



## Representative Groundwater Monitoring

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An alternative to the traditional groundwater monitoring approach

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## Topics

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- Background
- Compliance Progress
- Current monitoring approach
- Controversy
- Representative monitoring
- Current status
- Remaining Challenges



## Dairy Farm Water Quality Regulation

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- General Order for dairy farms adopted May 3, 2007
- Detailed requirements to protect surface and ground water
- Applies to all dairies in Central Valley (1400 dairy farms)
- No differentiation by farm size
- Requires significant changes in facilities & activities



## Requirements of Order

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- Prohibits discharges to surface or ground water
- Requires a Nutrient Management Plan (NMP)
- Requires an engineered Waste Management Plan (WMP) and facility assessment
- Monitoring of wells, soil, and plant tissue and extensive reporting



## Compliance Progress

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- Large outreach program
- High degree of compliance
- Significant attrition of farms
- Search for funding assistance
- Water board performing compliance inspections
- Costs to farmers piling up



## Current Monitoring Approach

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- Every farm required to install 3 to 4 or more monitoring wells
- Monitor “first encountered” groundwater for nitrates and salts
- Implementation scheduled on 100 – 200 farms per year
- Monitoring well installation ordered for 50 farms so far
- 25 more expected soon



## Controversy

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- Controversial and expensive
- Monitoring wells on every farm only identify a problem
- Do nothing to resolve or prevent it
- Diverts resources from corrections
- Consumes regulatory resources
- Some soils slow to respond to changes
- Source determination difficult



## Why Monitor Groundwater?

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- Show if Order is working to protect groundwater
- Show trends in groundwater quality on an aquifer basis
- To frame future regulations and dairy farm practices
- Valid goals
- But there is a better way



## Central Valley Representative Monitoring Program (CVRMP)

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- A project of Dairy Cares
- Identify farm “cluster or group”
  - Many dairies
  - Open soils with high recharge
  - Shallow groundwater
  - Limited non-dairy uses
  - Impacts largely attributable to dairies



## How It Will Work

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- Monitoring wells installed on most farms in a regional group
- Monitoring of a strategically selected area – not individual farms
- Data will be collected, analyzed, interpreted, and reported
- Findings will deduce practices and effects for similar farms



## Structure

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- Coalition will be formed to conduct the program
- Run by dairy farmers
- Membership is voluntary
- Formal sign-up and participation agreement
- Funded by assessments on members



## Advantages

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- Organized & definitive monitoring
- More efficient sample collection
- More comprehensive data set
- Quicker, more inclusive results
- Less staff resources required
- Less expensive for farmers



## What are the Financial Stakes?

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- Traditional approach of monitoring well systems on each farm is expensive – Estimated cumulative cost of over \$65,000,000
- Representative alternative estimated at \$5 to \$6,000,000
- Results in 6 years rather than 7 – 14 for traditional approach of 100 – 200 farms per year



## What Does it Mean for Farmers?

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- Current program
  - \$42,500 up front
  - \$2,500 to \$5,000/yr sampling costs
  - Annual costs never end
- CVRMP member
  - \$500 up front
  - \$660 to \$972/yr
  - Annual costs decrease after installation of well network is complete



## Current Status

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- Board of Directors recruited
- Organizing documents in draft form
- Initial representative area selected
- Monitoring and reporting program of the Order must be amended
- Discussions of amendments are proceeding



## Challenges

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- Gaining agreement with water board on responsibilities of CVRMP
- Farmer run – cannot be regulatory
- How to transfer data from the representative area to other farms
- How to accomplish changes in practices where need is shown



## Contacts

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