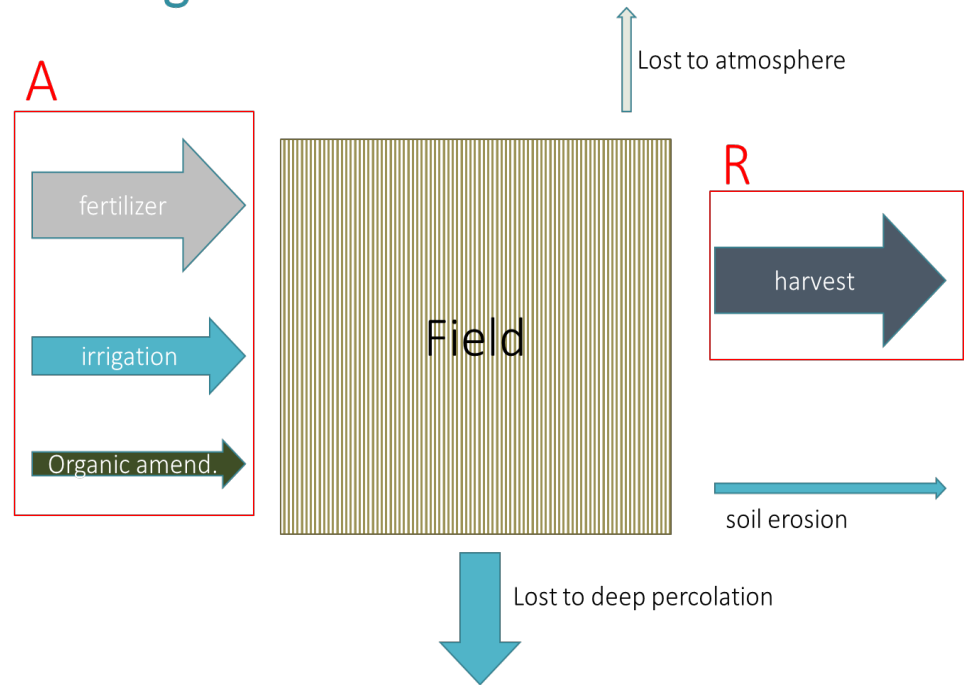


Precedential Developments in Regulation of Agricultural Lands

Emel G. Wadhvani
Office of Chief Counsel

North Coast Regional Water
Board Meeting 2/20/19
Agenda Item 4

Nitrogen Fluxes



Governing Law



- Water Code sections 13263, 13267, 13269
- Nonpoint Source Policy (2004)
- Antidegradation Policy (1968)
- Precedential State Water Board Order 2018-0002 (East San Joaquin)



Agricultural Permits



Receiving Water Limitations

- Discharges may not cause or contribute to exceedances of water quality objectives
- Immediate compliance or time schedule

Antidegradation findings

Requirements for Management Practice Implementation

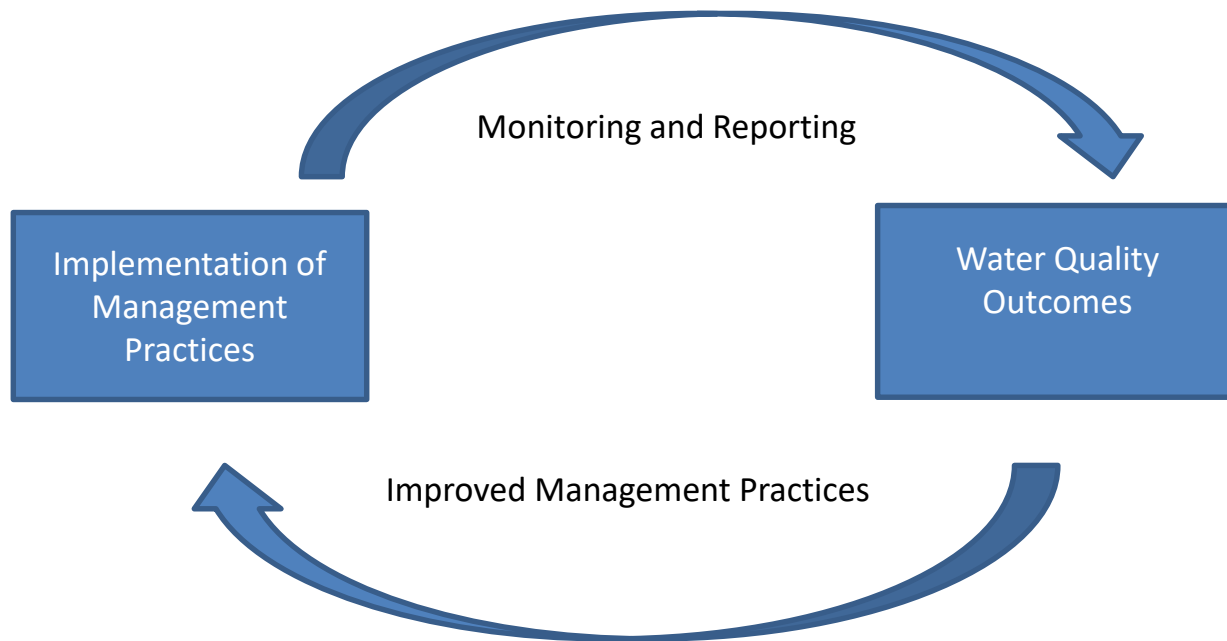
- Farm plans
- Nutrient management plans

Monitoring and Reporting Requirements

- Surface water monitoring
- Groundwater monitoring
- Drinking water well sampling

Coalition-based vs. direct regulation

Nonpoint Source Policy

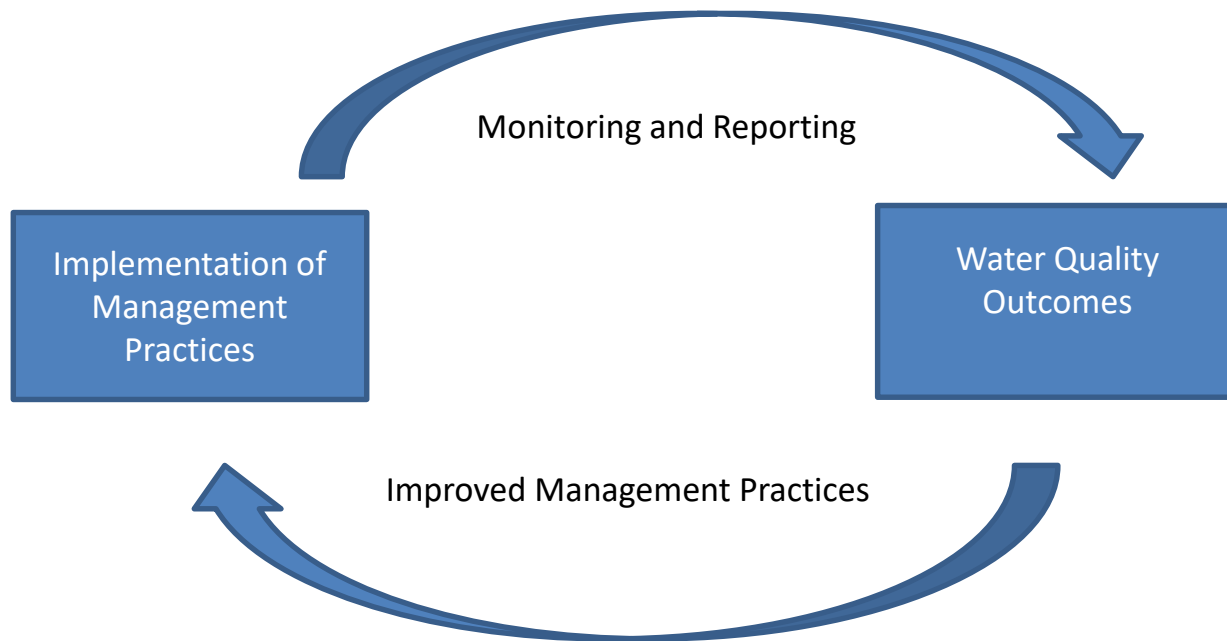


Nonpoint Source Policy

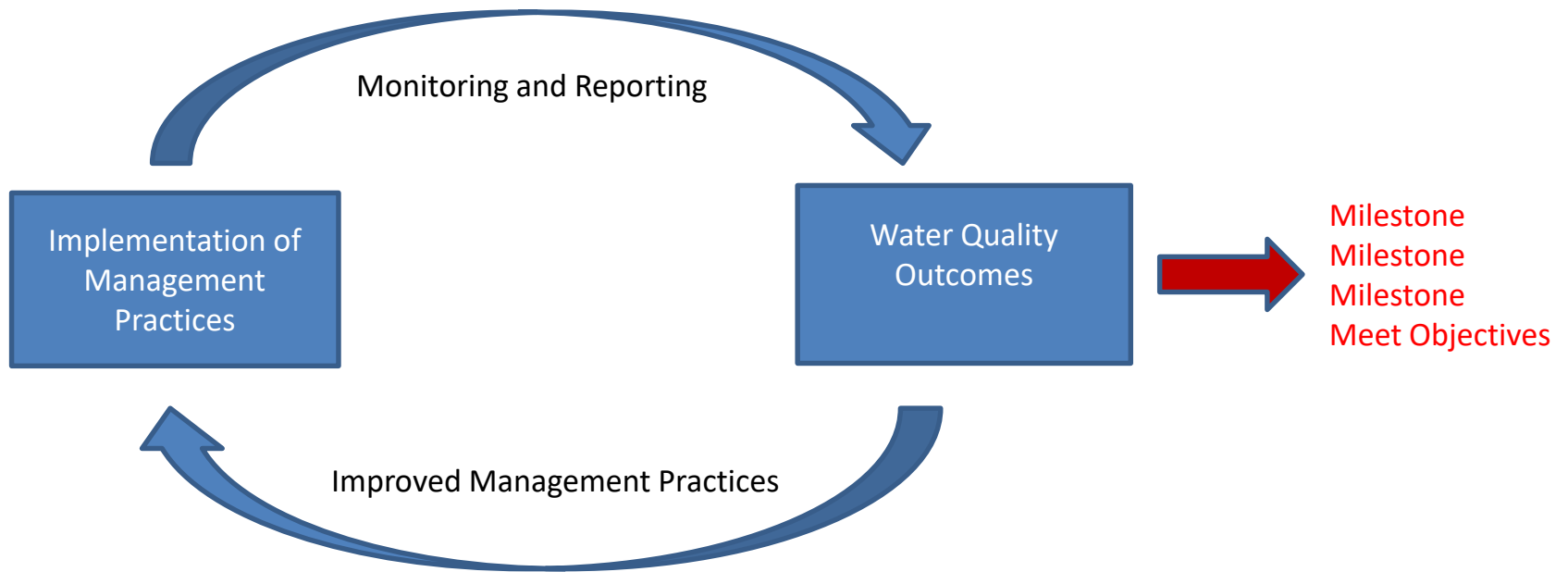
“... the NPS Policy expressly requires time schedules and quantifiable milestones; the purpose is to assure that the water quality objectives are eventually met. But there is no requirement that the ultimate goal of preventing and cleaning up NPS pollution be accomplished within the lifespan of the modified waiver. . . .Without specific time schedules and quantifiable milestones, there is not a ‘high likelihood’ the program will succeed in achieving its objectives, as required by NPS Policy.”

Monterey Coastkeeper v. State Water Resources Control Board (2018) 28 Cal.App.5th 342.

Nonpoint Source Policy



Nonpoint Source Policy





Agricultural Permits



Receiving Water Limitations

- Discharges may not cause or contribute to exceedances of water quality objectives
- Immediate compliance or time schedule

Antidegradation findings

Requirements for Management Practice Implementation

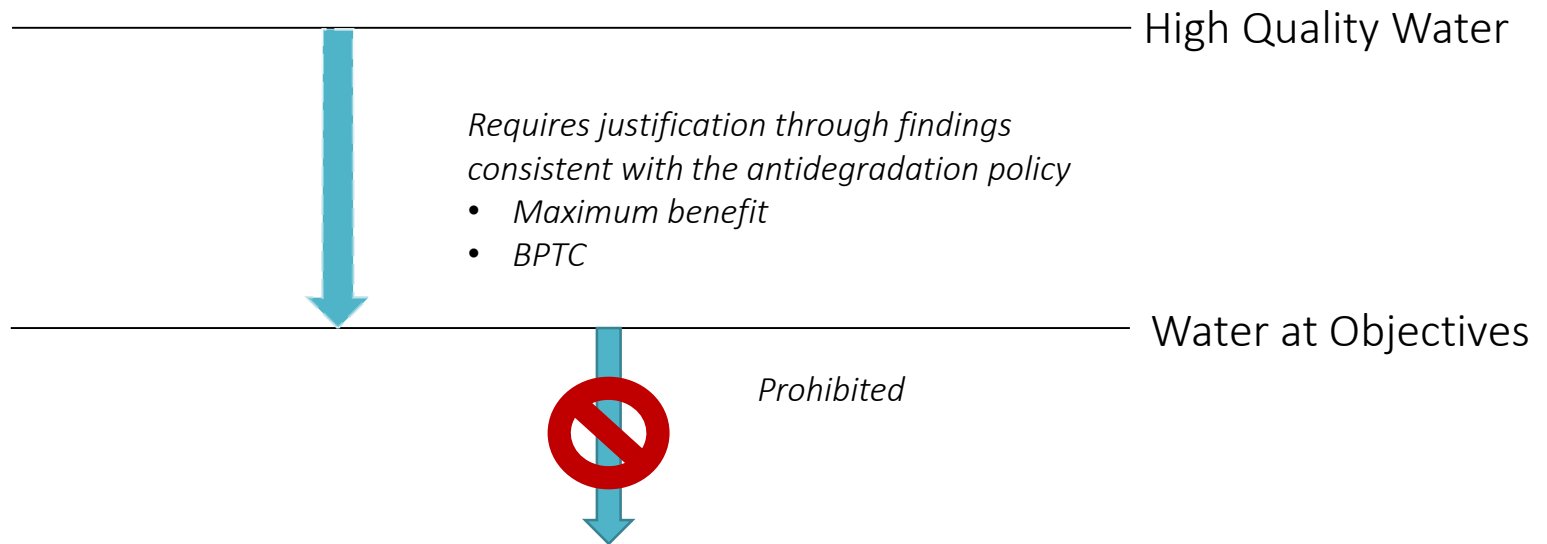
- Farm plans
- Nutrient management plans

Monitoring and Reporting Requirements

- Surface water monitoring
- Groundwater monitoring
- Drinking water well sampling

Coalition-based vs. direct regulation

Antidegradation



Association De Gente Unida Por El Agua v. Central Valley Regional Water Quality Control Board (2012) 210 Cal.App.4th 1255



Agricultural Permits



Receiving Water Limitations

- Discharges may not cause or contribute to exceedances of water quality objectives
- Immediate compliance or time schedule

Antidegradation findings

Requirements for Management Practice Implementation

- Farm plans
- Nutrient management plans

Monitoring and Reporting Requirements

- Surface water monitoring
- Groundwater monitoring
- Drinking water well sampling

Coalition-based vs. direct regulation

Petitions



State Water Board Order WQ 2018-0002

Reviewed Central Valley Water Board's
Agricultural Waste Discharge Requirements
for the Eastern San Joaquin Watershed

Established statewide precedential
requirements for nitrogen tracking and
reporting and other components of
agricultural land permits

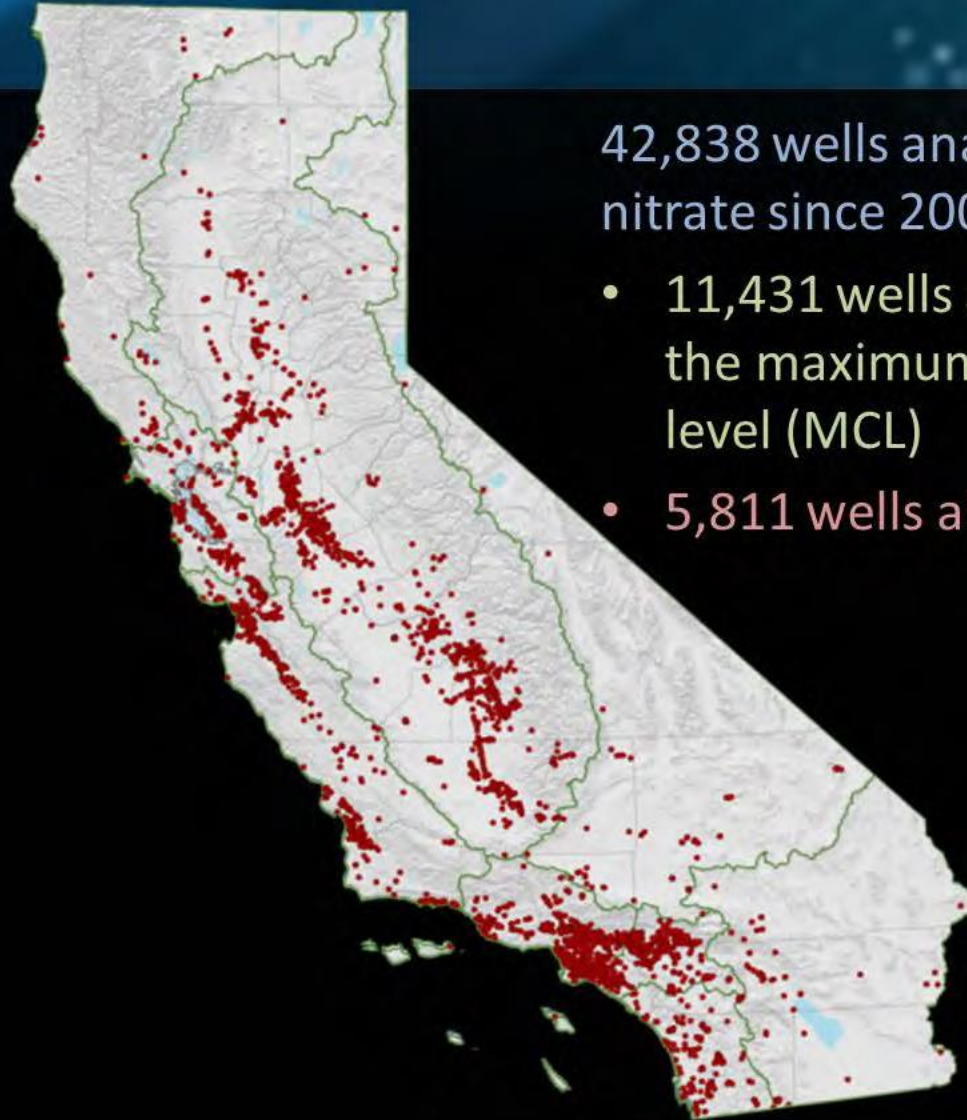
Regional water boards to incorporate
requirements into the permits by February
2023

Framing the Issue - Background

- UC Davis Nitrate Report and State Water Board Report to the Legislature, 2012
- Nitrogen Tracking Task Force Report, CDFA, 2013
- Agricultural Expert Panel Report, SWRCB, 2014



Framing the Issue – Nitrate in Groundwater



42,838 wells analyzed for nitrate since 2000

- 11,431 wells above one-half the maximum contaminant level (MCL)
- 5,811 wells above the MCL

Framing the Issue – Nitrate in Groundwater



42,838 wells analyzed for nitrate since 2000

- 11,431 wells above one-half the maximum contaminant level (MCL)
- 5,811 wells above the MCL

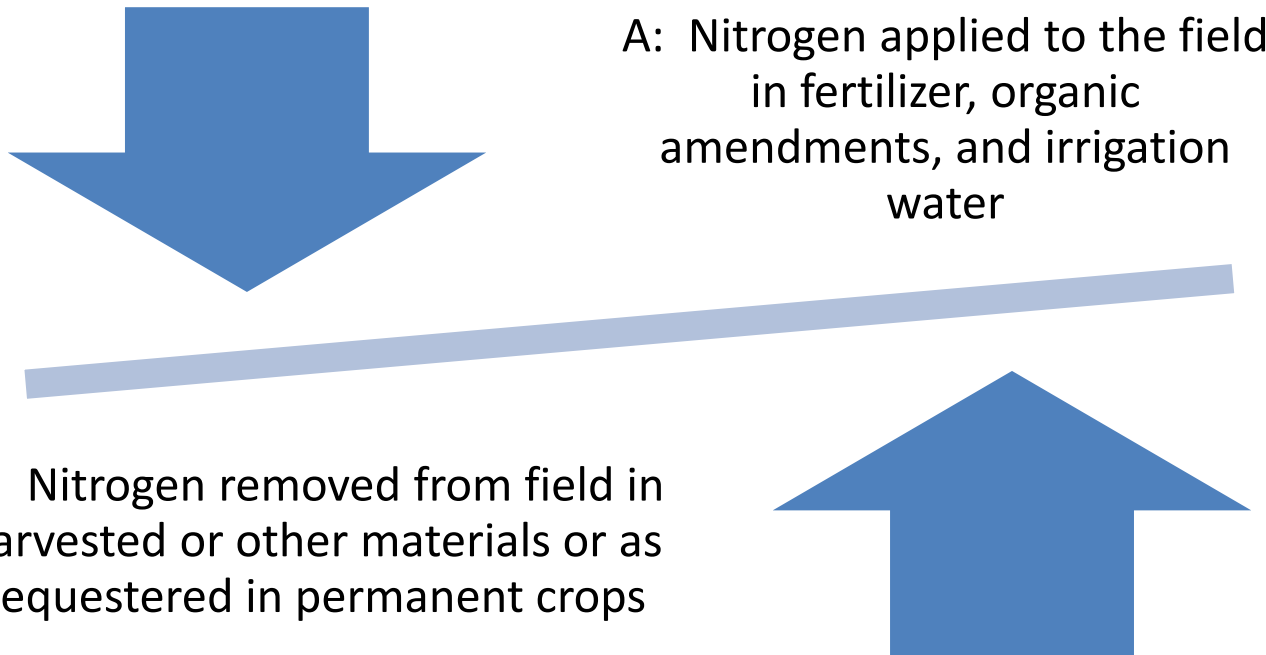
Nitrogen Management

- All growers must prepare an irrigation and nitrogen management plan
 - Certification
- All growers must report nitrogen applied (A) and removed (R) values

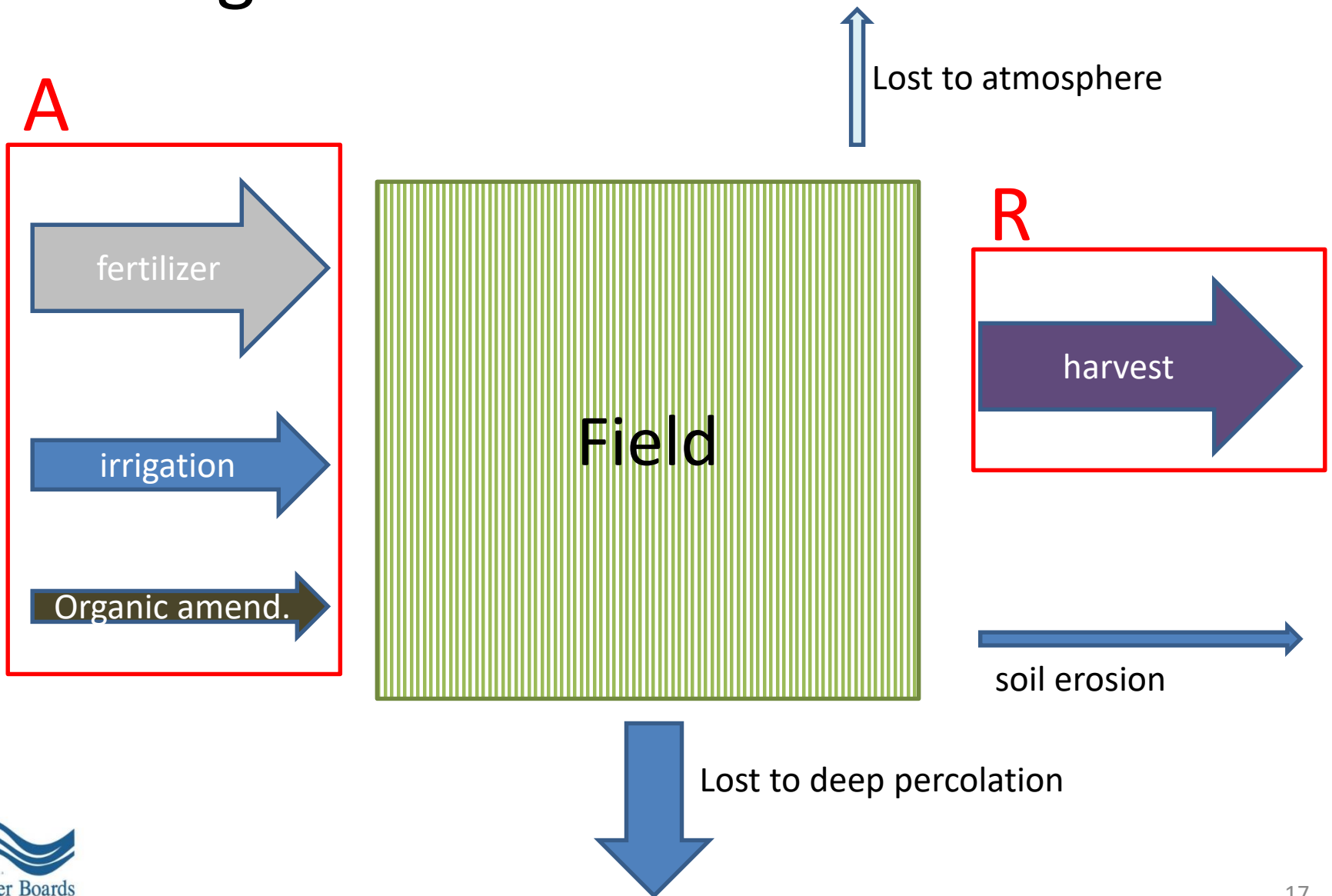


Nitrogen Management

- Tracking applied nitrogen (A) and removed nitrogen (R) – A/R and A-R; multi-year values

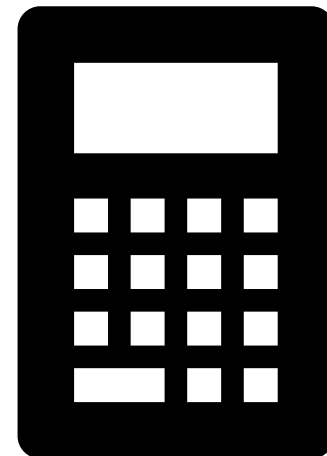


Nitrogen Fluxes



Nitrogen Management

- Nitrogen Applied
 - Fertilizer, organic amendment, irrigation water
- Nitrogen Removed
 - Yield x crop-specific coefficient
 - Regional water boards to approve coefficients



Nitrogen Management

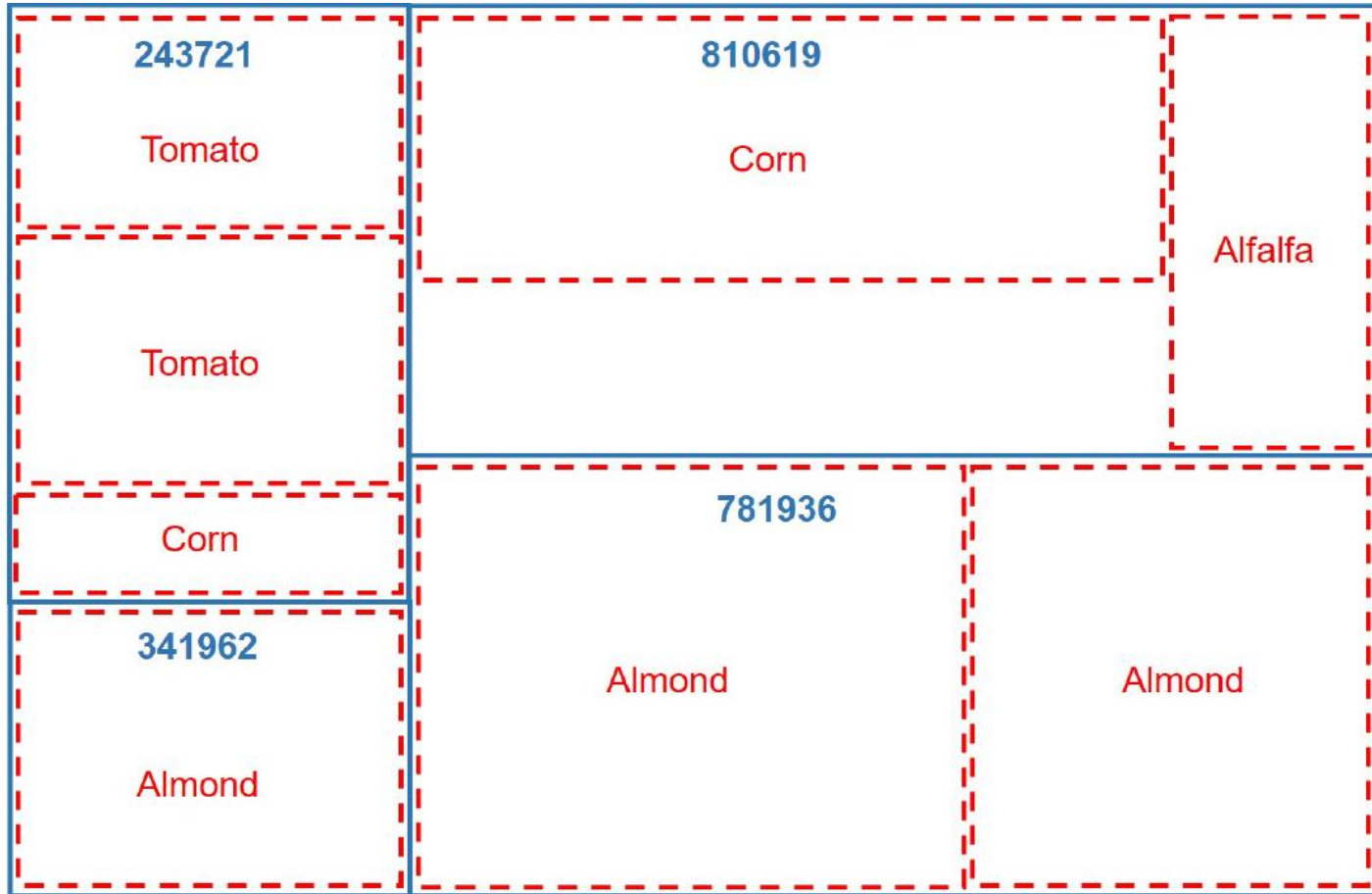
Exceptions:

- Not precedential where a category of growers affirmatively demonstrates that applied nitrogen is not expected to seep below the root zone in amounts that could impact groundwater and is not expected to discharge to surface water
- Limited or delayed nitrogen reporting for some categories of growers

Nitrogen Management

- Coalition-based regulatory programs provide for anonymous data reporting
- Direct reporting where no coalition





Legend

	Owner Boundary
	Field Boundary

Figure 1. Illustration of Anonymous Member ID, corresponding to Tables 1 and 2

TABLE 2

Sample Field-Level Nitrogen Data Reported to the Regional Board by Anonymous Member ID*

Anonymous Member ID	Crop for each field	N Applied			Total Nitrogen Applied (lbs/ac)	Nitrogen Removed (lbs/ac)	A/R	A-R (lbs/ac)	3 yr A/R
		N Applied via Fertilizer (lbs/ac)	N Applied via Organics/Compost (lbs/ac)	N Applied via Irrigation (lbs/ac)					
243721	Tomato ₁	180	10	6	196	148	1.3	48	1.3
243721	Tomato ₂	150	0	45	195	60	3.3	135	3.7
243721	Corn, silage	230	0	17	247	210	1.2	37	1.4
341962	Almond	180	5	22	207	140	1.5	67	1.3
810619	Corn, grain	200	0	5	205	120	1.7	85	1.6
810619	Alfalfa	0	0	35	35	510	0.1	-475	0.1
781936	Almond ₁	250	0	0	250	130	1.9	120	2.1
781936	Almond ₂	135	10	31	176	54	3.3	122	3.6

*The data in this table is for illustrative purposes only and does not represent actual data collected. If multiple crop types are grown in the same field over the course of a year or over several years, variations on field nomenclature and crop reporting will be necessary. For example, the field could be identified as the same field in an extra column and an extra row could be added for each crop.

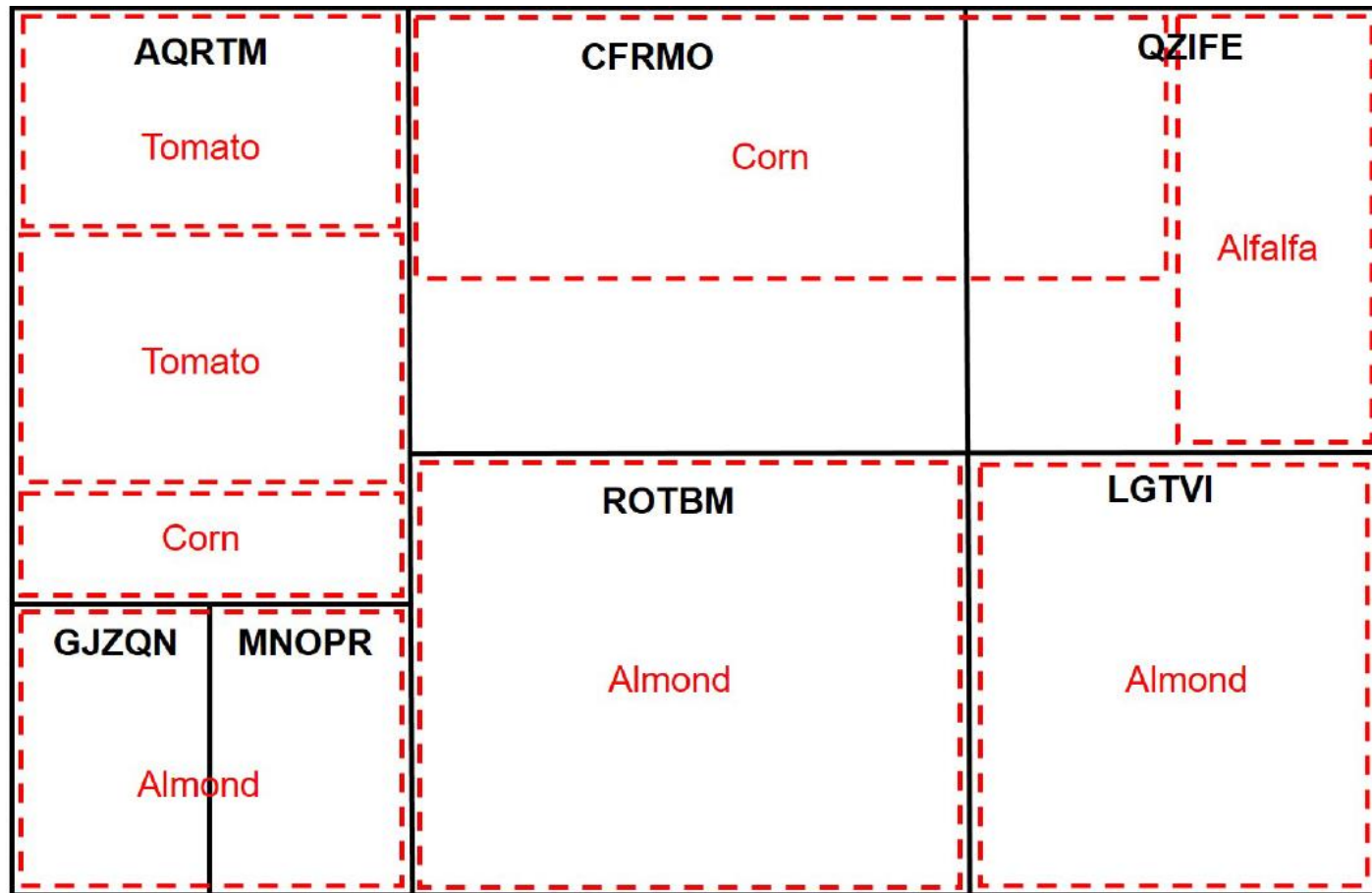


Figure 2. Illustration of Anonymous APN ID, corresponding to Table 3

TABLE 3

Sample Field-Level Nitrogen Data Reported to the Regional Board by Anonymous APN ID*

Anonymous APN ID	Groundwater Sub-basin (Per DWR Bulletin 118)	Crop for each field	N Applied			Total Nitrogen Applied (lbs/ac)	Nitrogen Removed (lbs/ac)	A/R	A-R (lbs/ac)	3 yr A/R
			N Applied via Fertilizer (lbs/ac)	N Applied via Organics/ Compost (lbs/ac)	N Applied via Irrigation (lbs/ac)					
AQRTM	5-22.02	Tomato ₁	180	10	6	196	148	1.3	48	1.3
AQRTM	5-22.02	Tomato ₂	150	0	45	195	60	3.3	135	3.7
AQRTM	5-22.02	Corn, silage	230	0	17	247	210	1.2	37	1.4
GJZQN	5-22.04	Almond	180	5	22	207	140	1.5	67	1.3
MNOPR	5-22.04	Almond	180	5	22	207	160	1.3	47	1.2
CFRMO	5-22.03	Corn, grain	110	0	5	115	92	1.3	23	1.6
QZIFE	5-22.02	Corn, grain	110	0	5	115	92	1.3	23	1.6
QZIFE	5-22.02	Alfalfa	135	10	31	176	54	3.3	122	3.6
ROTBM	5-22.06	Almond	250	0	0	250	130	1.9	120	2.1
LGTVI	5-22.04	Almond	135	10	31	176	54	3.3	122	3.6

*The data in this table is for illustrative purposes only and does not represent actual data collected. If multiple crop types are grown in the same field over the course of a year or over several years, variations on field nomenclature and crop reporting will be necessary. For example, the field could be identified as the same field in an extra column and an extra row could be added for each crop.

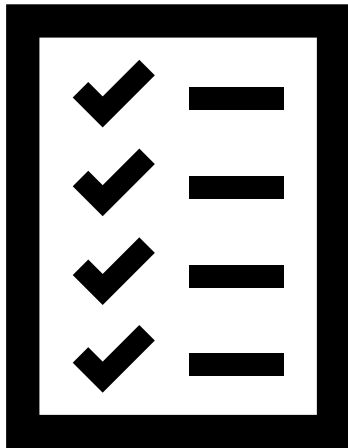
TABLE 4

Sample Township-Level Nitrogen Data Reported to the Regional Board*

Township Range (TR)	Crop	Total Acreage (ac)	N Applied via Fertilizer (total lbs)	N Applied via Organics/Compost (total lbs)	N Applied via Irrigation (total lbs)	Total Nitrogen Applied (total lbs)	Nitrogen Removed (total lbs)	A/R	A-R (total lbs)
02S07E	Almonds	88	20000	60	2390	22450	22400	1.0	50
02S07E	Corn, silage	54	12420	0	650	13070	11340	1.2	1730
02S07E	Walnuts	35	5250	0	500	5750	3575	1.6	2175
05S14E	Almonds	115	20700	0	3540	24240	16100	1.5	8140
05S14E	Corn, grain	600	66000	250	0	66250	55200	1.2	11050
05S14E	Grapes	112	2800	75	200	3075	3140	1.0	-65
05S14E	Oats	32	--	--	--	--	--	--	--
05S14E	Pistachios	1293	155160	0	3550	158710	108612	1.5	50098
05S14E	Wheat	1040	156000	200	900	157100	104000	1.5	53100
06S09E	Almonds	38	5700	0	705	6405	2052	3.1	4353
06S09E	Corn, grain	2144	235840	0	9858	245698	197248	1.2	48450
07S11E	Almonds	4696	657440	2000	3250	662690	422640	1.6	240050
07S11E	Tomatoes	891	160380	0	9928	170308	131868	1.3	38440
07S11E	Walnuts	105	15750	45	0	15795	8400	1.9	7395
08S13E	Barley	400	57000	200	400	57600	32000	1.8	25600
10S15E	Almonds	9328	2000000	800	14048	2014848	1679040	1.2	335808
10S15E	Corn, grain	387	42570	250	0	42820	35604	1.2	7216
10S15E	Tomatoes	91	12000	30	500	12530	17900	0.7	-5370
10S15E	Walnuts	80	11500	0	50	11550	9600	1.2	1950
11S17E	Almonds	9817	1511000	0	820	1511820	1079870	1.4	431950
11S17E	Corn, silage	54	12420	0	650	13070	11340	1.2	1730
11S17E	Walnuts	760	140000	300	6000	146300	66500	2.2	79800
13S17E	Almonds	1724	410000	0	3760	413760	258600	1.6	155160
13S17E	Tomatoes	186	19500	10	0	19510	1467	13.3	18043
13S17E	Walnuts	189	30000	200	1550	31750	6250	5.1	25500

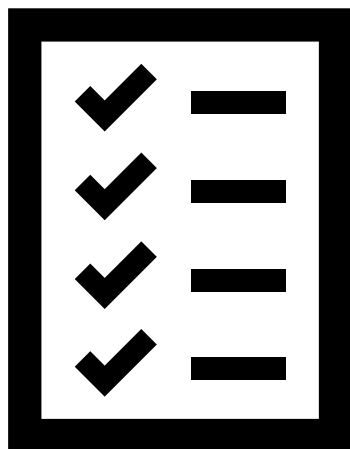
*The data in this table is for illustrative purposes only and does not represent actual data collected.

Use of AR Data by Regional Boards



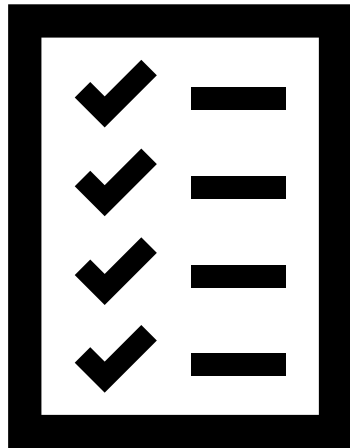
- Verify that appropriate follow up is conducted and responsive management practices are implemented
- May request names and locations on a case-by-case basis

Use of AR Data by Regional Boards



- Approve groundwater protection targets for nitrogen loading within a township

Use of AR Data by Regional Boards



- Evaluate field-level data for development of acceptable ranges for multi-year A/R ratio target values

On-Farm Drinking Water Well Sampling

- Sampling for nitrates; additional constituents discretionary
- Notification to users





Replacement Water?

- OE Settlements
 - Salinas Basin Agricultural Stewardship Group (2017)
 - Kaweah Basin, Tulare Basin, and Kings River Watershed Coalitions (2019)
- CV-Salts
- Legislation

30

Summary of Other Requirements

Outreach and Training

- All growers must participate in outreach events
- Regional water boards have discretion over the precise form and frequency of outreach



This Photo by Unknown Author is licensed under [CC BY-ND](#)

Management Practice Reporting

- All growers must report management practices
- Regional water boards have discretion as to the form and frequency of submissions
- In third-party programs, field-level management practice implementation data must be submitted by the coalition to the regional water board, but must have anonymous identifiers

TABLE 1

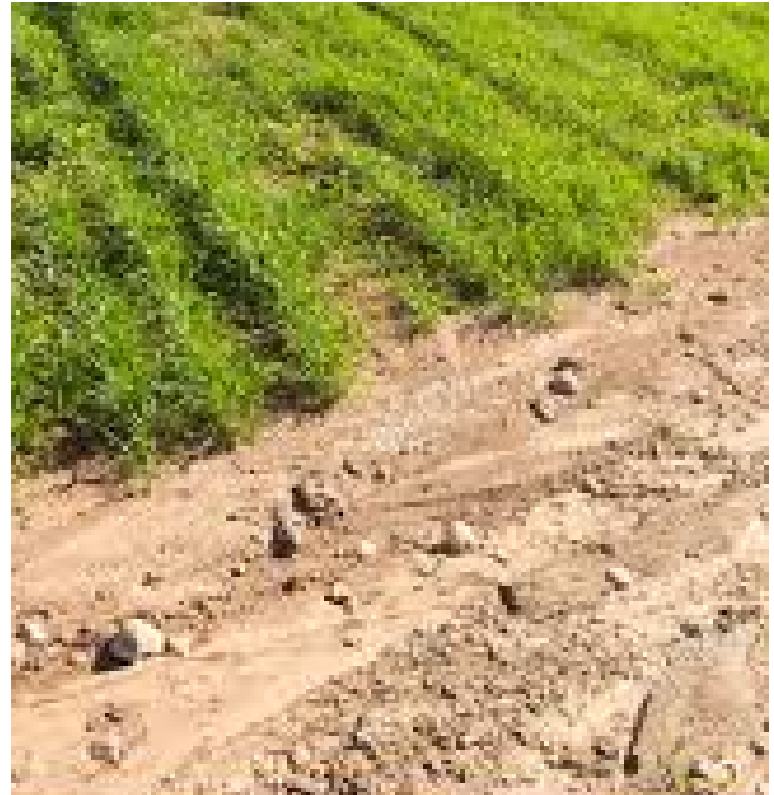
Sample Field-Level Management Practice Data Reported to the Regional Board by Anonymous Member ID*

ID	Data from INMP Summary Report						Data from Farm Evaluation			Data from MPIR			
Anonymous Member ID	Crop	Outlier Notification? (Annual)	INMP Certification Method (Annual)	Irrigation Method	Irrigation Practices (Annual)	Nitrogen Management Practices (Annual)	Pest Management Practices (Every Five Years)	Sediment and Erosion Management Practices (Every Five Years)	Irrigation wells? Abandoned wells? (Every Five Years)	In a SQMP area? (Annual)	Practices implemented to comply with SQMP	In a GQMP area?	Practices implemented to comply with GQMP
243721	Tomato ₁	Yes	CCA	Drip	Measured soil moisture	Evaluated crop nitrogen need; used fertigation	Followed label restrictions	Used off season cover crop	Yes, No	No	NA	No	NA
243721	Tomato ₂	No	CCA	Drip	Weather-based measured soil moisture	Used tissue/petiole testing	Used drift control agents	Stabilized creek and stream banks	Yes, Yes	No	NA	No	NA
243721	Corn	No	Self	Furrow	Tailwater return	Used split fertilizer applications	none	No irrigation drainage	Yes, Yes	No	NA	No	NA
341962	Almond	No	NRCS	Drip	Weather-based scheduling	Used split fertilizer applications	Used buffer zones	Field is lower than surrounding terrain	Yes, No	Yes	Limited edge of field spraying	Yes	Used split fertilizer application
810619	Corn	No	CCA-N/A	Furrow	Tailwater return	Tested irrigation water nitrogen concentration	Used vegetated drain ditches	Flow dissipaters, stabilized creek and stream banks	No, No	Yes	integrated pest management	No	NA
810619	Alfalfa	Yes	Self-N/A	Border flood	Laser-leveled fields	none	Applied no pesticides	Used in-furrow dams	No, Yes	Yes	integrated pest management	No	NA
781936	Almond ₁	No	CCA	Sprinkler	Measured soil moisture	Tested soil for residual nitrogen	Mapped sensitive areas	irrigated with drip or micro irrigation syst.	Yes, No	No	NA	Yes	Compost added to soil
781936	Almond ₂	No	CCA	Flood	Irrigation based on crop water need	Tested soil for residual nitrogen	Used end-of-row sprayer shutoff	Planted cover crops or native vegetation	Yes, Yes	No	NA	Yes	Compost added to soil

*The data in this table is for illustrative purposes only and does not represent actual data collected.

Sediment and Erosion Plan

- All growers with potential to cause erosion and discharge sediment that may degrade surface waters must implement sediment and erosion control practices
- Regional water boards have discretion as to how these practices are documented and reported



Water Quality Monitoring

- Surface water quality monitoring required, but no specific direction set in precedential order



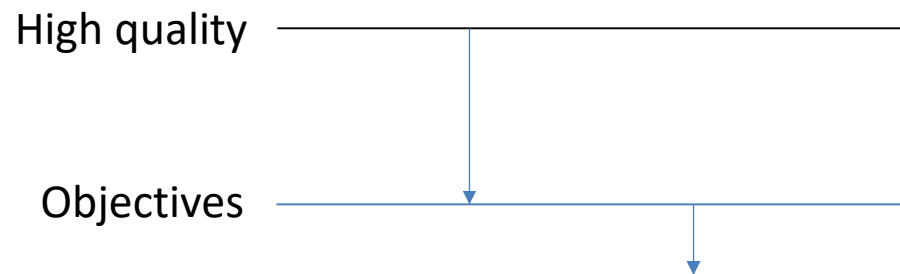
Water Quality Monitoring

- Requirement for groundwater quality trend monitoring is precedential, however, specific requirements and monitored constituents left to the discretion of regional water boards



Antidegradation

- Landscape-level, generalized analysis is reasonable for diffuse non-point source discharges
- Maximum benefit and best practicable treatment or control analysis must evolve as understanding of impacts to water quality and methods of control advances



Coalition Recordkeeping Requirements

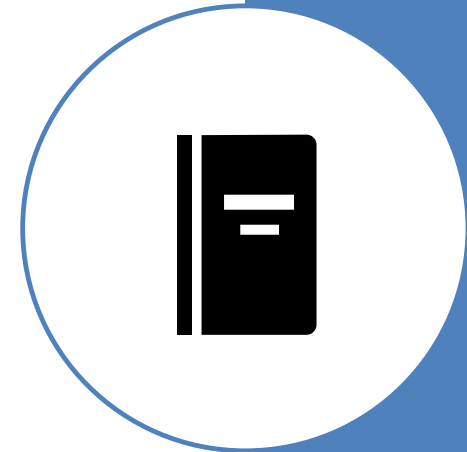
- All coalitions to maintain reports and records for ten years
- Back up files must be stored in a secure, offsite location managed by an independent entity



Going Forward

Triennial Reporting to the State Water Board

- Anticipated that regional water boards will report:
 - Progress on precedential aspects of order
 - Progress on outreach for management practice implementation
 - Progress on enrollment of non-filers



Going Forward



- Three lawsuits filed challenging compliance of the petition order with the Nonpoint Source Policy and the Antidegradation Policy



CALIFORNIA

Water Boards

STATE WATER RESOURCES CONTROL BOARD

REGIONAL WATER QUALITY CONTROL BOARDS