



# Nutrient Management Fact Sheet: California

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California regulatory requirements for dairy operations differ in the various water control board regions across the state. This summary for California is broken into the regions that include dairy operations – Central Valley Region, Santa Ana Region, North Coast Region and the San Francisco Region.

## Central Valley Region

### Nutrient Management Plans

Topic	Summary
Coverage	<p><a href="#">Central Valley</a> Regional Water Quality Control Board oversees water resources in the region. This summary assumes dairies are covered under the Waste Discharge Requirements General Order for Existing Milk Cow Dairies (<a href="#">General Order R5-2013-0122</a>). More information on the water quality permitting authorities can be found <a href="#">here</a>.</p> <p>General Order R5-2013-0122 requires owners and operators of existing milk cow dairies (operating as of October 17, 2005 and have not expanded and filed a complete Report of Waste Discharge) who apply manure, bedding, or process wastewater to land for nutrient recycling to develop and implement management practices that control nutrient losses that are contained in a certified Nutrient Management Plan (NMP).</p> <p>On February 20, 2020 the Central Valley Water Resources Board <a href="#">rescinded</a> the General Waste Discharge Requirements and General NPDES Permit R5-2010-0118 (NPDES CAG015001) for dairies.</p> <p>Waste Management Plans are also required to provide an evaluation of the existing milk cow dairy’s design, construction, operation, and maintenance for flood protection and waste containment.</p>
Content	<p>The Nutrient Management Plan must take the site-specific conditions into consideration in identifying steps that will minimize nutrient movement through surface runoff or leaching past the root zone.</p> <p>Elements of a NMP include:</p> <ul style="list-style-type: none"> <li>- Land application area information.</li> <li>- Sampling and analysis (soil, manure, process wastewater irrigation water and plant tissue analysis).</li> <li>- Nutrient budget.</li> <li>- Setback &amp; buffers.</li> <li>- Field risk assessment.</li> <li>- Record keeping and NMP review schedule.</li> </ul>



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	<p>Specific details of the requirement can be found in the <a href="#">Order</a> in Attachment C.</p> <p>Additional guidance including check lists and forms can be found on the California Dairy Research Foundations <a href="#">website</a>.</p> <p>Software is also available to complete Nutrient Management Plans and Waste Management Plans. More information can be found <a href="#">here</a>.</p>
Frequency of Updates	<p>Plans updated once every 5 years but must be updated with changes affecting the nutrient balance/budget and other changes.</p> <p>Records must be maintained on site for 5 years.</p>
Paperwork	<p>Annual reports must be filed, including an Annual Dairy Facility Assessment related to completion of Nutrient Management Plans and Waste Management Plans. Information on filing an annual report can be found <a href="#">here</a>.</p> <p>Reports shall be available for public inspection at the offices of the Central Valley Water Board. Data on waste discharges, water quality, meteorology, geology, and hydrogeology shall not be considered confidential.</p>
Planner Qualifications	<p>Certified specialists must develop the NMP.</p>

### Manure Storage and Application – Central Valley

Topic	Summary
Storage	<p><a href="#">Facility Siting / Setback</a></p> <p>A setback of 100 feet is required between supply wells and animal enclosures in the production area. A minimum setback of 100 feet or other control structures (such as housing, berming, grading) shall be required for the protection of existing wells or new wells installed in the cropland. If a county or local agency adopts more stringent setback standards than that adopted by the DWR, then these local standards shall carry precedence over the <a href="#">Well Standards of DWR</a>.</p> <p>Additional information on setbacks can be found <a href="#">here</a>.</p> <p><a href="#">Storage Length</a></p> <p>The order includes several requirements for new and reconstructed ponds<sup>1</sup> and the designs must be reviewed and approved by the Water Board’s Executive Officer prior to construction.</p>

<sup>1</sup> [https://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2013-0122.pdf](https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0122.pdf)



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	<p>Storage volume is calculated in the Waste Management Plan based on several factors including:</p> <ul style="list-style-type: none"> <li>- Anticipated timing of land application.</li> <li>- Manure, process wastewater, and other wastes accumulated during the storage period.</li> <li>- Proper timing and rate applications.</li> <li>- Normal precipitation.</li> <li>- 25-year, 24-hour precipitation and runoff.</li> <li>- Necessary freeboard (one foot of freeboard for below ground retention ponds and two feet of freeboard for aboveground retention ponds).</li> </ul> <p>See Attachment B in the Order for more details.</p>
Application	<p><u><a href="#">Spreading</a></u></p> <p>Land application of all waste must be in accordance with a certified nutrient management plan. Central Valley Water Board must be notified in writing before waste is applied to land previously identified in the NMP as not having manure or process wastewater applied.</p> <p>Manure and process wastewater shall not be applied closer than 100 feet to any down gradient surface waters, open tile line intake structures, sinkholes, agricultural or domestic well heads, or other conduits to surface waters, unless a 35-foot-wide vegetated buffer or physical barrier is substituted for the 100-foot setback or alternative conservation practices will provide similar protection.</p> <p>Minimum widths of setback and vegetated buffers doubled around the wellhead of a drinking water supply well constructed in a sole-source aquifer.</p> <p>All process wastewater applied to land application areas must infiltrate completely within 72 hours after application.</p>

## Santa Ana Region

### Nutrient Management Plans

Topic	Summary
Coverage	<p><u><a href="#">Santa Ana</a></u> Regional Water Quality Control Board oversees water resources in the region. This summary assumes coverage of dairies under General Waste Discharge <u><a href="#">Order No. R8-2018-0001</a></u>.</p> <p>The Order is for Concentrated Animal Feeding Operations (Dairies and Related Facilities) within the Santa Ana Region. The Order is a National Pollutant</p>



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	<p>Discharge Elimination System (NPDES) permit under the federal Clean Water Act.</p> <p>Nutrient Management Plans are required for the application of manure and other dairy-related waste to cropland at the dairy facility.</p> <p>The Regional Board determined that AFOs with a herd size of more than 20 cows or 50 heifers or calves within the region are CAFOs and regulated under the order. Dairies where the animal population is less than 20 dry or milking cows generally do not need to obtain coverage under the Order.<sup>2</sup></p> <p>Newly constructed dairies may have additional requirements under an <a href="#">Individual NPDES Waste Discharge permit</a>.<sup>3</sup></p> <p>Other Plans: Engineered Waste Management Plans must also be developed.</p>
<p>Frequency of Updates</p>	<p>NMP and Engineered Waste Management plans need to be updated if there are substantial changes in its operations that affect compliance, ownership, size and treatment and containment systems.</p> <p><a href="#">Annual Reports</a> must be filed each year.</p>
<p>Content</p>	<p>Nutrient management plans must be in conformance with NRCS Conservation Practice Standard 590 and include: soil and tissue testing and analysis, manure, organic by-product and biosolids testing and analysis, nutrient loss risk assessment, 4Rs of nutrient stewardship.</p> <p>September 2020 <a href="#">CA NRCS 590 Practice Standard</a>.</p>
<p>Paperwork</p>	<p>Engineered Waste Management Plans and Nutrient Management Plans are available for public input for 30 days<sup>4</sup> and are kept on file in the Regional Board office.<sup>5</sup> Additionally, a new or amended nutrient management plans and Engineered Waste Management Plans will be subject to public review for 30 days prior to its approval by the Executive Officer.</p>
<p>Planner Qualifications</p>	<p>Nutrient management plans must be prepared by a Certified Nutrient Management Planner meeting competency and knowledge requirements established by NRCS.</p>

<sup>2</sup> [General Waste Discharge Requirements for Concentrated Animal Feeding Operations \(Dairies and Related Facilities\) Within the Santa Ana Region \(ca.gov\)](#)

<sup>3</sup> [General Waste Discharge Requirements for Concentrated Animal Feeding Operations \(Dairies and Related Facilities\) Within the Santa Ana Region \(ca.gov\)](#)

<sup>4</sup> [https://www.waterboards.ca.gov/santaana/public\\_notices/Dairy\\_NOIs.html](https://www.waterboards.ca.gov/santaana/public_notices/Dairy_NOIs.html)

<sup>5</sup> [https://www.waterboards.ca.gov/santaana/water\\_issues/programs/dairies/ewmp\\_nmp.html](https://www.waterboards.ca.gov/santaana/water_issues/programs/dairies/ewmp_nmp.html)



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An Engineered Waste Management Plan must be prepared by a registered professional engineer.

### Manure Storage and Application – Santa Ana

Topic	Summary
Storage	<p><a href="#"><u>Facility Siting / Setback</u></a></p> <p>Waste storage or disposal facilities shall not be built within 400 feet of a public drinking water well.</p> <p><a href="#"><u>Structure</u></a></p> <p>Engineered Waste Management Plans must include:</p> <ul style="list-style-type: none"> <li>- Location and construction of containment structures and a site plan.</li> <li>- Specifications for the placement of overflow outlets and minimum capacity markers.</li> <li>- Controls to prevent manure, litter, and process wastewater from being applied or accumulate closer than 100-feet to any downgradient surface water, open tile line intake structures, sinkholes, well heads, or other conduits to surface or groundwater.</li> <li>- Controls to prevent erosion of soil that impact storage capacity.</li> <li>- Calculations for the volume of containment structures.</li> <li>- Procedures for restoring the minimum holding capacity.</li> <li>- A schedule of operation and maintenance practices necessary to maintain compliance.</li> </ul> <p>Minimum holding capacity must be sufficient to contain the runoff and direct precipitation from a 25-year, 24-hour rainfall event.</p>
Application	<p><a href="#"><u>Spreading</u></a></p> <p>Manure applied to non-CAFO related croplands must meet specifications in the order.</p> <p>Land application of manure and wastewater must be managed in accordance with the NMP.</p> <p><a href="#"><u>Testing</u></a></p> <p>Manure analysis must be conducted annually to inform application rates. Soil testing must be conducted a minimum of once every five years.</p>

### North Coast Region

#### Nutrient Management Plans

Topic	Summary
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<p>Coverage</p>	<p><a href="#">North Coast</a> Regional Water Quality Control Board oversees water resources in the region. This summary assumes dairies are covered under General Waste Discharge Requirements for Dairies <a href="#">Order No. R1- 2019-0001</a>.</p> <p>Order No. R1- 2019-0001 requires owners and operators of dairies who apply manure and/or dairy process water to land as a soil amendment or source of nutrients are required to develop and implement a <a href="#">Nutrient Management Plan (NMP)</a>. Also, if the dairy animals graze the dairy land for more than 30 days annually, then an NMP must be completed and implemented.</p> <p>Dairies with less than 25 cows may not need to complete an NMP.</p> <p>Dairies that have a discharge requiring an NPDES permit must obtain coverage under <a href="#">NPDES Permit for Concentrated Animal Feeding Operations within the North Coast Region, Order No. R1-2012-0001</a>, or a subsequently adopted NPDES permit.</p>
<p>Content</p>	<p>Under the General Waste Discharge Order requirements elements of a <a href="#">NMP</a> include:</p> <ul style="list-style-type: none"> <li>- Contact information.</li> <li>- Dates for implementation, review and revisions.</li> <li>- Maps.</li> <li>- Area for application.</li> <li>- Manure and process water storage areas.</li> <li>- Milk barn.</li> <li>- Chemical storage areas.</li> <li>- Waste storage areas.</li> <li>- Nutrient budget calculations.</li> <li>- Land application practices and water quality protection including methods of application to land and BMPs to protect surface water and groundwater.</li> </ul> <p>The NMP must identify the analytical laboratory utilized and the analyses to be conducted for soil, manure, soil amendments, process water, irrigation water, plant tissue, etc.</p> <p>Additional guidance including outlines of an NMP and waste management plans can be found on the California Dairy Research Foundation's <a href="#">website</a>.</p>
<p>Frequency of Updates</p>	<p>Annual Reports must be filed with the Regional Water Board each year. The NMP should be reviewed annually and revised if changes in conditions or practices at the dairy require changes in the NMP.</p> <p>Records must be maintained on site for 5 years.</p>



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<p>Paperwork</p>	<p>The NMP must be available for Regional Water Board staff review during inspections.</p> <p>Annual reports must be filed each year and will be available for public inspection at the offices of the Regional Water Board. Some data may be exempt from disclosure based on the California Public Records Act.</p>
<p>Planner Qualifications</p>	<p>NMPs must be developed with the assistance of specialists such as those with a degree in or certification from: soil scientist, agronomist, crop advisor, University of California Cooperative Extension (UCCE) or Resource Conservation District service advisor or technician, or a technical service provider certified by the Natural Resources Conservation Service (NRCS).</p>

### Manure Storage and Application – North Coast

Topic	Summary
<p>Storage</p>	<p><a href="#"><u>Facility Siting / Setback</u></a></p> <p>Under the General Waste Discharge Order requirements, animals must be separated from surface waters by a 35-foot-wide vegetated buffer unless an alternative practice provides equal or better protection.</p> <p><a href="#"><u>Structure</u></a></p> <p>The anticipated maximum time between land application events (i.e., the storage period) shall be used to determine the needed storage capacity for manure and process water.</p> <p>The size of ponds/containment structures must be able to contain waste materials and rainwater from a 25-year 24-hour storm event.</p>
<p>Application</p>	<p><a href="#"><u>Spreading</u></a></p> <p>Application of manure and process water to croplands shall be at rates which are reasonable for the crop, soil, climate, special local situations, management systems, and type of manure. The total nutrient loading shall not exceed the amount needed to meet crop demand and shall be in accordance with the nutrient budget calculations.</p> <p>Manure and process water shall not be applied within a 100-foot setback to any down-gradient surface water unless a 35-foot-wide vegetated buffer or physical barrier (i.e., a berm) is substituted for the 100-foot setback; or an alternative conservation practice that provides similar protection.</p> <p><a href="#"><u>Testing</u></a></p>



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Soil and Manure sampling must be described in the NMP. The laboratory utilized must be certified, or if not certified it must be approved by the Regional Water Board staff. Laboratory analysis methods are identified in [California Analytical Methods Manual for Dairy General Order Compliance – Nutrient Management Plan Constituents](#).

## San Francisco Region

### Nutrient Management Plans

Topic	Summary
Coverage	<p><a href="#">San Francisco</a> Bay Regional Water Quality Control Board oversees water resources in the region. This summary assumes dairies are covered under the General Waste Discharge Requirements <a href="#">Order Number R2-2016-0031</a>.</p> <p>Order No. R2-2016-0031 requires the preparation and implementation of a <a href="#">Nutrient Management Plan</a> for facilities that require the use of liquid waste retention ponds and that apply manure and/or process water to land as a soil amendment or source of nutrients.</p> <p>This is not a <a href="#">National Pollutant Discharge Elimination System (NPDES) permit</a>.</p>
Content	<p>Elements of a <a href="#">Nutrient Management Plan</a> include:</p> <ul style="list-style-type: none"> <li>- Contact information.</li> <li>- Date of completion and subsequent update.</li> <li>- Maps.</li> <li>- Nutrient budget calculations.</li> <li>- Land application practices and water quality protection.</li> <li>- Sampling and analysis program.</li> </ul> <p>Details on the NMPs can be found in <a href="#">Attachment D</a>.</p> <p>Additional guidance on the NMP can be found on the California Dairy Research Foundation's <a href="#">website</a>.</p>
Frequency of Updates	<p><a href="#">Annual Reports</a> must be filed with information on Nutrient Management Plan and other plans. NMPs must be updated in response to changing conditions and the results of monitoring.</p> <p>Records must be maintained on site for 5 years.</p>
Paperwork	<p><a href="#">Annual reports</a> must be filed including information on the Nutrient Management plan along with other information.</p>





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	<p>All reports prepared in accordance with the terms of the Order and submitted to the Executive Officer shall be available for public inspection at the offices of the Water Board.</p> <p>The most current version of the NMP must be kept at the facility and must be made available for review by Water Board staff during inspections. If the facility is designated as a Tier 3 facility, the NMP shall be submitted to the Water Board for review, within 2 years of Tier 3 designation or submittal of a Notice of Intent.</p>
Planner Qualifications	<p>Nutrient Management Plans shall be developed by dischargers with the assistance of appropriately certified or licensed professional.</p> <p>For Tier 3 Dairies, Waste Management Plans must be developed by appropriately certified or licensed professional such as a professional soil scientist, agronomist, crop advisor, University of California Cooperative Extension (UCCE) service advisor or technician, or a technical service provider certified by the NRCS.</p>

### Manure Storage and Application – San Francisco

Topic	Summary
Storage	<p><a href="#"><u>Facility Siting / Setback</u></a> A setback of 100 feet is required between supply wells and animal enclosures in the production area.</p> <p><a href="#"><u>Structure</u></a> Retention ponds (or expanded ponds) constructed after adoption of this Order must comply with Natural Resources Conservation Service (NRCS) Waste Storage Facility Code 313 including a maximum specific discharge (unit seepage rate) of 1 x 10<sup>-6</sup> cm/sec.</p> <p><a href="#"><u>Storage Length</u></a> Storage volume requirements for freeboard to be maintained are as follows:</p> <ul style="list-style-type: none"> <li>- Two feet for partially or completely aboveground ponds.</li> <li>- One foot for pond structures that are completely in ground.</li> </ul> <p>The Waste Management Plan (WMP) is required for facilities with liquid waste retention ponds. The plan must contain an analysis of the existing facility's waste containment capacity.</p>
Application	<p><a href="#"><u>Spreading</u></a> Manure and process water shall not be applied within a 100-foot setback to any down-gradient surface water, unless a 35-foot-wide vegetated buffer or physical</p>



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barrier (i.e., a berm) is substituted for the 100-foot setback; or an alternative conservation practice that provides similar protection.

Manure and process water shall not be applied closer than 100 feet to open tile line intake structures, sinkholes, or well heads unless the NMP contains a statement from a professional explaining that an alternative practice provides similar protection.

### Testing

Soil and manure shall be monitored, sampled and analyzed in accordance with the NRCS 590 Conservation Practice Standard or other sampling and analysis program approved by the Executive Officer. Laboratories used must be certified and use the analysis and methods identified in the [California Analytical Methods Manual for Dairy General Order Compliance – Nutrient Management Plan Constituents](#).

### Technical Assistance

Topic	Summary
Software Tools	<p>The <a href="#">Solution Center for Nutrient Management</a> was created by the University of California to serve as a website to increase access to California agricultural nutrient management resources and serve as a platform for conversations on important nutrient management.</p> <p>California NRCS uses the <a href="#">CNMP Manure Management Planner (MMP)</a> tool to prepare strategic nutrient application plans.</p> <p>California Department of Food and Agriculture (CDFA) provides the East San Joaquin Water Quality Coalition with technical assistance in the development of a <a href="#">NMP template and a NMP software</a> to be used by coalition members.</p>
Guides / Handbooks	<p>University of California provides several tools and resources for dairy producers, including:</p> <ul style="list-style-type: none"> <li>- <a href="#">Recordkeeping tools</a> for dairy producers' nutrient management efforts (producers must be using flow meters, GPM + run time method and pond drop measurements).</li> <li>- Resources to assist dairy producers in properly <a href="#">measuring liquid manure nutrients</a> (which include flow meters, GPM + run time method and pond drop measurement).</li> <li>- A pre-programmed <a href="#">nutrient management spreadsheets</a> with instructions on calculating flow rate and lagoon pump duration.</li> <li>- <a href="#">Resources</a> to set up a manure handling system, including, a checklist for Using Liquid Manure for Crop Production and designing Liquid Manure Transfer Systems.</li> </ul>



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	<p><a href="#">California Dairy Research Foundation</a> provides reference binders that guide compliance with regulatory requirements in several regions.</p> <p>California NRCS provides information on the state’s <a href="#">Practice 590 Guideline</a> for Animal Feeding Operations (AFO) Nutrient Management.</p> <p>The Sustainable Agriculture Research &amp; Education Program’s (UCSAREP) <a href="#">California Nitrogen Assessment (CNA)</a> provides producers, researchers and the public with an in-depth look at nitrogen flows, practices and policies for California.</p> <p>The California State Water Resources Control Board provides informational materials regarding its <a href="#">Irrigated Lands Regulatory Program (ILRP)</a>.</p> <p>The <a href="#">Dairy Design Publication Series</a> provides producers with information for designing dairies with efficient nutrient manage systems.</p>
Classes / Trainings	<p>The California Dairy Quality Assurance Program’s (CDQAP) Environmental Stewardship program offers <a href="#">environmental stewardship certification</a> through educational courses, environmental stewardship farm management plans and on-site independent evaluations.</p>
Tailored Expert Assistance	<p>California NRCS provides information on what <a href="#">CNMPs</a> cover and provides further resources to producers on how to plan water, manure and organic by-product management.</p>

### Financial Assistance

#### Summary

The California Department of Agriculture’s (CDFA) offers several programs providing financial assistance to dairy farmers including:

- [Alternative Manure Management Program \(AMMP\)](#) awards competitive grants to California dairy and livestock operations that conduct projects implementing non-digester manure management practices in California to reduce greenhouse gas emissions.
- [Dairy Digester Research and Development \(DDRDP\)](#) awards competitive grants to California dairy operations and digester developers for the implementation of dairy digesters that result in long-term methane emission reductions.
- [Healthy Soils Program Incentives Program](#) provides grants for incentivizing and demonstrating the implementation of conservation agricultural management practices that sequester carbon, reduce atmospheric greenhouse gases and improve soil health.

California NRCS provides the following assistance:

- [Environmental Quality Incentives Program \(EQIP\)](#) - offers financial cost-share assistance to farmers for the adoption of conservation practices and development of nutrient management plans.



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- [Animal Feeding Operations/Confined Animal Feeding Operations \(AFO/CAFO\)](#) operations can apply for NRCS EQIP financial assistance for the storage, treatment, and utilization of animal waste.
- [Conservation Stewardship Program \(CSP\)](#), which provides producers with financial assistance to adopt conservation management practices on their operation.