

ORDER NO. 2009-XXXX
ATTACHMENT F
STANDARD REQUIREMENTS FOR
NUTRIENT MANAGEMENT PLANS
FOR
WASTEWATER TREATMENT FACILITIES

The purpose of the Nutrient Management Plan (NMP) is to budget and manage nutrients applied to land application area(s) considering all sources of nutrients, crop requirements, soil types, climate, and local conditions in order to prevent adverse impacts to surface water and groundwater quality. The NMP must take site-specific conditions into consideration in identifying steps that will minimize nutrient movement through surface runoff or leaching past the root zone.

The NMP must contain, at a minimum, all the elements listed below under Contents of a Nutrient Management Plan and must be updated in response to changing conditions, monitoring results, and other factors.

A specialist who is certified in developing nutrient management plans shall develop the NMP. A certified specialist is a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy or a Technical Service Provider certified in nutrient management in California by the Natural Resources Conservation Service (NRCS). The Executive Officer may approve alternative proposed specialists. Only NMPs prepared and signed by these parties will be considered certified.

The Monitoring and Reporting Program specifies minimum amounts of monitoring that must be conducted at the wastewater treatment facility (WWTF). As indicated below, this information must be used to make management decisions related to nutrient management. Likewise, the timing and amounts of wastewater applications to crops must be known to correctly calculate the amount of storage needed.

Waste and land application areas shall be managed to prevent contamination of crops grown for human consumption. The term "crops grown for human consumption" refers only to crops that will not undergo subsequent processing which adequately removes potential microbial danger to consumers.

Contents of a Nutrient Management Plan

The NMP shall identify the name, address of owner and operator and shall contain all of the following elements to demonstrate that the Discharger can control nutrient losses that may impact surface water or groundwater quality and comply with the requirements of the Order.

1. Land Application Area Information

- a. Identify each land application area (whether it is owned, rented, or leased, to which wastewater and/or solids/sludge may be applied) on a single published base map (topographic map or aerial photo) at an appropriate scale which includes:
 - 1) A field identification system (Assessor's Parcel Number; land application area by name or number; total acreage of each land application area; crops grown; owner; indication of what types of waste are applied (wastewater only, solids/sludge only, or both wastewater and solids/sludge); drainage flow direction in each field, nearby surface waters, and storm water discharge points; tailwater and storm water drainage controls; subsurface (tile) drainage systems (including discharge points and lateral extent); irrigation supply wells and groundwater monitoring wells; sampling locations for discharges of storm water and tailwater to surface water from the field; and
 - 2) Wastewater conveyance structures, discharge points and discharge mixing points with irrigation water supplies; pumping facilities; flow meter locations; drainage ditches and canals, culverts, drainage controls (berms, levees, etc.), and drainage easements.
- b. Provide the following information for each land application area identified in 1.a above:
 - 1) Field's common name (name used when keeping records of waste applications).
 - 2) Assessor's Parcel Number.
 - 3) Total acreage.
 - 4) Crops grown and crop rotation.
 - 5) Information on who owns and leases the field.
 - 6) Proposed sampling locations for discharges of storm water and tailwater to surface water.

- c. Provide copies of written agreements with third parties that receive wastewater from the Discharger's WWTF.
 - 1) The Discharger shall have a written agreement with each third party that receives process wastewater from the Discharger. Each written agreement shall be included in the Discharger's Nutrient Management Plan. The written agreement shall identify:
 - i. The Discharger and WWTF from which the wastewater originates;
 - ii. The third party that will receive wastewater;
 - iii. The Assessor's Parcel Number(s) and the acreage(s) of the cropland where the wastewater will be applied; and
 - iv. The types of crops to be irrigated with the wastewater.
 - v. The length of time the agreement will be in effect.

2. Available Nutrients

- a. All sources of nutrients (nitrogen, phosphorus, and potassium) available for each crop in each land application area shall be identified prior to land applications. Potential nutrient sources include, but are not limited to, wastewater, solids/sludge, manure, irrigation water, commercial fertilizers, soil, and previous crops.
- b. Nutrient values of soil, wastewater, solids/sludge, manure, and irrigation water shall be determined based on laboratory analysis. "Book values" may be used for planning of waste applications during the first two years during initial development of the NMP if necessary. Acceptable book values are those values recognized by American Society of Agricultural and Biological Engineers (ASABE), the NRCS, and/or the University of California that accurately estimate the nutrient content of the material. The nutrient content of commercial fertilizers shall be derived from California Department of Food and Agriculture published values.
- c. Nutrient credit from previous legume crops shall be determined by methods acceptable to the University of California Cooperative Extension, the NRCS, or a specialist certified in developing nutrient management plans.

3. Nutrient Budget

The NMP shall include a nutrient budget for each land application area. The nutrient budget shall establish planned rates of nutrient applications. The Nutrient Budget shall include the following:

a. Nutrient Application Rates

- 1) The rate of application of wastewater and solids/sludge for each crop in each land application area (also considering sources of nutrients other than wastewater or solids/sludge) to meet each crop's needs without exceeding application rates specified.
- 2) Planned rates of nutrient application shall be determined based on soil test results, crop tissue test results, nutrient credits, wastewater, solids/sludge, and manure analysis, crop requirements and growth stage, seasonal and climatic conditions, and use and timing of irrigation water.
- 3) Each crop's nutrient requirements for nitrogen, phosphorus, and potassium shall be determined based on recommendations from the University of California, the *Western Fertilizer Handbook* (9th Edition), or from historic crop nutrient removal.
- 4) Nutrient application rates shall not attempt to approach a site's maximum ability to contain one or more nutrients through soil adsorption. Excess applications or applications that cause soil imbalances are to be avoided.
- 5) Total nitrogen applications to a land application area prior to and during the growing of a crop will be based on pre-plant or pre-side dress soil analysis to establish residual nitrogen remaining in the field from the previous crop to establish early season nitrogen applications. Pre-plant or side dress nitrogen applications will not exceed the estimated total crop use as established by the nutrient management plan. Except as allowed below, application rates shall not result in total nitrogen applied to the land application areas exceeding 1.4 times the nitrogen that will be removed from the field in the harvested portion of the crop. Additional applications of nitrogen are allowable if the following conditions are met:
 - i. Plant tissue testing has been conducted and it indicates that additional nitrogen is required to obtain a crop yield typical for the soils and other local conditions;
 - ii. The amount of additional nitrogen applied is based on the plant tissue testing and is consistent with University of California Cooperative Extension written guidelines or written recommendations from a professional agronomist;
 - iii. The form, timing, and method of application facilitates timely nitrogen availability to the crop; and

- iv. Records are maintained documenting the need for additional applications.
- 6) Phosphorus and potassium may be applied in excess of crop uptake rates. If, however, monitoring indicates that levels of these elements are causing adverse impacts, corrective action must be taken. Cessation of applications may be necessary until crop uptake and harvest have reduced the concentration in the soil.
- 7) Plans for nutrient management shall specify the form, source, amount, timing, and method of application of nutrients on each land application area to minimize nitrogen and/or phosphorus movement to surface and/or ground waters to the extent necessary to meet the provisions of the Order.
- 8) Where crop material is not removed from the land application area or the land grazed, waste applications are not allowed. For example, if a pasture is not grazed or mowed (and cuttings removed from the land application area), waste shall not be applied to the pasture.
- 9) Wastewater and/or solids/sludge will be applied to the land application area for use by the first crop covered by the NMP only to the extent that soil tests indicate a need for nitrogen application.
- 10) Supplementary commercial fertilizer(s) and/or soil amendments may be added when the application of nutrients contained in wastewater and/or solids/sludge alone is not sufficient to meet the crop needs, as long as these applications do not exceed provisions of the Order.
- 11) Nutrient applications to a crop shall not be made prior to the harvest of the previous crop except where the reason for such applications is provided in the NMP.
- 12) Water applications shall not exceed the amount needed for efficient crop production.
- 13) Nutrients shall be applied in such a manner as not to degrade the soil's structure, chemical properties, or biological condition.

Nutrients are being evaluated in several Central Valley surface waters. Where these studies show that nutrients are adversely impacting beneficial uses, the Central Valley Water Board will work with parties in the watershed, including WWTF, to reduce discharges of phosphorus, nitrogen and possibly other constituents.

b. Nutrient Application Timing

- 1) Wastewater application scheduling should be based on the nutrient needs of the crop, the daily water use of the crop, the water holding capacity of the soil, and the lower limit of soil moisture for each crop and soil.
- 2) Wastewater shall not be applied when soils are saturated. During the rainy season rainfall can exceed crop water demand; however, the application of wastewater is allowable if tests show that there is an agronomic need and current conditions indicate that threat of nitrate leaching is minimal.
- 3) The timing of nutrient application must correspond as closely as possible with plant nutrient uptake characteristics, while considering cropping system limitations, weather and climatic conditions, and land application area accessibility.
- 4) Nutrient applications for spring-seeded crops shall be timed to avoid surface runoff and leaching by winter rainfall.

c. Nutrient Application Method

- 1) The Discharger shall apply nutrient materials uniformly to application areas or as prescribed by precision agricultural techniques.
- 2) Realistic yield goals for each crop in each land application area shall be established. For new crops or varieties, industry yield recommendations may be used until documented yield information is available.
- 3) If the NMP shows that the nutrients generated by the WWTF exceed the amount needed for crop production in the land application area, the Discharger must implement management practices (such as offsite removal of the excess nutrients, treatment, or storage) that will prevent impacts to surface water or groundwater quality due to excess nutrients.

4. Setbacks, Buffers, and Other Alternatives to Protect Surface Water

- a. A setback is a specified distance from surface waters or potential conduits to surface waters where wastewater and solids/sludge may not be land applied, but where crops may continue to be grown.
- b. A vegetated buffer is a narrow, permanent strip of dense perennial vegetation where no crops are grown and which is established parallel to the contours of and perpendicular to the dominant slope of the land application area for the purposes of slowing water runoff, enhancing water infiltration, trapping pollutants bound to

sediment, and minimizing the risk of any potential nutrients or pollutants from leaving the land application area and reaching surface waters.

- c. The minimum widths of setbacks and vegetated buffers must be doubled around the wellhead of a drinking water supply well constructed in a sole-source aquifer.
- d. Practices and management activities for vegetated buffers include the following:
 - 1) Removal of vegetation in vegetated buffers in accordance with site production limitations, rate of plant growth, and the physiological needs of the plants.
 - 2) Not mowing below the recommended height for the plant species.
 - 3) Maintaining adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation.
 - 4) Maintaining adequate ground cover, litter, and canopy to maintain or improve infiltration and soil condition.
 - 5) Periodic rest from mechanical harvesting, which may be needed to maintain or restore the desired plant community following episodic events such as drought.
 - 6) Implementing pest management to protect the desired plant communities.
When needs are a significant problem
 - 7) Preventing channels from forming.
- e. For each land application area that is within 100 feet of a surface water or a conduit to surface water, identify the setback, vegetated buffer, or other alternative practice that will be implemented to protect surface water.

5. Record-Keeping

The Discharger shall maintain records for each land application area identified in 1.a above and as required in the Monitoring and Reporting Program No. R5-XXXX-XXXX.

6. Nutrient Management Plan Review

- a. Identify the schedule for review and revisions to the NMP.
- b. Identify the person who will conduct the NMP review and revisions.
- c. Provide the name and contact information (including address and phone number) of the person who created the NMP; the date that the NMP was drafted; the name,

title, and contact information of the person who approved the final NMP; and the date of NMP implementation.

- d. The NMP shall be updated prior to any anticipated changes that would affect the overall nutrient balance or the nutrient budget such as, but not limited to, a crop rotation change, changes in the available cropland, or the changes in the volume of wastewater generated.
- e. The Discharger shall review the NMP at least once every five years and notify the Central Valley Regional Board in the annual report of any proposed changes that would affect the NMP.