

Comprehensive Nutrient Management Plan Outline

Plan Development Procedure - [Definition](#) and [Objectives](#)

1. Conduct an on-site visit with the client to complete the following activities.
 - a. Identify existing, potential and perceived resource issues in the planning area.
 - b. Schedule manure, wastewater, organic by-product, irrigation water and soil sampling and analysis activities, as applicable.
2. Provide compliance documentation for applicable Federal, Tribal, State and local permits and regulations.
 - a. [Colorado Concentrated Animal Feeding Operation Permit Application, Appendix A](#)
 - b. [Colorado Biosolids Regulation No. 64](#)
 - c. [Colorado Discharge Permit System Regulation No. 61](#)
 - d. [Colorado Animal Feeding Operations Control Regulation No. 81](#)
3. Complete conservation planning for the livestock operation. Work with the client to identify and select alternatives that address the identified resource concerns and all applicable CNMP Element Criteria listed in sections A through F below.
4. Complete an Environmental Evaluation Worksheet (CPA-52) to identify and document Resource Concerns and the effects of conservation practices and systems.
 - a. [CO-NRCS-CPA-52, CPA-52 Instructions, Colorado Quality Criteria](#)
5. Complete a [Record of Cooperator's Decisions and Progress in Application \(CPA-68\)](#).
6. Complete an [Emergency Action Plan to address spills and catastrophic events](#).
7. Obtain plan development [Approval Signatures](#).
 - a. Overall Plan - Producer/Operator
 - b. Overall Plan - Colorado Certified Conservation Planner/Comprehensive Nutrient Management Planning Specialist
 - c. Manure and Wastewater Handling and Storage - NRCS Engineering Job Approval Authority or Professional Engineer
 - d. Nutrient Management - American Society of Agronomy Certified Crop Advisor, American Registry of Certified Professionals in Agronomy, Crop and Soil Science or National Association of Independent Crop Consultants
8. Assemble the plan in a 3-ring notebook or binder with tabs that separate all applicable CNMP Elements. Include an Introduction at the beginning of the plan that includes the following information.
 - a. Producer-Operator-Planner [Contact Information](#)
 - b. Plan Development [Approval Signatures](#)
 - c. Record of Cooperators Decisions and Progress in Application ([CPA-68](#))
 - d. Permit compliance documentation, as applicable
 - e. Environmental Evaluation Worksheet ([CPA-52](#))
 - f. [Emergency Action Plan](#)

Element Criteria, General

A. Manure and Wastewater Handling and Storage Criteria (required)

1. Complete a [Data Inventory for Planning Livestock Waste Management Systems Worksheet](#)
2. Complete a [Solid and Liquid Manure and Wastewater Nutrient Production Calculations Worksheet](#). The Colorado [Nutrient Management 590 Job Sheet](#) Land Base Calculator is also acceptable.
3. Complete the [Waste Storage Facility Volume Approximation Worksheet](#), as applicable.
4. Plan Manure and Wastewater Handling and Storage Practices, as applicable
 - a. [Anaerobic Digester, Ambient Temperature - 365 Standard](#); [365 Statement of Work](#)
 - b. [Anaerobic Digester, Controlled Temperature - 366 Standard](#); [366 Statement of Work](#)
 - c. [Animal Mortality Facility - 316 Standard](#); [316 Statement of Work](#)
 - d. [Closure of Waste Impoundments - 360 Standard](#); [360 Statement of Work](#); [360 Specification](#)
 - e. [Composting Facility - 317 Standard](#); [317 Statement of Work](#)
 - f. [Dike - 356 Standard](#); [356 Statement of Work](#); [356 Construction Specification](#)
 - g. [Diversion - 362 Standard](#); [362 Statement of Work](#); [362 Construction Specification](#)
 - h. [Heavy Use Area Protection - 561 Standard](#); [561 Statement of Work](#); [561 Construction Specification](#)
 - i. [Manure Transfer - 634 Standard](#); [634 Statement of Work](#); [634 Construction Specification](#)
(Manure Transfer may also include one or more of the following practices)
 - i. [Pipeline - 516 Standard](#); [516 Statement of Work](#); [516 Construction Specification](#)
 - ii. [Pumping Plant – 533 Standard](#); [533 Statement of Work](#); [533 Construction Specification](#); [533 Construction Specification - Photovoltaic \(PV\)](#)
 - iii. [Irrigation Water Conveyance, Ditch & Canal Lining, Plain Concrete - 428A Standard](#); [428A Statement of Work](#); [428A Construction Specification](#)
 - iv. [Open Channel – 582 Standard](#), [582 Statement of Work](#); [582 Construction Specification](#)
 - v. [Irrigation System, Sprinkler – 442 Standard](#); [442 Statement of Work](#); [442 Construction Specification](#); [442 Design Summary Worksheet](#)
 - j. [Pond Sealing or Lining, Bentonite Treatment - 521C Standard](#); [521C Statement of Work](#); [521C Construction Specification](#)
 - k. [Pond Sealing or Lining, Compacted Clay Treatment - 521D Standard](#); [521D Statement of Work](#); [521D Construction Specification](#)
 - l. [Pond Sealing or Lining, Flexible Membrane - 521A Standard](#); [521A Statement of Work](#); [521A Construction Specification](#)
 - m. [Pond Sealing or Lining, Soil Dispersant Treatment - 521B Standard](#); [521B Statement of Work](#); [521B Construction Specification](#)
 - n. [Roof Runoff Structure - 558 Standard](#); [558 Statement of Work](#)
 - o. [Sediment Basin - 350 Standard](#); [350 Statement of Work](#); [350 Construction Specification](#)
 - p. [Structure for Water Control - 587 Standard](#); [587 Statement of Work](#); [587 Construction Specification](#)
 - q. [Waste Facility Cover - 367 Standard](#); [367 Statement of Work](#)

- r. [Waste Storage Facility - 313 Standard](#); [313 Statement of Work](#); [313 Documentation Guide, Waste Handling, Storage and Treatment Components of a CNMP](#); [313 Construction Specification - Reinforced Concrete Waste Storage Facility](#); [313 Construction Specification - Waste Storage Pond](#)
 - s. [Waste Treatment Lagoon - 359 Standard](#); [359 Statement of Work](#); [359 Construction Specification](#); [359 Documentation Guide - Waste Handling, Storage and Treatment Components of a CNMP](#)
 - t. [Waste Utilization - 633 Standard](#); [633 Statement of Work](#)
 - u. [Wastewater Treatment Strip - 635 Standard](#); [635 Statement of Work](#); [635 Construction Specification](#); [635 Documentation Guide - Waste Handling, Storage and Treatment Components of a CNMP](#); [Colorado Plant Materials Technical Note 59, Plant Suitability and Seeding Rates for Conservation Plantings in Colorado](#);
5. Identify Operation & Maintenance requirements for each planned and existing Manure and Wastewater Handling and Storage practice.

B. [Land Treatment Criteria](#) (required for land application of manure or organic by-products)

- 1. Complete [Excel WEQ](#) and [Rusle 2](#) erosion prediction calculations for each field where manure or organic by-products are applied. Planning to the soil loss tolerance "T" is required to meet Quality Criteria for soil erosion. If wind and or water erosion are not resource concerns for a specific site, document the crop rotation, tillage system and applicable soil and climate factors in the CPA-52.
- 2. Plan [Irrigation Water Management, 449](#) for each irrigated field where manure or organic by-products will be applied.
- 3. Plan additional Land Treatment Practices, as applicable, to meet State Permit requirements and NRCS Quality Criteria for Wind and Water Soil Erosion, and Surface and Ground Water Quality for Nutrients.
 - a. [Anionic Polyacrylamide \(PAM\) Erosion Control - 450 Standard](#); [450 Statement of Work](#); [450 Construction Specification](#)
 - b. [Conservation Crop Rotation - 328 Standard](#); [328 Statement of Work](#)
 - c. [Contour Buffer Strips - 332 Standard](#); [332 Statement of Work](#); [332 Job Sheet](#)
 - d. [Contour Farming - 330 Standard](#); [330 Statement of Work](#)
 - e. [Cover Crop - 340 Standard](#); [340 Statement of Work](#); [340 Specification Guide](#)
 - f. [Cross Wind Ridges - 589A Standard](#); [589A Statement of Work](#)
 - g. [Cross Wind Trap Strips - 589C Standard](#); [589C Statement of Work](#); [589C Job Sheet](#)
 - h. [Field Border - 386 Standard](#); [386 Statement of Work](#); [386 Job Sheet](#)
 - i. [Filter Strip - 393 Standard](#); [393 Statement of Work](#); [393 Job Sheet](#)
 - j. [Grassed Waterway - 412 Standard](#); [412 Statement of Work](#); [412 Construction Specification](#)
 - k. [Herbaceous Wind Barriers - 603 Standard](#); [603 Statement of Work](#); [603 Job Sheet](#)
 - l. [Irrigation Water Management - 449 Standard](#); [449 Statement of Work](#)
 - m. [Pasture and Hay Planting - 512 Standard](#); [512 Statement of Work](#)

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- n. [Pest Management - 595 Standard](#); [595 Statement of Work](#); [595 Specification Guide](#); [595 Job Sheet](#)
 - o. [Prescribed Grazing - 528 Standard](#); [528 Statement of Work](#); [528 Specification Guide](#)
 - p. [Residue and Tillage Management, No Till/Strip Till/Direct Seed - 329 Standard](#); [329 Statement of Work](#); [329 Job Sheet](#)
 - q. [Residue and Tillage Management, Mulch Till - 345 Standard](#); [345 Statement of Work](#); [345 Job Sheet](#)
 - r. [Residue and Tillage Management, Ridge Till - 346 Standard](#); [346 Statement of Work](#); [346 Job Sheet](#)
 - s. [Residue Management, Seasonal - 344 Standard](#); [344 Statement of Work](#)
 - t. [Riparian Forest Buffer - 391 Standard](#); [391 Statement of Work](#); [391 Specification Guide](#); [391 Job Sheet](#)
 - u. [Riparian Herbaceous Cover - 390 Standard](#); [390 Statement of Work](#)
 - v. [Salinity and Sodic Soil Management - 610 Standard](#); [610 Statement of Work](#); [610 Job Sheet](#)
 - w. [Stripcropping - 585 Standard](#); [585 Statement of Work](#)
 - x. [Terrace - 600 Standard](#); [600 Statement of Work](#); [600 Construction Specification](#)
 - y. [Vegetative Barrier - 601 Standard](#); [601 Statement of Work](#); [601 Job Sheet](#)
 - z. [Windbreak/Shelterbelt Establishment - 380 Standard](#); [380 Statement of Work](#); [380 Specification](#); [380 Job Sheet](#)
4. Identify Operation & Maintenance requirements for each planned and existing Land Treatment practice.
- C. [Nutrient Management Criteria](#) (required for land application of manure or organic by-products)**
- 1. Soil Sample each field that will receive manure or organic by-product applications. Analyze samples for N, P, K, organic matter, pH and electrical conductivity plus all other nutrients included in the nutrient management plan.
 - 2. Sample each manure, wastewater and organic by-product containment structure and at a minimum, analyze for Total Nitrogen including NH₄ and NO₃, Phosphorus, Potassium, pH and electrical conductivity. Annual sampling is required.
 - 3. Complete a Nutrient Management Plan including risk assessments for Nitrogen Leaching and Phosphorus Runoff for each field where manure or organic by-products will be applied
 - a. [Nutrient Management 590 Standard](#); [590 Statement of Work](#); [590 Job Sheet](#)
 - b. [Colorado Phosphorus Index Risk Assessment Version 3](#)
 - c. [Colorado Nitrogen Leaching Risk Assessment Version 2](#)
 - 4. Complete [Land Base Requirement](#) calculations using actual manure and organic by-product production estimates and analyses calculated for the Manure and Wastewater Handling and Storage Element. Fields must be planned to the soil loss tolerance "T" and score a Low or Medium Risk Assessment for Nitrogen Leaching and Phosphorus Runoff.
 - 5. Identify applicable Operation & Maintenance requirements for Nutrient Management.
 - a. Schedule periodic plan reviews to coincide with the soil test cycle, not to exceed 5 years.
 - b. Schedule annual manure sampling and analysis for each manure containment structure.
 - c. Protect fertilizer and organic by-product storage facilities

- d. Calibrate application equipment for uniform distribution at planned rates.
- e. Document the actual rates at which nutrients are applied.
- f. Recordkeeping (see Section D)

D. Record Keeping Criteria (Required)

1. Annual manure sample analysis for each manure containment structure
2. Current soil test results for each field or treatment unit, per 590
3. Application records for each manure and fertilizer application event
4. Containment source or type and form of commercial fertilizer
5. Field by field [Organic Nutrient Use Summary](#)
6. Amount applied per acre
7. Time and date of application(s)
8. Weather conditions during nutrient application(s)
9. General soil moisture conditions at time of application(s)
10. Application method and equipment used
11. Crops planted for each field including planting and harvesting dates and yields
12. Records that address manure and wastewater containment structures
 - a. Record storage pond stages on a weekly (CAFO) or monthly (AFO) basis.
 - b. Dates of emptying, level before emptying, and level after emptying
 - c. Discharge and overflow events, including level before and after
 - d. Daily precipitation
13. Transfer of manure off-site or to third parties
 - a. Manure nutrient content
 - b. Amount of manure transferred
 - c. Date of transfer
 - d. Recipient
14. Activities associated with the emergency spill response plan
15. Records associated with any reviews/inspections by NRCS, third party consultants, or representatives of regulatory agencies
 - a. Dates of review
 - b. Name of reviewer and purpose of the review
 - c. Recommendations or follow-up requirements/corrective actions resulting from the review
 - d. Actions taken as a result of the review
16. Records of maintenance performed associated with operation and maintenance plans
17. Nutrient application equipment calibration
18. Changes made to the CNMP

E. Feed Management Criteria (Optional)

1. Self Assessments for [Beef](#), [Dairy](#), [Pig](#)
2. [Feed Management - 592 Standard](#); [592 Statement of Work](#)
3. Identify Operation and Maintenance requirements for Feed Management.

F. Other Utilization Activities Criteria (Optional)

This element may be applicable when the end use of the manure is not Land Application, e.g. off-farm compost sales or pelletization and re-feeding.

1. Improved systems for solids removal from liquid manure
2. Improved manure handling, storage and treatment methods to decrease ammonia volatilization
3. Treatment systems that transform and or capture nutrients, trace elements and pharmaceutically active compounds from manure
4. Improved composting and other manure stabilization techniques
5. Treatment systems to remediate or replace anaerobic lagoons