Farm Evaluation Summary Report

(2017 Crop Year)

Submittal Date

May 1, 2018

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LIST OF ACRONYMS

GAR	Groundwater Quality Assessment Report
FE	Farm Evaluation survey
MWE	Managed Wetland Evaluation survey
SVWQC	Sacramento Valley Water Quality Coalition
CVRWQCB	Central Valley Regional Water Quality Control Board

FARM EVALUATION REPORT

As outlined in the Waste Discharge Requirements General Order for Growers within the Sacramento River Watershed (WDR or General Order; Order No. R5-2014-0030-R1), the Sacramento Valley Water Quality Coalition (SVWQC or Coalition) is submitting a summary of management practice information obtained from 2017 Farm Evaluations (FEs). Farm Evaluations are required annually for parcels in high vulnerability areas and every 5 years for parcels in low vulnerability areas starting with the 2014 Crop Year (due March 1, 2015). Members with parcels in high vulnerability areas, or with parcels in low vulnerability areas without a previously completed survey (e.g. a new member), were required to return a completed 2017 survey for enrolled parcels to the Coalition by March 1, 2018. A version of the Farm Evaluation survey, called the Managed Wetland Evaluation (MWE), was completed by members with private or publically managed land irrigated for wetland conservation, preservation, or restoration (Table 1).

The Central Valley Regional Water Quality Control Board (Regional Water Board) reviews management practices compiled in this Farm Evaluation Summary, along with water quality monitoring results, to determine if Coalition members are taking actions to protect surface and groundwater quality beneficial uses. The standard FEs are designed to collect management practice information in four survey "Parts":

- Part A: whole farm evaluation,
- Part B: specific field evaluation,
- Part C: irrigation well information, and
- Part D: sediment and erosion control practices.

The survey parts gather information on management practices that affect both surface and groundwater quality:

1. Identification of crops grown and the irrigated acreage of each crop,
2. Geographical location of the member's farm,
3. Identification of on-farm management practices implemented to achieve the WDR farm management performance standards,
4. Identification of whether or not there is movement of soil during storm events and/or during irrigation (sediment and erosion risk),
5. Location of active irrigation wells and abandoned wells, and
6. Applied wellhead protection and backflow prevention practices and devices.

Managed Wetland Evaluations are designed to include only practices that may be used in managing wetland habitat. These MWEs are completed with information from March 2016 through February 2017 including the following:

1. Identification of enrolled parcels included as managed wetland,
2. Identification of habitat type and acreage,
3. Geographical location of the property,
4. Identification of irrigation practices implemented for each habitat type and the months in which they occur,
5. Identification of management practices for irrigation, herbicide application, and sediment control used to ensure water quality standards,
6. Location of active irrigation wells and abandoned wells, and applied wellhead protection and backflow prevention practices and devices, and
7. Identification of whether or not water leaves the property and is conveyed downstream and a description of where this occurs.

Eight of the Coalition's 13 Subwatershed Groups are classified as high vulnerability; therefore, this report includes information from surveys returned by members within these 8 Subwatershed Groups. The Subwatershed Groups with high vulnerability areas are: Butte Yuba Sutter, Colusa Glenn, Dixon Solano, Northeastern California, Placer-Nevada-South Sutter-North Sacramento, Sacramento Amador, Shasta Tehama, and Yolo groups. The Executive Officer of the Regional Water Board has approved Reduced Monitoring Management Practices Verification alternatives for El Dorado, Lake County, and Napa. Vulnerability designations for Goose Lake and the Upper Feather River Watershed Group will be determined when the Groundwater Quality Assessment Report (GAR) is updated in September 2021 (*Sacramento Valley Water Quality Coalition Revised GAR Conditional Approval Letter, September 16, 2016)*. These areas are only required to submit surveys every fifth year.

Table 1. Farm Evaluation deadlines for high and low vulnerability areas in the SVWQC.

VULNERABILITY	DOCUMENT REQUIRED	DUE DATE	UPDATES REQUIRED	REPORT TO RB
High	Farm Evaluation	March 1, 2018	March 1 Annually	May 1, 2018
Low	Farm Evaluation	March 1, 2020	March 1 Every 5 years	May 1, 2020

Farm Evaluations were distributed and processed through Subwatershed Groups; these smaller organizations more efficiently communicate with individual members. Lists of active members were used to evaluate the status of returned FEs. All members on these lists were sent notifications regarding FE completion deadlines and were provided with both resources and assistance with completing the surveys and to answer any questions. Members known to have managed wetlands were provided MWEs. A majority of surveys were prepopulated based on 2016 responses.

Member survey responses were recorded electronically by each Subwatershed Group and entered into the Coalition Access database for analysis. Survey responses were linked to unique identifiers per parcel with an Assessor Parcel Number (APN) and the associated acreage. The results are being submitted in an Access database along with this report and are identified on a Township-Range level, where the Township is assigned based on the centroid of each parcel.

Members were offered assistance with completing their surveys by each Subwatershed Group. The following actions were taken to ensure accurate data collection and reporting:

- Surveys were pre-populated by many Subwatershed Groups based on the previous year's answers. The member was given the opportunity to change their answer or indicate that no changes has occurred. If questions were not answered the year before, the question was marked with an arrow and a note indicated that the question needed to be answered this year.
- Private appointments were offered to assist members.
- Members were also assisted via phone and email.
- Members were contacted by phone for follow-up when unanswered questions or unclear responses were found during survey entry; this only occurred for priority questions that were essential to the survey (management practice questions) and not all members could be contacted prior to the submission of this report.
- Data entry systems were updated to improve entry efficiency and accuracy.

Data were reviewed to identify data entry errors, missing data, and potentially inaccurate data. The review included comparing acreages provided by the members to acreages enrolled with the Coalition, and ensuring a response was recorded for every question on the survey. The following issues were identified that could not be corrected:

- Irrigated acreage was not provided for some parcels. Enrolled irrigated acreage was used to complete the survey when possible. Total parcel acreage was used if irrigated acreage was not available.
- In situations where members have multiple parcels with different fields and management practices, some members did not clearly report acreage for each Site ID/Field ID. If the member could not be reached for clarification, the enrolled irrigated acreage was used.
- Some members did not provide crop information per field. If the crop type was not filled in by the member, and they could not be reached for clarification, the membership data was utilized when possible.

RESOURCES REQUIRED TO DOCUMENT FARM EVALUATION MANAGEMENT PRACTICES

As the largest water quality coalition in the Central Valley, both in irrigated acreage (1.3 million irrigated acres) and number of participants (over 8,000) enrolled, assisting owners and operators of irrigated lands in the Sacramento Valley Water Quality Coalition (SVWQC) complete the Farm Evaluation (FE) requirements was an "all hands on deck" effort that required countless hours and upwards of $300,000 annually. While the Coalition was able to streamline the data collection and entry these annual costs reflect both investments in technology systems to improve the members' ability to efficiently and accurately complete reports, staffing resources necessary to distribute, collect and enter data, material costs of producing maps, and providing assistance to Coalition members with questions on completing the FE.

A number of workshops and open houses were held for owners and operators of irrigated agriculture in the counties of the SVWQC requiring 2017 surveys. Thousands of letters were mailed, monthly newsletters were sent during the months in which FE distribution and collection efforts were underway, follow-up emails or letters were sent to those who hadn't returned Farm Evaluations, and appointments were made with individual members to help them complete the forms.

In addition to the outreach described above, there was a significant capital investment in developing a database systems, purchasing upgraded hardware and software systems and training full time and temporary help to input the data in a consistent manner. Costs ranged from an average $7,000 for a Subwatershed Group with less than 100 members to $75,000 for Subwatershed Groups with over 1,500 members and/or 225,000 irrigated acres.

The CVRWQCB should not view these costs in insolation or merely the first year costs for the SVWQC Waste Discharge Requirements (WDR) Order. Agriculture faces increasing cost pressures, not only from regulation, but from other areas (e.g., water master fees, fire tax), all "coming from the same pocket" of the grower and challenging the sustainability of California agriculture. Additionally, future costs of implementing groundwater quality elements of the WDR require the Regional Water Board to balance priorities and streamline requirements.

SUMMARY

Members with high vulnerability parcels or without prior surveys were required to complete and return a FE or MWE survey for the 2017 crop year. The SVWQC received surveys from 92% of the members representing 93% of the expected acreage by April 4, 2018. Only 25 members required a MWE for a portion of their membership (Table 2).

Table 2. Acreage and membership totals of returned 2017 FE and MWEs.

Survey Status	Survey Type	Sum of Acreage	Count of Members
Returned	Farm Evaluation	1,136,109	5,754
	Managed Wetland Evaluation[1]	11,750	25
Returned Total		**1,147,860**	**5,779**
Not Returned Total		**82,183**	**638**
Expected Grand Total		**1,203,107**	**6,416**
Percent Returned of Expected		**93%**	**92%**

[1] All members with MWEs also completed FE surveys for enrolled acreage.

STANDARD FARM EVALUATION

Farm Evaluation answers are associated to a parcel, acreage, and crop. In situations where a grower reported more than one crop per parcel, the first crop listed was recorded as the primary crop.

Primary crops were grouped into sub categories and general categories. For example, the primary crop Almonds is associated with a subcategory of Nut Trees and a general category of Orchard. General categories include Pasture/Hay/Grain, Orchard, Row Crop, Vineyard, and Habitat. In some cases, surveys were returned without a crop designation (3% of the acreage) and the crop information was listed as Not Recorded. One percent of the acreage was fallow and assigned to the general category of Not Farmed (Figure 1). Table 3 includes the percentage of reported acreage by general category, subcategory and primary crop for all surveys returned (both FE and MWE surveys).

Orchards represent the largest portion of Coalition acreage (498,820 acres) followed by Pasture/Hay/Grain (303,907 acres) and Row Crops (213,339 acres). The remaining acreage is split between a variety of row crops, habitat, dry or fallow land, and unreported crops (Figure 1). Of the surveys returned with crops falling within the Orchard general category, nut trees cover 415,289 acres; acreage associated with nut trees is greater than all other orchard subcategories combined (Figure 2). Almonds and walnuts each cover approximately half of the total nut tree acreage with pistachios, chestnuts, and miscellaneous nut trees covering the remaining nut tree acreage (Figure 2, Table 3). Wetland habitat is discussed further in a separate MWE section of the report.

Figure 1. General categories of reported crops in 2017 Farm Evaluations, including Managed Wetland Evaluations, displayed as percent of total reported acreage.

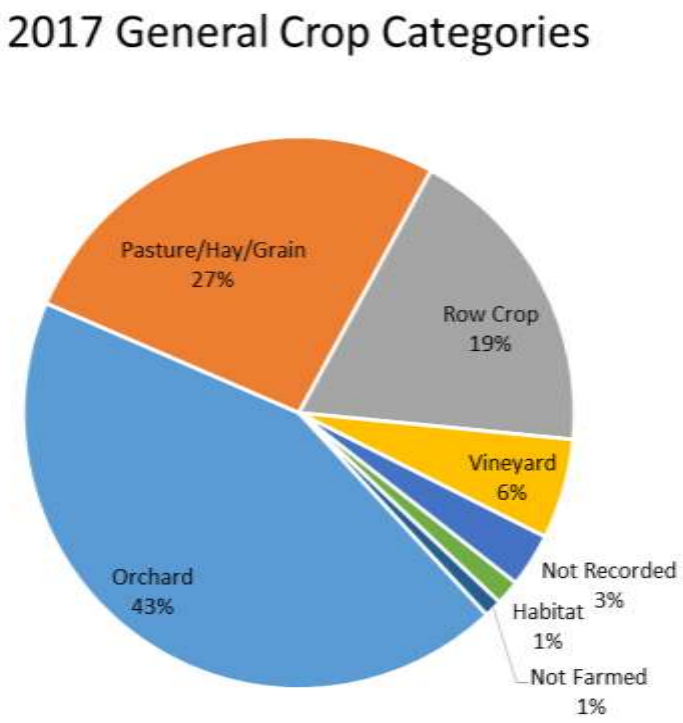


Figure 2. A summary of the type of orchards associated with 2017 Farm Evaluations; displayed as percent of acres reported.

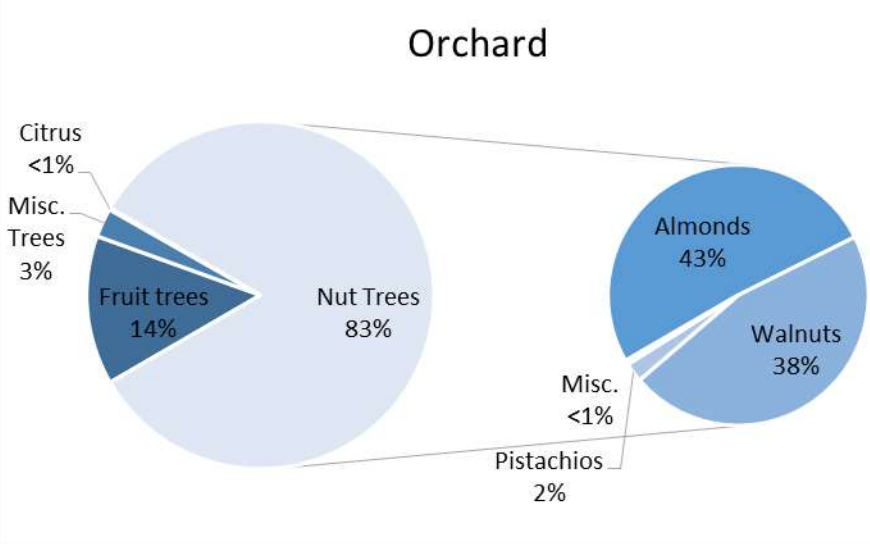


Table 3. Crop classifications associated with primary crops reported by members for the 2017 crop year.

General Category	Sub Category	Primary Crop	Percent of Acreage
Pasture/Hay/Grain	Grain	Barley	0.23%
		Grain	0.18%
		Hops	< 0.01%
		Milo	0.05%
		Oats	0.24%
		Rice	1.57%
		Rye	0.27%
		Sorghum Milo	0.37%
		Sudan	0.48%
		Teff	0.04%
		Triticale	0.29%
		Wheat	3.12%
	Hay	Alfalfa	6.88%
		Hay	1.85%
	Pasture	Pasture	10.89%
Row Crop	Berries	Berries	0.07%
	Corn	Corn	3.61%
	Herbs/Spices	Cloves	0.01%
		Herbs/Spices	0.04%
	Misc	Cover Crop	0.10%
		Misc	0.20%
		Shrubs	< 0.01%
		Sod	0.06%
	Nursery/Ornamental	Flowers	< 0.01%
		Nursery	0.08%
		Ornamental plants	0.06%
	Oil crop	Safflower	0.90%
		Sunflowers	4.18%
	Row Crop	Asparagus	0.04%
		Beans	1.06%
		Broccoli	0.02%
		Carrots	0.05%
		Cotton	0.27%
		Cucumbers	0.29%
		Garlic	0.03%
		Melons	0.27%
		Misc Produce	0.17%
		Onions	0.05%
		Peas	0.03%
		Peppers	0.10%
		Potatoes	0.02%

General Category	Sub Category	Primary Crop	Percent of Acreage
		Pumpkins	0.03%
		Salad Greens	< 0.01%
		Squash	0.07%
		Strawberries	< 0.01%
		Tomatillos	< 0.01%
		Tomatoes	5.59%
		Vegetables	1.01%
	Seed	Asparagus	< 0.01%
		Beans	< 0.01%
		Cucumbers	< 0.01%
		Melons	< 0.01%
		Seed	0.01%
		Sunflowers	0.01%
		Tomatoes	0.02%
		Vegetables	0.16%
Habitat	Native Vegetation	Native Vegetation	0.21%
	Wetland	Brood Pond	0.11%
		Managed Wetland	0.06%
		Permanent Wetland	0.23%
		Seasonal Wetland	0.63%
		Semi-Permanent Wetland	0.20%
		Wetlands	0.02%
Not Farmed	Dry	Dry	0.01%
	None	Domestic	< 0.01%
		Fallow	0.99%
		None	0.03%
Not Recorded	Not Recorded	Not Recorded	3.16%
Orchard	Citrus	Citrus	0.07%
	Fruit trees	Cherries	0.11%
		Figs	< 0.01%
		Fruit Trees	0.10%
		Olives	1.54%
		Persimmons	0.03%
		Pome fruit	0.57%
		Pomegranates	< 0.01%
		Stonefruit	3.68%
	Nut Trees	Almonds	18.45%
		Chestnuts	< 0.01%
		Nut trees	0.05%
		Pecans	0.14%
		Pistachios	0.87%
		Walnuts	16.66%

General Category	Sub Category	Primary Crop	Percent of Acreage
	Trees	Christmas Trees	0.01%
		Orchard	1.13%
		Trees	0.04%
Vineyard	Grapes	Grapes	5.75%
	Kiwis	Kiwis	0.12%

Irrigation Management Practices

Eighty-eight percent of members reported scheduling irrigation according to field needs; this practice is consistently reported as the most common irrigation efficiency method on FEs (Table 4, Figure 3). Drip irrigation and flood irrigation also continue to be the two most utilized primary irrigation methods; these two irrigation practices combined were utilized on 51% of the reported acreage. Most members continue to utilize only primary irrigation methods. Although, sprinklers were reported as the most common secondary irrigation system (Table 5).

Table 4. Implemented irrigation efficiency methods and irrigation practices, displayed in acreage and member response count.

Survey Section	Question	Response	Acreage	Member Count
B	Irrigation Efficiency Practices	Scheduled to need	1,023,498	5,099
		Laser Leveling	669,662	2,223
		Use moisture probe	637,662	2,256
		Use ET for scheduling	525,545	1,625
		Pressure Bomb	203,357	620
		Soil Moisture Neutron Probe	106,337	345
		Other	91,598	535
		No Selection	4,473	40
	Primary Irrigation Practices	Drip	321,666	1,457
		Flood	291,366	1,748
		Sprinkler	220,569	1,719
		Micro Sprinkler	216,574	1,363
		Furrow	141,491	578
		Border Strip	31,560	153
		No Selection	11,105	106
	Secondary Irrigation Practices	No Selection	830,978	4,767
		Sprinkler	112,857	467
		Flood	67,400	365
		Drip	56,602	221
		Micro Sprinkler	42,846	212
		Furrow	35,976	104
		Border Strip	7,969	47

Figure 3. Reported acreage associated with each irrigation efficiency practice.

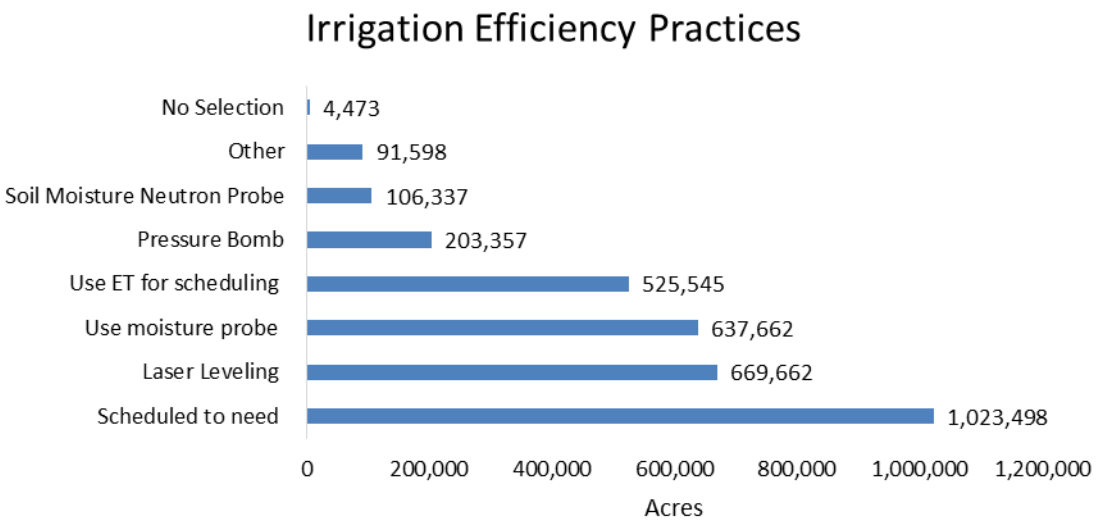


Table 5. Count of management units with secondary irrigation practices reported with primary irrigation practices.

		Secondary Irrigation						
		Border Strip	Drip	Flood	Furrow	Micro Sprinkler	Sprinkler	No Selection
Primary Irrigation	Border Strip	20	1	27	2	1	11	132
	Drip	3	142	46	37	66	223	1293
	Flood	16	21	145	30	18	73	1679
	Furrow	9	17	64	40	5	89	550
	Micro Sprinkler	11	41	73	9	112	71	1240
	Sprinkler	8	55	74	15	42	151	1608
	No Selection	-	1	5	-	-	-	109
Management Unit Total		**67**	**278**	**434**	**133**	**244**	**618**	**6,611**

Sediment Management Practices

Eighty-eight percent of members indicated they do not have the potential to discharge sediment to off-farm surface waters (Table 6). Commonly implemented sediment and erosion control practices for 2017 were consistent with those of previous years. The most common cultural method to control sediment and erosion was increasing water penetration into the soil through amendments, such as deep ripping and aeration (778,761 acres). Minimizing tillage and allowing native vegetation to stabilize soils were also commonly reported practices (Table 6, Figure 4). Members continue to leave as much time as possible between pesticide applications and irrigation as well as use drip or micro irrigation to control sediment discharge and erosion (Table 6, Figure 5).

Table 6. Sediment and erosion control management practices implemented by members in parcel acreage and response counts.

Survey Section	Question	Response	Acreage	Response Count
A	Does your farm have the potential to discharge sediment to off-farm surface waters?	No	886,941	5,078
		Yes	245,500	723
		No Selection	3,337	26
D	Cultural Practices to Manage Sediment and Erosion	Soil water penetration increased with deep ripping/ aeration	778,761	2,613
		Minimum tillage incorporated to minimize erosion	706,428	3,224
		Cover crops or native vegetation are used to reduce erosion	645,473	3,209
		Vegetated ditches to remove sediment, pesticides, & fertilizers	581,268	2,031
		Crop rows are graded to optimize rain and irrigation water	559,843	1,828
		Vegetative filter strips and buffers are used to capture flows	352,442	1390
		Storm water is captured using field borders	344,726	1,253
		Creek banks and stream banks have been stabilized	339,251	1,010
		Berms capture runoff and trap sediment	331,818	1,292
		Hedgerows/trees help stabilize soils & trap sediment movement	250,423	1210
		Subsurface pipelines are used to channel runoff water	217,620	543
		Sediment basins/holding ponds settle out sediment & pesticides	212,352	739
		No storm drainage due to field or soil conditions	178,459	1,807
		Field is lower than surrounding terrain	99,545	629
		Other	29,407	128
		No Selection	11,498	59
D	Irrigation Practices for Managing Sediment and Erosion	The time increased between pesticide applications and irrigation	770,796	2,921
		Use drip or micro-irrigation to eliminate irrigation drainage	564,562	2,598
		Shorter irrigation runs with checks manage and capture flows	461,965	1,857
		No irrigation drainage due to field or soil conditions	392,598	2,890
		Tailwater Return System	261,000	577
		In-furrow dams used to increase infiltration and settle sediment	224,881	750
		Catchment Basin	220,258	713
		Use of flow dissipaters to minimize erosion at discharge point	123,117	373
		Other	51,238	226
		PAM used to bind sediment & increase infiltration	20,696	43
		No Selection	14,156	58

Figure 4. Acreage reported for cultural practices implemented to manage sediment and erosion.

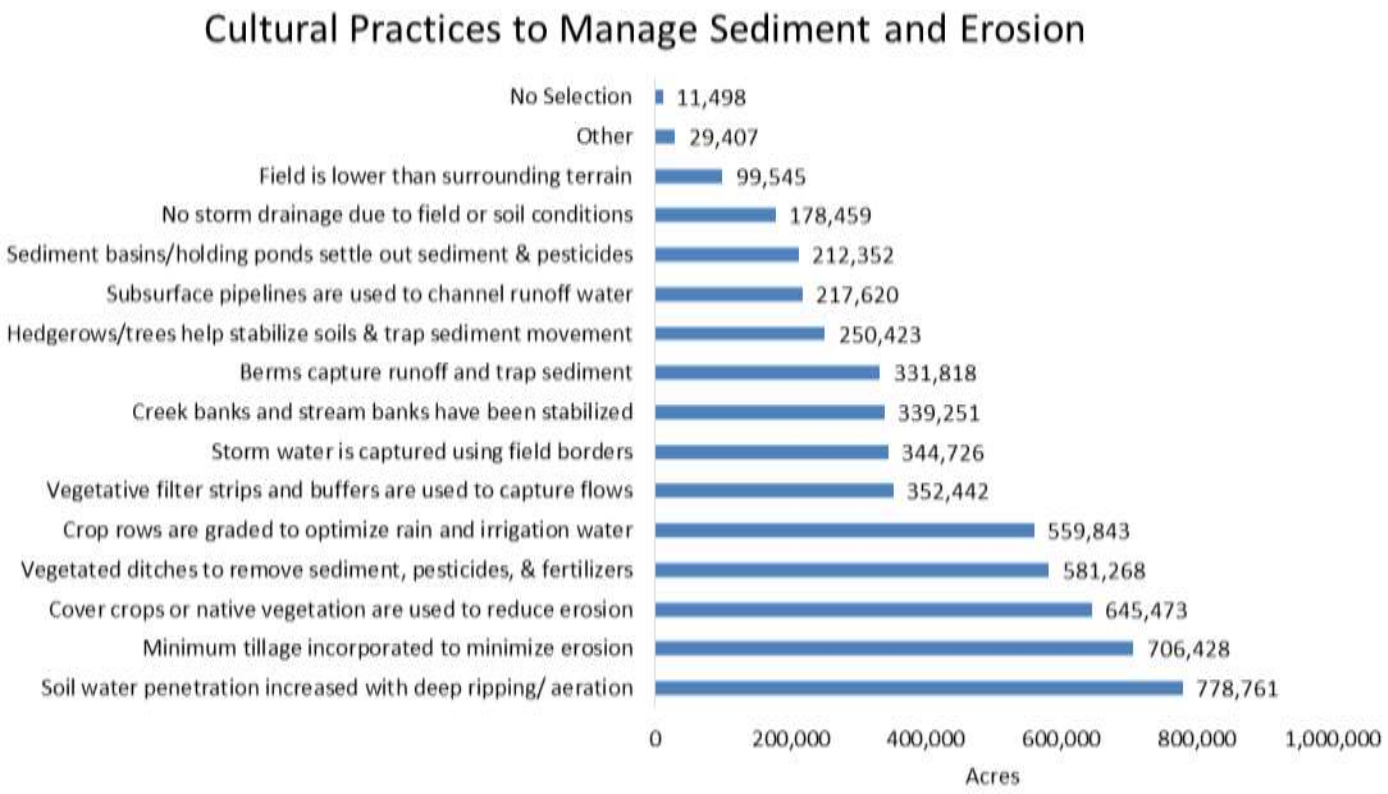
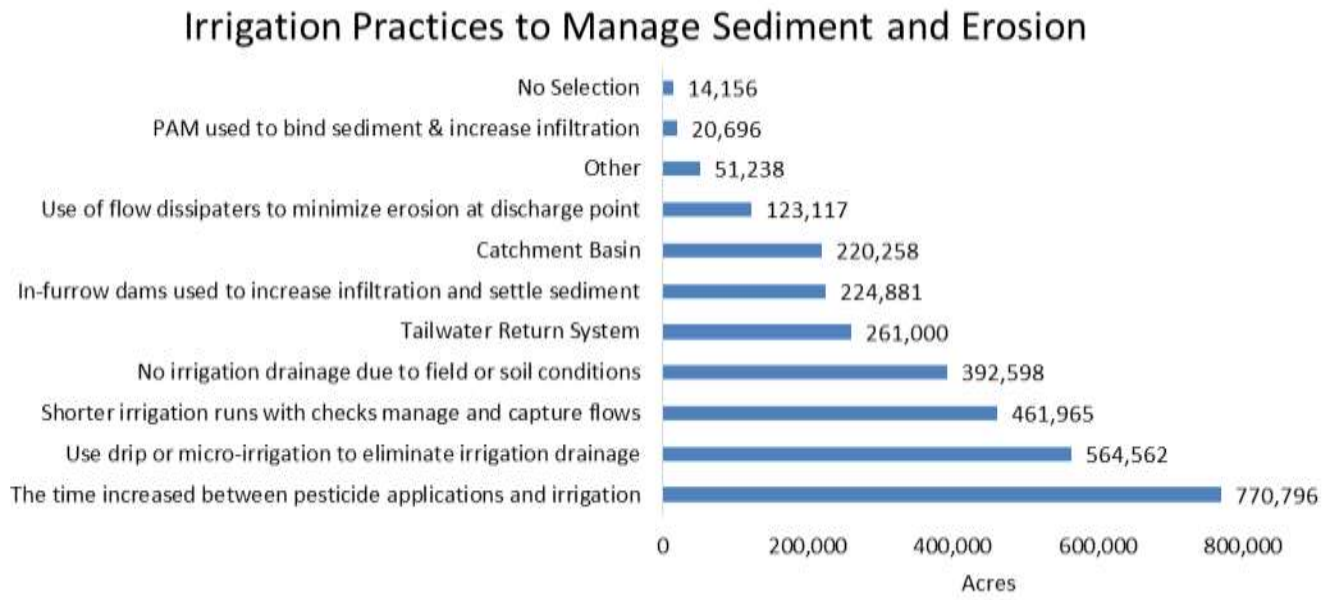


Figure 5. Acreage associated with irrigation practices to manage sediment and erosion.



Pesticide & Nutrient Management

SVWQC members continue to employ several practices to reduce the movement of pesticides and nutrients to surface waters (Table 7, Figure 6, and Figure 7). Members commonly implemented between 11 and 12 different pesticide management practices; the three most reported pesticide management practices were following label restrictions, following county permit requirements, and monitoring wind conditions (Table 7, Figure 6).

Consistent with prior years, a majority of the members employed PCAs or CCAs in 2017 to develop their crop fertility plan (Table 7). The most commonly reported nitrogen management methods continue to be splitting fertilizer applications throughout the growing season (20%), soil testing (19%), and testing plant tissue (16%, Table 7, Figure 7).

Table 7. Pesticide and nutrient management methods implemented by members, shown in acreage and member response count.

Survey Section	Question	Response	Acreage	Member Count
A	Pesticide Application Practices	Follow Label Restrictions	1,031,204	4,311
		County Permit Followed	1,028,692	4,249
		Monitor Wind Conditions	1,016,573	4,212
		Avoid Surface Water When Spraying	984,736	3,918
		Use PCA Recommendations	980,665	3,823
		Attend Trainings	979,164	3,743
		Monitor Rain Forecasts	962,205	3,908
		End of Row Shutoff When Spraying	945,803	3,825
		Use Appropriate Buffer Zones	900,217	3,407
		Use Drift Control Agents	848,810	3,020
		Reapply Rinsate to Treated Field	633,814	2,189
		Sensitive Areas Mapped	608,214	1,990
		Use Vegetated Drain Ditches	562,852	1,731
		Chemigation	262,207	717
		Target Sensing Sprayer used	177,414	558
		No Pesticides Applied	95,295	1,392
		Other	36,330	177
		No Selection	2,771	22
	Who helps develop the crop fertility plan?	Pest Control Advisor (PCA)	989,846	3,823
		Certified Crop Advisor (CCA)	573,060	2,007
		Professional Soil Scientist	310,669	943
		UC Farm Advisor	310,025	1,000
		Professional Agronomist	287,656	817
		Independently Prepared by Member	244,160	1,050
		None of the above	63,290	1,099
		Certified Technical Service Providers by NRCS	35,054	192
		No Selection	901	15
B	Nitrogen Management Practices	Split Fertilizer Applications	838,405	3,384
		Soil Testing	794,201	3,018
		Tissue/Petiole Testing	674,292	2,570
		Fertigation	472,507	1,679

Survey Section	Question	Response	Acreage	Member Count
B	Nitrogen Management Practices	Foliar N Application	404,403	1,583
		Cover Crops	397,401	1,706
		Irrigation Water N Testing	390,702	1207
		Do Not Apply Nitrogen	127,336	1,581
		Variable Rate Applications using GPS	70,823	243
		Other	26,620	189
		No Selection	14,429	44

Figure 6. Pesticide management practices implemented by members shown in reported parcel acreage.

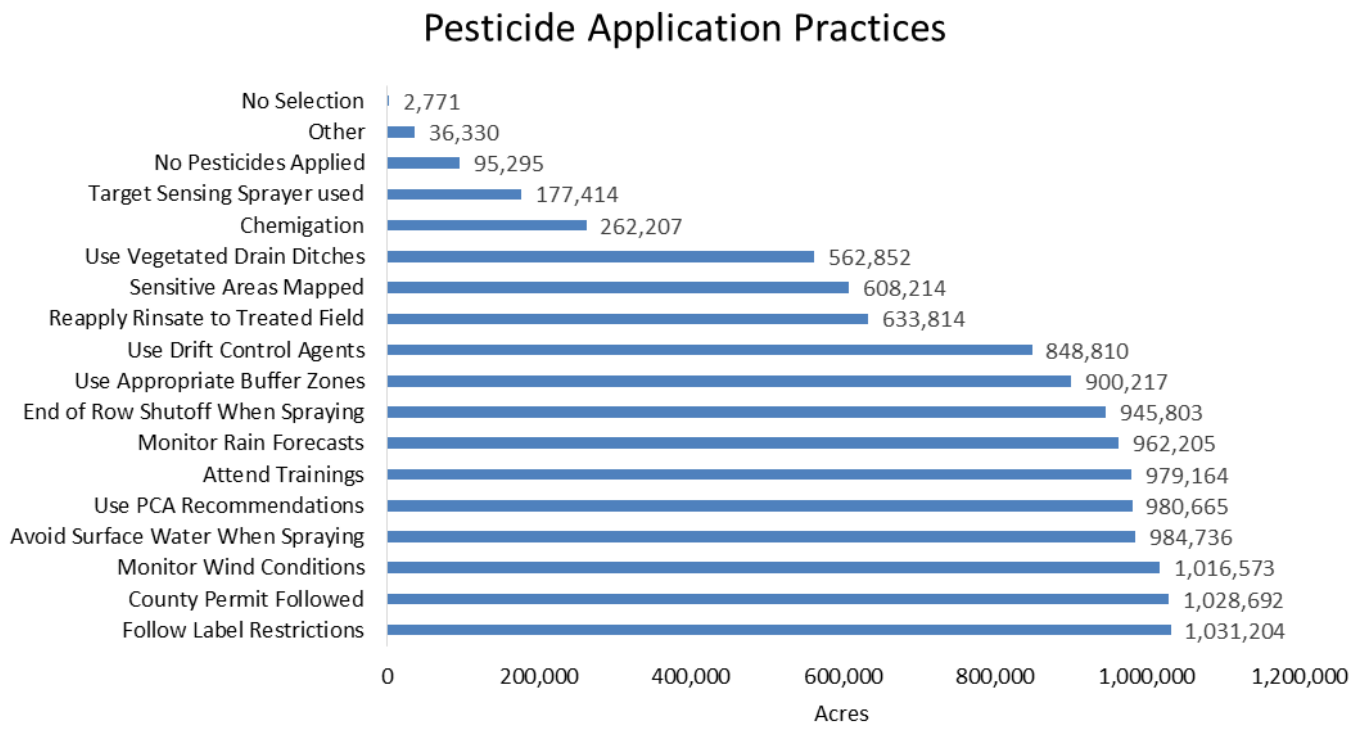
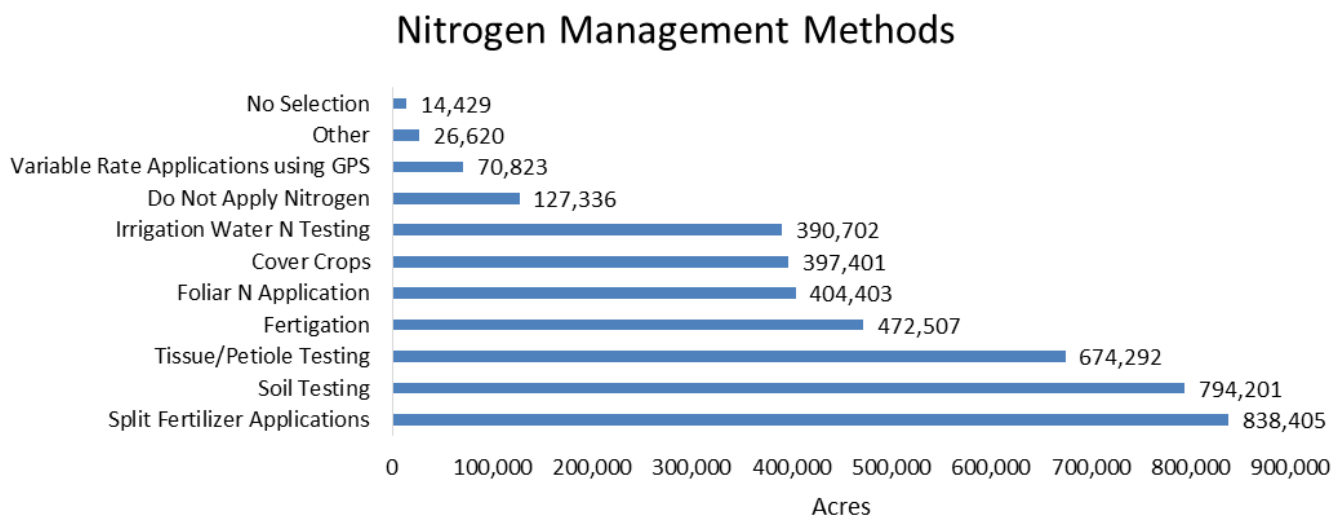


Figure 7. Nitrogen management practices implemented by members shown in reported parcel acreage.



Well Management Practices

Irrigation Wells

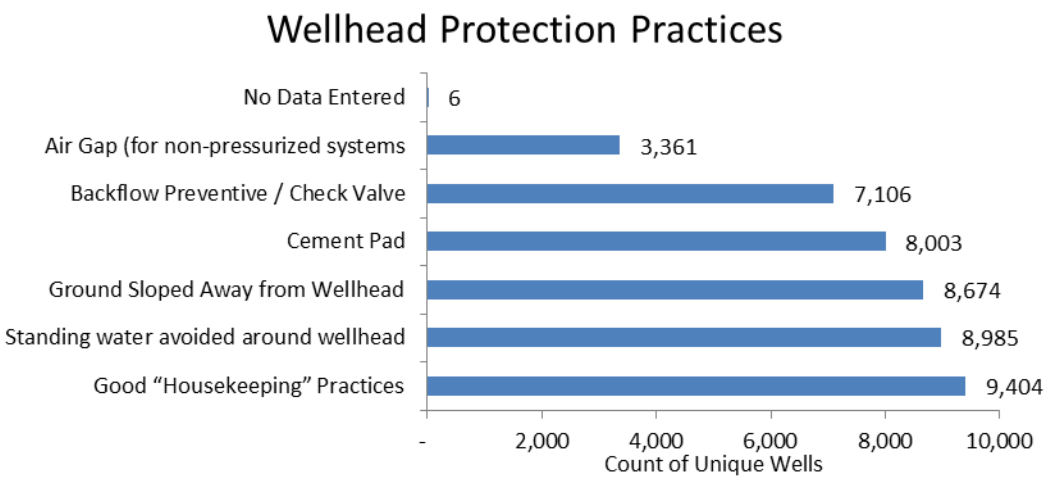
The majority of members have property with at least one irrigation well (61%, Table 8). Wellhead protection practices implemented on active irrigation wells are intended to prevent pollution to the groundwater system through wellheads. Most wells were associated with four of six possible practices used to prevent groundwater pollution. The most common practices continue to be following good housekeeping procedures (95% of wells) and preventing standing water around the wellhead (91% of wells; Table 8, Figure 8).

Table 8. Irrigation well info by membership acreage, member count, and well count.

Survey Section	Question	Response	Acreage	Count
				Response[1]
C	Do you have any irrigation wells on parcels associated with this Farm Evaluation?	Yes	874,724	3,499
		No	247,208	2,249
		No Selection	9,101	49
				Well
	Wellhead Protection Practices	Good "Housekeeping" Practices	-	9,404
		Standing water avoided around wellhead	-	8,985
		Ground sloped away from wellhead	-	8,674
		Cement Pad	-	8,003
		Backflow Preventive / Check Valve	-	7,106
		Air Gap (for non-pressurized systems)	-	3,361
		No Selection	-	6
			Unique Irrigation Wells	9,848

[1] Some growers responded per management unit rather than for the membership as a whole.

Figure 8. Count of unique wells reported with each wellhead protection practice.



Abandoned Wells

On 2017 FEs, 95% of members reported no abandoned wells on their parcels, although the Coalition region does contain abandoned wells. Members reported a total of 244 abandoned wells. Most abandoned wells have been properly destroyed. Ninety-seven of the 244 wells have been abandoned by a licensed professional or certified by the county; 128 have been destroyed by an unknown method (Table 9). Many members with abandoned wells selected more than one response in the Well Chart (Table 9). 1 Some growers responded per management unit rather than on the membership as a whole.

Table 10 lists the year that growers reported the wells were abandoned. When a decade was given by the grower, the first year of the decade was used for totaling purposes. The number of wells abandoned over the years has fluctuated without a clear trend with respect to quantity of wells abandoned across time.

Table 9. Abandoned well practices by acreage, response count, and well count.

Survey Section	Question	Response	Acreage	Count
C				Response[1]
	Are you aware of any known abandoned wells associated with this Farm Evaluation?	No	1,027,803	5,453
		Yes	97,037	269
		No Selection	9,793	47
				Wells
	Abandoned Well Practices	Destroyed - Unknown method	-	128
		Destroyed by licensed professional	-	61
		No Data Entered	-	46
		Destroyed – certified by county	-	36

[1] Some growers responded per management unit rather than on the membership as a whole.

Table 10. Count of wells abandoned in each reported year.

Well Abandoned Year on the Farm Response (Survey Section C)	Count of Wells
1940	3
1950	4
1955	1
1958	1
1960	28
1970	1
1977	1
1980	4
1982	1
1983	2
1984	2
1985	3
1986	1
1987	1
1988	4
1990	2
1991	1
1992	1
1994	1
1996	1
1997	1
1998	1
1999	2
2000	4
2001	2
2002	1
2004	1
2005	2
2006	5
2007	2
2008	2
2009	1
2010	12
2011	2
2012	3
2013	5
2014	9
2015	14
2016	14
1974	1
1975	1
2017	7
Unknown	95
Total	**244**

MANAGED WETLAND EVALUATIONS

Out of required 2017 surveys, only 25 memberships needed Managed Wetland Evaluations (Table 2; Figure 1). A majority of the wetland habitat covered by 2017 MWEs was Seasonal Wetland flooded between August and April (Table 11).

Table 11. Acreage associated with each reported managed wetland habitat type.

Habitat Type	Acreage	Response Count
Seasonal Wetland (Flooded August-April)	8,513	14
Semi-Permanent (Flooded September-July)	2,131	7
Permanent Wetland (Flooded Year Round)	1,016	4
Brood Pond/Reverse Cycle (Flooded March-August)	170	3

Irrigation Practices

Managed wetlands fall into any of six habitat types: seasonal wetland, semi-permanent, permanent wetland, brood pond, irrigated pasture, or irrigated upland. For all wetland types and brood ponds, the land is irrigated in order to flood the field for a portion of the year. Then, the water is released to support different stages of waterfowl and other wetland wildlife lifecycles. Members reported the time periods of their irrigation, flood-up, and drawdown by writing in the months in which these occur.

Irrigation generally occurred in late fall for brood ponds. Crops were irrigated April through September. For seasonal wetlands, irrigation was reported for various periods throughout the year (

Figure 9). Flood up for seasonal and semi-permanent wetland generally occurred in fall and winter. Permanent wetlands reported flood up throughout the year. Brood pond flood up occurred from the beginning of 2016 through summer (Figure 10). Drawdown occurred between March and August for seasonal and semi-permanent wetlands. Brood pond drawdown occurred August through January (Figure 11). Patterns in irrigation, flood up, and drawdown practices remain consistent with those reported for prior years.

Figure 9. Time periods for irrigation provided on surveys; the color of the bar reflects the percent of surveys returned with that specific irrigation time period specified.

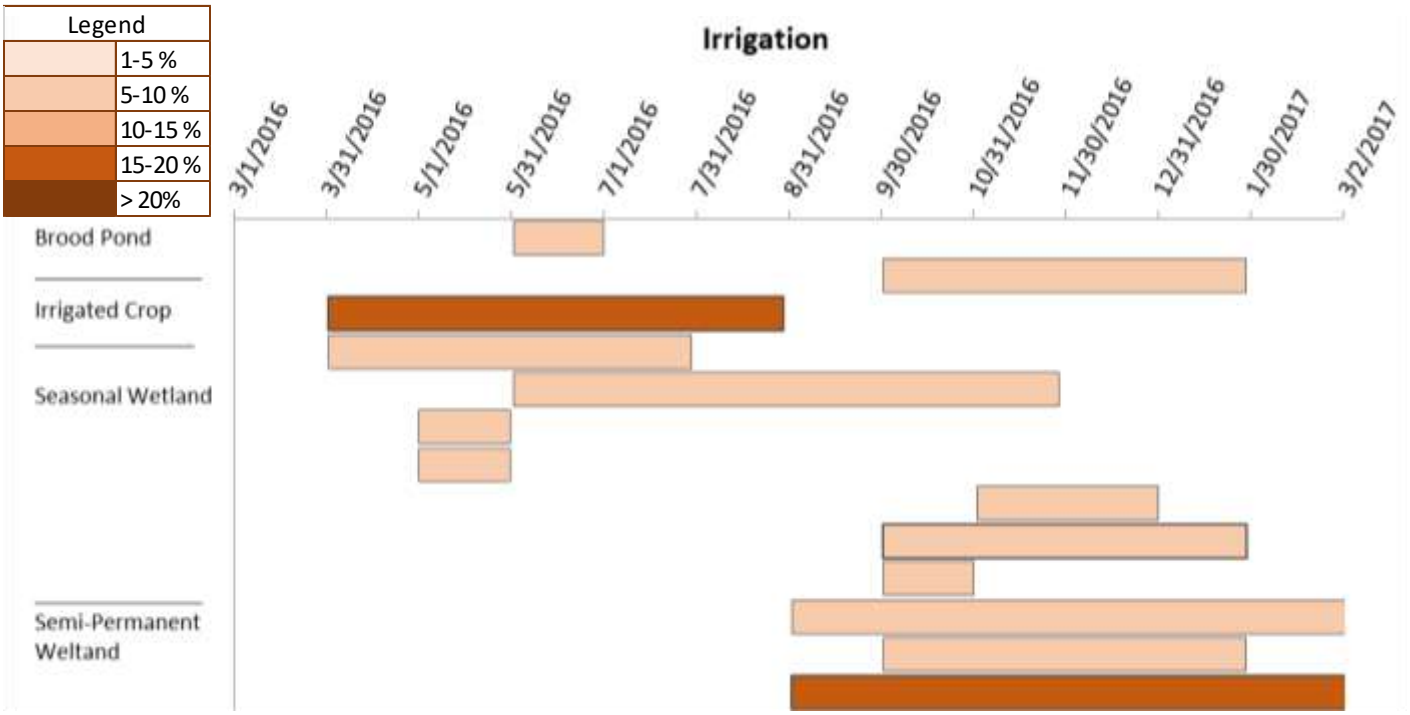


Figure 10. Time periods for flood up provided on surveys; the color of the bar reflects the percent of surveys returned with that specific flood up time period specified.

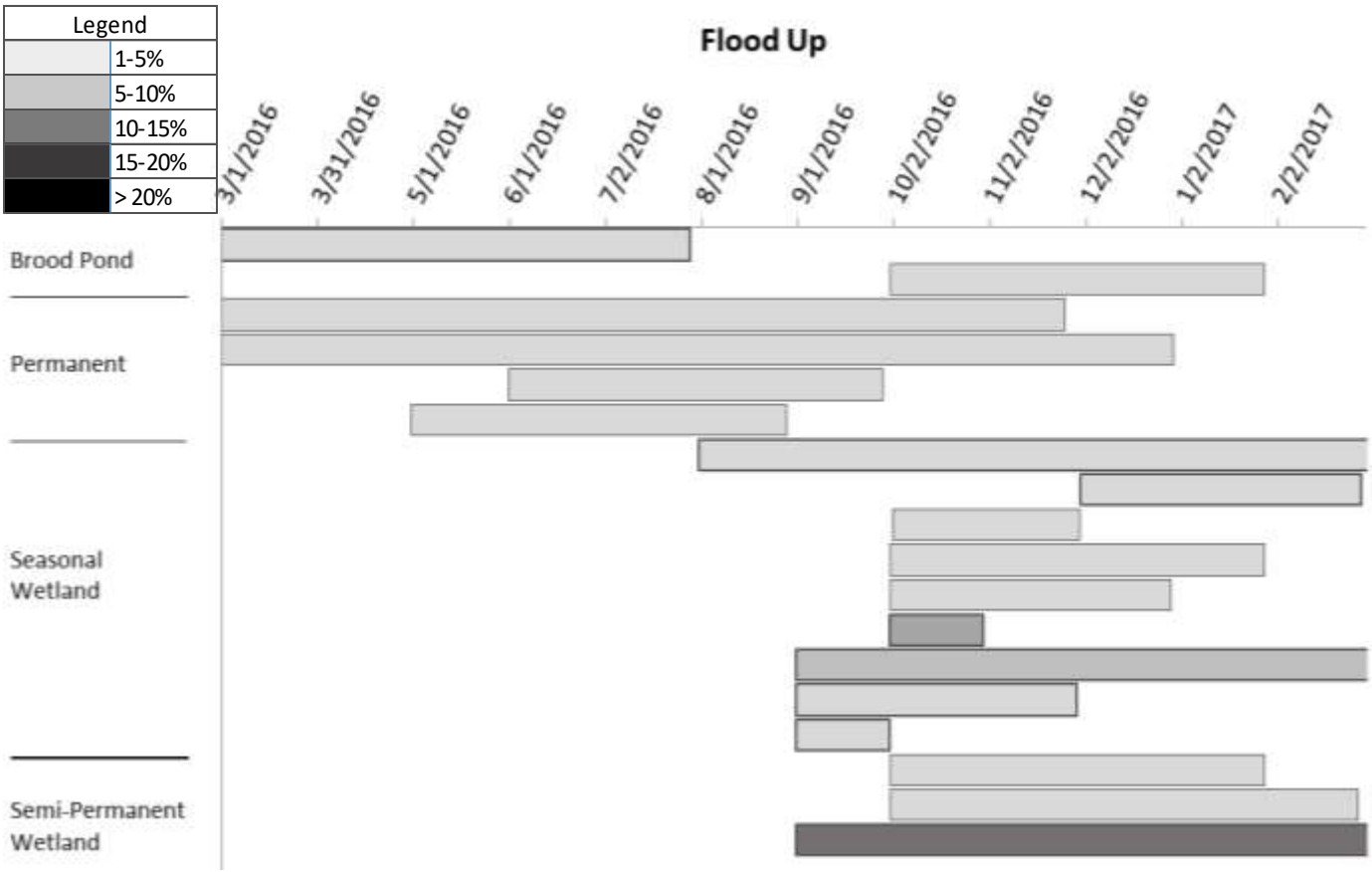
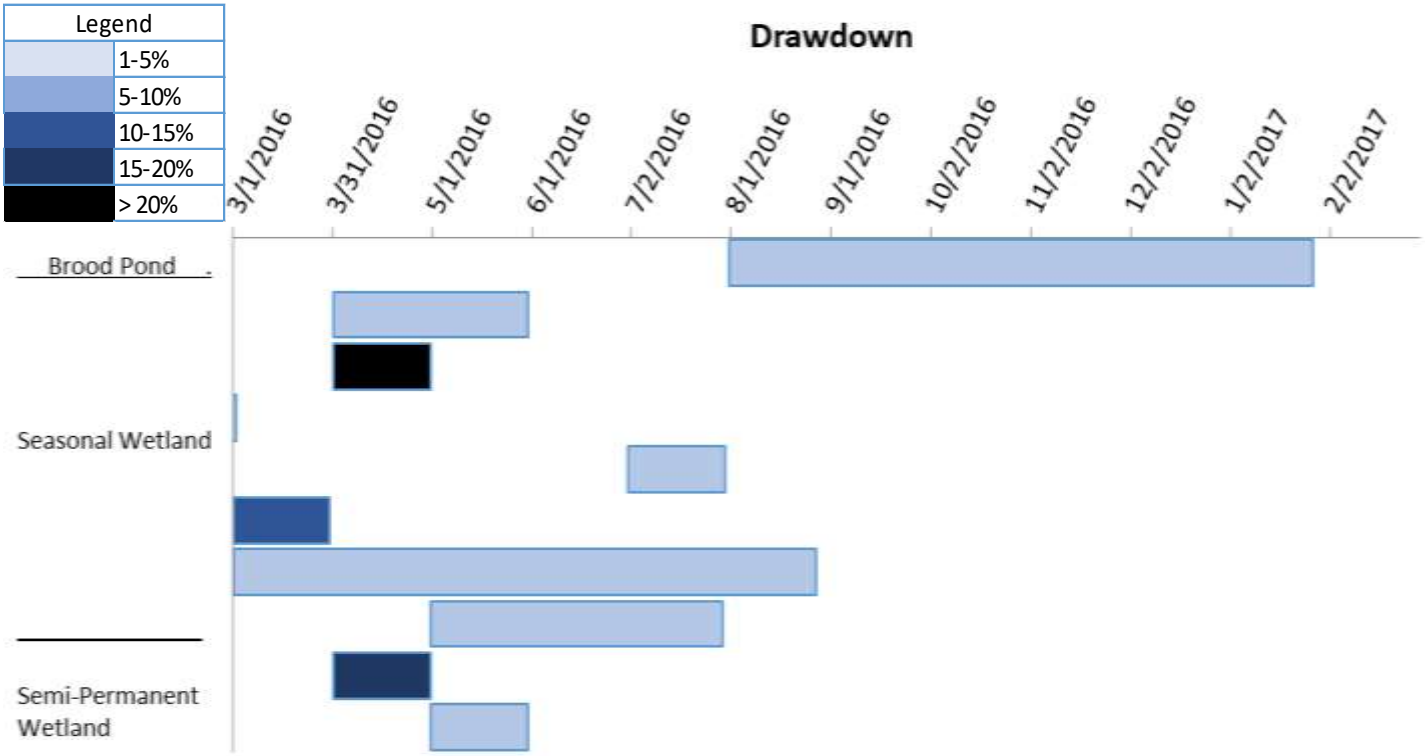


Figure 11. Time periods for drawdown provided on surveys; the color of the bar reflects the percent of surveys returned with that specific drawdown time period specified.



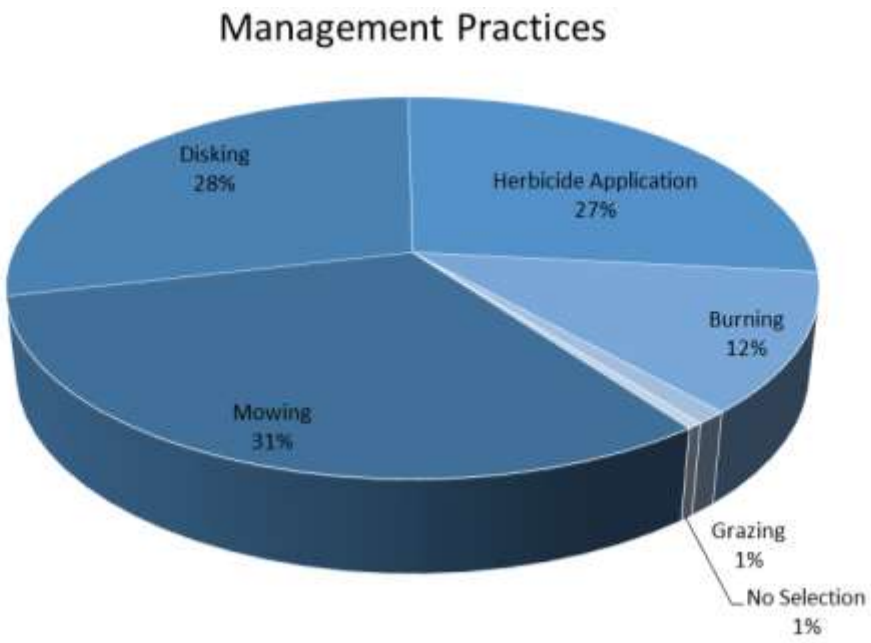
Management Practices

Members reported an average of two management practices aimed at improving habitat conditions for wildlife. As with prior year MWEs, the two most reported management practices were mowing and disking (Table 12, Figure 12).

Table 12. Summary of management practices implemented by members to improve wildlife habitat on managed wetlands.

Question	Response	Acreage	Response Count
Herbicide Application Practices	Mowing	11,445	21
	Disking	10,384	12
	Herbicide Application	9,803	12
	Burning	4,296	4
	Grazing	390	1
	No Selection	190	2

Figure 12. Wetland management practices reported by members, in percent reported acreage.



Herbicide Management

Thirteen members applied herbicides to their managed wetlands and employed several practices to reduce the movement of herbicides to surface waters (Table 13, Figure 13). The most common management practices were following label restrictions, county permits, and PCA recommendations. Glyphosate based herbicides were applied to the largest managed wetland acreage. Figure 14 shows all reported herbicides on 2017 surveys.

Table 13. Herbicide management practices used by members on managed wetland fields.

Question	Response	Acreage	Response Count
Herbicide Application Practices	Follow Label Restrictions	9,988	14
	County Permit Followed	8,925	11
	Use PCA Recommendations	8,746	9
	Monitor Wind Conditions	7,935	8
	Avoid Surface Water When Spraying	7,711	8
	Attend Trainings	6,952	6
	Monitor Rain Forecasts	6,917	6
	Sensitive Areas Mapped	4,334	3
	Other	616	5

Figure 13. Herbicide management practices implemented by Coalition members, displayed in reported acreage.

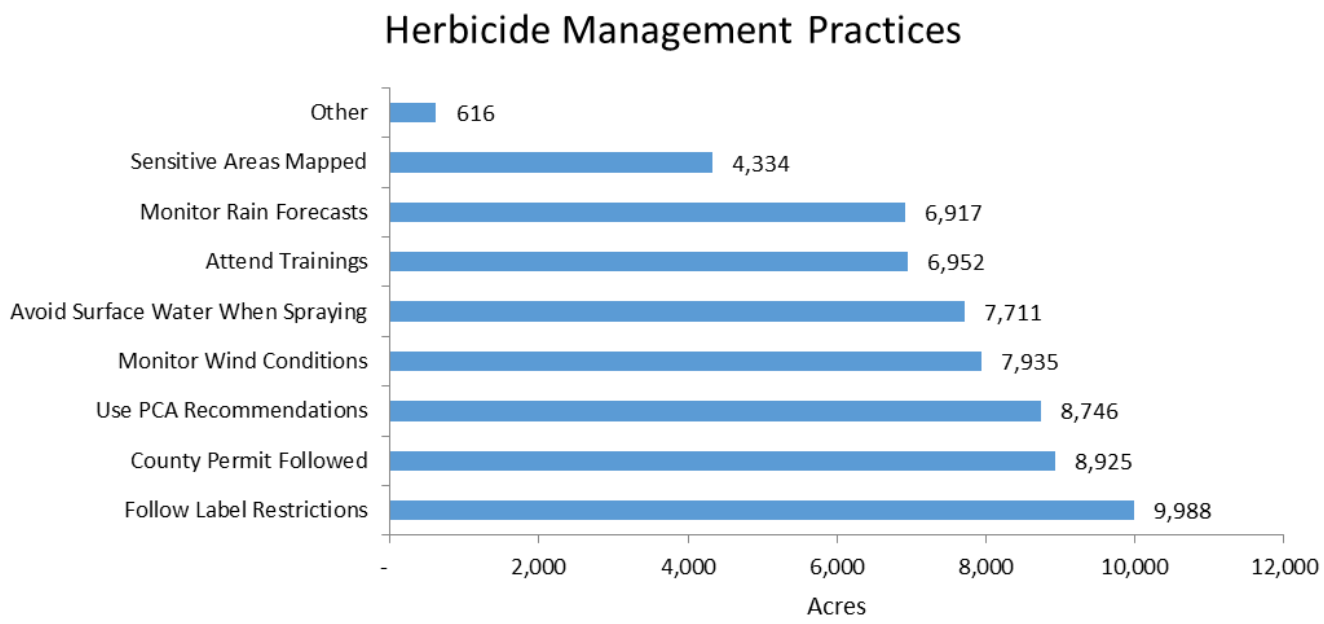
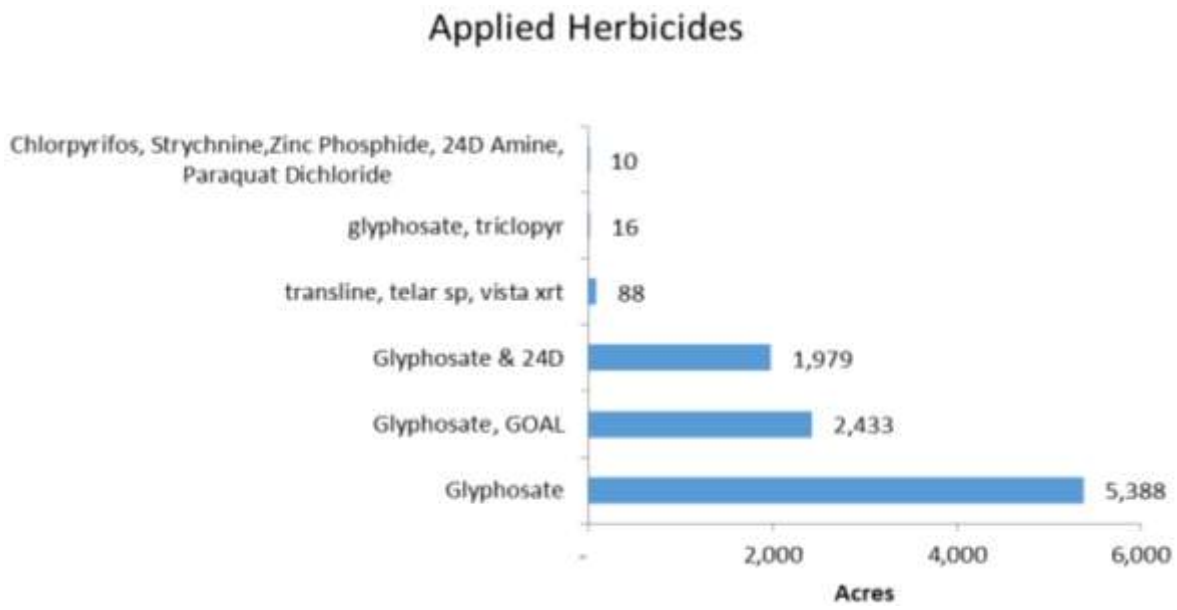


Figure 14. Reported herbicides and the acreage associated with each application.



Sediment Management Practices

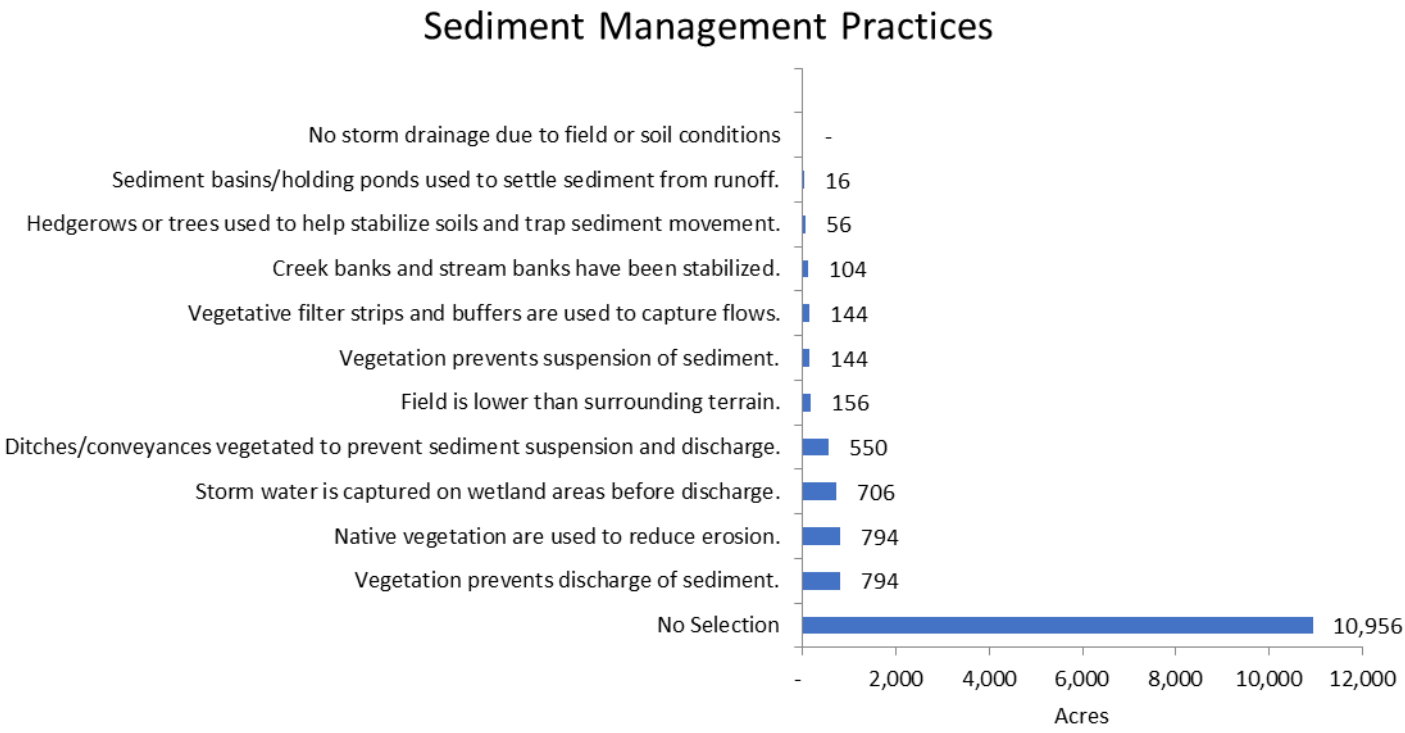
Many Coalition members who manage wetlands use management practices to control the movement of sediment; members typically employ more than one method on a parcel (Table 14, Figure 15). While 80% of the memberships with managed wetlands did not report sediment management practices, those that do employ these management practices reported two practices on average. Members continue to

report utilizing native vegetation and planted vegetation to capture sediment and strengthen soils as the most commonly implemented practices (Table 14; Figure 15).

Table 14. Practices implemented by Coalition members to manage sediment and control erosion on their managed wetland fields.

QUESTION	RESPONSE	ACREAGE	RESPONSE COUNT
Sediment and Erosion Control Practices	No Selection	10,956	20
	Vegetation prevents discharge of sediment.	794	5
	Native vegetation are used to reduce erosion.	794	5
	Storm water is captured on wetland areas before discharge.	706	4
	Ditches and conveyances vegetated and prevent suspension and discharge of sediment.	550	2
	Field is lower than surrounding terrain.	156	2
	Vegetation prevents suspension of sediment.	144	3
	Vegetative filter strips and buffers are used to capture flows.	144	3
	Creek banks and stream banks have been stabilized.	104	2
	Hedgerows or trees are used to help stabilize soils and trap sediment movement.	56	2
	Sediment basins/holding ponds used to settle sediment from irrigation and storm runoff.	16	1
	No storm drainage due to field or soil conditions	-	-

Figure 15. Sediment control practices used by members to minimize or eliminate the movement of sediment.



Well Management Practices

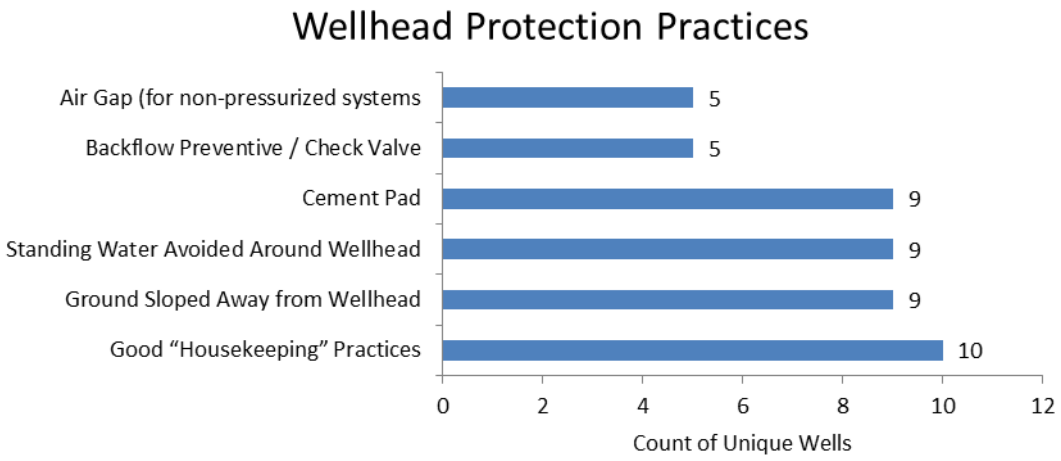
Irrigation Wells

Five members with managed wetlands reported at least one irrigation well on their property, all with several Wellhead Protection Practices in place. Implementing good housekeeping methods continues to be the most reported practice for wetland irrigation wells (Table 15, Figure 16).

Table 15. Wellhead protection practice information for wells on managed wetlands.

Survey Section	Question	Response	Acreage	Count
				Member
C	Do you have any irrigation wells on parcels associated with this survey?	No	8,249	20
		Yes	3,501	5
				Well
	Wellhead Protection Practices	Good "Housekeeping" Practices	-	10
		Ground Sloped Away from Wellhead	-	9
		Standing Water Avoided Around Wellhead	-	9
		Cement Pad	-	9
		Backflow Preventive / Check Valve	-	5
		Air Gap (for non-pressurized systems	-	5
			Unique Irrigation Wells	**10**

Figure 16. Count of unique wells reported with wellhead protection practices on managed wetland management units.



Abandoned Wells

Of the 25 members with MWEs, only one membership was aware of an abandoned well on their property. This well was destroyed by a licensed professional in 2015 (Table 16).

Table 16. Summary of known abandoned wells on managed wetlands.

Survey Section	Question	Response	Acreage	Count
C				Member
	Are you aware of any known abandoned wells associated with this survey?	No	11,710	24
		Yes	40	1
				Wells
	Abandoned Well Practices	Destroyed by licensed professional		1