

Procedures For Dairy Location Map

Purpose

To provide a clear understanding of the methodology undertaken, this document outlines the process of mapping publicly available dairy facility locations retrieved from the [California Integrated Water Quality System](#) (CIWQS), as September 2025, and comparing them to regions identified as high-risk for groundwater quality impacts from nitrates, as indicated by the State Water Resources Control Board's Groundwater Ambient Monitoring Assessment (GAMA) [Aquifer Risk Map](#) (ARM).

Step-by-Step Instructions

Step 1: Download data from CIWQS

1. Navigate to the official CIWQS [Regulated Facilities Report webpage](#)
2. Do not select a region, county, or city to obtain statewide report
3. Under Program, select "ANIMALWASTE"
4. Select "Active" Permit Status
5. Do not Select Waste Type, Facility Type, or Agency Type
6. Run Report and download Data
 - a. Select run report
 - b. Select the total number of "ANIWSTCOWS"
 - c. Select 'Export This Report to Excel'
7. Excel data processing:
 - a. Filter "CAF Subtype" = 'Mature Dairy Cattle'
 - b. Remove duplicate location ("Latitude" and "Longitude"), "Facility Name", and "WDID"

Step 2: Download Data from GAMA ARM

1. In ArcGIS Pro (or another GIS program) navigate to your Map
2. Select Add Data
3. Select Data from Path
4. Enter the Rest endpoint URL for [2025 GAMA ARM for Nitrate](#)
5. Click Add. This may take a moment, but your data will appear on the table of contents pane.
6. Save as a local shape file
 - a. Share/save as layer

Step 3: Download regional Board Boundaries

1. Repeat 2-3 in step 2 of your map
2. Enter Regional Board Endpoint URL for [State Region Board Boundaries](#)
3. Save as a local shape file

Step 4: Import and process data with Geographical Informational System (GIS)

1. Import regional board boundaries
2. Add facility and Nitrate Risk Areas
3. Add facilities table
4. Plot facilities by latitude and longitude (x,y) coordinates
5. Add Aquifer Risk Map Nitrate Risk areas shape file
6. Filter ARM Nitrate High Risk Areas and import to new feature
 - a. Filter “2025 Water Quality Risk” = “high”
7. Create new layer from facilities that are within 1-mile for high-risk Nitrate areas
8. Select new layer facilities within 1-mile or ARM Nitrate High-Risk area
9. Format to aggregate symbology and enable clusters
10. Edit radius for clusters

Step 5: Additional spatial analysis

1. Facilities can be summarized within areas of ARM Nitrate High-Risk.
 - a. Select the facilities that intersect areas of ARM Nitrate High-Risk
 - b. Summarize by State for State Totals
 - c. To summarize by regions, conduct spatial join to attribute a region to each facility or filter by attribute
2. Facilities can be summarized within 1 mile from ARM Nitrate High-Risk areas.
 - a. Select facilities within 1-mile of ARM Nitrate High-Risk
 - b. Summarize by State for State Totals
 - c. To summarize by regions, conduct spatial join to attribute a region to each facility or filter by attribute

Note: Additional summaries may be made to summarize ARM data or the Central Valley Regional Water Board data per [CV-Salts Management Zones](#).