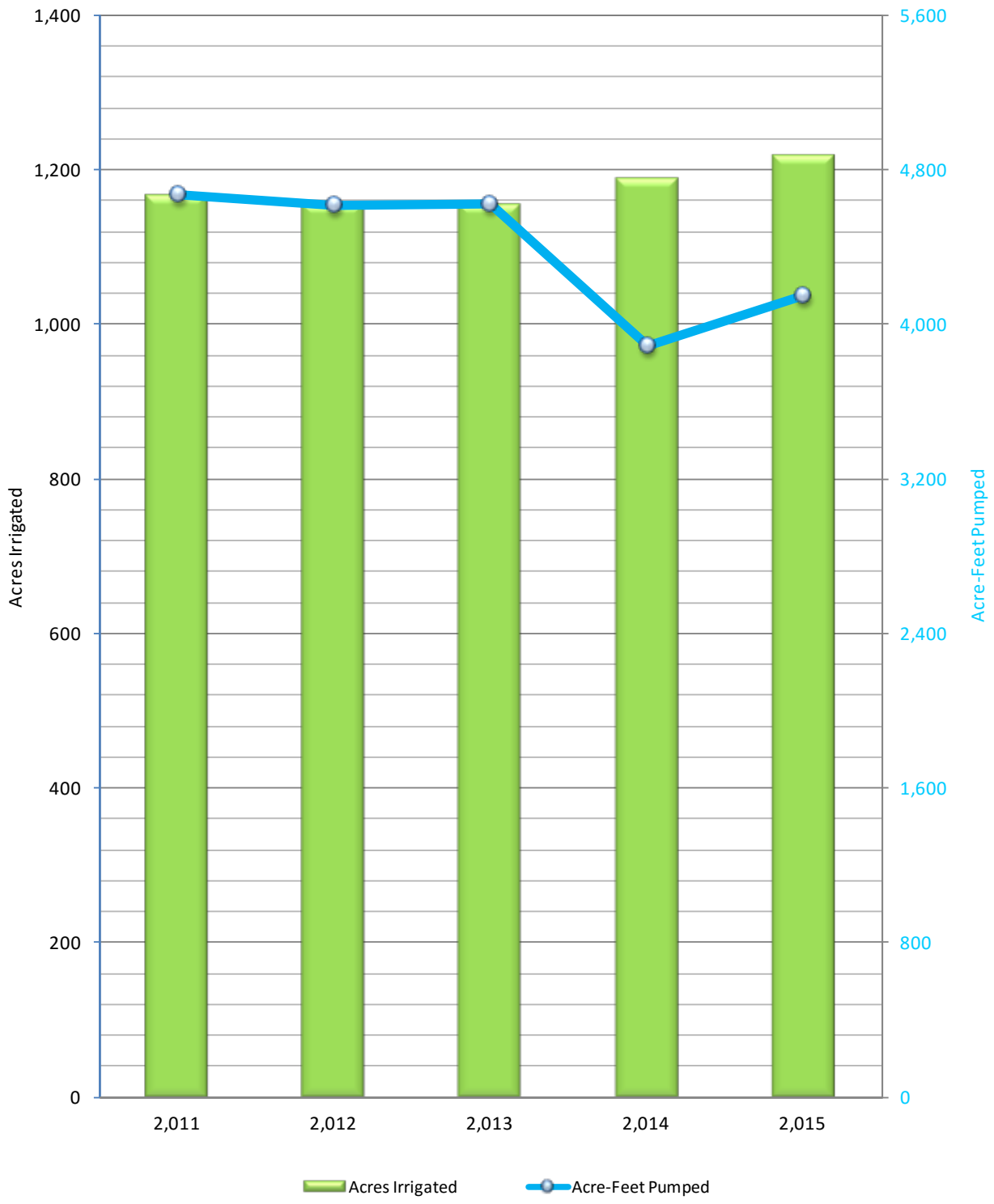

Figure 3. Graph showing Pueblo Valley historical irrigated acreage and pumpage. The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

APPENDIX A. 2015 PUEBLO 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.
Supple-mentally 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.
Supple-mentally 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 so, the common name description of the plants under cultivation are given (e.g., alfalfa)

NIWR (ft)	Net Irrigation Water Requirement. Expressed as the number of feet of water per acre per year required to grow a particular crop type.
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 Method.	The method used to estimate the amount of water pumped. M – Totalizing meter readings. N – NIWR
Remarks	Additional information. Numbers in this column correspond to footnotes at the end of the table.

Crop Inventory and Groundwater Pumpage for Irrigation - Pueblo Valley - Basin 001, 2015

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 Rates	Irrigation Method	Application %	Irrigated Acres	Acreage Estimation Method	Acre-Feet Pumped	Pumpage Estimation Method	Remarks
13503	CER	NE	TR3	3	47N	30E	Y	38720	50		200.00		Moser, Ruth T.	Pasture	2.5	Flood	60%	50	F, I	1278.80	D	
38720	CER		TR3	4	47N	30E	Y	13503	319.7	319.70	1278.80	1278.8	Moser, Ruth T.	Alf.	3.1	Flood	60%	270	F, I		D	
18000	CER		TR3	4	47N	30E			11.48	11.48	45.92	45.92	Arrien, Kent & Ma	No Crop								
18001	CER		TR3	4	47N	30E			domestic	8.15	32.58	32.58	Arrien, Kent & Ma	No Crop								
18083	CER		TR3	4	47N	30E			1	1.00	4.00	4	Ortlip, Paul A.	Yard	3	Sprinklers	85%	0.75	F, I	2.65	N	
23244	CER		TR3	4	47N	30E			67.79	67.79	271.16	271.16	Stephen, William	No Crop								
23502	CER		TR4	4	47N	30E			50.42	50.42	201.68	201.68	English, Brian L.	Pasture	2.5	Sprinklers	75%	20	F, I	66.67	N	
36579	CER	SW	NW	22	47N	30E			77.68	77.68	310.72	310.72	Peter, John S.	Alfalfa	3.1	Flood	60%	63	F, I	310.72	D	
83096	PER	NW	NE	22	47N	30E	Y	1	766.2	909.82	1723.70	3639.27	Denio Farms	Alfalfa	3.1	Pivots	85%	146	F, I	532.47	N	
														Alfalfa		Sprinklers		7	F, I	28.93	N	
83098	PER	SE	SW	15	47N	30E	Y	1	766.2		3064.80		Denio Farms	Alfalfa		Pivots		284	F, I	1035.76	M	
83094	PER	SE	SE	15	47N	30E	Y	1	820.28		2926.90		Denio Farms	Alfalfa	3.1	Pivot	85%	122	F, I	444.94	N	
83095	PER	SE	NW	15	47N	30E	Y	1	766.2		2554.00		Denio Farms	Grain	2	Pivot	85%	129	F, I	303.53	N	
83097	PER	SE	NW	15	47N	30E	Y	1	127.7		510.80		Denio Farms	Alfalfa		Pivot		127	F, I	141.86	M	

otal Suplementally Adjusted Permitted/Certificated Acreage 1,446.04

total Suplementally Adjusted Permitted/Certificated Pumpage 5,784.13

Total Estimated Acreage 1,218.75

Total Estimated Pumpage 4,146.33

[1] PERMITS 83094, 83095, 83096, 83097, 83098 HAVE A TOTAL COMBINED DUTY OF 3,639.27 AFA.