STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WATER RESOURCES

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BUENA VISTA VALLEY, HYDROGRAPHIC BASIN 10-129

CROP INVENTORY

2014

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ABSTRACT

This inventory represents the status and usage of all groundwater rights for irrigation purposes located within Buena Vista Valley, Hydrographic Basin 10-129, for the 2014 calendar year. **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 actions, 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 **5,328 acres** with a total permitted, supplementally adjusted duty of 21,311 acre-feet within Buena Vista Valley. An estimated **3,365 acres** were irrigated and 10,587 acre-feet were pumped during 2014.

HYDROGRAPHIC BASIN SUMMARY

HYDROGRAPHIC BASIN NUMBER	129, REGION 10
HYDROGRAPHIC BASIN NAME	BUENA VISTA VALLEY
COUNTIES	CHURCHILL, PERSHING
MAJOR COMMUNITIES	UNIONVILLE
DESIGNATED BASIN	DESIGNATED
DENIALS BASED UPON WATER AVAILABILITY	2741, IRR DEN, 1/29/1982 2757, IRR DEN, 4/9/1982 2782, IRR DEN, 11/5/1982 2984, IRR DEN, 7/13/1984 2998, IRR DEN, 8/8/1984 3169, IRR DEN, 4/4/1985 4710, IRR, DEN, 3/23/1999 5362, IRR DEN, 6/4/2004
ESTIMATED IRRIGATION PUMPAGE 2014 (ACRE-FEET)	10,587*

STATE ENGINEER'S ORDERS

NO. 732 – DESIGNATION OF BASIN	OCTOBER 2, 1979
NO. 1244 – ADJUDICATION	NOVEMBER 13, 2014
NO 1245 – ADJUDICATION	NOVEMBER 13, 2014
NO. 1248 – ADJUDICATION	JANUARY 12, 2015

COMMITTED GROUNDWATER RESOURCE FOR IRRIGATION PURPOSES: 21,311 ACRE-FEET
DATE: DECEMBER 2014

NOTE: Committed groundwater resource data are accurate for the end of 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. 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.

* 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 Buena Vista Valley Hydrographic Basin (10-129) for the year 2014.

DESCRIPTION OF THE STUDY AREA

The Buena Vista Valley Hydrographic Basin is located in west-central Nevada (Figure 1). Buena Vista Valley occupies approximately 742 square miles[1] in Pershing and Churchill Counties. The adjacent hydrographic basins are: Grass Valley (4-071) to the northeast, Pleasant Valley (10-130) to the east, Dixie Valley (10-128) to the southeast, Carson Desert (8-101) to the southwest, Carson Desert Packard Valley Subarea (8-101A) and Lovelock Valley Oreana Subarea (4-073A) to the west, and Imlay Area (4-072) to the northwest.

Buena Vista Valley Valley's agricultural lands are located approximately 30 miles northeast of Lovelock and nine miles south of the intersection of I80 and SR400. The Humboldt Range lies to the west of the valley floor. The East and Stillwater Ranges lie on the east side of the valley. The valley has no towns. Unionville in Big Canyon, once a thriving mining camp, is on the east side of the Humboldt Range. Irrigation occurs primarily in the northern portion of the basin[2] (Figure 2).

GROUNDWATER LEVELS

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

129 N25 E35 27BCCB1	129 N27 E34 12BBBD1	129 N28 E37 10BBDA1
129 N30 E34 11BAAB1	129 N30 E34 26AADD1	129 N30 E34 27BBBD1
129 N30 E34 27BBCB1	129 N30 E35 20BACA1	129 N30 E35 20CDBD1
129 N31 E34 24ABCD1	129 N31 E34 24BADB1	129 N31 E35 06CCCD1
129 N31 E35 07BBBD1	129 N31 E35 07BBBD2	

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).

[1] NDWR, Hydrographic Area Summary, April 27, 2016.
[2] O.J. Loeltz, et al., Geology and Ground-water Resources of Buena Vista Valley Valley, Pershing County, NV, Water Resources Bulletin No. 13, (State of Nevada, Office of the State Engineer and United States Geological Survey), p. 9-10, 45-46, 1955.

METHODS TO ESTIMATE IRRIGATED ACREAGE

This report estimates the number of acres irrigated by the groundwater pumped under permits and certificates issued by the State Engineer. Vested claims within Buena Vista Valley are outside the scope of this report because those claims are filed for surface water (stream) sources only. 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 are analyzed to determine acreages. This method was not used in the 2014 report.

METHODS TO ESTIMATE PUMPAGE

This report estimates the amount of groundwater pumped under water rights issued by the State Engineer. 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, the place of use was inspected to estimate the amount of acreage under cultivation. The number of acres under cultivation was then multiplied by certificated or permitted duty rate associated with that acreage.
- If there were no acres under cultivation, zero pumpage was recorded.
- Where there were no flow meters or other reliable options for estimating pumping and the use was irrigation, pumping 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. Efficiencies associated with three types of irrigation methods are as follows: 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 is estimated using the NIWR method above, but is 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 pumping was not used in previous inventories, and pumping estimates for 2014 may differ significantly from estimates of previous years.
- Where lands are irrigated by both surface water and groundwater, the surface water supply for the irrigation season was subtracted from the comingled water when estimating groundwater pumpage.

The estimated irrigated acres and pumping for the 2014 calendar year can be viewed in Appendix A. Irrigated acreage and pumping for the calendar years 2009 through 2014 are tabulated in Table 1; Figure 3 shows the same information graphically. Note that for 2009 through 2011 calendar years, the data are consistent with the *2013 Crop Inventory* report. The 2009 through 2011 numbers are not consistent with historical pumping data reports, due to increased estimation accuracy in the 2013 report.

TABLE

Table 1. Buena Vista Valley historical irrigated acreage and pumpage data. Historical data reported herein are consistent with those published in 2013, and differ from previously published data.

Year	2009	2010	2011	2012	2013	2014
Acres Irrigated	2,520	2,911	3,562	3,326	3,198	3,365
Acre-Feet Pumped	9,458	10,382	11,829	13,000	9,729	10,587

FIGURES

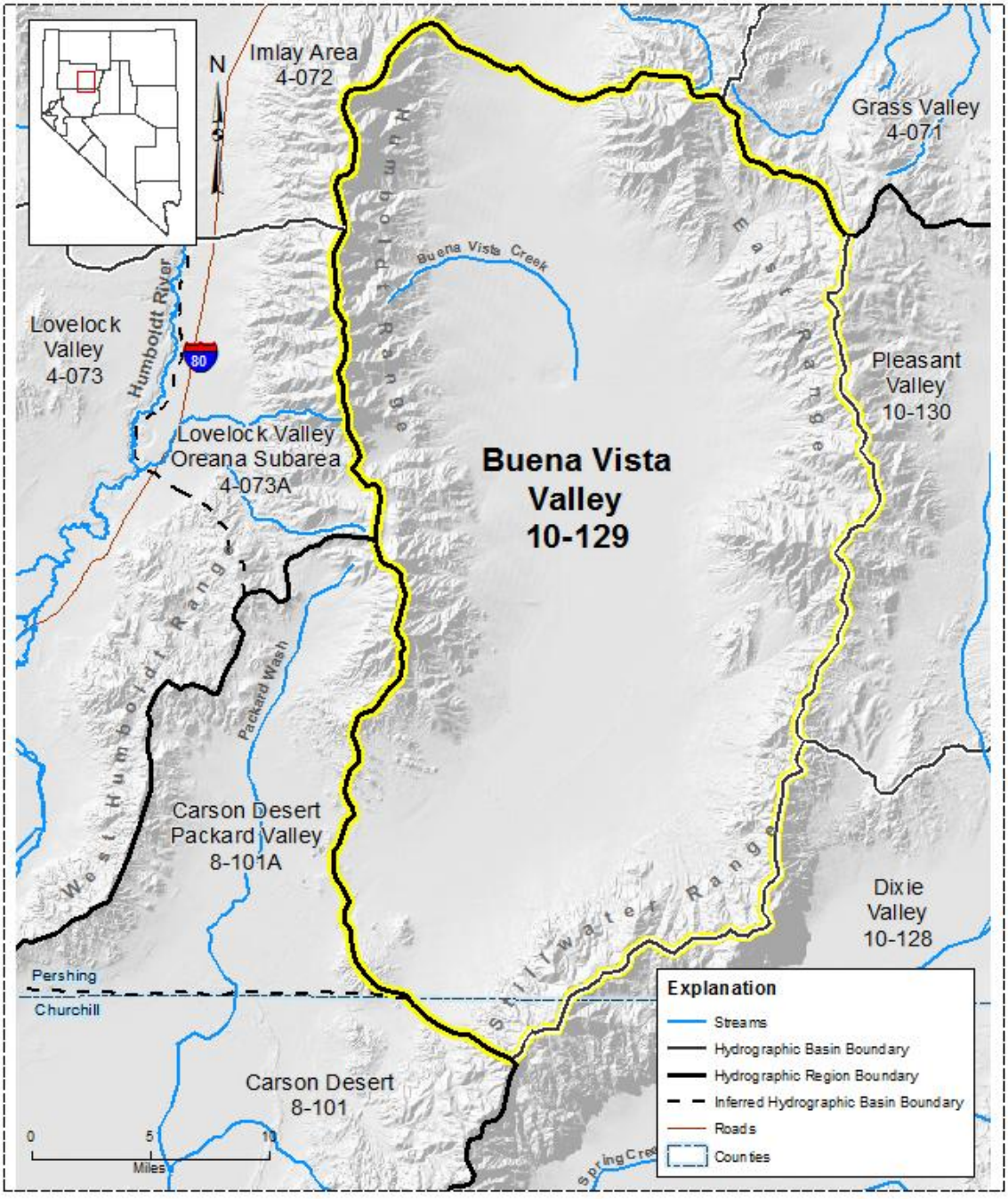

Figure 1. Physiographic map of Buena Vista Valley (Hydrographic Basin 10-129).

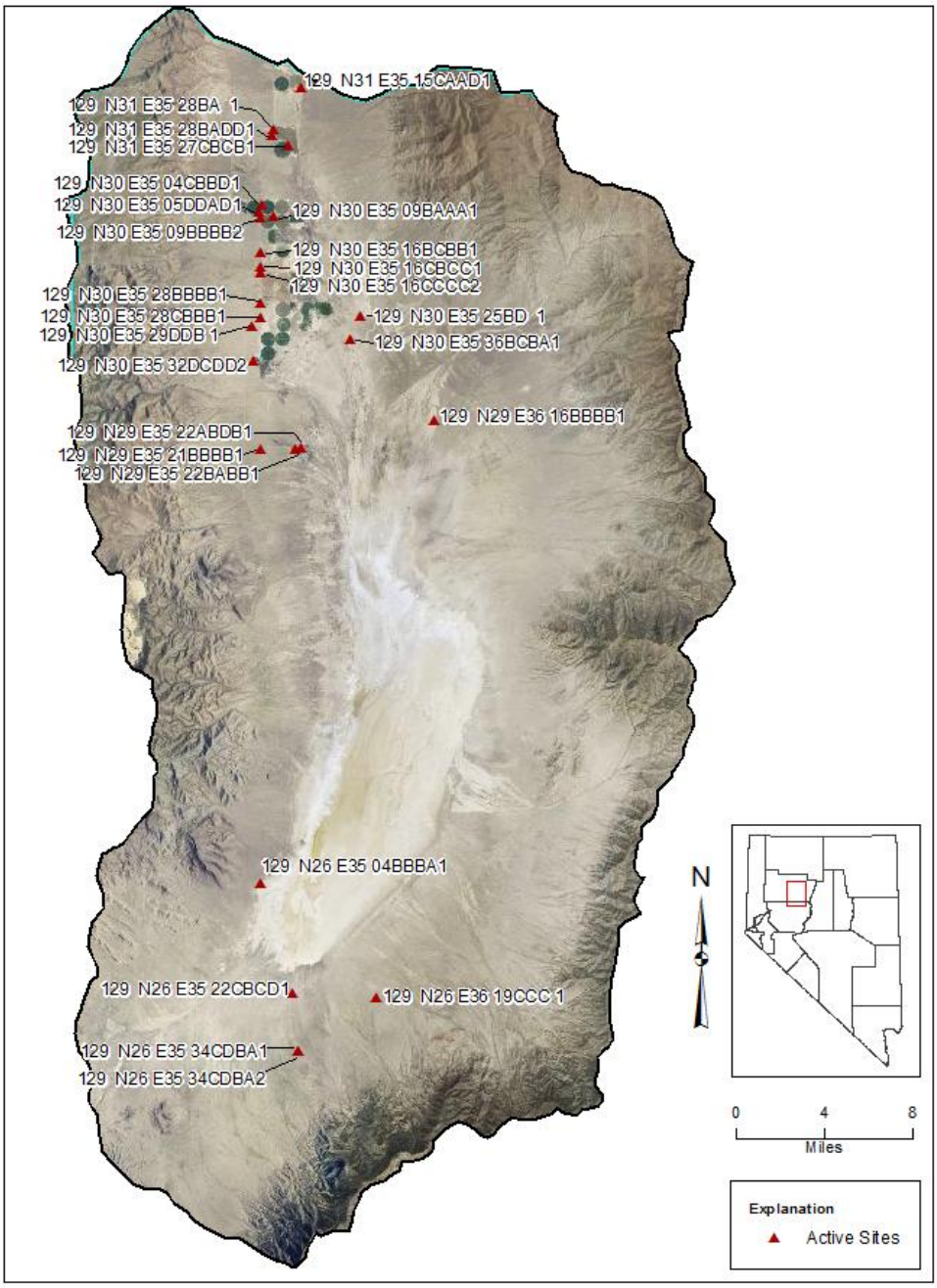

Figure 2. Map showing Buena Vista Valley irrigated acreage and water level monitoring sites.

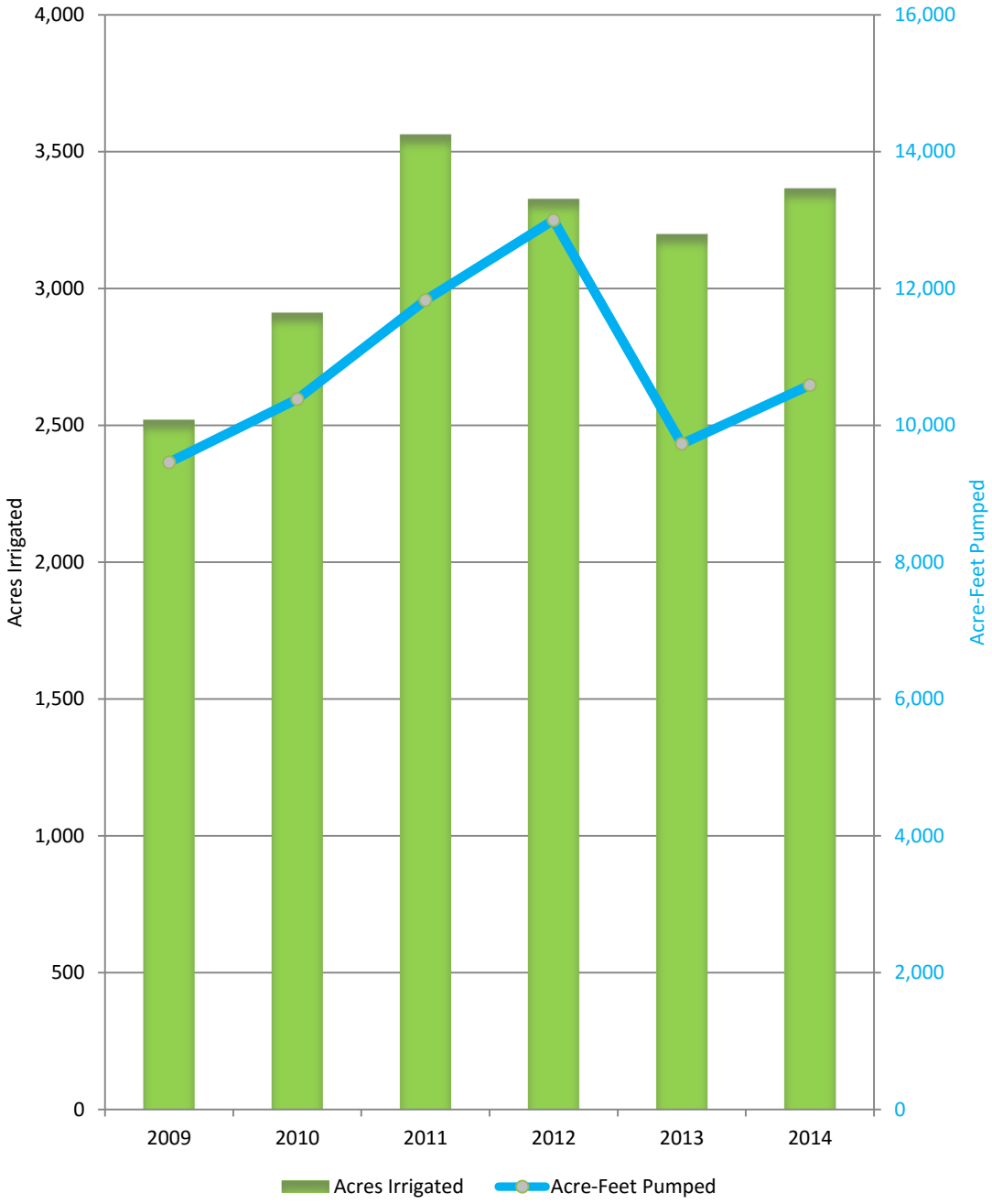

Figure 3. Graph showing Buena Vista Valley historical irrigated acreage and pumpage. Historical data reported herein are consistent with those published in 2013, and differ from previously published data.

APPENDIX A. 2014 BUENA VISTA 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-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	The numbers in this column correspond to footnotes at the end of the table.

Crop Inventory and Groundwater Pumpage for Irrigation - Buena Vista Valley - Basin 129, 2014

App. No.	Status	Point of Diversion					Sup.	Sup. Application #s	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 Area (Acres)	Acreage Estimation Method	Volume Pumped (Acre-Feet)	Pumpage Estimation Method	Remarks
		QQ	Q	Sec.	Twn.	Rng.																
13432	CER	SW	SE	32	30N	35E	Y	13432, 25139, 42761, 45191, 67237, 67238, V01132	160.87	920.00	643.48	3680.00	McCart *et al.*	Alfalfa	3.4	Flood	60%	32	F-I	96.00	D	Surface water from Indian and Cottonwood Creeks - Assumed no use on pivots. Estimate 25% use on 32 acres of Flood irrigated land.
45191	PER	SE	SE	29	30N	35E	Y		520.00		2080.00			Alfalfa	3.4	Pivot	85%	389	F-I	1,556.00	NIWR	
67237	PER						Y		920.00		3680.00			Grass Hay	3.3	Pivot	85%	50	F-I	194.12	NIWR	
67238	PER	SE	NW	22	29N	35E	Y		920.00		3680.00			0	0	0	0	0	F-I	-	N/A	
50920	CER	NW	SW	4	30N	35E	Y	V01322, V03023, 50917, 50919, 50920, 50921, 50922, 50923, 50924	890.60	890.60	396.71	3562.40	Huntsman Ranch, LLC	Alfalfa	3.4	Pivot	85%	128	F-I	580.81	M	Coyote Creek source. 53% of the allowable acre-ft/acre was metered. 47% of the maximum allowable acre-ft/acre not used was most likely surface water. Therefore, surface water was not used in this calculation.
50922	CER						Y		890.60		1393.36			Grain	3.3	Pivots	85%	120	F-I			
50924	CER						Y		890.60		233.84			0	0	0	0	0	F-I	-	N/A	
50921	CER	SE	SE	5	30N	35E	Y		890.60		1094.20			Alfalfa	3.4	Pivots	85%	381	F-I	834.39	M	
50923	CER	NW	NW	9	30N	35E	Y		890.60		3554.80			Alfalfa	3.4	Pivot	85%	252	F-I	449.55	M	
47575	CER	SW	NW	16	30N	35E	Y	47575, 47577	515.00	515.00	1664.10	2060.00	Buena Vista Land & Livestock, LLC	Alfalfa	3.4	Pivot	85%	120	F-I	790.91	M	No surface water.
							Y							Grain	3.3	Pivots	85%	240	F-I			
47577	CER	NW	SW	16	30N	35E	Y		515.00		2060.00			Grain	3.3	Pivot	85%	122	F-I	407.90	M	
13264	CER	SW	NW	21	30N	35E	Y	13264, 28267, V00735	322.76	584.16	1291.04	2336.64	Palomino Development, LLC	Alfalfa	3.4	Pivot	85%	123	F-I	492.00	NIWR	Surface water from Union-ville Creek on 87.25 acres - No SW use on pivots.
														Grass Hay	3.3	Pivot	85%	56	F-I	217.41	NIWR	
28267	CER	NW	NW	21	30N	35E	Y		584.16		2336.64			Alfalfa	3.4	Pivots	85%	253	F-I	1,012.00	NIWR	
29524	CER	SW	NW	22	30N	35E	Y	29524, 43403, 43404, 43405, 43406, 47736, 58570, 58571, 58572, 58573	124.90	270.38	262.73	1081.52	Harmon *et al.*	0	0	0	0%	0	F-I	-	N/A	No surface water.
43403	CER	NW	NW	22	30N	35E	Y		124.90		382.89			Alfalfa	3.4	Sprinklers	75%	98	F-I	392.00	D	
43404	CER	NE	NW	22	30N	35E	Y		145.48		114.38			0	0	0	0%	0	F-I	-	N/A	
43405	CER	SW	NW	22	30N	35E	Y		124.90		499.60			0	0	0	0%	0	F-I	0.12	M	
43406	CER	NW	SW	22	30N	35E	Y		145.48		361.99			0	0	0	0%	0	F-I	-	N/A	
47736	CER	SW	NE	22	30N	35E	Y		145.48		361.99			0	0	0	0%	0	F-I	-	N/A	
58570	CER	SW	SW	16	30N	35E	Y		270.38		115.15			Alfalfa	3.4	Pivot	85%	126	F-I	504.00	NIWR	
58571	CER						Y		270.38		141.98											
58572	CER						Y		270.38		105.70											
58573	CER						Y		270.38		271.07											
29065	PER	NW	NW	28	30N	35E	Y	29065, 29066, 29067, 31208, 40892, 40893, 40894	1920.00	1918.03	4343.82	7672.11	Kendricks *et al.*	Alfalfa	3.4	Pivot	85%	127	F-I	508.00	NIWR	No surface water.
29066	PER						Y		1920.00		4343.82											
29067	PER	SW	SW	28	30N	35E	Y		1920.00		4343.82			Alfalfa	3.4	Pivots	85%	377	F-I	1,229.77	M	
31208	PER	NE	SW	28	30N	35E	Y		1920.00		4271.42			0	0	0	0%	0	F-I	-	N/A	
40892	PER	NW	NW	27	30N	35E	Y		166.75		661.73			0	0	0	0%	0	F-I	-	N/A	
40893	PER	SW	NW	28	30N	35E	Y		468.00		863.80			0	0	0	0%	0	F-I	-	N/A	
40894	PER	NW	NW	28	30N	35E	Y		468.00		1872.00			Alfalfa	3.4	Pivot	85%	125	F-I	447.39	M	
23425	CER	NE	NW	28	31N	35E	Y	V01177, 79700, 79701	190.52	229.50	762.08	918.00	Pruitt Revocable Living Trust	Alfalfa	3.4	Flood	60%	53	F-I	166.73	M	Partially supplemental to Santa Clara and Star Creek surface waters. Estimated 25% surface water use on flood irrigated area. No adjustment to metered water.
79700	PER						Y		80.29		321.16			Alfalfa	3.4	Pivot	85%	129	F-I	516.00	NIWR	
79701	PER						Y		76.59		306.36			Alfalfa	3.4	Flood	60%	64	F-I	192.00	D	
								Permitted Acres =		**5,327.67**	***Total Supplementally Adjusted Duty (acre-feet) =***	**21,310.67**					**Total Irrigated Areas (acres) =**	**3,365**	**Total Pumped (acre-feet) =**	**10,587.09**		